SMALLHOLDER INVOLVEMENT IN TREE CROPS IN MALAYA, WITH SPECIAL REFERENCE TO OIL AND COCONUT PALMS IN JOHOR, 1862 - 1963

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ABSTRACT

As part of efforts to mitigate the oil palm industry's harmful impacts in Southeast Asia, scholars have begun showing more interest in smallholder farming arrangements. However, the reasons why most smallholders in Malaya have shunned the crop since its introduction have not been carefully investigated to date. Historians have typically claimed that oil palms exhibited processing cost economies that favoured large-scale farming arrangements. The history of Malaya, with particular reference to Johor, a major site of oil palm cultivation since the 1920s, suggests a different argument.

This thesis contends that Malayan smallholders spurned oil palms because of high opportunity costs, grounded in the counter-attractions of other tree crops. *Hevea* rubber was especially alluring, with its relatively high cash returns. Similarly important to smallholders, but barely acknowledged by historians, was the coconut palm. First, it flourished in soils where rubber floundered. Second, prior to the oil palm's arrival, coconut palm products were already domestically popular. Consequently, Malayan processors and traders, key influences mediating demand and supply, had little incentive to encourage smallholders to channel labour into oil palms, when estates began adopting the tree. Third, labour requirements for oil palms were more exacting than those for other tree crop mainstays, including coconut palms. Fourth, government policies affecting the cultivation, processing and domestic consumption of oil palm products helped restrain small-scale involvement, whereas official support for smallholder coconut farming was more forthcoming. These opportunity costs ensured that small-scale oil palm cultivation remained muted, despite significant policy changes favouring smallholders during the 1950s and 1960s.

This thesis contributes to the economic history of Southeast Asia through a detailed examination of oil and coconut palm farming, two important

pursuits neglected by historical scholarship. It stresses the significance of a set of overlooked economic actors, incorporating cultural considerations in the process. Lastly, it makes novel analytic links between pre-colonial, British, Japanese, and independence-era polities in Malaya.

CONTENTS

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LIST OF ABBREVIATIONS

Note: All archival and series abbreviations are to be found at the beginning of the Bibliography (page 351).

ACLR	Assistant Collector of Land Revenue
BCE	Before Common Era
BR	British Resident
CE	Common Era
CL&M	Commissioner of Lands and Mines
CLR	Collector of Land Revenue
DA	Director of Agriculture
DAFMS	Department of Agriculture, Straits Settlements and Federated Malay States
Enc	Enclosure
FMS	Federated Malay States
HC	High Commissioner
SS	Straits Settlements

NOTE ON CURRENCIES, WEIGHTS, AND MEASURES

All monetary references are in Straits Settlements dollars (later the Malayan/Malaysian dollar/*ringgit*) unless otherwise designated. Between 1906 and 1966 one Straits (Malayan/Malaysian) dollar was equivalent to 2*s*.4*d* ($60 equalled £7).

Weights and measures are normally expressed in the metric system, except where the historical figure is more appropriate.

All unit measures of tons refer to the imperial ton/long ton.

1 ton equals 2,240 lb equals 16.8 *piculs*.
1 *picul* equals 100 *kati* equals 133 1/3 lbs.
1 ton of copra is assumed to yield 0.625 tons of copra oil and 0.35 tons copra cake.
5,913 whole coconuts are assumed to yield 1 ton of copra oil.[1]

[1] Coconut measures: H. Lake Coghlan. *Coconut Industry in Malaya* (3rd ed.) (London: Malay States Information Agency, 1924), 35, 43.

Chapter 1

INTRODUCTION

Palm oil, obtained from the outer layer of the fruit of the oil palm (*Elaeis guineensis*), is one of the world's most heavily used vegetable oils today. In 2013, approximately half of all packaged foods consumed worldwide contained palm oil.[1] Oil palm products (including palm kernel oil, derived from the fruit's kernel) are also used in a wide variety of non-edible goods, including cleaning agents, cosmetics, plastics, herbicides, drugs, textiles, and biofuels.[2] Palm oil's commercial ascendance has been relatively recent, going from 6 per cent of all fat exports in the late 1960s to 38 per cent by the late 1990s.[3] Malaysia was at the forefront of this global transformation, nearly quintupling its share of world palm oil exports from 10 per cent in 1950 to 57 per cent in 2000.[4] More recently, neighbouring Indonesia surpassed Malaysia in 2009 to become the world's top exporter of palm oil. The two territories account for nearly nine-tenths of all global palm oil exports today.[5]

The oil palm's rise as a globally traded commodity has been dogged by controversy. Although a significant trade in palm oil and kernels from West African peasant holdings took place during the nineteenth century, the oil palm's territorial expansion since the beginning of the twentieth century has been dominated by large-scale estate arrangements in Southeast Asia. Whether privately or publicly-

[1] Roundtable on Sustainable Palm Oil Secretariat, "Why Palm Oil Matters in Your Everyday Life: Consumer Fact Sheet." Roundtable on Sustainable Palm Oil website (last accessed 3 May 2017, at http://bit.ly/20Wx4OP).

[2] Teoh Cheng Hai, *The Palm Oil Industry in Malaysia: From Seed to Frying Pan*. Petaling Jaya: WWF Malaysia, 2002; K. Bottriell and N. Judd. *Mapping & Understanding the UK Palm Oil Supply Chain and Review of Policy Options: A Report to the Department for Environment, Food and Rural Affairs.* London: Department for Environment, Food and Rural Affairs, 2011.

[3] Susan M. Martin, "An Edible Oil for the World: Malaysian and Indonesian Competition in the Palm Oil Trade, 1945-2000." In *Intra-Asian Trade and the World Market,* eds. A.J.H. Latham and Heita Kawakatsu (London: Routledge, 2006), 209.

[4] Lim Chong Yah, *Economic Development of Modern Malaya* (Kuala Lumpur: Oxford University Press, 1967), 377.

[5] FAOSTAT, 'Trade: Crops and Livestock Products Database.' FAOSTAT website (last accessed 3 May 2017, at http://bit.ly/20Wu196).

owned, these typically involve a tightly-organised labour force toiling amongst endless rows of oil palm monocultures, taking on strenuous harvesting, fruit collecting and field maintenance activities.[6] Fruits are then milled for their oil and kernels within large factories, creating a hub-and-spoke system centred on the processing facility.

Proponents of such layouts argue that they are needed for efficient land use, and cost economies associated with palm fruit processing.[7] Such arguments are bolstered by the palm fruit's rapid perishability once harvested, and, since the middle decades of the twentieth century, significant advances in breeding techniques. Intensively farmed oil palms currently need one-tenth the land required by their closest commercial competitor, soybeans, to produce the same amount of oil.[8] Some researchers have also contended that the oil palm's compatibility with large-scale milling arrangements has allowed tropical producers to engage in rare instances of successful resource-based industrialisation. Thus, in Malaysia, oil palm production arrangements arguably facilitated technological upgrading and vertical integration during the second half of the twentieth century, leading to new manufacturing jobs with higher incomes.[9]

Critics point to a multitude of concerns raised by oil palm expansion in Malaysia and Indonesia during the past few decades. Indeed, as some scholars have contended, the recent boom is just one aspect of a global elite-driven 'resource grab', not just involving agricultural land, but their accompanying forest, water and mineral resources.[10] Yet, while

[6] Rob A. Cramb and John F. McCarthy, "Characterising Oil Palm Production in Indonesia and Malaysia." In *The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia*, eds. Rob A. Cramb and John F. McCarthy (Singapore: NUS Press, 2016), 33.
[7] Koh Lian Pin, Patrice Levang, and Jaboury Ghazoul, "Designer Landscapes for Sustainable Biofuels." *Trends in Ecology & Evolution* 24, no. 8 (2009), 431-432.
[8] R. H. V. Corley and P. B. H. Tinker, *The Oil Palm. Fifth Edition* (Hoboken, NJ: Wiley, 2016), 10-11.
[9] Susan M. Martin, *The UP Saga* (Copenhagen: NIAS Press, 2003), 1-13; Rajah Rasiah, "Explaining Malaysia's Export Expansion in Palm Oil and Related Products." In *Technology, Adaptation and Exports*, ed. Vandana Chandra (Washington: The World Bank, 2006), 163-224.
[10] Derek Hall, Philip Hirsch, and Tania Li, *Powers of Exclusion: Land Dilemmas in Southeast Asia* (Singapore: NUS Press, 2011); Oliver Pye and Jayati Bhattacharya, *The Palm Oil Controversy in Southeast Asia* (Singapore: ISEAS, 2012); Corey Ross, *Ecology and Power in*

literature on the oil palm's expansion is voluminous and still rising, most discussions have tended to focus on discreet aspects of the problem, rather than treat them as a synoptic whole.

In discussions centred on the oil palm itself, exceptions to this conceptual myopia include a recent collection of essays edited by anthropologists Rob Cramb and John McCarthy, who begin their overview of the crop with the premise that numerous environmental, political, social, and economic issues connected to the Southeast Asian oil palm boom cannot be effectively addressed in isolation from one another.[11] They note that the oil palm industry's environmental problems in both Malaysia and Indonesia have been especially publicised. These include the immense biodiversity losses brought on by the large-scale conversion of tropical rainforests and coastal peatlands to oil palm monocultures, as well as chemical pollution from mills and estates. The victims of these changes extend well beyond areas brought under oil palm plantations.[12]

However, these environmental transformations are conditioned by deeper socio-political processes, involving a massive transfer of property rights into the hands of politically-connected business elite. Such transfers often disadvantage small landowners and local communities. They are also based on the exploitation of cheap migrant estate labour, sowing tensions between local and migrant cultivators. In a situation where the global demand for oil palm products is still steadily expanding, Cramb, McCarthy, and others point out that it is the manner in which the oil palm is commodified, rather than the crop itself, which is the real problem. The key challenge is to work out how the oil palm can 'provide the greatest contribution to sustainable rural livelihoods', instead of undermining them.[13]

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the Age of Empire: Europe and the Transformation of the Tropical World. (Oxford: Oxford University Press, 2017).

[11] Rob A. Cramb and John F. McCarthy, "Introduction." In *The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia*, eds. Rob A. Cramb and John F. McCarthy. (Singapore: NUS Press, 2016), 2-8.

[12] Ibid., 7-8.

[13] Ibid., 2.

In response, scholars have begun investigating ways to encourage more independent smallholder involvement in oil palms, both in Southeast Asia and elsewhere.[14] Besides the economic benefits derived from cash cropping, independent smallholders usually retain control over their own labour and its deployment, unlike estate labourers or scheme settlers. This arguably leads to more proficient and cost-effective agricultural practices, since households tend to have a superior grasp of local environmental conditions influencing cultivation, and do not need costly management structures to supervise their work.[15]

In addition, since the global commodities busts of the 1990s, institutional funders have faced pressures to move away from policies promoting what were believed to be more efficient smallholder crop specialisation practices, towards those favouring crop diversification instead.[16] Researchers and policymakers have shown increased interest in agroforestry techniques, in which large numbers of trees are interspersed among shorter-cycle cultivars, resulting in varying degrees of complexity and species diversity.[17] The most optimistic arguments claim that economic and environmental benefits can be maximised over time through such approaches. Households using such techniques often live on a mixture of farm and non-farm activities, including the production of different crops for both sale and subsistence. Instead of maximizing the yield of a single crop, resilience to individual crop failures and crop price

[14] Gina Koczberski, "Loose Fruit Mamas: Creating Incentives for Smallholder Women in Oil Palm Production in Papua New Guinea." *World Development* 35, no. 7 (2007), 1172-85; Lesley M. Potter, "Alternative Pathways for Smallholder Oil Palm in Indonesia: International Comparisons." In *The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia*, eds. Rob A. Cramb and John McCarthy (Singapore: NUS Press, 2016), 155-188; Alison Rieple, Susan Martin, Jane Chang, Bonaventure Boniface, and Amran Ahmed, "Small Farmers and Sustainability: Institutional Barriers to Investment and Innovation in the Malaysian Palm Oil Industry." American Association of Geographers Conference. Chicago, Illinois, 21-25 April 2015.

[15] Frank Ellis, *Peasant Economics: Farm Households and Agrarian Development* (Cambridge: Cambridge University Press, 1988), Ch. 10; Yujiro Hayami, "The Peasant in Economic Modernization." *American Journal of Agricultural Economics* 78, no. 5 (1996), 1158; Derek Byerlee, "The Fall and Rise Again of Plantations in Tropical Asia: History Repeated?" *Land Development Digest* 3, no. 3 (2014), 576-577.

[16] François Ruf and Götz Schroth, "Introduction." In *Economics and Ecology of Diversification: The Case of Tropical Tree Crops*, eds. François Ruf and Götz Schroth (Dordrecht: Springer, 2015), 1-2.

[17] François Ruf, "The Myth of Complex Cocoa Agroforests: The Case of Ghana." *Human Ecology* 39, no. 3 (2011), 373-376.

fluctuations is increased.[18] Lower incomes from lower crop yields are mitigated by lower household operating costs. According to such arguments, in enhancing resilience to economic risks, smallholders, including those farming oil palms, simultaneously become more 'wildlife-friendly' farmers.[19]

These dynamics have already arisen in parts of Southeast Asia and the Pacific, including East Malaysia, Indonesia, and Papua New Guinea. In these territories, oil palms have been occasionally found planted among other village orchard crops in a diversified landscape, as part of household strategies to stabilise incomes.[20] This smallholder 'pushback' against estate-style oil palm production arrangements nevertheless remains a minor feature of a landscape dominated by the latter. To be sure, about 40 per cent of oil palm lands in Indonesia were farmed by smallholders in 2010. However, most of these growers, according to Koh, Levang, and Ghazoul, were dependent on sales to a single large processing entity, curtailing their capacity to negotiate fair prices and manage their lands according to their own preferences.[21] In Malaysia (including Sarawak and Sabah), the smallholder share of oil palm lands was only 14 per cent in 2011, with a similar dependence on large-scale mills.[22] Such findings are especially significant when one considers the fact that the oil palm is the only tree crop in tropical Asia which did not become dominated by independent smallholder arrangements at the end of the twentieth

[18] Potter, 'Alternative Pathways', 166.
[19] Koh et al., *Designer Landscapes*, 432-435; Jeyamalar Kathirithamby-Wells, "The Implications of Plantation Agriculture for Biodiversity in Peninsular Malaysia: A Historical Analysis." In *Beyond the Sacred Forest: Complicating Conservation in Southeast Asia*, eds. Michael R. Dove, Percy E. Sajise and Amity A. Doolittle (Durham: Duke University Press, 2011), 62-90.
[20] Koczberski et al., *Making a Living*, 324-39; Rob Cramb and Patrick Sujang, "The Mouse Deer and the Crocodile: Oil Palm Smallholders and Livelihood Strategies in Sarawak, Malaysia." *Journal of Peasant Studies* 40, no. 1 (2013), 129-54; Potter, 'Alternative Pathways', 166.
[21] Koh et al., *Designer Landscapes*, 433-434.
[22] Malaysian Palm Oil Board (MPOB), "Oil Palm Planted Area by Category as at December 2011." MPOB Website (last accessed 4 May 2017, at http://bit.ly/2pb6ugT); Potter, 'Alternative Pathways', 163; Jean-François Bissonette and Rodolph De Koninck. "The Return of the Plantation? Historical and Contemporary Trends in the Relation between Plantations and Smallholdings in Southeast Asia." *Journal of Peasant Studies* 44, no. 4 (2017), 873.

century: a long list that includes major crops such as *Hevea* rubber, coffee, coconuts, and cocoa.[23]

Growing scholarly interest in oil palm smallholder arrangements has sparked recent attempts to explain this agricultural anomaly. For example, development economist Derek Byerlee attributes the disparity to government prejudice against smallholders, and more importantly, the oil palm's relatively late introduction to Southeast Asia, which has limited the extent to which smallholders have diversified into the crop thus far.[24] Byerlee's argument, however, overlooks the fact that oil palm crop booms occurred in Southeast Asia much earlier, first in Sumatra during the 1910s, and then Malaya a decade later. By 1960, estates had already planted nearly 140,000 acres worth of oil palms in Malaya alone. Indeed, while multidisciplinary interest in the oil palm's Southeast Asian trajectory has grown into a veritable industry of its own, the period before the 1960s is typically treated as an insignificant prelude to the expansion taking place in the decades afterwards.[25]

HISTORIOGRAPHY

This thesis thus seeks to unravel the mystery of the missing oil palm smallholder in Southeast Asia, right from the outset of the crop's commercial presence in the region. It focuses on Malaya (now known as Peninsular Malaysia), where the estate share of oil palm cultivation remains the highest in Southeast Asia, if not the world. In doing so, this study breaks new ground through a detailed historical examination of smallholder involvement in Malaya's oil palm sector before 1960. In short, it seeks to understand why oil palms in Malaya have proven so resistant to smallholder cultivation.

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[23] Colin Barlow and S. K. Jayasuriya, "Stages of Development in Smallholder Tree Crop Agriculture." *Development and Change* 17, no. 4 (1986), 635-637; William Gervase Clarence-Smith and Steven Topik, eds. *The Global Coffee Economy in Africa, Asia and Latin America, 1500-1989* (Cambridge: Cambridge University Press, 2003); Robin Dand. *The International Cocoa Trade* (3rd ed.) (Cambridge: Woodhead, 2010); Corley et al., *Oil Palm*, 19-20.
[24] Byerlee, *Tropical Asia*, 584.
[25] See especially the literature review in Cramb et al., 'Introduction', pp. 1-26.

Historical accounts of the Malaysian oil palm sector rarely acknowledge the involvement of independent smallholders, let alone question the absence of interest in the crop. This is partly because many accounts of the sector follow nationalist narratives which emphasise the role of post-colonial Malaysian authorities in fostering greater industrialisation within the sector, as well as the state's role in encouraging participation by small growers through group farming schemes. Thus, according to development economist Rajah Rasiah,

> until 1960 there was no special government-driven support to expand exports....Under British rule, planters of oil palm specialized in primary production and received no subsidy or protection from the government. Specialisation in primary production continued after independence. The government's first intervention came in the late 1960s, when foreign-owned estates were acquired by parastatals....During the 1950s and 1960s the government extended the Rural Industry and Smallholders Development Authority to include oil palm cultivation and launched FELDA [the Federal Land Development Authority] to alleviate poverty.[26]

Rasiah's account inadvertently credits post-colonial authorities with innovations pioneered during British colonial rule, and leaves the question of the industry's development during the colonial period unexplored. But these misrepresentations point to a deeper tendency among historians to neglect the immense contribution of smallholders to tropical cash crop production (and thus ultimately to the expansion of a global economy), in favour of estate-centred narratives.[27]

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[26] Rasiah, 'Malaysia', 164, 171.

[27] Exceptions include P. T. Bauer, *The Rubber Industry. A Study in Competition and Monopoly* (London: Longmans, 1948); Lim Teck Ghee, *Peasants and Their Agricultural Economy in Colonial Malaya, 1874-1941* (Kuala Lumpur: Oxford University Press, 1977); Susan M. Martin, *Palm Oil and Protest: An Economic History of the Ngwa Region, South-Eastern Nigeria, 1800-1980* (Cambridge: Cambridge University Press, 1988); Bambang Purwanto, "From Dusun to the Market: Native Rubber Cultivation in Southern Sumatra, 1890-1940." (PhD Thesis. University of London, SOAS, 1992); Anne Booth, *Agricultural Development in Indonesia* (Sydney: Allen and Unwin, 1988), Ch. 6; François Ruf and P. S. Siswoputranto, eds. *Cocoa Cycles: The Economics of Cocoa Supply* (Cambridge: Woodhead

To date, the most comprehensive historical account of Malaysia's oil palm sector remains Susan Martin's study of United Plantations, which relies on company archives and personnel interviews to chart the origins and growth of the firm into a highly respected enterprise within Malaysia. In doing so, Martin provides an extremely lucid analysis of how the private oil palm estate sector in Malaysia grew from strength to strength, since its inception in the early 1910s. By illuminating connections between technical developments in the oils and fats industries outside Malaysia, the Malaysian scene itself, and United Plantation's contribution to domestic industrialisation, Martin's monograph has become required reading for understanding how Malaysia's oil palm estate sector arrived at its current eminent position.

Yet, in Martin's study, the only oil palm small growers mentioned are those who were inducted into government-managed land development schemes in Malaysia, as well as West African peasants.[28] There is no recognition of the independent smallholder contribution to Malaysian oil palm cultivation in her work, despite the fact that smallholdings accounted for nearly one-fifth of all oil palm lands cultivated in Peninsular Malaysia by the mid-1980s: a period firmly within Martin's chronology.[29] Other writings which have touched on more discrete components of Malaysia's oil palm sector, including agency houses, refineries, and state-directed oil palm group schemes, have also been conspicuously silent on the matter.[30]

Publishing Limited, 1995); William Gervase Clarence-Smith, ed., *Cocoa Pioneer Fronts since 1800: The Role of Smallholders, Planters, and Merchants* (New York: St. Martin's Press, 1996); Robert Edward Elson, *The End of the Peasantry in Southeast Asia: A Social and Economic History of Peasant Livelihood* (New York: St Martin's Press, 1997); Clarence-Smith et al., *Coffee*.

[28] Martin, *Saga*, 80-81, 158, 180, 207-209, 240, 266, 286, 296, 301, 320-323.

[29] Malek bin Mansoor and Colin Barlow, *The Production Structure of the Malaysian Oil Palm Industry with Special Reference to the Smallholder Subsector* (Kuala Lumpur: Palm Oil Research Institute of Malaysia, 1988), 54.

[30] Jaya Gopal, "The Development of Malaysia's Palm Oil Refining Industry: Obstacles, Policy and Performance." (PhD Thesis, Imperial College, 2001); Aurélia de Vathaire, "Les Ecrivains-Planteurs Français De Caoutchouc En Malaisie, 1905-1957." (PhD Thesis, La Rochelle University, 2008); Lim, *Malaya*, 128-143; Sjovald Cunyngham-Brown, *The Traders: A Story of Britain's South-East Asian Commercial Adventure* (London: Newman Neave, 1971); Edgar Graham and Ingrid Floering, *The Modern Plantation in the Third World* (Sydney: Croon Helm, 1984), 105-114; Tunku Shamsul Bahrin and Lee Boon Thong, *FELDA: Three Decades of Evolution* (Kuala Lumpur: FELDA, 1988); Peter Pugh et al., Guy Nickalls,

Extant historical scholarship on smallholder involvement in oil palms in Malaysia is thus virtually non-existent. Barbara and Leonard Andaya, in their authoritative general history of Malaysia, offer a fleeting mention of oil palm smallholdings during the interwar years, with no reference provided for their claim.[31] The only detailed local case histories of oil palm smallholders focus on the period after 1960, including Shamsul Amri Baharuddin's ethnography of village communities in Selangor, and Tan Pek Leng's spotlight on Chinese involvement in the oil palm industry.[32] In the realm of historical analysis then, little has changed since Shamsul's pointed observation, made in 1986, that '[there] has not been a single detailed study to date on peasant oil palm growers'.[33]

This lack of historical research has not prevented speculation on the reasons behind the absence of smallholder oil palm cultivation within Malaya. Prevailing scholarship, influenced by the estate–driven narrative, views the problem primarily as a struggle between smallholders and estates for economic competitiveness, particularly at the primary processing stage. Biological differences between the oil palm and other major tree crop cultivars, such as the *Hevea* rubber tree (*Hevea brasiliensis*), and the coconut palm (*Cocos nucifera*), shaped the techniques that could be used to process crops after the harvest. Processing palm fruit for oil and kernels was subject to greater cost economies than copra (dried coconut kernel) or rubber sheet production,

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ed., *Great Enterprise: A History of Harrisons & Crosfield* (London: Harrisons & Crosfield, 1990); James Pletcher, "Regulation with Growth: The Political Economy of Palm Oil in Malaysia." *World Development* 19, no. 6 (1991), 623-36; Cyril Northcote Parkinson, *The Guthrie Flagship: United Sua Betong*. (Kuala Lumpur: Malaysian Branch of the Royal Asiatic Society, 1996); Niels Fold, "Oiling the Palms: Restructuring of Settlement Schemes in Malaysia and the New International Trade Regulations." *World Development* 28, no. 3 (2000), 473-86; Valeria Giacomin, "Contextualizing the Cluster: Palm Oil in Southeast Asia in Global Perspective (1880s-1970s)." (PhD Thesis, Copenhagen Business School, 2016); Ead., "Negotiating cluster boundaries: governance shifts in the palm oil and rubber cluster in Malay(si)a (1945-1970 ca.)." *Management and Organizational History* 12, no. 1 (2017), 76-98; Ead., "The Emergence of an Export Cluster: Traders and Palm Oil in Early Twentieth-Century Southeast Asia." *Enterprise & Society* (2017), 1-37. doi: 10.1017/eso.2017.10; Nicholas J. White, *British Business in Post-Colonial Malaysia, 1957-70: Neo-Colonialism or Disengagement?* (New York: RoutledgeCurzon, 2004), 165-174.

[31] Barbara Watson Andaya and Leonard Y. Andaya, *A History of Malaysia* (3rd ed.) (Basingstoke: Palgrave, 2017), 225.

[32] Shamsul A. B., *From British to Bumiputera Rule: Local Politics and Rural Development in Peninsular Malaysia* (Singapore: ISEAS, 1986), Ch. 3, passim; Tan Pek Leng, *Land to Till: The Chinese in the Agricultural Economy of Malaysia* (Kuala Lumpur: Centre for Malaysian Chinese Studies, 2008), 96-98, 175.

[33] Shamsul, *Malaysia*, 3.

thus implying that capital-scarce smallholders had an advantage working with coconuts and rubber, but not oil palms.

For example, in Harcharan Singh Khera's pioneering book-length economic survey of the Malaysian oil palm industry in 1976, stress is placed on the fact that palm fruit cash cropping in Malaya (and Malaysia) has been a complex and expensive option, which tends to favour players with the vast capital resources needed to deploy large-scale machinery, technical personnel, specialised field labour, and large contiguous areas of land needed to grow the crop.[34] No doubt this view was influenced by prevailing palm fruit production arrangements in Malaysia at the time, conducted on a much larger scale than in West Africa, where smallholders continue to control most oil palm cultivation arrangements. In this reformulation of the David and Goliath narrative, smallholders are cast as the losing parties in this supposed commercial battle with cash-rich estates.

This mechanist rationale has been adopted by a number of prominent historians studying Southeast Asia. For instance, in his economic history of Malaysia since 1800, John Drabble uses the processing argument with exemplary succinctness:

> [T]he industry in Malaya was confined to estates (almost entirely European-owned), principally because of the expensive technology necessary to process the fruit quickly after harvesting to prevent the build-up of free-fatty acid.[35]

Similarly, the Andayas' *History of Malaysia* states that the need for 'capital and special expertise, especially in the processing of the oil' confined the industry to large plantations in colonial Malaya.[36] Muzaffar Tate, in his review of the Malaysian estate industry's fortunes since the late eighteenth century, justifies the absence of smallholder oil palm cultivation by the

[34] Harcharan Singh Khera, *The Oil Palm Industry of Malaysia* (Kuala Lumpur: Penerbit Universiti Malaya, 1976), 141.
[35] John H. Drabble, *An Economic History of Malaysia, c. 1800-1990: The Transition to Modern Economic Growth* (Basingstoke: Macmillan, 2000), 133.
[36] Andaya et al., *Malaysia*, 223.

need for tightly coordinated field operations and large-scale fruit milling.[37] Gregg Huff's economic history of twentieth-century Singapore, Nicholas White's discussion of post-independence-era British business activity in Malaya, and Valeria Giacomin's historical survey of Southeast Asia's oil palm sector essentially take the same line as Tate.[38] None of these accounts, save for White's, cite a direct reference for the claim.

Yet this contention, lacking any grounding in extensive archival research, suffers from crucial weaknesses, not least the omission of crucial historical facts. A domestic market for low-quality, high-acid Malayan palm oil actually existed by the 1930s, one in which Malayan estates themselves were active participants. Furthermore, labour-intensive processing operations were a reality for many estates, including those which were producing high-quality palm oil, as late as two decades after the oil palm industry's inception. And contrary to previous assumptions, oil palm estates in Malaya were willing to purchase palm fruit supplies from smallholders before the 1960s, with some smallholders selling their fruits accordingly.

The mechanist rationale is also analytically problematic. It makes it harder, rather than easier, to explain why smallholders moved into oil palms in greater numbers from the 1960s onwards, despite the proliferation of even larger palm fruit factories in Malaya. The argument ignores the very real shift in political support which occurred during the 1950s and 1960s. The rationale thus ignores the crucial question of why that shift occurred when it did.

One common response has been to claim that cash returns from other smallholder crops in Malaya, such as rubber, were higher than those for oil palm products during the period up to the 1960s, before the tide turned in favour of oil palms, with the implication that state authorities changed their views when they read the straws in the wind. But the

[37] D. J. M. Tate, *The RGA History of the Plantation Industry in the Malay Peninsula* (New York: Oxford University Press, 1996), 460.
[38] W. G. Huff, *The Economic Growth of Singapore: Trade and Development in the Twentieth Century* (Cambridge: Cambridge University Press, 1994), 188; White, *Post-Colonial Malaysia*, 173; Giacomin, *Export Cluster*, 23.

evidence used for this argument tends to be anachronistic, drawing on price trends during the 1960s and 1970s, rather than the interwar years.[39] Neither can changes in relative prices account for the situation with coconuts, a major smallholder tree crop with lower returns than oil palms by the 1930s. Finally, the price argument cannot alone explain why estates had already planted 80,000 acres of oil palms in Malaya by 1941, while the recorded contribution from smallholders remained negligible.

Scholars, including some earlier-mentioned ones, have tried redressing these weaknesses by highlighting the role that state discrimination against smallholders played in the pre-1960s oil palm sector, in terms of exclusionary cropping conditions stipulated on land alienated to small growers.[40] But as critics have shown, similar discriminatory land regulations were imposed on smallholders wishing to grow rubber and coconuts, with often little actual effect on cultivation decisions.[41] Politics alone cannot explain the sheer disparity between smallholder and estate involvement in oil palms in Malaya. Using 'state discrimination' as a catch-all also reduces what were in fact complex and contending official views of smallholders in oil palm cultivation to unremitting support for a European-dominated 'plantation paradigm'.[42] Indeed, as this study will demonstrate, conflicting official perspectives were present throughout the Malayan oil palm industry's development, right from its inception. The more interesting question that this study addresses is why estate-centric official perspectives have won out at certain times, and for certain crops, but not others.

Finally, a few scholars have alluded to the role that local consumption plays in smallholder agriculture. Both Khera and Tate briefly acknowledge that smallholders in colonial Malaya were not interested in oil palms as a source of cooking oil. They argue that smallholders already had the coconut palm, whose fruits constituted the main source of edible

[39] Tan, *Land to Till*, p. 75.
[40] Ooi Jin-Bee, *Land, People and Economy in Malaya* (London: Longmans, 1963), 197; Khera, *Oil Palm*, 141; Kathirithamby-Wells, 'Biodiversity', 74-75.
[41] Lim, *Peasants*, passim; J. H. Drabble, *Rubber in Malaya, 1876-1922: The Genesis of the Industry* (Kuala Lumpur: Oxford University Press, 1973), 73-78, 100-102.
[42] Ross, *Ecology*, 73.

oil in local diets.[43] This question was, in fact, broached in an inverted form nearly eighty years ago. George Deasy, an American geographer who was investigating reasons for the lack of peasant interest in coconut cultivation in tropical West Africa, noted that the region had

> long been the center for the oil palm…an excellent substitute for the coconut palm. Hence, greater apathy to the cultivation of the coconut palm is probably found there than anywhere in the Tropics. It is significant to note that the only parts of Africa supplying appreciable quantities of coconut products to commercial channels are found on the eastern rather than the western coast of that continent [where the oil palm is much less common].[44]

Despite the novelty and potential richness of such arguments, few scholars have acknowledged this competitive aspect of palm product consumption in Southeast Asia. For those who have done so, local disinterest in palm oil compared to coconut oil is treated as a self-evident fact, rather than a product of historical contingency.[45] As historians Penelope Franks and Janet Hunter have noted, such indifference is symptomatic of a general apathy concerning historical patterns of popular consumption in the non-Western world.[46] But a topic like food, typically glossed over in many historical sources, is also methodologically challenging to examine, ironically because food is so deeply embedded within the everyday textures of life to begin with.

In sum, this thesis aims to restore a sense of dynamism to an important but neglected narrative. It examines developments that have been overshadowed by preoccupations with the contemporary oil palm boom in Malaysia, developments that, a century ago, were already being

[43] Khera, *Oil Palm*, 141; Tate, *Industry*, 460.
[44] George F. Deasy, "Location Factors in the Commercial Coconut Industry." *Economic Geography* 17, no. 2 (1941), 137.
[45] Khera, *Oil Palm*, 141; Tate, *Industry*, 460.
[46] Penelope Francks and Janet Hunter, "Introduction: Japan's Consumption History in Comparative Perspective." In *The Historical Consumer: Consumption and Everyday Life in Japan, 1850-2000*, eds. Penelope Francks and Janet Hunter (Basingstoke: Palgrave Macmillan, 2012), 4.

shaped by largely rural but migratory populations, Asian industrialists, officials of different ideological stripes and skillsets, and rapidly changing ecologies. In doing so, we can finally begin to see the Malaysian oil palm industry's rise as a drama peppered with missed opportunities, conflicting interests, and overt favouritism, rather than merely an inevitable realisation of estate-centric production arrangements.

OBJECTIVES

Given the limitations of existing scholarship on the question of the missing smallholder, this thesis has six interrelated objectives. In seeking to achieve them, new historical data, novel approaches to historical research, and critical analysis are brought to bear on the question at hand. In doing so, this study not only aims to advance historical scholarship on Southeast Asia during the nineteenth and twentieth centuries, but also strives to reframe the contemporary debate concerning Southeast Asia's oil palm boom.

First, this thesis seeks to move away from the predominantly estate-centric view of oil palm expansion in Malaya, to one that highlights the perspectives of smallholders themselves. Where external commentators saw (and continue to see) a failure by 'ignorant' and 'parochial' smallholders to copy Western advances in agriculture, this thesis places primary emphasis on the fact that smallholders had their own sensible reasons for shunning the crop, which boiled down to the lower opportunity costs of engaging in other forms of economic activity. Just as importantly, smallholders could choose to act on these preferences, unlike migrant estate workers, whose labour was confined to cash crops chosen from above. In other words, understanding why smallholders were not diversifying into oil palms requires knowing what they were doing to begin with. In this sense, my study falls in line with a long-established body of historical work on small growers in Malaya, including those by

Lim Teck Ghee, Shamsul Amri Baharuddin, Shaharil Talib, and John Overton.[47]

Second, through the examination of smallholder activity in Malaya, this thesis aims to illuminate a whole domain left unexplored by the estate-driven narrative, which has nevertheless influenced the latter's historical development. The estate narrative is not so much ignored, as repositioned within a broader context populated by historically neglected actors and activities.

This means giving primacy to local ecological dynamics conditioning the responses of growers to newly introduced crops, including differences in soil conditions across Malaya. Human economic activity shaped, and was shaped by such soils. In Malaya, many agriculturalists had to grapple with the harsh realities of cultivating crops on flat, poorly-draining coastal soils, establishing extensive drainage networks on these strips of land. Most scholarship on water control in Southeast Asia has focused on irrigation systems, studying them in order to reconstruct histories of labour and power relations. Yet studies of drainage systems, the flipside of irrigation, are remarkably rare, despite scholarly acknowledgement that in regions with excess water supplies, drainage is often more important.[48]

In seeking to recover neglected histories of non-Western water control, attention is inevitably drawn towards major tree crops whose expansion in Malaya was heavily influenced by prevailing soil conditions: *Hevea* rubber, arecanuts (from the palm *Areca catechu*), and most of all, coconuts. Coconut palms were probably the most commonly farmed tree crop in Malaya before *Hevea* rubber's advent, and remained an immensely popular crop after.

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[47] Lim, *Peasants*; Shamsul, *Malaysia*; Shaharil Talib, *After Its Own Image: The Trengganu Experience, 1881-1941* (Kuala Lumpur: Oxford University Press, 1984); John Overton, *Colonial Green Revolution? Food, Irrigation and the State in Colonial Malaya* (Wallingford: CAB International, 1994).

[48] Peter Boomgaard, "In a State of Flux: Water as a Deadly and Life-Giving Force in Southeast Asia." In *A World of Water: Rain, Rivers and Seas in Southeast Asian Histories*, ed. Peter Boomgaard (Leiden: KITLV Press, 2007), 14.

The focus on local conditions also means illuminating the critical functions that non-Western actors, particularly those of Chinese, Indian and Japanese origins, have played in shaping past smallholder livelihood practices in Southeast Asian commodity production networks, in their often-maligned roles as crop dealers, crop processors, and industrialists.[49] What is being investigated here, as Christine Dobbin contends, 'is not a curiosity in the history of Asia but rather the larger…question which aims to understand the changes brought about in society by embryonic industrial capitalism in which two partners, Asia and Europe, were involved'.[50] By investigating the mixture of local conditions that shaped creative and productive responses to historical change, a more nuanced, less Eurocentric history of economic transformation outside of the West can begin to be written.[51]

Connected with this reassessment of local context is a third objective: to provide more sophisticated understandings of the kinds of cultural factors that affect smallholder decisions regarding what to grow and harvest in Southeast Asia. Historians will undoubtedly face difficulties when trying to account for past actions which are 'motivated by unreason or emotion'.[52] There are nevertheless crucial ways to help move the debate on culture away from derogatory characterisations of lower-class social strata as conservative, fatalistic, and indolent.[53]

This thesis addresses cultural considerations partly by turning the analytical lens back towards those who helped foster such negative perceptions of smallholders to begin with. It seeks to show how colonial stereotypes of growers shaped policies towards smallholders. This

[49] Hayami, *Economic Modernization*, 1162.
[50] Christine Dobbin, *Asian Entrepreneurial Minorities: Conjoint Communities in the Making of the World-Economy, 1570-1940* (Richmond: Curzon Press, 1996), 4.
[51] Dipesh Chakrabarty, *Provincialising Europe: Postcolonial Thought and Historical Difference* (Princeton: Princeton University Press, 2000), Ch. 1, passim.
[52] Shannon McSheffrey, "Detective Fiction in the Archives: Court Records and the Uses of Law in Late Medieval England." *History Workshop Journal* 65 (2008), 65-78.
[53] Brien K. Parkinson, "Non-Economic Factors in the Economic Retardation of the Rural Malays." *Modern Asian Studies* 1, no. 01 (1967), 31-46; Syed Hussein Alatas, *The Myth of the Lazy Native: A Study of the Image of the Malaysia, Filipinos and Javanese from the 16th to the 20th Century and Its Function in the Ideology of Colonial Capitalism* (London: Frank Cass, 1977); T. N. Harper, *The End of Empire and the Making of Malaya* (Cambridge: Cambridge University Press, 1999), 233-237.

question has been addressed at some length in the Malayan rubber sector by John Drabble and Lim Teck Ghee.[54] Lim also discusses the coconut situation to a lesser extent, and this study consequently builds on Lim's path-breaking work. Nothing, however, has been done by way of examining official attitudes towards smallholder involvement in the Malayan oil palm sector, save for brief and unsubstantiated allusions to the period of the early 1930s.[55] Chapter Three thus addresses this lacuna, contending that unpleasant official experiences with smallholder participation in the Malayan coconut and rubber sectors moulded subsequent views regarding smallholder involvement with Malayan oil palms.

Stereotypes aside, this study also focuses on another cultural factor, namely the role that consumption plays in market formation and producer decision-making. Economic historians have often treated consumer desire as an engine powering smallholder crop diversification, in which the most remunerative crops are chosen and grown solely for their exchange value, so as to widen the range of goods rural households can choose to purchase.[56] While not incorrect, this approach to understanding consumption downplays important questions concerning the social values that shape consumption patterns, as well as the role that subsistence farming plays in livelihood construction.

This thesis thus seeks to make what has been previously taken for granted, namely the absence of oil palm subsistence farming in pre-1960s Malaya, a mystery worth addressing in detail, not least because of its ramifications for the shape and extent of smallholder tree crop agriculture in Southeast Asia. It takes its lead from Sidney Mintz's dictum that 'when unfamiliar substances are taken up by new users, they enter into pre-existing social and psychological contexts and acquire – or are given – contextual meanings by those who use them. How that happens is by no

[54] Lim, *Peasants*; John H. Drabble, *Malayan Rubber: The Interwar Years* (Basingstoke: Macmillan, 1991), 86-89.
[55] Ooi, *Malaya*, 197; Khera, *Oil Palm*, 141; Kathirithamby-Wells, 'Biodiversity', 74.
[56] Barlow et al., *Development*, 640; Elson, *Peasantry*, 204.

means obvious'.[57] In the case of Malaya, the contextual meanings surrounding oil palm products were shaped by applied chemists, the local chemical industry and its technologies, colonial administrators, wartime deprivation, and the perceptions of Malayan consumers themselves, many of whom continued to prefer the products of the coconut palm.

This study thus intersects with an emerging body of literature exploring the extent to which the forces of industrialisation, mass consumption, advertising, and Western education changed the views of non-Westerners regarding health, hygiene, cleanliness and beauty.[58] However, the scope of this thesis limits such investigations here to a brief acknowledgement of their influence on consumer preferences, rather than a full-blown exploration of these factors, let alone their entanglement with religion, politics, class, gender, and race. In other words, readers interested in the relationship between changing non-Western consumption patterns and a greater 'civilising process' will be disappointed.[59] But for those who are interested in the idea that the domestic consumer preferences of a non-Western region can shape what is being produced for overseas markets, they will find much to chew on in here. This study thus finds itself in good company with commodity historians and social researchers working on a variety of geographic frontiers, extending across Latin America, sub-Saharan Africa and Southeast Asia.[60]

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[57] Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (London: Penguin, 1986), 6.

[58] Anne McClintock, *Imperial Leather: Race, Gender and Sexuality in the Imperial Contest* (London: Routledge, 1995); Timothy Burke, *Lifebuoy Men, Lux Women: Commodification, Consumption, and Cleanliness in Modern Zimbabwe* (Durham: Duke University Press, 1996); Kees van Dijk and Jean Gelman Taylor, eds. *Cleanliness and Culture: Indonesian Histories* (Leiden: Boston Brill, 2011).

[59] Norbert Elias, *On the Process of Civilisation: Sociogenetic and Psychogenetic Investigations, trans. E. Jephcott, ed. S. Mennell* (Dublin: University College Dublin Press, 2012).

[60] Martin, *Palm Oil and Protest*; Rob A. Cramb, *Land and Longhouse: Agrarian Transformation in the Uplands of Sarawak* (Copenhagen: NIAS Press, 2007); Judith Ann Carney and Richard Nicholas Rosomoff, *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World* (Berkeley: University of California Press, 2010); Tim Anderson, *Land and Livelihoods in Papua New Guinea* (Melbourne: Australian Scholarly Publishing, 2015); François Ruf and Götz Schroth, eds., *Economics and Ecology of Diversification: The Case of Tropical Tree Crops* (Dordrecht: Springer, 2015); Jonathan E. Robins, "Food and Drink: Palm Oil versus Palm Wine in Colonial Ghana." Commodities of Empire Working Paper 25 (Milton Keynes: The Open University, 2016).

Fourth, this thesis seeks to extend the corpus of historical literature on commodity chains in a new direction, by examining the trajectory of Malaya's oil palm industry in conjunction with that of the coconut palm's. The coconut industry was Malaya's foremost oil crop sector long before the arrival of the oil palm. It continued to play a more significant export role than oil palms as late as the 1950s.[61] Yet this is rarely acknowledged in the historical literature on twentieth century Malayan commodities, which tends to focus more on rubber, tin and rice.[62] By comparing, contrasting, and linking developments pertaining to the Malayan oil palm and coconut commodity chains with each other, this thesis seeks to offer an innovative and nuanced understanding analysis of how the divergent fortunes of these industries were deeply intertwined. At the centre of the narrative lie the smallholders themselves, who were simultaneously driving and being subject to these massive changes. To extend William Clarence-Smith's argument, the methodological decision to focus on not just one, but two different commodity chains, can help to reveal unexpected associations between seemingly isolated events.[63] In doing so, the thesis also contributes to a small but growing body of historical literature on the socio-economic significance of the coconut palm. This is, after all, a cultivar whose fruits are still tended by more than 11 million farmers, mostly low-income smallholders, in over 90 countries today.[64]

Fifth, this study departs from previous analyses of Malaya's oil palm industry that frame its development within a nationalist narrative.

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[61] Lim, *Malaya*, 266.

[62] Wong Lin Ken, "Twentieth Century Malayan Economic History: A Select Bibliographic Survey." *Journal of Southeast Asian Studies* 10, no. 1 (1979), 1-25.

[63] William Gervase Clarence-Smith, *Cocoa and Chocolate, 1765-1914* (London: Routledge, 2000), 1.

[64] George L. Hicks, *The Philippine Coconut Industry: Growth and Change, 1900-1965* (Washington: Center for Development Planning, National Planning Association, 1967); H. E. Maude, "The Coconut Oil Trade of the Gilbert Islands." In *Of Islands and Men; Studies in Pacific History*, ed. H. E. Maude (Melbourne: Oxford University Press, 1968), 233-283; Christiaan Heersink, *Dependence on Green Gold: A Socio-Economic History of the Indonesian Coconut Island Selayar* (Leiden: KITLV Press, 1999); Noboru Ishikawa, "A Social History of Coconuts in Semantan, Southwestern Sarawak." *The Sarawak Museum Journal* 54, no. 75 (1999), 239-51; Steve W. Adkins, Mike Foale, and Yohannes M. S. Samosir, *Coconut Revival: New Possibilities for the 'Tree of Life': Proceedings of the International Coconut Forum Held in Cairns, Australia, 22-24 November 2005* (Canberra: Australian Centre for International Agricultural Research, 2006).

Instead, we will evaluate the sector's growth in the broader contexts of British imperialism and decolonisation in Southeast Asia, as well as the Japanese Occupation of 1942-1945. This thesis will reconstruct important links between British Malayan authorities, officials in the Home Government, policymakers in Malaya during the wartime Japanese rule, and the first independence-era government of Malaya. In doing so, we will see how official ideologies – namely those concerning smallholders, the crops they grew, and the way such crops were to be consumed – were fostered, shared, debated, and implemented over long periods of time. Indeed, these ideologies existed as processes that spanned multiple forms of political authority, pre-dating the ascent of Malaya's domestic nationalist elites.

In doing so, particular emphasis is placed on the roles that specialist advisers, as opposed to general administrators, played in shaping such ideas and policies throughout the entire period of study. As Joseph Hodge notes in his broader study of British imperialism in the tropics, applied scientists had some influence in halls of power, but often struggled to have their views heard and endorsed within government.[65] In the case of Malaya, their struggles led to the inconsistent application of policies supporting smallholder agricultural activity. As will be discussed in throughout the thesis, but especially in Chapters Four, Five, and Seven, these events ultimately dampened the uptake of oil palms among independent smallholders. Growers would have otherwise benefited from more consistent state support at critical moments in Malaya's agricultural trajectory.

Finally, this study attempts to contribute to broader debates regarding the optimal scale of production in different economic activities. Many scholars have asked why, in an age of growing industrial capitalism, some occupations continue to persist along small-scale lines, including those related to agriculture.[66] This thesis will focus on one related sub-

[65] Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007), 19, 115.
[66] Tirthankar Roy, *Artisans and Industrialization: Indian Weaving in the Twentieth Century* (Oxford: Oxford University Press, 1993); Hayami, *Economic Modernization*, 1157-1167; James

theme, namely the extent to which smallholder tree crop farming in Malaya was more environmentally sustainable than estate production during the period of study. To this end, we will adopt François Ruf's concept of 'forest rent' as a framework with which to evaluate the ecological dimensions of smallholder tree crop cultivation.[67] Although Ruf's schema arose from research on cocoa, it can be modified and extended to oil and coconut palms.

To paraphrase Ruf's argument, forests provide an array of ecological and economic benefits, including low weed frequency, good retention of moisture and fertility in rich organic topsoil, fewer problems with pests and diseases, protection against drying winds, and provision of food, timber and other forest products.[68] However, in the low-lying tidal swamp environments covered within this study, moisture was abundant. Removing excess water, and the kind of water involved, were more pertinent issues. Nevertheless, many other aspects of Ruf's framework, including how forests help suppress weeds, provide produce, and safeguard soil fertility, remain directly applicable to the Malayan case. Farmers who plant up recently-cleared lands will quickly lose many of the advantages derived from these forests. In other words, the forest rent quickly declines. More labour and inputs are then needed to uphold crop yields for future harvests, often making it impractical to replant the original, ageing tree crop with a similar, but younger version.

The question regarding how growers manage declining forest rent lies at the heart of Ruf's analysis, and it also constitutes a major preoccupation of this study. As Chapters Four, Five and Seven will show, crop diversification was one of the prime strategies used by Malayan smallholders to weather the loss of forest benefits. Over time, original coastal forests were replaced with increasingly complex agroforests. But this leads back to the question of why the oil palm was not usually one of

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C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998); Harold Brookfield, "Family Farms Are Still Around: Time to Invert the Old Agrarian Question." *Geography Compass* 2, no. 1 (2008), 108-26.

[67] François Ruf and Frederic Lançon, *From Slash-and-Burn to Replanting: Green Revolutions in the Indonesian Uplands?* (Washington: World Bank, 2004), xvi.

[68] Ruf et al., *Green Revolutions*, xvi.

these tree crops, given its high tolerance for many of the same heavy soils teeming with coconut palms. This question is addressed throughout the thesis. Coming full circle, a concluding chapter will use insights derived from the forest rent framework to address wider debates regarding the suitability of smallholder agroforestry arrangements for oil palms in Southeast Asia.

Put succinctly, in the following chapters I will argue that smallholders generally avoided farming oil palms before the 1960s because of high opportunity costs, grounded in the counter-attractions of other tree crops. *Hevea* rubber was especially alluring, with its relatively high cash returns. Similarly important to smallholders, but barely acknowledged by historians, was the coconut palm. First, it flourished in soils where rubber floundered. Second, prior to the oil palm's arrival, coconut palm products were already domestically popular. Consequently, Malayan processors and traders, key influences mediating demand and supply, had little incentive to encourage smallholders to channel labour into oil palms, when estates began adopting the tree. Third, labour requirements for oil palms were more exacting than those for other tree crop mainstays, including coconut palms. Fourth, government policies affecting the cultivation, processing and domestic consumption of oil palm products helped restrain small-scale involvement, whereas official support for smallholder coconut farming was more forthcoming. These opportunity costs ensured that small-scale oil palm cultivation remained muted, despite significant policy changes favouring smallholders during the 1950s and 1960s.

TERMS OF REFERENCE

The central subjects of this study defy easy categorization. The term 'smallholder' often refers to growers who farm a relatively small area of land, using mainly household labour to do so, while engaging with external markets to varying degrees. This is consistent with the 'peasant' concept used by Frank Ellis, which cites the use of family labour as the

primary characteristic distinguishing smallholders from other kinds of growers.[69] However, the official Malayan definition of a smallholding as a plot of less than 100 acres cannot be ignored.[70] To be sure, the kind of labour arrangement required to farm a 50 acre plot, is clearly different from that needed to work a piece of land below five acres. But official definitions have an important place in this study, not least because government policies treated producers differently on the basis of official categories.

Connected to this issue are four other social phenomena encountered within this study, which conventional definitions of smallholders as family farmers tend to obscure. The first is the historical centrality of local trader intermediaries to smallholder cropping decisions. Crop dealers, who were sometimes urban dwellers, often owned (or intended to hold) property too large to be worked by family labour alone. This would exclude them from more narrow definitions of smallholders. However, the properties already farmed by such traders were often crucial to their ability to reduce the 'pioneering costs' of a comparatively novel, risky cash crop like the oil palm. Having done so, dealers played crucial roles in encouraging smallholder uptake of these new cash crops, chiefly through the provision of planting materials, the knowledge surrounding their production and harvesting, and any credit needed to tide over the period of crop maturation.[71] Second, distinctions between smallholders and dealers were often clouded by changes in wealth and livelihood strategies. Third, the knowledge and materials needed for crop diversification were often derived from work on estates themselves. In the process, growers sometimes straddled the lines between middling planter, agricultural labourer and family farmer. Lastly, how the state responded to all such 'smallholder' initiatives, including those of dealers, whose lands were lumped together with smaller peasant growers, was often critical to diversification outcomes.

[69] Ellis, *Peasant Economics*, 12.
[70] Drabble, *Interwar Years*, 1.
[71] Byerlee, *Tropical Asia*, 577.

This thesis thus adopts a broader notion of smallholdings that includes what were often termed 'medium' holdings. These properties were typically owned by absentee landowners, artisans, traders, or Indian moneylenders. Yet, as Peter Bauer has noted, such holdings still tended to rely less on outside labour than large estates.[72] In this study, a 'smallholder' thus refers to an individual, or household, in charge of deciding what main cash crops to farm in an area below 100 acres in size This definition thus excludes settlers working on government-organised schemes, who, like estate labourers, have comparatively little say in crop choices.[73] The logical contrast is with farming arrangements occupying landholdings of 100 acres and above, requiring an elaborate hierarchy of specialist wage labourers.[74] These constitute the estates (and plantations) that are subsequently discussed in this thesis.

My study focuses on events in Malaya, a geographic entity that equates to contemporary Peninsular Malaysia and the island of Singapore. Where used, 'Malaysia' refers to the political territory that took shape in 1963 upon Malaya's new federal arrangements with North Borneo, Sarawak, and Singapore (these arrangements with the latter ended in 1965). Where sources permit, ethnic descriptors used in this thesis will allude to a person's previous place of residence before Malaya, such as 'Javanese' instead of 'Malay'. With that caveat in mind, 'Malayans' here refers to Eurasians, Europeans, Indians, Malays, Chinese, and other persons of Asian descent who were inhabitants of Malaya at some time during the period covered by the study, and earned at least part of their livelihoods there.

Throughout this story, particular reference will be made to Johor, the southernmost state of mainland Malaya. Two factors sealed the decision to focus on Johor. First, practicalities of time limited the geographic scope of a four-year doctoral thesis to a discreet portion of the Malay Peninsula. Second, Johor was Malaya's single largest contributor to

[72] Bauer, *Rubber Industry*, 4-5.
[73] Graham et al., *Plantation*, 108.
[74] C. C. Goldthorpe, "A Definition and Typology of Plantation Agriculture." *Singapore Journal of Tropical Geography* 8, no. 1 (1987), 26-43.

cash crop production during most of the period studied. This included the main tree crops investigated in this thesis – oil and coconut palms – but also extended to other popular cultivars at the time, including *Hevea* rubber and areca palms. One might therefore expect smallholder interest in both oil and coconut palms to be especially pronounced in Johor. Where integral to this study's main themes, important developments within Malaya proper, the general Asian region, West Africa, and Europe itself are also discussed in relation to Johor.

The core trajectory of the narrative begins in 1862. The choice of starting year marks Temenggong Sri Maharaja Abu Bakar's ascension to the rulership of Johor, and reflects the importance of his support for migrant coconut cultivation from this period onwards. Under Abu Bakar, Johor witnessed its first coconut boom, sowing the seeds for local smallholder aversion to oil palms.

The decision to end the study at 1963 is also thematic. 1963 was the first year in which unprecedented Malayan government support for the smallholder cultivation of oil and coconut palms was implemented, setting precedents for decades to come. However, the conditions leading to this support stemmed from the pre-independence era. My study's chronological framework is thus designed to demonstrate continuities within Malaya's oil palm and coconut industries before and after independence in 1957. But the study also pays attention to developments before and after the given time frame. These provide additional necessary context for understanding the causes and effects of the smallholder participation gap between oil palms and other tree crops.

SOURCES

My study uses primary sources from archives and libraries in Peninsular Malaysia, Singapore, and the United Kingdom. These consist mostly of official correspondence, reports, memorandums, oral transcripts, audio recordings, personal papers, newspapers, and maps. The

data derived from these sources were compiled, compared, and distilled into a coherent narrative in order to answer the central question at hand.

The most important sources for this study are held in Peninsular Malaysia. The holdings of the National Archives of Malaysia, both at its main facility in Kuala Lumpur, and its Johor Baru branch, were consulted extensively. Both repositories contain a vast array of materials concerned with agriculture, primarily in the form of land applications, district reports, and policy decisions. In addition, the Kuala Lumpur facility houses correspondence pertaining to federal-level policy discussions on smallholder activity. When put together, the sources from the Kuala Lumpur and Johor archives can be highly complementary, making it possible to reconstruct debates and concerns about smallholders as they were relayed and contested across the imperial chain of command, from Whitehall to as far down as the local Malayan sub-district.

Putting together this thesis involved an arduous search for smallholder oil palm land applications lodged with state authorities. To this end, at Johor Baru, the papers held under the series of the Commissioner of Lands and Mines, the General Adviser, and the Collector of Land Revenue (Batu Pahat) were extensively consulted, as were those of the Selangor Secretariat in Kuala Lumpur, for the period between the 1910s and 1950s. By sifting through thousands of agricultural land applications, irrefutable proof was found of smallholder involvement with oil palms in pre-1960s Malaya. Such episodes were extremely hard to locate, with less than 10 encountered in total. Ironically, the very rarity of such applications sometimes provoked heated internal official discussions on how to respond. This made it possible to reconstruct detailed case studies of smallholder interest in oil palms (Chapters Four and Five). These same archival series, as well as those of papers held under the collections of the Ministry of Agriculture and the Ministry of Commerce and Industry in Kuala Lumpur, also contained sizeable records of internal official discussions and decisions regarding the performance of Malaya's coconut sector, especially for the period after the Second World War.

Public repositories in the United Kingdom were another valuable source of raw materials for this study. At the National Archives (Public Record Office) at Kew, records compiled by the Colonial Office under series codes CO 273, CO 323, CO 537, CO 717, CO 758, and CO 852 proved useful for understanding the broader imperial context in which policies pertaining to the coconut trade, as well as dietary practices in Malaya, were carried out. Sources categorised by the Ministry of Food, under series codes MAF 83 and MAF 97, were also consulted sparingly, in order to understand the impact of the international political economy of trade in fats on Malayan producers during the 1940s.

Given the considerable bias expressed against smallholders and intermediaries in official records, critical readings of sources were necessary from the outset. Initially, textual analysis took the form of paying attention to who was saying what, how concerns were being articulated, and what was being left out of discussions. With extended immersion and reflection on the records, it eventually became possible to read most official sources both 'along the grain' and 'against the grain', in order to understand some of the deeper motivations, prejudices, and concerns that were driving policy decisions at different levels of bureaucracy.[75]

These materials were also cross-examined through the use of published government sources held in various repositories, which, besides the archives mentioned above, included the British Library and the libraries of SOAS (University of London), the London School of Economics and Political Science, and the Malaysian Palm Oil Board. These contain annual reports, commission enquiries, statistical compilations, and official surveys. In addition, both the libraries of the Wellcome Institute in London and the National University of Singapore were consulted for a large amount of 'grey literature' produced by applied scientists under government and university employment, chiefly articles in the *Malayan Agricultural Journal* and *Malayan Medical Journal*. These

[75] Ann Laura Stoler, *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense* (Princeton: Princeton University Press, 2009), Chs. 1 and 2, passim.

technical documents helped to refine and qualify findings from other official sources.

No amount of critical reading, however, can address thematic oversights within official records. The materials proved particularly weak in their documentation of several sub-topics of vital interest to this study. These include the workings of Malayan Chinese chemical manufacturing enterprises, the activities of rural crop buyers, and local household consumption patterns. These gaps were addressed in several ways. First, the papers of the Sir Raymond Firth Collection, housed at the archives of the London School of Economics and Political Science, were consulted. The Firth papers contain a wealth of data, including an unpublished manuscript on Malaya's smallholder economy co-authored by anthropologist Raymond Firth himself. This document, provisionally titled *Malay Peasant Agriculture: An Economic Survey*, proved especially useful in tackling thematic gaps in smallholder marketing and consumption patterns.

Second, the business archives of Unilever at Port Sunlight hold the collected papers of the Overseas Committee, formed in 1926 to coordinate the global work of Lever Brothers. From 1935 onwards, briefings on different aspects of Malaya's oil and fats industries, including Unilever's competitors, were regularly compiled by visiting senior executives. These were perused extensively, and used to bridge knowledge gaps regarding the development of Malaya's soap-making industry during the interwar years, as well as its linkages with coconut and oil palm farming.

Third, oral sources were tapped to introduce 'new evidence from the underside'.[76] While this thesis would undoubtedly have benefitted from interviews with smallholders, limited time and sampling challenges dictated that a less ambitious strategy be pursued. To this end, informal conversations were held with individuals who had been heavily involved in various aspects of the Malaysian oil palm industry, including smallholder representatives, planters, agronomists, chemists, and

[76] Paul Thompson, *The Voice of the Past: Oral History. Third Edition (*Oxford: Oxford University Press, 2000), 8.

mechanical engineers. The findings from these discussions were used predominantly to recalibrate research strategies within the archives. Interview data was otherwise only deployed directly within the thesis when there was an established knowledge gap in the official sources. Such testimonies are referenced accordingly within the study.

In Singapore, the National Archives contained a wealth of pre-recorded oral testimonies accumulated through government-driven initiatives. As it turned out, these records were especially useful for understanding historical developments during the Japanese Occupation, a period for which many of the relevant official Malayan archival records have been either lost or destroyed.[77] For this study, the most important contribution made by the recordings was to help reconstruct the perceived meanings of palm oil consumption during and after wartime. In these testimonies, complex emotions could be gleaned through the 'orality of oral sources', including changes in the tone and narrative 'velocity' of interviewee responses.[78] A final, more indirect, source of oral testimonies came from essays written by undergraduate students from Universiti Sains Malaysia, published as a series of monographs edited by Paul Kratoska and Abu Talib Ahmad. These publications addressed a variety of topics related to everyday rural life rarely found in official records.

Four groups of secondary sources proved especially useful to this study. The first were writings by scholars of Malayan, Southeast Asian and West African history, including John Drabble, Christaan Heersink, Gregg Huff, Jeyamalar Kathirithamby-Wells, Amarjit Kaur, Paul Kratoska, Lim Teck Ghee, Susan Martin, Ichirō Sugimoto, Carl Trocki and Nicholas White. These helped flesh out the broad geographic and economic milieu in which the Malayan tree crop experience took place. Sugimoto's statistical analysis of Singapore's historical economic development also provided an important quantitative toolkit with which to scrutinize

[77] Paul H. Kratoska, *The Japanese Occupation of Malaya 1941-1945: A Social and Economic History* (London: Hurst, 1998), 6-8.
[78] Alessandro Portelli, "The Peculiarities of Oral History." *History Workshop Journal* 12, no. 1 (1981), 96-107.

historical data on commodity prices.[79] Second, the writings of François Ruf and his collaborators helped to frame the analysis of environmental change observed in this study. Third, a number of technical treatises on tree crop cultivation, together with publications issued by Malaysia's Incorporated Society of Planters, facilitated a better understanding of the opportunity costs involved in oil palm cropping. Lastly, several student theses discussing local histories of Johor and the Malayan coconut industry were consulted for insights that proved difficult to find elsewhere.

THESIS STRUCTURE

The main body of this study, Chapters Four to Seven, is organised in strict chronological fashion, but it relies on two thematic 'legs' for initial direction. The first leg, Chapter Two, reconstructs the origins of the smallholder participation gap in Malaya. It examines tree crop developments in Malaya since the precolonial period, and pays attention to the specific social and geographic contexts in which these developments took place. It highlights Johor's unusual situation, where farming arrangements for coconut and oil palms had become starkly inverted images of each other by 1929, and analyses how this condition came about. Finally, the chapter introduces the core framework for understanding how opportunity costs buttressed the smallholder participation gap between oil palms and other major Malayan tree crops.

The second leg, Chapter Three, charts the formation of colonial policies regarding smallholder involvement in oil and coconut palms, as an analytic complement to the previous chapter's stress on social and ecological factors. It examines the reactions of British colonial authorities to the smallholder participation gap as they observed it taking shape in Malaya during the 1920s, and the reasons behind their responses, as they coalesced into a distinctive set of approaches that would, from 1929

[79] Ichirō Sugimoto, *Economic Growth of Singapore in the Twentieth Century: Historical GDP Estimates and Empirical Investigations* (Singapore: World Scientific, 2011).

onwards, condition Malayan policies towards oil and coconut palms for the next three decades.

In covering successive intervals between 1929 and 1963, Chapters Four to Seven extend, refine and modify the core arguments advanced in Chapters Two and Three. Despite facing odds that were already heavily stacked against their involvement in oil palms, smallholders repeatedly found room to manoeuvre after 1929. The missing oil palm smallholder was not a foregone conclusion. In every decade after the 1920s, there were crucial junctures at which the Malayan oil palm industry's trajectory could be, and was indeed reoriented, in response to specific circumstances and decisions made. Outcomes were cumulative, with the results of each juncture impacting on following ones. In fact, over time, it became harder, rather than easier, for smallholders to diversify into oil palms. By the 1960s, it had become extremely difficult, but not impossible, for smallholders to enter the oil palm industry in selective ways.

Chapter Four shows how the period of the Great Depression placed pressures on smallholders to move away from familiar coconut cropping routines of the 1920s, and diversify into a wide range of other economic activities, including oil palm cultivation. Economic changes brought on between 1929 and 1934 helped terminate the 'pioneering phase' of coconut cultivation in Johor. Meanwhile, Asian interest in Malaya's local oil palm product trade accelerated at the levels of cultivation, primary processing, and finished goods. At the same time, government interventions and inherent opportunity costs curbed the extent to which the localisation of the oil palm trade actually took place, particularly in terms of smallholder oil palm cultivation in Johor.

Chapter Five reveals how the structures of the Malayan oil palm and coconut trades continued to converge in the aftermath of the Depression. Between 1934 and 1941, smallholder involvement in oil palms went from mere interest to actual cultivation, while coconut farming in Johor became increasingly unpopular, in partial reaction to long-term environmental changes. Nevertheless, demand for coconut produce

remained considerable, giving cultivators less reason to exit the industry quickly. Numerous state interventions also slowed the narrowing of the smallholder participation gap between oil palms and other tree crops.

Chapter Six examines the impacts of war and reconstruction on the smallholder gap between 1942 and 1948. The period saw further convergence between the oil and coconut palm trades, but this proved to be a temporary development stemming from international market upheaval. The extremely harsh conditions under which palm oil was consumed during wartime extinguished nascent interest in the oil as a cooking ingredient, effectively raising the opportunity costs of oil palm cultivation for smallholders even further. Future smallholder interest in the crop remained heavily dependent on sales to estate factories, rather than on internal household use or transactions with artisanal processors. Ultimately, this would limit the appeal of the crop to wealthier smallholders prepared to specialise in its cultivation, as opposed to those preferring to rely on a more diverse range of agricultural activities.

Chapter Seven investigates the period between 1948 and 1963, when smallholders began to participate in oil palm farming in greater numbers. Driving these moves were pressures to replant and diversify away from ageing rubber and coconut cultivars. Yet, by the end of the interval, the smallholder participation gap remained far wider than what proponents of smallholder oil palm farming arrangements in Malaya had envisioned. A mild revival of coconut farming was also underway, given impetus by vested interests lobbying for government support. Behind these contradictory developments lay the longer-term opportunity costs that smallholders still associated with oil palm farming, costs that the Malayan authorities themselves were partly responsible for.

The concluding chapter summarises the overall findings of the thesis. In doing so, it distils some general principles that affect smallholder involvement in tree crops in the Malay Peninsula. On this basis, the thesis suggests ways in which further smallholder participation in the oil palm economy might be achieved within Southeast Asia.

Chapter 2

THE BIRTH OF THE SMALLHOLDER PARTICIPATION GAP: TREE CROPPING IN MALAYA BEFORE 1930

Researchers interested in the causes of wealth and poverty have sometimes asked whether different natural resources are imbued with unique physical properties that prejudice the manner of their exploitation.[1] Those inclined towards environmentally determinist views have often argued that oil palms possess inherent physical traits that predispose them to large-scale production arrangements. The palm fruit's propensity to be milled cost-effectively using capital-intensive machinery is typically referred to, especially among scholars focused on Southeast Asia, where most of such mechanisation took place during the twentieth century. According to these arguments, capital-scarce smallholders tend to be placed at a severe disadvantage whenever they try to enter the palm fruit production market. This is all either a blessing or a curse, depending on whether one is more interested in the industrial or the socio-environmental implications of intensive oil palm cash cropping.

Nonetheless, such explanations suffer from two weaknesses. First, they hardly question the nature of the produce flowing from all this costly machinery, namely vegetable oil intended for further industrial processing into a bland, colourless substance that Susan Martin has memorably termed an 'invisible ingredient'.[2] It is as if no alternatives to industrial oil manufacture exist. Direct connections are seldom made between the manner in which palm oil and palm kernels are produced, and their final user markets, except among scholars interested in the numerous territories surrounding both sides of the Atlantic Basin, a vast region that

[1] Greg Bankoff and Peter Boomgaard, eds., *A History of Natural Resources in Asia: The Wealth of Nature* (Basingstoke: Palgrave Macmillan, 2007).
[2] Susan M. Martin, *The UP Saga* (Copenhagen: NIAS Press, 2003), Ch. 7.

harbours localised circulations of oil palm products that only make their way overseas in limited amounts today.[3]

Second, environmental explanations tend to discuss the oil palm's peculiar biology in abstract, without considering the broader social and historical contexts that the palm is situated within, including the presence of other competing crops and activities. This might make sense for a plantation specialising in the bulk production of palm oil and kernels for sale to the chemical industry, especially if it is vertically integrated. But it runs counter to economic reality for many small growers, whose only insurance against sharp falls in international commodity prices usually involves livelihood diversification, and seeking out alternative markets for the sale of their main cash crop.

It is a little known fact that on the eve of the industry's establishment in Malaya, colonial officials thought capital was the least important constraint on local oil palm expansion. In 1909, Malaya's inaugural Director of Agriculture voiced concerns about how other crops in Malaya were already soaking up the labour and lands of cultivators. Estates, he argued, had little incentive to switch into oil palms when *Hevea* rubber was much more attractively priced. Smallholders, in his view, were similarly unlikely to take up oil palms because coconut production could offer a comparable income for far less work.[4]

Such views allude to a puzzle lying at the heart of Malaya's agricultural development before 1930. Most oil palm estates established during this period did not rely on costly machinery, and instead depended heavily on labour at all stages of production. Yet, by the end of the 1920s, oil palm cultivation in places like Johor was completely dominated by estates, whereas smallholders had laid claim to the production of most coconuts and, to a lesser extent, rubber. The smallholder participation gap

[3] Lesley M. Potter, "Alternative Pathways for Smallholder Oil Palm in Indonesia: International Comparisons." In *The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia*, eds. Rob A. Cramb and John McCarthy (Singapore: NUS Press, 2016), 155-188.
[4] ANM-KL: HCO 1650/1908, Director of Agriculture and Government Botanist, FMS, to Federal Secretary, FMS, 9.1.1909.

between oil palms and other major tree crops thus cannot be directly attributed to the use of large-scale processing machinery, since little was in operation during this period. If there were indeed inherent physical differences between these tree crops that complicated exploitation, answers must lie elsewhere.

Current environmental explanations for the smallholder participation gap, while flawed, should not be dismissed prematurely. Indeed, they gain strength when revised to take specific historical and ecological contexts into account. Coconut palms, indigenous to much of Southeast Asia, have been a central pillar of economy, culture and society in Malaya since antiquity. Yet pre-colonial coconut palm expansions in response to local and regional markets have been neglected in historiography, and were probably much more significant than previously acknowledged. They laid the geographic and social basis for the Malayan coconut sector's growth during the better-known copra boom of the early twentieth century. During this later period, rubber also entered the Malayan agricultural landscape, becoming yet another crop demanding the time and energy of smallholders, but with even greater monetary rewards.

By the time of its introduction to Malaya, the oil palm faced stiff competition from other tree crops. Rubber grew in a large variety of soils, and was undoubtedly more lucrative to farm. Coconut palms, however, were more vulnerable to being side-lined, because of their lower cash returns compared to palm oil. But coconuts benefited from a multiplicity of market outlets, and were relatively undemanding in the labour needed for their harvesting and handling. Just as crucial was the presence of trader intermediaries, who shaped opportunity costs by bridging demand and supply, while simultaneously taking on crop processing tasks that were incompatible with many smallholder work schedules. The oil palm would have to become a more attractive crop for both traders and smallholders before it could be more widely adopted. Understanding initial aversions to the oil palm thus requires turning towards the more distant past, when other tree crops held sway.

THE COCONUT PALM'S POPULARITY

Available evidence suggests that the coconut palm, like sugar cane and rice, was domesticated in Southeast Asia possibly sometime around 12,000 – 6,000 BP (Before Present).[5] The scholar-administrator Richard Winstedt has claimed that coconuts were being cultivated in Peninsular home gardens during the 'prehistoric' period, alongside bananas and sugarcane, a practice that seems to have continued into the first millennium CE.[6] Perhaps Man's oldest and most localised use of coconuts was as a source of uncontaminated water.[7] Moreover, the practice of extracting oil from fleshy coconut kernel has occurred long enough in history for coconut oil to be considered a traditional source of fat in Malayan diets.

Fresh coconut oil was usually made at home, with the use of manual kernel extraction tools, a fire and an earthenware pot of boiling water (Photograph 1). The clear, fragrant oil, once skimmed off, was typically used for frying and illumination. Coconut 'milk' (*santan*) was also made by soaking freshly grated kernel in warm or hot water, and then squeezing the wet mass by hand through a sieve. *Santan* formed a popular sweet-savoury base for innumerable curries, desserts, and traditional medicines. Besides being a calorie-dense food ingredient, coconut milk enhanced the flavour and mouthfeel of starchy staples (rice, other grain crops, sago and tubers), fish, and numerous vegetables. Coconut oil could be used as a hair and skin emollient, while fermented coconut water, together with indigo, was turned into a dyeing agent for cloth.[8] There

[5] R. D. Hill, "Towards a Model of the History of 'Traditional' Agriculture in Southeast Asia." In *Smallholders and Stockbreeders: Histories of Foodcrop and Livestock Farming in Southeast Asia*, eds. Peter Boomgaard and David Henley (Leiden: KITLV Press, 2004), 27-29.
[6] Richard [Olaf] Winstedt, *Malaya and Its History* (7th ed.) (London: Hutchinson, 1966), p.15; Paul Wheatley, *The Golden Khersonese: Studies in the Historical Geography of the Malay Peninsula before A.D. 1500* (Kuala Lumpur: University of Malaya Press, 1961), 230-231.
[7] Hugh C. Harries, "Nuts to the Garden of Eden." *Principes* 23 (1979), 145-147.
[8] LSE: FIRTH 2/7/10, Raymond Firth and A. E. P. Collins, 'Malay Peasant Agriculture' (henceforth MPA), 143-144; Isaac Henry Burkill, *A Dictionary of the Economic Products of the Malay Peninsula* (2nd ed.) (Kuala Lumpur: Ministry of Agriculture and Cooperatives, 1966), 611-612; John Lewis Rosedale and John Noel Milsum, *Malay Leaf and Other*

were at least 10 known different Malay names given to a coconut as it ripened, in line with different uses for the nut at different stages of ripeness.[9]

Photograph 1. Handheld coconut kernel grater, circa 1900. Photograph taken by author at the National Museum of Singapore, July 2014.

Other parts of the coconut palm were also highly valued, sometimes at the expense of kernel fat production. Across Southeast Asia, the sap of the unopened inflorescence was tapped and made into sugar (by boiling), or into drinking alcohol and vinegar (via fermentation).[10] The terminal bud ('cabbage') of the palm made for a locally popular vegetable, either eaten raw, boiled or pickled.[11] Windbreaks and fishing lures were fashioned out of palm fronds, construction timber hewn from trunks, and combustion fuel from the palm's fruit husk, flower spathe and petioles. Vernacular knowledge was considerable, with specific breeds favoured for

Vegetables and Their Analyses (Kuala Lumpur: Government Printer, 1940); Rosemary Firth, *Housekeeping among Malay Peasants* (2nd ed.) (London: Athlone Press, 1966), passim; J. M. Gullick, *Malay Society in the Late Nineteenth Century: The Beginnings of Change* (Singapore: Oxford University Press, 1987), 182; Winstedt, *Malaya*, 114-115; Christine S. Wilson, "Southeast Asia." In *The Cambridge World History of Food. Volume Two.*, eds. Kenneth F. Kiple and Kriemhild Conee Ornelas (Cambridge: Cambridge University Press, 2000), 1163; Monica Janowski, "Introduction: Feeding the Right Food: The Flow of Life and the Construction of Kinship in Southeast Asia." In *Kinship and Food in South East Asia*, eds. Monica Janowski and Fiona Kerlogue (Copenhagen: NIAS Press, 2007), 4-7.

[9] Appendix 1.

[10] Akira Matsuyama, *The Traditional Dietary Culture of Southeast Asia* (London: Kegan Paul, 2003), 111-236, passim; C. X. Furtado, "Singapore's Contribution to the Study of Palms." *Gardens' Bulletin, Singapore* 17, no. 2 (1959), 195; Burkill, *Dictionary*, 610-611.

[11] Burkill, *Dictionary*, 618.

specialist applications. The kernel shell of *kelapa sekol,* for example, was fancied for household cups.[12]

Other palms, notably the *nibong* (*Oncosperma tigilarium*), sago (*Metroxylon sagu*), *nipa* (*Nypa fruticans*), *kabong* (*Arenga saccharifera*), and areca (*Areca catechu*), were sometimes preferred over coconut palms for construction, masticatory, and edible purposes in Malaya.[13] The fruit of the areca palm, for instance, was treasured for its mild stimulatory effects and ritual significance.[14] Throughout much of Asia, arecanuts were typically chewed together with lime and leaf wrappers from the betel vine (*Piper betle*).[15] For the Indo-Pacific region, however, Malaya included, the coconut palm appears to have been the dominant palm species around which a self-sufficient domestic economy based on arboriculture developed historically.[16]

Notwithstanding localised circulations, coconut palm products have also travelled across Asia since antiquity. Copra was not a Western construct, and had long been traded within Asia and Southeast Asia for conversion into a cooking fat.[17] Moreover, before Chinese and Arab traders began to dominate trade networks during the nineteenth century, Bugis and other 'Malay' merchants frequently used southern Malaya as a zone for the trade and redistribution of coconut produce throughout the wider Malay Archipelago during the seventeenth and eighteenth

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[12] LSE: FIRTH MPA, 144-145; Raymond Firth, *Malay Fishermen: Their Peasant Economy* (London: Routledge & Kegan Paul, 1966), 98-99, 307, 325; Ahmed Bin Haji Omar, "Races of the Coconut Palm." *Gardens' Bulletin, Straits Settlements* 2, no. 5 (12 September 1919), 144.

[13] LSE: FIRTH MPA, 145-147; H. N. Ridley, "The Timbers of the Malay Peninsula." *A Agricultural Bulletin of the Straits and Federated Malay States* 1, no. 8 (1902), 289-92; J. N. Milsum and J. Dennett, "A Preliminary Note on the Sugar Palm." *Malayan Agricultural Journal* 17, no. 12 (1929), 449-53;

[14] J. N. Milsum, "Local Arecanuts." *Malayan Agricultural Journal* 26, no. 2 (1938), 59; Dawn Rooney, *Betel Chewing Traditions in South-East Asia* (Oxford: Oxford University Press, 1993).

[15] W. N. Sands, "Observations on the Betel-Nut Palm (*Areca Catechu*, L.) and Betel-Nuts." *Malayan Agricultural Journal* 14, no. 7 (1926), 202-18; T. L. Bulman, "The Origin and Diffusion of *Areca Catechu* L. (Arecaceae), the Betel Nut Palm." *Malaysian Journal of Tropical Geography* 17 (1988), 11-17.

[16] Tan Koon Lin, *The Swamp-Sago Industry in West Malaysia: A Study of the Sungei Batu Pahat Flood Plain* (Singapore: ISEAS, 1983), 1-3.

[17] R[ichard] O[lof] Winstedt, "A History of Johore (1365-1895 A.D.)." *Journal of the Malayan Branch of the Royal Asiatic Society* 10, no. 3 (115) (1932), 41; Christiaan Heersink, *Dependence on Green Gold*: *A Socio-Economic History of the Indonesian Coconut Island Selayar* (Leiden: KITLV Press, 1999), 10.

centuries.[18] For households, copra had no use-value. It formed a durable medium for long-distance transport of vegetable fat, and could be created using simple techniques and local materials. But by being easily stored and consolidated over long intervals, copra became highly amenable to large-scale oil extraction methods when these came to be available in the West by the mid-nineteenth century.

When sold, copra faced a different market and set of competing products, compared to those facing village-made coconut produce. It is thus important that a clear distinction be made between various kinds of coconut-based produce. Following historian Christaan Heersink, coconut oil in this study refers to the oil made from fresh nuts using manual methods accessible to households.[19] During the period studied, coconut oil, coconut milk, fresh nuts, palm sugar, and coconut sap-based alcohol (toddy), were all trades based on artisanal production methods. Copra oil, in contrast, refers to the oil expressed from copra using more complex mechanical methods, typically on a much larger scale than coconut oil-making.[20] By the twentieth century, copra oil usually had downstream linkages with industrial manufactures such as mass-produced soap, cooking oil, copra cake, and margarine. In their own ways, both types of coconut produce would prove critical to keeping Malaya's coconut farms afloat during times of enormous international upheaval, not least during the Great Depression and Japanese Occupation.

By the eighteenth century, areas under coconut cultivation in Malaya, both old and new, began noticeably expanding.[21] The enmeshment of older Asian and newer British trading interests lifted demands for consumer goods within Malaya itself. Malaya's growing

[18] Carl A. Trocki, *Prince of Pirates: The Temenggongs and the Development of Johore and Singapore, 1784-1885* (Singapore: NUS Press, 2007), 92-93; Winstedt, *Johore*, 40; Wong Lin Ken, "The Trade of Singapore, 1819-69." *Journal of the Malayan Branch of the Royal Asiatic Society* 33, no. 4 (192) (1960), 75; Barbara Watson Andaya and Leonard Y. Andaya, *A History of Malaysia* (2nd ed.) (London: Macmillan, 2001), 86-116; Heersink, *Green Gold*, 104, 134, fn. 39, 139; John N. Miksic, *Singapore & the Silk Road of the Sea, 1300-1800* (Singapore: NUS Press, 2014), passim.
[19] Heersink, *Green Gold*, 73-74.
[20] Ibid.
[21] D. J. M. Tate, *The RGA History of the Plantation Industry in the Malay Peninsula* (New York: Oxford University Press, 1996), 56-57, 63, fn. 7; Burkill, *Dictionary*, 610.

production of tin and cash crops for the China trade, greased by an inflow of migrant labour, boosted the local market for coconut produce. Population growth was further accelerated by British colonisation of Penang and Singapore, urbanisation, and the founding of Johor as a territorial state in the early nineteenth century.[22] In one historian's estimate, Malaya's population grew almost six-fold in less than a century, going from 250,000 in 1800 to 1.4 million in 1891.[23] Within this context, the domestic Peninsular trade in coconut products expanded.

Malaya's booming copra trade with the West would only begin to take place by the late nineteenth century. But even before this, exports of coconut produce from Malaya to the wider Asian region were already expanding rapidly. During the nineteenth century, regions such as Burma saw their populations increase significantly, from four million in 1830 to 10.5 million in 1901, driving demand for a popular dietary staple.[24] By the 1880s, Penang was a major exporter of copra and coconut oil to southern Burma, southern Siam, and Deli (Sumatra). To meet this rising regional demand, Penang's recorded coconut acreage grew from about 6,000 acres in 1830 to 17,000 acres by 1874.[25]

The expanding geography of coconut palm cultivation followed broader trends in Malaya's economic development during the nineteenth century. While many palms were cultivated on Malaya's sandier East Coast, most new cultivation during the nineteenth century unfolded along the western half of the Peninsula, where the bulk of tin deposits, transport infrastructure, and consumers were located.[26] The palms planted along the Peninsula's western seaboard during this period grew up mostly on poorly-draining, low-lying clay soils. These lands were distinctly different

[22] Andaya et al., *Malaysia*, 92-98; Khoo Kay Kim, *The Western Malay States, 1850-1873: The Effects of Commercial Development on Malay Politics.* (Kuala Lumpur: Oxford University Press, 1972), 53-58.
[23] Wong Yee Tuan, "Before Palm Oil, There Was Coconut Oil..." *Penang Economic Monthly* 13, no. 2 (February 2011), 46.
[24] Wong, *Coconut Oil*, 46.
[25] Wong Yee Tuan, "The Rise and Fall of the Big Five of Penang and Their Regional Networks, 1800s-1900s." (PhD Thesis. The Australian National University, 2007), 30-31.
[26] Amarjit Kaur, *Bridge and Barrier. Transport and Communications in Colonial Malaya, 1870-1957.* (Singapore: Oxford University Press, 1985), xvii.

from the porous crumb on which most coconuts grew outside Malaya.[27] Indeed, dense soils are problematic for many forms of dryland agriculture, and often require man-made drainage interventions to be useful. However, the high natural fertility of Malaya's coastal alluvial clays, coupled with the ability of the coconut palm's roots to respire in waterlogged conditions for limited intervals, made the western coastline a relatively conducive environment for the coconut palm (provided adequate drainage was established) (Photograph 2).

Photograph 2. Coconut cultivation in Malaya, circa 1860-1890. Reproduced with permission of The National Archives of the United Kingdom.

COCONUT EXPANSION UNDER ABU BAKAR'S RULE

Following its reconstitution from maritime kingdom to territorial state by the early nineteenth century, the polity of Johor was not to be left out of this economic surge. As part of Singapore's expanding hinterland, Johor's location and abundance of land placed the territory in a prime

[27] Reginald Child, *Coconuts* (2nd ed.) (London: Longman, 1974), 77-78.

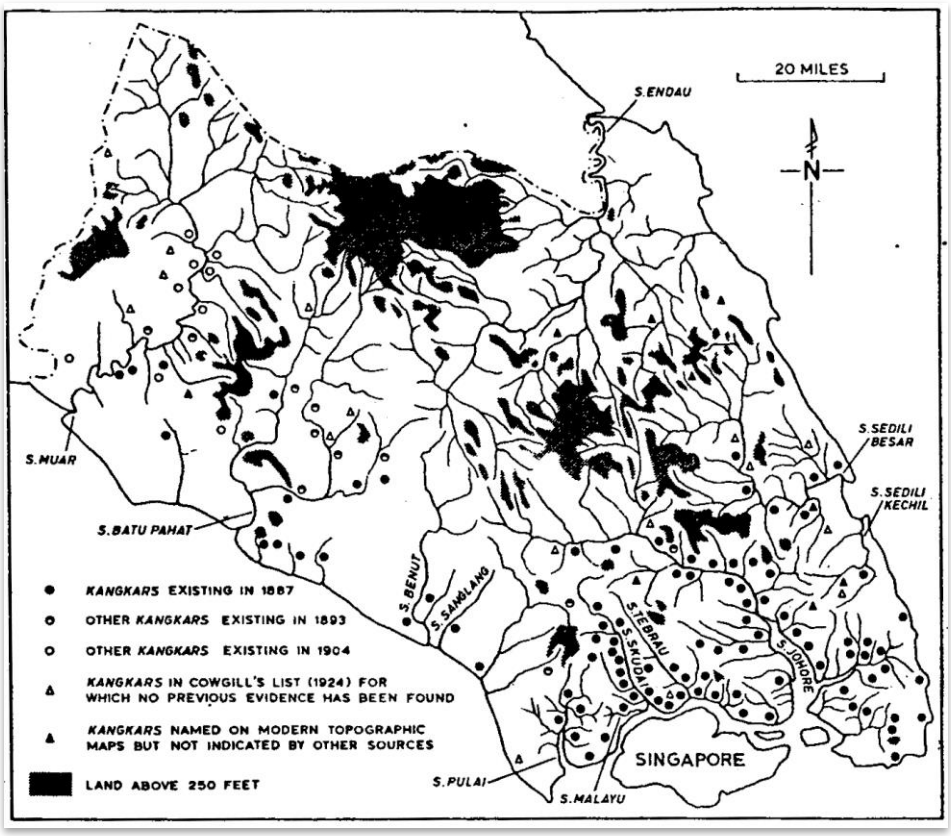
position to capitalise on the boom in coconut cultivation. Although coconuts were grown around scattered settlements in Johor throughout the nineteenth century, the most appropriate year to mark the expansion of Johor's sector is 1862. This was the year in which Temenggong Sri Maharaja Abu Bakar succeeded his father as the ruler of Johor. Under Abu Bakar's watch, new initiatives were quickly launched by his brother, Ungku Abdul Rahman. One of these was the creation of new settlements along Johor's western and southern coastlines, where 'police stations' and coconut groves were established with the aid of hundreds of immigrant Javanese settlers.[28]

According to historian Carl Trocki, Abdul Rahman's sponsorship of these enterprises was motivated by the need to reduce the Johor aristocracy's reliance on revenues from the incumbent Chinese-dominated *Kangchu* system. The *Kangchu* system, peculiar to Johor, Singapore and Riau during the nineteenth century, consisted of grants of riverine agricultural concessions to Chinese strongmen, where pepper and gambier were planted on freshly deforested land (Map 1). Revenue diversification seems to have become especially urgent after a financial crisis in Singapore almost bankrupted Johor's Chinese planters during the mid-1860s.[29]

The development of coastal settlements helped to widen Johor's range of agricultural produce beyond inland pepper and gambier. Besides the economic benefits derived from these new settlements, Johor's ruling elites were able to establish direct links of patronage with a growing immigrant population from the Dutch East Indies, thus cultivating a following of clients that would not have been possible via the arms-length nature of the *Kangchu* system. These coastal settlements eventually became bastions of political legitimacy for the Johor government. The

[28] Trocki, *Pirates*, 152; Christopher Stephen Gray, "Johore, 1910-1941, Studies in the Colonial Process." (PhD Thesis, Yale University, 1978), 3-4.
[29] Trocki, *Pirates*, 138-153.

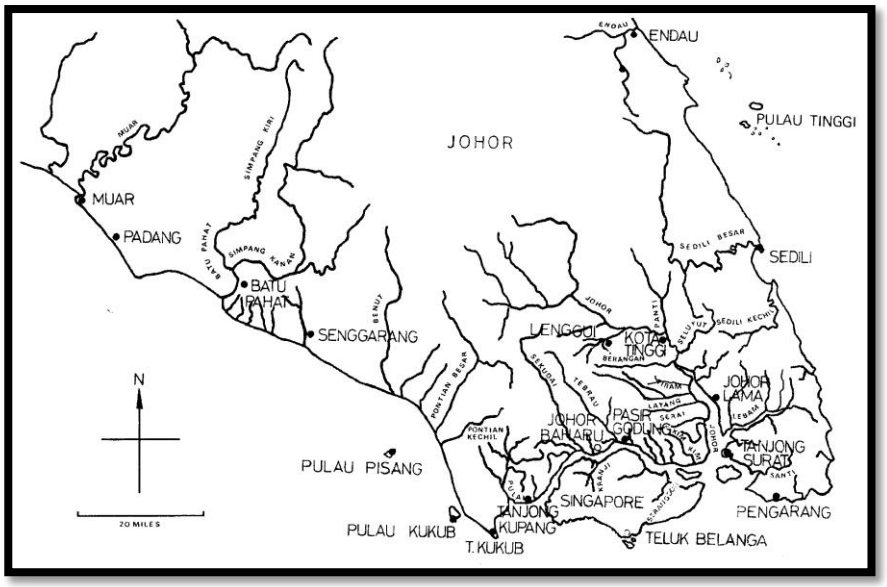
latter would eventually style itself as a Malay-dominated administration, ruling over a largely ethnic Malay state, with a Malay Sultan as its apex.[30]



Map 1. Johor: Chinese riverine agricultural settlements (*Kangkar*) up to 1924. Source: James C. Jackson, *Planters and Speculators: Chinese and European Agricultural Enterprise in Malaya 1786-1921* (Kuala Lumpur: University of Malaya Press, 1968), 268-269.

In contrast to the archival records concerning *Kangchu* arrangements, accounts of Johor's state-endorsed coastal agricultural expansion are hampered by sparse government records.[31] Some detailed accounts can be found in the writings of Johor's first 'court scribe', Mohamed Ibrahim Munshi. While accompanying Abdul Rahman and his entourage on a tour of Johor's West Coast in 1871, Ibrahim jotted down manifold observations about pioneer settlements at Tanjong Kupang, Batu Pahat, and Padang (Map 2).

[30] Gray, 'Johore', 101.
[31] Trocki, *Pirates*, 152.



Map 2. Johor: administrative divisions, 1874. Source: Trocki, *Pirates*, 165.

Besides the fact that these coastal areas were easily accessible to traffic via waterways, soil conditions appeared to be suitable for coconut planting, at least in the short term. Javanese labourers had been brought in by Abdul Rahman to dig ditches, build new roads and clear the mangrove forests lining the shores at both Padang and Tanjong Kupang. Ibrahim gives no reasons for forest removal, but it is possible that much of the resultant mangrove firewood and timber was sold for use within the Malayan tin and construction industries.[32] But forest clearance would have disrupted organic processes of swamp-based land reclamation, and left both settlements vulnerable to future coastal erosion and inundation from the tides.[33]

At Tanjong Kupang, the ground, already extensively drained by settlers, was said to be

> reddish black and swampy, soft and full of crab-holes. It is not proper earth but a soil composed of leaves and so forth. It is because many wide, deep and long ditches have been made that the soil is dry and the trees can

[32] Munshī Muḥammad Ibrāhīm ibn 'Abd Allāh, *The Voyages of Mohamed Ibrahim Munshi* (Kuala Lumpur: Oxford University Press, 1975), 4.
[33] Jeyamalar Kathirithamby-Wells, *Nature and Nation: Forests and Development in Peninsular Malaysia* (Copenhagen: NIAS Press, 2005), 3, 62-63, 106.

> flourish. The water in the soil is fresh and cold, and red-brown like tea.[34]

Similarly peaty conditions prevailed at Padang.[35] Both localities offered attractive, yet precarious environmental situations for its inhabitants. Nearby streams ran red with sediment, and their water had to be boiled before drinking, which reduced the risk of falling ill, but did little to improve its palatability.[36]

By the time of Ibrahim's visit, coconut groves already formed the agricultural mainstays of these settlements. A compact block of 80 acres at Tanjong Kupang was 'dark with coconut [palms]…all of them low and bearing fruit'.[37] The smaller-than-average fruit size and low height of these palms may have alluded to the 'yellow dwarf' coconut variety, a breed commonly seen in local markets during the twentieth century.[38] Dwarf palms were often preferred by migrant growers because they began yielding fruit at a very early age.[39]

Other food crops were also being grown by the settlers, either on a permanent basis, or as a temporary catch crop near coconut palms, until the latter shaded out the food crops. At Padang, where a hundred Javanese migrants had recently settled, coastal soils permitted sugar cane, bananas, and various tubers to be grown. Areca palms were also being harvested for construction lumber and fruit sales.[40] Rice appears to have been cultivated during the initial settlement of Tanjong Kupang, but had become neglected, possibly as a consequence of the maturing of the local coconut stands. Valuable protein was also being obtained through fishing.[41]

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[34] Muḥammad Ibrāhīm ibn 'Abd Allāh, *Voyages*, 3.
[35] J. K. Coulter, "Peat Formations in Malaya." *Malayan Agricultural Journal* 33, no. 2 (1950), 68.
[36] Muḥammad Ibrāhīm ibn 'Abd Allāh, *Voyages*, 7, 11.
[37] Ibid., 4.
[38] Ahmed, *Races*, 143.
[39] Frank Stockdale, *Report by Sir Frank Stockdale… on a Visit to Malaya, Java, Sumatra and Ceylon, 1938* (London: Colonial Office, 1939), 46-47; H. W. Jack and W. N. Sands, "Observations on the Dwarf Coconut Palm in Malaya." *Malayan Agricultural Journal* 17, no. 6 (1929), 140-165.
[40] Muḥammad Ibrāhīm ibn 'Abd Allāh, *Voyages*, 5-7.
[41] Ibid., 4.

These cost-saving pioneer strategies were not unique to Johor. In the Dutch East Indies, coconut palms were often sown alongside faster-maturing subsistence crops like rice, and once the former's fruits could be harvested and sold, growers increased their reliance on markets for their food supplies.[42] In coastal Perak, most new coconut lands were being cultivated by 'immigrant peasants who, unlike the indigenous peasantry, tended towards specialized monoculture of the crop'.[43] At most, these farms were all probably 'simple agroforests' comprised of one tree species and a few short-cycle crops.[44] These smallholdings were all being run by farmers looking for quick returns on their labour.

Some literature has treated decisions to sow large numbers of coconut palms along Malaya's western coastlines as part of a response towards the copra export economy in Europe.[45] However, this view cannot explain attempts to plant dense groves in places like Johor since at least the 1860s, several decades before the European-oriented copra boom began in Malaya. There is no sign of any incipient copra manufacture in Ibrahim's writings, and it would have been uncharacteristic of him to ignore such activity if encountered. Aside from cultural beliefs regarding the positive value of coconut palms in new settlements, coconut kernel fat would have been an essential component of rural diets. Its fruits were an extremely useful regional tradable, as were arecanuts, whose palms were planted in dense blocks alongside coconuts, and did reasonably well on peaty soils.[46]

Furthermore, Ibrahim's comments on the scarcity of freshwater supplies at coastal settlements allude to the importance of the palm as a source of potable water. To quench his thirst, Ibrahim periodically drank

[42] David Henley, *Fertility, Food and Fever: Population, Economy and Environment in North and Central Sulawesi, 1600-1930* (Leiden: KITLV Press, 2005), 546-547.
[43] Lim Teck Ghee, *Peasants and Their Agricultural Economy in Colonial Malaya, 1874-1941* (Kuala Lumpur: Oxford University Press, 1977), 51-52.
[44] Hubert de Foresta, Genevieve Michon, and Achmad Kusoro, "Complex Agroforests." (Lecture Note 1, ICRAF, 2000), 14.
[45] Tate, *Industry*, 56-57, 435-437; Stockdale, *Report*, 46-47.
[46] H. Stirrup, "Betel Nut Industry in the Muar District, Johore." *Agricultural Bulletin of the Federated Malay States* 5, no. 5 & 6 (1916), 189-92; D. H. Grist, "The Betel-Nut Industry." *Malayan Agricultural Journal* 14, no. 7 (1926), 219.

coconut water from local nuts.[47] To reduce the likelihood of diseases like cholera, it made sense to sow quick-growing coconut palm varieties as soon as possible.[48] Coconuts would have been especially important in a region lacking in fresh springs and constructed wells.[49] Rapid land clearance for perennial crops was probably also necessary to secure usufruct rights at a time when Johor's rulers had yet to provide a legal framework for permanent property ownership.[50]

West Johor's growing population soon made railways economically feasible, even without British administrative support. After bringing the northwestern territory of Muar under his control in 1879, Abu Bakar established a light railway system within Muar, beginning with Padang district. By the time of the railway's completion in 1890, Padang had become Muar's 'richest agricultural district', boasting some 10,000 Javanese settlers growing arecanuts, coconuts and other crops for sale.[51] The railway ferried agricultural produce from Padang to Muar's port town of Bandar Maharani for onward shipment. In exchange, rice and other consumer goods were railroaded back to Padang's villages.[52] The train line also helped expand Muar's economy by opening up more coastal land for agriculture. By 1911, Padang's population had increased to 12,000.[53]

By this time, however, recently introduced tree crops, such as *Hevea* rubber, and the oil palm, were beginning to make their commercial presence felt on Johor's landscape. The next section discusses how these new cultivars reshaped Johor's agricultural landscape during the first three decades of the twentieth century, even as the coconut sector continued to expand.

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[47] Muḥammad Ibrāhīm ibn 'Abd Allāh, *Voyages*, 3.
[48] R. D. Hill, *Rice in Malaya: A Study in Historical Geography* (Singapore: NUS Press, 2012), 128, 133.
[49] Cheong Bick Yin, "The Growth and Distribution of Population in Johore, 1911-1957." (BA Thesis, University of Singapore, 1960), 12; Abd. Jalil Bin Abd. Gani, "Sejarah Batu Pahat, 1917-1942 (History of Batu Pahat, 1917-1942)." (BA (Hons) Thesis, Universiti Kebangsaan Malaysia, 1976), 2-3.
[50] François Ruf, "The Myth of Complex Cocoa Agroforests: The Case of Ghana." *Human Ecology* 39, no. 3 (2011), 374.
[51] Trocki, Pirates, 191; Kaur, *Transport*, 28.
[52] Kaur, *Transport*, 28, 196-204.
[53] Ibid., 204.

THE SHAPING OF JOHOR'S TREE CROP BOOM

In stark contrast to Malaya, West Africans had already spent several millennia developing an extensive subsistence culture revolving around the indigenous oil palm. The Portuguese-led introduction of the coconut palm only occurred sometime after 1500 CE.[54] Although the oil palm is unusual in that it yields fruit containing two different oils – palm oil and palm kernel oil – West African repertoires of palm cultivation, harvesting, product preparation and consumption harboured similarities to coconut palm cultures in Southeast Asia and elsewhere. Once harvested from both wild and cultivated palms, palm fruits were boiled, macerated, and pounded for their oils, to be used in a spread of everyday dishes. Like coconut oil in Southeast Asia, palm oil was a popular relish which enabled its consumers to ingest large amounts of starchy staples, especially yams.[55] Palm oil was also used for illumination and medicinal purposes. Meanwhile, palm kernel oil had a buttery character which made it especially useful for frying and anointing on skin. Like the coconut palm, sap from the immature oil palm inflorescence was commonly made into wine and vinegar. The hard shells of palm kernels made a useful combustion fuel, and could be carved into ornaments. Oil palm leaf fronds and stalks were made into fencing, fish traps, and other household constructs, while its trunk was used as lumber.[56] Likewise, a lively internal trade in oil palm products had existed in the Nigerian region long before the rise of palm oil exports to Europe during the nineteenth century.[57]

For those enamoured with its taste, palm oil's aesthetic attractions were obvious. Fran Osseo-Asare, a food historian and long-time gourmand

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[54] Child, *Coconuts*, 6; Charles William Stewart Hartley, *The Oil Palm* (3rd ed.) (Harlow: Longman Scientific and Technical, 1988), 1-3.
[55] Janowski, 'Introduction', 5.
[56] Hartley, *Oil Palm*, 8; Martin Lynn, *Commerce and Economic Change in West Africa* (Cambridge: Cambridge University Press, 1997), 1-2; J. M. Sarbah, "The Oil-Palm and Its Uses." *Journal of the Royal African Society* 8, no. 31 (1909), 232-50; Eno Blankson Ikpe, *Food and Society in Nigeria*: *A History of Food Customs, Food Economy and Cultural Change 1900-1989* (Stuttgart: Steiner, 1994), passim; Fran Osseo-Asare. *Food Culture in Sub-Saharan Africa* (Westport: Greenwood Press, 2005), 14-15.
[57] Toyin Falola, and Matthew M. Heaton, *A History of Nigeria* (Cambridge: Cambridge University Press, 2008), 78.

of Ghanaian cooking, enthuses that 'it is as hard to capture the essence of the palm fruit as it is to describe the hues of sunset to a blind person. The fruit has a color like paprika or glowing coals, with the softness of red velvet, the silkiness of a fine sari, and the richness of fresh cream'.[58] In Nigerian novelist Chinua Achebe's classic treatment of the social tensions affecting Igbo society during the late nineteenth century, he offers readers a glimpse of the deeper historical cosmologies surrounding the oil palm: 'the art of conversation is regarded very highly [in Igbo society], and proverbs are the palm-oil with which words are eaten'.[59] In short, the oil palm's products literally and metaphorically greased the rituals of daily life in many parts of West Africa.

Amidst this oil palm-centred culture, the nineteenth century saw mounting sales of peasant-produced West African oil palm products, as well as a search for new tropical zones for profitable oil palm planting outside West Africa. The prime instigator of this double shift was Western Europe's increasing demand for tropical commodities, brought about by the industrial revolution. By the mid-nineteenth century, West African-sourced palm oil had become a major industrial material for soap-making, candles, railway lubricants, and tin plating.[60] During this same period, both palm kernels and copra also became useful exports to Europe. In contrast to palm oil, which in its freshly squeezed form was a complex, semi-solid oil at ambient temperatures of 25°C and upwards, and whose high carotenoid content gave palm oil its characteristic orange-red glow, both the oils of palm kernels and copra were fairly colourless, richer in lauric acid, and 'harder' with higher melting points. For these reasons, manufacturers in temperate climates preferred using the latter oils for soap-making.[61] Moreover, unlike palm oil, both kernel oils also left behind

[58] Fran Osseo-Asare and Barbara Baëta, *The Ghana Cookbook* (New York: Hippocrene Books, 2015), 108.
[59] Chinua Achebe, *Things Fall Apart* (New York: Anchor Books, 1994), 7.
[60] Hartley, *Oil Palm*, 10-11.
[61] Siew Wai Lin, "Palm Oil." In *Vegetable Oils in Food Technology: Composition, Properties and Uses. Second Edition,* ed. Frank D. Gunstone (Chichester: Wiley-Blackwell, 2011), 29-35; Ibrahim Nurul Amri, "The Lauric (Coconut and Palm Kernel) Oils." In *Vegetable Oils in Food Technology: Composition, Properties and Uses. Second Edition,* ed. F. Gunstone (Chichester: Wiley-Blackwell, 2011), 169-197.

kernel cake as a by-product of extraction, which became increasingly useful for feeding cattle in Europe.[62]

Palm kernels from West Africa gained from the additional benefit of being located much closer to Europe, compared to Asian-sourced copra in its pre-Suez Canal, pre-steamship days.[63] This situation changed somewhat with the lowering of freight costs due to the communications revolution of the 1870s and 1880s. Not only did Asia-Pacific copra become a more commercially attractive tradable, but interest in cultivating *Elaeis* in Southeast Asia for exportable palm oil and kernels began to grow significantly. This was especially so in the Dutch East Indies.[64]

What truly pushed oil palm planters to look beyond West Africa were two concurrent developments during the twentieth century's opening decades. One was the limited ability of West African peasant producers to scale up their production of palm oil and kernels for European markets. The other was the general difficulty of establishing mechanised processing and plantation arrangements in British West Africa, which would have, in principle, permitted much higher extraction rates of palm oil than existing peasant methods were capable of. The results of this stalemate, as already recounted elsewhere, ultimately saw palm fruit factories set up in the Belgian Congo, the establishment of the first dedicated oil palm plantation-mill complex in Sumatra, and the first oil palm estates in Johor and Selangor, all from 1910-1911 onwards.[65] Yet, for Johor's oil palm sector to assume the expansive dimensions reached by the end of the 1920s, one important local requirement still needed fulfilling: the territory's ability to attract large European fixed capital investments.

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[62] Hartley, *Oil Palm*, 11.
[63] Ibid., 10-11; Heersink, *Green Gold*, 162; Lynn, *West Africa*, 116-118.
[64] Lynn, *West Africa*, 116.
[65] Tate, *Industry*, 464, n.6; Hartley, *Oil Palm*, 11-13; Lynn, *West Africa*, 122-127; David Meredith, "Government and the Decline of the Nigerian Oil-Palm Export Industry, 1919-1939." *Journal of African History* 25, no. 3 (1984), 311; K. Dike Nworah, "The Politics of Lever's West African Concessions, 1907-13." *International Journal of African Historical Studies* 5, no. 2 (1972), 248-64; Kurt G. Berger and Susan M. Martin, "Palm Oil." In *The Cambridge World History of Food. Volume One*, eds. Kenneth F. Kiple and Kriemhild Conee Ornelas (Cambridge: Cambridge University Press, 2000), 398-99; William Gervase Clarence-Smith, "The Rivaud-Hallet Plantation Group in the Economic Crises of the Inter-War Years." In *Private Enterprises During Economic Crises: Tactics and Strategies*, eds. Pierre Lanthier and Hubert Wateler (Ottawa: Legas, 1997), 118.

Initially, this issue was eclipsed by the continued growth of Johor's coconut sector. By the beginning of the twentieth century, recorded copra exports from Malaya and Johor were increasing at unprecedented rates, in line with the boom in demand from the fat-processing industries of Western Europe, North America, and Japan.[66] Following breakthroughs in the hydrogenation of liquid fats in 1902, plant- and marine-based fats with higher melting points, including those from coconuts, palm kernels, groundnuts, and whales, could be substituted for traditional 'hard' livestock fats in margarine and shortening with increasing cost-effectiveness.[67] Palm oil, however, with its pigments, odour and lower plasticity, was more difficult to refine, and thus did not benefit as much from the hydrogenation revolution until after the Second World War, when refining technologies shifted in its favour.

In the meantime, between 1904 and 1913, the estimated coconut acreage in the Federated Malay States - Perak, Selangor, Negri Sembilan and Pahang - grew by an average of almost seven per cent per annum, from 77,500 to 175,000 acres, while copra production increased tenfold in the same interval, from 976 to 9,287 tons.[68] It was Johor, though, which became the single largest contributor to Malaya's copra sector. From 1914 to 1918, Johor exported a total of 73,156 tons of copra, which compared favourably with the roughly 90,000 tons of copra sent abroad by the entire Federated Malay States grouping during the same interval.

Seen from a global perspective, Malaya's copra boom was even more extraordinary. Between 1909 and 1924, the territory's estimated world share of exports rose from three to 12 per cent. Malaya consequently surpassed British Ceylon as a copra exporter.[69] When Malaya's role as a re-exporter of Dutch East Indies copra is taken into account, the former

[66] ANM-KL: C&I/E 1015/Vol. 1, Enc. 24B.
[67] Walther G. Hoffmann, "100 Years of the Margarine Industry." In *Margarine: An Economic and Social History, 1869-1969*, ed. J. H. van Stuyvenberg, 9-36 (Liverpool: Liverpool University Press, 1969), 16; Sean Francis O'Keefe, "An Overview of Oils and Fats, with a Special Emphasis on Olive Oil." In *The Cambridge World History of Food. Volume One*, eds. Kenneth F. Kiple and Kriemhild Conee Ornelas (Cambridge: Cambridge University Press, 2000), 376, 387; Lynn, *West Africa*, 118.
[68] R. W. Munro and L. C. Brown, *A Practical Guide to Coco-Nut Planting* (2nd ed.) (London: Bale, Sons & Danielsson, 1920), 166.
[69] Appendix 3.1.

territory's significance grows further. In 1925, for example, Malaya's gross copra export figure, including that of transhipped produce of Dutch East Indies origin, was the world's second highest (237,510 tons), surpassing that of the Philippines (144,392 tons) and more than twice of Ceylon's (113,686 tons).[70]

Within Malaya, the development of Johor's coconut farms was especially remarkable, given how heavily coconut production relied on smallholder activity within a relatively confined area along its western coastline. As will be seen in the penultimate section of this chapter, the technologies and economics of coconut and copra production generally favoured minimally mechanised operations. Relying on family labour and catch cropping strategies, smallholder coconut farms could be established at one-quarter the cost of European estates.[71] Nevertheless, estate arrangements for coconuts were still more prevalent in the Federated Malay States than in Johor. Malaya's inaugural national coconut census of 1930 estimated that estates only held two per cent of coconut land in Johor, whereas equivalent figures for Perak and Selangor were 45 and 34 per cent respectively.[72] This phenomenon requires explanation, especially given that Johor would host some of Malaya's largest ever oil palm plantations to date by the end of the 1920s.

Johor's nominal independence from British control meant that it was unable to attract large-scale European investment until the 1910s. The state's rulers had tried opening up Johor's economy to a raft of European-funded charter schemes during the preceding four decades, including proposals for agricultural concessions spanning hundreds of thousands of acres.[73] However, given the perceived political risks of investing in

[70] TNA: CO 323/1050/2, Enc. 2, 'Table B: Domestic Exports of Copra From Producing Countries in the Empire'.
[71] G. C. Allen and A. G. Donnithorne, *Western Enterprise in Indonesia and Malaya: A Study in Economic Development* (London: Allen & Unwin, 1957), 139-140; Ichirō Sugimoto, *Economic Growth of Singapore in the Twentieth Century: Historical GDP Estimates and Empirical Investigations* (Singapore: World Scientific, 2011), 109-112.
[72] D. H. Grist, "The Malayan Coconut Census, 1930." *Malayan Agricultural Journal* 19 (1931), 62-63.
[73] Trocki, *Pirates*, 198-199; Kaur, *Transport*, 196; Keith Sinclair, "Hobson and Lenin in Johore: Colonial Office Policy towards British Concessionaires and Investors, 1878-1907." *Modern Asian Studies* 1, no. 4 (1967), 338-343.

territories lying outside the British protectorate system, coupled with the presence of competing investment opportunities in the Malay States already brought under British control, investors wanted a guarantee of British government support to cover unforeseen losses in Johor. The Colonial Office was unwilling to share in such risks, arguing that successful European ventures would strengthen Johor's economic standing and sovereignty, while unsuccessful schemes would become costly burdens for any incoming colonial government.[74]

European planter interest thus only took effective shape with formal British control over Johor. This was catalysed by a long-running stand-off between the Federated Malay States authorities and Johor's Sultan, regarding the terms on which the Johor segment of Malaya's expanding trans-peninsular railway system was to be constructed and funded. By the end of 1909, Johor's segment had been completed by the Johor authorities themselves, bisecting the entire territory in the process. But this had been accomplished through heavy loans from the Crown Agents to the Johor Treasury. Worse still, the latter institution was already under crushing debt due to falling revenues from the shrinking *Kangchu* sector, an absence of European commercial investment, and heavy expenditures on foreign travel and local entertainment during Sultan Abu Bakar's reign.[75] Consequently, the state's first British Adviser was appointed the following year, bringing direct British influence to bear on Johor's bureaucracy, not least on systems of state finance.[76] By this time, however, Western interest in coconut planting was being dissipated by rising *Hevea* rubber prices. Mass production of cars had already begun in the United States by 1907, consequently boosting international demand for rubber for vehicle tyres.[77]

From this point onwards, Johor's agriculture expanded rapidly along two distinct fronts. Put together, these expansions accounted for an

[74] Sinclair, *Johore*, 344-347, 351-352.
[75] Ichirō Sugimoto, "An Analysis of the State of Johore's Finances, 1910-1940." *Journal of the Malaysian Branch of the Royal Asiatic Society* 80, no. 2 (293) (2007), 69-70.
[76] Ibid., 72.
[77] J. H. Drabble, *Rubber in Malaya, 1876-1922: The Genesis of the Industry* (Kuala Lumpur: Oxford University Press, 1973), 62, 91-92, 122.

overwhelming proportion of Johor's population growth between 1911 and 1931, the fastest by far among all the Malay states.[78] The first front was the old western coastal zone, easily reached from Sumatra and Java within several days, if not hours. Although Johor's rubber exports soon began to overshadow those of other traditional tree crop exports during the 1910s, a persistently vibrant West Coast trade in coconuts, copra and arecanuts weighed heavily in favour of new settlements along Malaya's western front. With its relatively abundant coastal lands, Johor consistently claimed the lion's share of Dutch East Indies migrants coming to Malaya, with some 120,200 of its residents claiming Dutch East Indies ancestry by 1931, out of a total of 280,600 across Malaya.[79] Smallholding ownership in Johor cost practically nothing except one's labour, as land tenure was effectively based on usufruct rights until well into the first half of the twentieth century. Further encouragement was provided by sponsorship from wealthy patrons (*orang kaya* and *penghulu*), many of whom were recent migrants themselves.[80] Over time, initial success bred further interest. Fresh settlers gravitated towards communities of friends and relatives along the coastline, on whom they could call on for help.[81]

Johor's water-logged coastline was transformed by this influx of settlers. From the northern district of Batu Pahat down to Pontian, existing streams and tributaries were straightened and widened by Javanese, Bugis, and Banjarese settlers, who brought with them coastal engineering techniques inherited from their places of origin.[82] Because of the indivisible nature of this pioneering work, labour was usually mobilised through locally-organised mutual assistance systems (*gotong*

[78] Sugimoto, *Johore's Finances*, 69-70.
[79] Tunku Shamsul Bahrin, "The Growth and Distribution of the Indonesian Population in Malaya." *Bijdragen tot de Taal-, Land- en Volkenkunde* 123, no. 2 (1967), 275.
[80] Abd. Jalil, 'Batu Pahat', 11-12; Kenelm O. L. Burridge, "The Malay Composition of a Village in Johore." *Journal of the Malayan Branch of the Royal Asiatic Society* 29, no. 3 (1956), 61, 77; Id., "Managerial Influences in a Johore Village." *Journal of the Malayan Branch of the Royal Asiatic Society* 30, no. 1 (1957), 96; John Overton, *Colonial Green Revolution? Food, Irrigation and the State in Colonial Malaya* (Wallingford: CAB International, 1994), 55; Lim, *Peasants*, 51-52; Tunku Shamsul Bahrin, "The Pattern of Indonesian Migration and Settlement in Malaya." *Asian Studies* 5, no. 2 (1967), 239; Paul H. Kratoska, "The Peripatetic Peasant and Land Tenure in British Malaya." *Journal of Southeast Asian Studies* 16, no. 1 (1985), 19-20; Gray, 'Johore', 105-106, 175-176.
[81] Tunku Shamsul Bahrin, *Indonesian Migration*, 238-240.
[82] Ibid., 240-241.

royong), arrangements which continued to be used around Southeast Asia to open up tidal swamp lands well into the late twentieth century.[83] Internal drains were dug for individual smallholdings, and linked up with refurbished canals (*parit*) (Photograph 3). These networks were used to transport coconuts and other cash crops towards the coast, for processing and shipment to Singapore. Wooden tidal gates were installed on some canals, both to control sea water incursions, and to extend the reach of waterborne transport several kilometres inland. Coastal bunds were also constructed from surrounding earth to block unwanted tidal intrusions into farmland.[84]

Photograph 3. Labourers excavating a drain on a Malayan coconut holding, circa 1900-1920. Reproduced with permission of Arkib Negara Malaysia.

The Johor state, now under direct British guidance, appears to have done little to aid these endeavours before the Second World War. Having reformed the taxation system, and with revenues quickly accumulating from rising demand for export commodities like rubber, the government was more focused on using its newfound surplus for other purposes. The state's most immediate priorities were to discharge its

[83] Abd. Jalil, 'Batu Pahat', 12; William L. Collier, *Social and Economic Aspects of Tidal Swamp Land Development in Indonesia* (Canberra: Development Studies Centre, ANU, 1979).
[84] Mohammed Halib, *Peat, Pits and Pittance: An Integrated Agricultural Development Experience in Peninsular Malaysia* (Hull: Centre for South-East Asian Studies, University of Hull, 1992), 24.

outstanding debts to the Crown Agents, and to build an extensive interior road network to pry open Johor's interior to further investment.

However, by the end of the 1920s, the state was investing much more of its surplus into bonds, funds and securities across the rest of the British Empire, namely to territories suffering from high levels of public debt, such as Britain and British India.[85] This last development was particularly controversial from the viewpoint of Johor's affairs. Yet this substantial drain from Johor's public finances, as Ichiro Sugimoto has shown, co-existed with selective interventions to support Johor's economic expansion, such as the above-mentioned construction of metalled roads. The real issue, as would become increasingly apparent, was the Johor government's privileging of large-scale producers, such as oil palm plantations, over the specific needs of smallholders in different areas of the territory. There were several ways in which this favouritism would occur, but preferences for road-building over coastal engineering were to assume one of the most physically obvious forms of discrimination by the 1930s.

Meanwhile, West Johor's drainage networks were soon coming under heavy strain from within. By the 1910s and 1920s, uncultivated lands along West Johor's coastline were growing scarce, prompting incoming settlers to establish new holdings up to 10 kilometres inland.[86] According to historian Mohamed Halib, the drains dug by these settlers were latched on to existing canals. Little effort was made to enlarge the capacities of these older *parit* and accompanying infrastructure. By the late 1920s, some tidal gates were being regularly overwhelmed, while bunds were collapsing, causing prolonged flooding that hurt coconut yields in affected areas.[87]

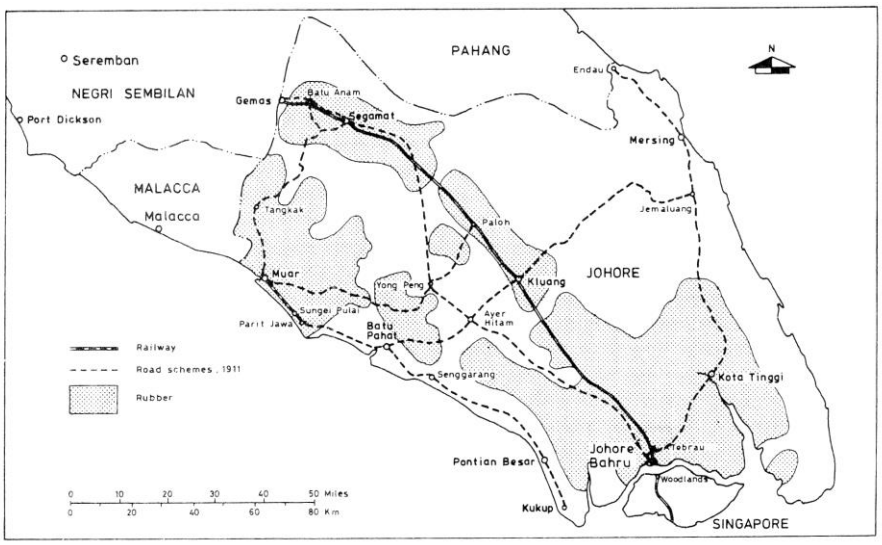
Halib's account suggests that *gotong royong* systems were unable to cope with the fallout from this increased economic activity. But perhaps, as other historians have suggested, co-operative labour

[85] Sugimoto, *Johore's Finances*, 74-77, 83-86.
[86] ANM-KL: HCO 425/1934, Enc. 4, 10.
[87] Halib, *Pittance*, 24-25.

arrangements were already being undermined by changes to local village leadership organisation occurring under colonial rule in Malaya.[88] In Johor, the village headman (*penghulu*) was originally the founder of a single settlement, and personally accountable to his constituents in exchange for tribute and loyalty. Under British rule, he eventually became a minor salaried official under the purview of British district officers, with only formal oversight of several villages. This occurred in different parts of Johor, during an interval of rapid settler expansion in the 1910s and 1920s.[89] Control over communal labour routines was probably disrupted during this transition to a new system. In short, the decline in West Johor's forest rent was not a straightforward process, and may have been aggravated by colonial political restructuring.

These problems were compounded by state-backed forest clearance within Johor's interior, where a second front of agricultural expansion was getting underway. In the midst of Malaya's first rubber boom, the completion of the new Federated Malay States-owned railway axis led to the 'opening up of the great rubber belt of west central Johore'.[90] Between 1906 and 1910, Johor's recorded rubber acreage grew tenfold to 43,517 acres. Much of this rubber was clustered around the new railway route and ancillary road networks, where about 170,000 acres of adjacent land had been alienated for cultivation by 1910 (Map 3). Both estates and smallholders were involved in these expansions, which resulted in a tenfold increase in the value of Johor's rubber exports between 1910 and 1913.[91]

[88] Gullick, *Malay Society*, 110-113; Paul H. Kratoska, "Penghulus in Perak and Selangor: The Rationalization and Decline of a Traditional Malay Office." *Journal of the Malaysian Branch of the Royal Asiatic Society* 57, no. 2 (247) (1984), 31-59.
[89] Abd. Jalil, 'Batu Pahat', 23, 30-32.
[90] Kaur, *Transport*, 57.
[91] Ibid.; Sugimoto, *Johore's Finances*, 69.



Map 3. Johor: major railway and road routes, 1911. Source: Kaur, *Transport*, 58.

The new railway axis had two quite different effects on West Johor's coastal farmlands. By encouraging inland expansions of rubber plantations, water runoff from catchment areas was dramatically increased during heavy rains. Soil erosion contributed to the further silting of westward-flowing rivers and drains.[92] Notwithstanding their own weaknesses, drainage systems on Johor's West Coast were thus put under further strain by upstream developments. All of these early drainage problems, troubling as they already were for Johor's coastal smallholders, would pave the way for even more dramatic environmental transformations during the Great Depression, triggering the gradual downfall of West Johor's great coconut frontier.

The railway route also helped ground the location of Johor's subsequent oil palm developments, especially once an uninterrupted rail link had been established with Singapore in 1923. By the end of the 1920s, every existing oil palm estate in Johor was positioned close to the central railway line, at the locales of Kulai, Layang Layang, Renggam, Kluang, and Labis.[93] The Federated Malay States-led railway alignment thus strongly precluded the possibility that oil palm estates would be set up in the vicinity of Johor's western coconut-growing areas, giving smallholders in

[92] Halib, *Pittance*, 25.
[93] Appendix 5.3.

these areas less of an incentive to start farming oil palms themselves. Meanwhile, proposed line extensions to Johor's West Coast, where Abu Bakar had built Johor's first railway, were aborted because coastal soils were supposedly too soft and peaty for line construction.[94]

Nevertheless, the interior railway was not primarily responsible for the sheer size of the oil palm estates which developed nearby. Neither did the railway prevent smallholders from cultivating lands near the line and its associated feeder roads, nor explain why these growers tended to focus on the cultivation of rubber, coconut, and other fruit trees, when the demonstration effects from nearby oil palm estates would have been most obvious to smallholders in this central region. In short, we need to look elsewhere to understand why smallholders did not draw more inspiration from oil palm estate expansions during the 1920s, as they did with rubber.

The growth of Johor's oil palm sector was, in the first instance, indirectly fuelled by the 'soft infrastructure' provided by the state. Legal foundations were laid in 1910-1911, when the evolving Johor administration brought the state's land tenure framework in line with that of the Federated Malay States through a new Land Enactment, establishing long-term concessionary systems for both large and small holdings, 'thereby making the state more attractive to would-be investors of all kinds'.[95] These included middling Chinese entrepreneurs, who sharecropped pineapples amidst young rubber in Johor as an effective way of lowering the start-up costs of a rubber estate.[96]

By 1917, Johor's rubber boom had begun to falter, and a search for alternative avenues for agricultural investment quickly got underway. The accumulation of rubber stocks due to shipping shortages during the Great War put considerable downward pressure on rubber prices in Johor, which hurt state revenues as well. Although these conditions were ameliorated after the armistice of November 1918, the consequent post-

[94] Kaur, *Transport*, 202.
[95] Gray, 'Johore', 9, 101.
[96] W. G. Huff, "Sharecroppers, Risk, Management, and Chinese Estate Rubber Development in Interwar British Malaya." *Economic Development and Cultural Change* 40, no. 4 (1992), 743-73.

war depression of 1920 and 1921, followed by the onset of the Stevenson Restriction Scheme in late 1922, drove many large European estates to diversify into other crops. These included, with some government support, coffee, tea, sugar and nipah palms. Meanwhile, Chinese planters in Johor continued to use pineapples as a way of mitigating income volatility from rubber until the early 1930s.[97]

There was thus no concerted official effort at the time to promote oil palms over other non-rubber crops. But news of the superior yields that could be extracted from oil palms had begun to emerge from Sumatra after the war. Where a hectare of well-tended coconuts might be expected to yield one ton of oil at most, the same land under oil palms could potentially generate two tons of palm oil and 600 kilograms of palm kernels.[98] This news drove another nail into the coffin for European interest in coconut plantations, and prepared the way for further investor interest in oil palms.

Johor of the late 1910s still lagged behind the Federated Malay States in attracting European investment, and its unoccupied lands were comparatively abundant. State administrators therefore proved highly willing to grant generous land concessions for a number of non-rubber crops, including oil palms. For example, between February and May 1920, the authorities approved a total of 35,000 acres for oil palms to two different enterprises, premium-free. This compared favourably with the $4.00-6.00 acreage premium being levied on new rubber lands in Johor in 1919.[99] Moreover, even before the advent of the Stevenson Scheme, officials had taken steps to make all fresh concessions conditional on the exclusion of rubber.[100] In the 1930s, annual Johor quit rents for oil palm estate lands were still only half of those for rubber and coconuts during

[97] Colin Barlow, *The Natural Rubber Industry* (Kuala Lumpur: Oxford University Press, 1978), 54-60; Huff, *Sharecroppers*, 747; Khoo Kay Kim, "Developments Relevant to Malayan Agriculture in the Post-Rubber Crisis Era (1920-1921)." *Journal of the Malaysian Branch of the Royal Asiatic Society* 72, no. 2 (277) (1999), 18-30.
[98] Allen et al., *Western Enterprise*, 141.
[99] ANM-JB: CL&M 957/1919, Minute, CLR Batu Pahat, 5.5.1920; CL&M 3630/1919, Enc. 5.
[100] ANM-JB: SSC 1109/20, 'African Oil Palms', 29.5.1920.

the first six years of ownership, following which rents for oil palm lands dropped to just a quarter of rubber's.[101]

To be sure, such large-scale oil palm concessions were also somewhat underwritten by budding beliefs in the superior economics of capital-intensive palm fruit processing equipment. But during the 1920s, there was little detailed information, let alone consensus, regarding the optimal size of milling machinery. This led to wildly diverging estimates of the 'minimum economic size' of land that could be alienated to complement a prospective factory. In the mid-1920s, as lower-capacity centrifugal presses entered the market, the floor for matching concessions ranged from anything between 200 to 3,000 acres of oil palm land.[102]

These thresholds were further qualified by a widespread official understanding that not every estate needed to have its own mill, something which had been anticipated even before the First World War.[103] For instance, in 1924, two middling planters of South Asian origin obtained separate but adjoining land parcels of 50 and 25 acres respectively for oil palm cultivation in the administrative subdivision of Tanjong Duablas, Selangor. Official approval was partly based on the fact that both men had chosen plots close to larger oil palm holdings, including 600 acres of lands already owned by a Chinese businessman, and another 1,000 acres westwards, held by Brooklands Estate.[104]

Nevertheless, official perspectives differed considerably. As late as 1927, Johor's chief land authority, the Commissioner of Lands and Mines, claimed that the minimum economic size for an oil palm concession was an unprecedented 4,500 acres.[105] The Commissioner acknowledged that estate clustering strategies would lower this threshold significantly, but still appeared heavily in favour of much larger concessions than

[101] LSE: FIRTH MPA, 46.
[102] ANM-JB: CL&M 1218/1924, Minute, DO Lower Perak, n.d., addressed to CL&M Johore; CL&M 1486/1924, Enc. 4; ANM-KL: SEL.SEC 2752/1925, Enc. 2; TNA: CO 874/158, E. Bateson, "Report on Oil Palm Cultivation.", 6; Martin, *Saga*, 45.
[103] F. G. Spring, "African Oil Palm in Malaya." *Agricultural Bulletin of the Federated Malay States* 2, no. 1 (1913), 36.
[104] ANM-KL: SEL.SEC 1668/1924, Enc. 1; SEL.SEC 1669/1924, Enc. 1.
[105] ANM-JB: CL&M 176/1927, Minute by CL&M Johore, 12.3.1927.

administrators of the Federated Malay States.[106] However, the Commissioner's views may have had less to do with exaggerated faith in cost-effective large-scale machinery, than an awareness of the Johor administration's shortage of competent land officials to deal with rapid agricultural expansion in both West and Central Johor. Into the early 1930s, the Johor authorities still preferred alienating land in large tracts for relative ease of inspection and administration.[107]

Pinning the absence of oil palm smallholdings in Johor on state discrimination alone thus has clear limits. Indeed, across Malaya, smallholders generally found legalistic strictures on cultivation relatively easy to evade.[108] In Johor, the degree of migrant smallholder activity vastly outpaced the local administration's ability to monitor, let alone manage such expansions. In 1924, some 80,000 smallholdings along the West Coast had yet to be surveyed, due to a lack of qualified staff.[109] As late as 1941, Johor's land offices still found themselves devoting considerable time issuing summons to individuals who had been found cultivating rubber, areca palms, fruit trees, and other crops, on lands without any official title.[110] If the state was not holding back the smallholder at this juncture, answers must lie within the smallholder economy itself.

In the past, scholars have tried rationalising the participation gap through three arguments, but none have been especially persuasive. First, at the level of processing, the most prevalent scholarly contention characterises the disparity as primarily a competition for economic efficiency between smallholders and estates. Because the Malayan oil palm industry was populated by large steam-powered processing units by the 1930s, contemporaries found it plausible to believe that only estates with deep pockets could afford the capital-intensive production methods used to process raw fruit into premium-quality palm oil, for shipment to

[106] Ibid.
[107] ANM-JB: CL&M 447/33, Minute by SAO Johore, 31.10.1933.
[108] John H. Drabble, *Malayan Rubber: The Interwar Years* (Basingstoke: Macmillan, 1991), 104-106, 138-139; Kratoska, *Peripatetic Peasant*, 31; Lim, *Peasants*, 154, 159-160; Kenelm O. L. Burridge, *A Report on Fieldwork in Batu Pahat, Johore* (Singapore: Social Research Unit, University of Malaya, 1956), 34-35.
[109] ANM-JB: SSC 694/24, Encs. 1, 2.
[110] ANM-JB: CL&M 63/1941, 'Muar Miscellaneous'; CLR BP 617/31, 'Apply for state land at the 10th'.

Europe's and North America's margarine processors. Historians evidently picked up on these official perspectives, and cited them uncritically in subsequent scholarship. Yet, as already outlined in Chapter One, this argument vastly oversimplifies developments that occurred before the 1960s, and fails to satisfactorily explain the events that took place afterwards.

Second, at the cultivation stage, scientists have sometimes argued that mature oil palms throw a heavier shade profile than coconuts, which reduces their usefulness for the labour-intensive, soil-conserving intercropping strategies supposedly characteristic of tropical peasant arboriculture.[111] Yet this contention ignores a long history of establishment and permanent intercropping under oil palms in West Africa, where palms were less closely spaced than in plantation monocultures.[112] Moreover, as seen earlier, many coconut stands along Malaya's western coastline were not initially farmed as diverse agro-food systems, but as blocks of pure stands geared towards commercial nut sales. At most, they were surrounded by other densely-packed blocks of tree cultivars, including areca palms and *Hevea* rubber. Intercropping arguments are thus fairly weak in the overall Malayan context.

A third rationale, at the income level, lies on firmer ground. Some scholars have argued that cash returns from other popular smallholder crops in Malaya, such as rubber, were generally higher than they were for oil palm products during the period up to the 1960s.[113] This observation is partly correct. During the interwar years, the relative unit value of exported rubber stayed well above that of oil palm products, copra and arecanuts. On average, rubber's unit price was about 3.3 times that of Malayan palm oil exports between 1927 and 1939.[114]

[111] Hartley, *Oil Palm*, 570; R. D. Hill, *Agriculture in the Malaysian Region* (2nd ed.) (Singapore: NUS Press, 2013), 150.
[112] Betty E. Adjei, "The Making of Quality: A Technography of Small-Scale Women's Groups and a Medium-Scale Firm Processing Oil Palm in Ghana." (PhD Thesis. Wageningen University, 2014), 116; Ikpe, *Nigeria*, 164-165; Hartley, *Oil Palm*, 375-378.
[113] Tan Pek Leng, *Land to Till: The Chinese in the Agricultural Economy of Malaysia* (Kuala Lumpur: Centre for Malaysian Chinese Studies, 2008), 75.
[114] Appendix 2.1.

The idea that relative prices were an important consideration for smallholders is also reinforced by path dependence concerns intrinsic to tree crop cultivation. Once planted, *Hevea* rubber trees had an average economic life of about 30-40 years in Malayan smallholdings.[115] Coconut palms were an even 'stickier' crop, with a typical productive lifespan ranging between 60 to 80 years.[116] Cutting down older perennials to make space for new crops involved trade-offs between income foregone from the old tree while waiting for the new sapling to yield its first crop, and expected returns from the new cultivar over the long run.

The oil palm in Malaya thus suffered from a double disadvantage. Not only were returns from oil palm products usually lower than rubber's, but the oil palm was a relative latecomer to Malaya's commodity production frontiers. By the time of Malaya's first oil palm boom, *Hevea* rubber had been widely adopted by smallholders for at least a decade, and coconut palms were also a major feature of the smallholder landscape. Seen this way, the arguments against smallholders switching from rubber into oil palms become highly persuasive, especially where growers lacked the resources to plant fresh lands.

For coconuts, however, the matter is rather different, given the significantly lower incomes associated with the crop. During the interwar years, rubber's unit price was on average about 5.7 times that of copra, a gap much wider than that between rubber and palm oil.[117] In theory then, coconut palms on smallholdings were in danger of being replaced (or at least supplemented) by either rubber or oil palms. Across Malaya, coconut palms were indeed supplemented by rubber stands, but diversification into rubber was limited by the tree's intolerance for the salty, acidic, poorly-draining soils of Malaya's western coastline. Thus, the coconut palm had the upper hand in much of West Johor, where new palm planting continued throughout the 1910s and 1920s, despite high rubber

[115] P. T. Bauer, *The Rubber Industry. A Study in Competition and Monopoly* (London: Longmans, 1948), 353.
[116] Child, *Coconuts*, 123.
[117] Appendix 2.1.

prices.[118] However, oil palms did much better than rubber on West Coast muck soils. Their greater tolerance for such soils placed them in direct competition for land with coconut palms.

To be sure, any prospective palm fruit suppliers would have found it difficult to send crops to inland oil palm estates and mills, given a minimum of 50 kilometres' journey. But sheer physical distance cannot account for the crop diversification choices of smallholdings closer to estates further inland, including innumerable smallholdings peppered with isolated stands of coconut groves. Neither does physical geography explain why oil palms, whose many products were technically similar to the coconut palm's, were not cultivated for subsistence and local markets along Johor's West Coast. Indeed, by the 1930s, many of Johor's coconut smallholders, occupying hundreds of thousands of acres of farmland, were diversifying into large numbers of other crops for these very purposes, but not the oil palm. The income and path dependence arguments are thus relevant but insufficient explanations for smallholder aversion to oil palms.

SMALLHOLDER OPPORTUNITY COSTS

In situations where agricultural land was still abundant, the main costs of tree crop cultivation for smallholders were those pertaining to household labour. It therefore makes sense to compare the relative demands placed on labour by different tree crops. This thesis contends that what ultimately mattered to smallholders were the opportunity costs of foregone production from other tree crops, particularly coconut palms and rubber trees (but also areca palms, coffee, and other fruit trees to a lesser extent). Relative cash returns mattered, but so did the labour expended in the harvesting and handling of a new crop, including any associated learning costs.

[118] W. N. Belgrave, "Coconuts on Heavy Soils." *Malayan Agricultural Journal* 19 (1931), 277; Junji Nagata, "Coconuts, Smallholders and the Ethnic Mosaic: Some Observations on Land Ownership and Land Use in Mukim Sungai Punggor, Johor, Malaysia." *Regional Views* 9 (1996), 50-51.

To my knowledge, there has been no systematic study of such historical opportunity costs to date. What follows is necessarily impressionistic, rather than comprehensive. My aim is to redirect enquiries into more promising channels, rather than cling to older, increasingly precarious arguments. The relevant evidence comes from archival material and secondary literature in four main areas. The first is the historical record of Malayan smallholder activity in the coconut and rubber sectors. Particular emphasis is placed on the coconut palm, given its relative historiographic neglect, and copra's tendency to fetch lower cash returns than rubber, and sometimes even arecanuts and rice.[119] Second, the experiences of Malayan oil palm estate labourers during the twentieth century provide some indication of the kinds of demands that would have been made on Malayan smallholders if they chose to work with oil palms. The history of West African farming households offers a third window into these issues, but from a more subsistence-oriented perspective. Finally, technical literature on tree crop farming helps fill some gaps, and correct occasional misunderstandings in the historical record. When all four sources are combined, they permit a discreet assessment of the likely disincentives for smallholder oil palm farming in Malaya from the 1920s onwards. That the evidence stems from sources spanning the twentieth century, rather than the period before 1930, is less indicative of anachronistic reasoning than the fact that such fundamental crop-specific differences continue to influence farming decisions even until today.

The general literature does not suggest that oil palms were more difficult to cultivate than *Hevea* rubber trees or coconut palms. If anything, the most common oil palm variety found in Malaya during the interwar years, the *Deli dura*, held a major advantage over these crops, maturing within four years. This growth rate was roughly two years faster than rubber and most coconut palms (except dwarf varieties) in Malaya at the time.[120] The real disadvantages of working with oil palms lay

[119] Hill, *Agriculture*, 160.
[120] Hartley, Oil Palm, 161; Child, *Coconuts*, 41; Jasper Guy Woodroof, *Coconuts: Production, Processing, Products* (Westport: AVI Pub. Co., 1979), 20; Barlow, *Rubber*, 25; Drabble, *Genesis*, 8, 12, 25.

afterwards, at the harvesting, handling, packaging, and marketing stages of the crop. Coconuts and rubber, by comparison, were more attractive to work with in all these production segments. As a result, they lent themselves more easily to small-scale rural trading, and enabled smallholders to outsource labour-intensive tasks like copra production to specialised intermediaries.

Harvesting

Unlike rubber tapping, which has usually been a dextrous, but relatively light, hazard-free activity close to the ground, harvesting oil palm fruit was (and still remains) a dangerous and tiring affair. Before most Malayan estates used sickle-mounted poles to reach tall palms from the 1960s onwards, climbing the tree was necessary, with or without a ladder. The same applied to tall coconut palms, but major differences in the physicalities of the two palms made the oil palm a more difficult crop to harvest.

Both palms rely on woody leaf fronds to support their respective fruit bunches as they enlarge and ripen, but similarities end there. Coconut bunches contain, on average, about eight to ten large fruits each. These form loose, sprawling clusters that eventually spill over the palm's crown. In contrast, mature oil palm fruit bunches are dense, tightly packed, honeycomb-like constructs harbouring thousands of individual fruits, wedged into the crown of the tree by sturdy fronds (Photograph 4). While individual ripe palm fruits do fall on their own, their pebble-like size and sheer number make them more tedious to gather in order to match an equivalent quantity of oil from a coconut. Furthermore, fallen palm fruit tends to rot much more quickly than dropped coconuts, introducing a further time-specific labour demand if more than the kernel is desired. It thus becomes essential to find ways to gain direct access to the oil palm fruit bunch itself, evacuating the fruits while they are still tightly packed together.[121]

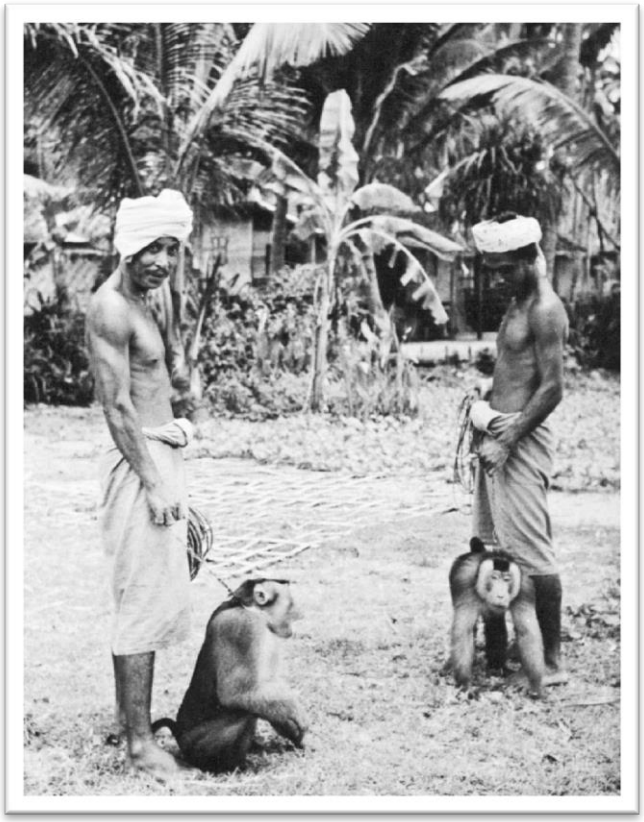
[121] Hartley, *Oil Palm*, 460; Child, *Coconuts*, 85; E. Mathieu, "The Oil Palm (Elaeis Guineensis,) in the East." *Gardens' Bulletin, Straits Settlements* 2, no. 7 (1920), 218.

Photograph 4. Oil palm at Ulu Remis Estate, Johor, circa late 1940s. Reproduced with permission of The National Archives of the United Kingdom.

For coconuts, bunch extraction is not only easier, but often unnecessary due to the large size of individual fruits. Shorter palms needed little except bare hands to twist each nut off its stalk, or a simple cutting tool to sever the entire bunch from the tree.[122] For taller palms, a trained 'coconut monkey' could be enlisted to cast nuts down (Photograph 5). The monkey, typically a male, was either from the pig-tailed macaque species (*Berok*, or *Macaca nemestrina*), or the long-tailed macaque family (*Kera*, or *Macaca fascicularis*). Indigenous to Southeast Asia, both primate species had been used for centuries to economise on human labour, and were sometimes rented out by their owner-handlers to coconut

[122] Research Branch of the Department of Agriculture, S.S. and F.M.S., "Dwarf Coconuts in Malaya." *Malayan Agricultural Journal* 26 (1938), 282.

smallholders for harvests.[123] Trained monkeys were used in a similar fashion to harvest arecanuts.[124] In contrast, the use of monkey (or ape) harvesters to extract oil palm fruit has yet to be encountered in Malaysia, or anywhere else for that matter. Presumably this is because of the numerous problems associated with the skilful use of a heavy cutting tool - such as a chisel, axe, or machete – needed to excise the bunch from its thick leaf base. As a research officer from Singapore's Botanic Gardens noted in 1920, 'there is no picking the fruit of *Elaeis guineensis*; it is sheer hard whacking that does it'.[125]



Photograph 5. Two fishermen with their trained coconut monkeys, Melawi, Kelantan, 1960. Reproduced with permission of The National Archives of the United Kingdom.

[123] LSE: FIRTH MPA, 29, 39, 140-141, 305; E. W. Gudger, "Monkeys Trained as Harvesters: Instances of a Practice Extending from Remote Times to the Present." *Natural History* 23 (1923), 272-79.
[124] V. Raghavan and H. K. Baruah, "Arecanut: India's Popular Masticatory: History, Chemistry and Utilization." *Economic Botany* 12, no. 4 (1958), 328.
[125] Mathieu, *Elaeis*, 219-220.

From the viewpoint of smallholders, this inability to delegate harvesting tasks to animals is indeed unfortunate, because unlike the coconut palm, oil palm leaf fronds are studded along their entire length with large vicious spines, some up to six centimetres long (Photograph 6). These pose a threat to anyone present in an oil palm grove. More fortunate contemporary field workers in Malaysia are equipped with personal protective gear, including thick gloves, boots, and heavy clothing. Few labourers in earlier decades had recourse to such equipment. As documented during the 1970s, oil palm fronds that came into direct contact with field labourers invariably left painful wounds that turned septic within hours if left untreated, sometimes resulting in permanent disabilities. Inexperienced workers tended to suffer the highest injury rates, suggesting that the learning costs of oil palm harvesting were very high.[126]

[126] P. Balasubramaniam and K. Prathap, "Pseudotumours Due to Oil Palm Thorn Injury." *Australian and New Zealand Journal of Surgery* 47, no. 2 (1977), 223-225; Joseph Wolf, *Injuries and Health Hazards Associated with Malaysia's Oil Palm Industry* (Kuala Lumpur: The Incorporated Society of Planters, 1983), 18, 24-29, 32, 34.

Photograph 6. A partially pruned oil palm. Photograph taken by author, Kuala Lumpur, August 2015.

Oil palm harvesting's unpopularity has persisted since the Malayan industry's emergence. During the 1930s, most oil palm estates were short of harvesters.[127] One major oil palm estate awarded the highest wages to its harvesters, even more than male rubber tappers elsewhere, for fear of losing them to other enterprises.[128] In 1942, during the first full year of the Japanese Occupation, harvesters were usually the foremost group of workers to be found either missing or claiming illness. Meanwhile, contract harvesters refused jobs unless they were amply compensated.[129] In the 1950s, perpetual harvester shortages at estates like Ulu Bernam in Perak were only resolved by replanting older palm stands with younger,

[127] ANM-KL: AD.SEL EST 111/2603, 'Annual Report on Oil Palm Estates for 2602', 5.
[128] Martin, *Saga*, 80.
[129] ANM-KL: A.D.SEL. EST 8/02, 'Bukit Munchong Oil Palm Estate: Monthly Report for September 02'; Ibid., Administrator, Bukit Munchong Estate to the Officer-in-Charge, Oil Palm Estates, Selangor, 28.10.1942; A.D.SEL. EST 9/02, Enc. 20, 23, 34, 42, 86; A.D.SEL. EST 11/2602, Enc. 5.

shorter, ones.[130] Similar problems have been encountered by oil palm estates outside Malaya, such as the Belgian Congo, where harvesters absconded during the early 1920s.[131]

Handling and packaging

After harvesting, palm fruit bunches are much more difficult to handle than coconuts (and many other crops like rubber and arecanuts). Because coconuts have evolved to be propagated via water, they come 'pre-packaged', predisposing them to airtight storage for weeks. With their strong fibrous husks, and their portability (weighing on average just under a kilogram, with a diameter of nine to 13 cm), coconuts can be thrown, rolled, floated, and loaded quickly with bare hands without harm to handlers or the fruits themselves.[132] This made them highly suitable crops for transport via the riverine networks of West Johor.

In contrast, the 'hedgehog-like' palm fruit bunch is typically ovoid in shape and very hefty. Average bunches weigh between 10 and 30 kg, reaching half a metre in length (Photograph 7). Each bunch is packed with thousands of spines, guaranteeing injuries from prolonged handling with bare hands.[133] Moreover, the outer layer of an individual fruit, from which palm oil is derived, is mostly pulpy and soft. Unlike the inner kernel with its hard shell, the outer layer is very fleshy, and susceptible to bruising and a build-up of free fatty acids once harvested. Having evolved to rely on animal agency and gravity for propagation, palm fruits do not float in water, adding additional costs to water-borne transport.[134] All this makes for difficult handling and storage: something which was presumably discouraging not just for smallholders, but riverine traders as well.

[130] Martin, *Saga*, 177.
[131] Clarence-Smith, 'Rivaud-Hallet', 121-122.
[132] Mathieu, *Elaeis Guineensis*, 220; Hartley, *Oil Palm*, 83; Douglas M. Considine and Glenn D. Considine, *Foods and Food Production Encyclopedia* (New York: Van Nostrand Reinhold, 1982), 449.
[133] Wolf, *Injuries*, 10-12, 18.
[134] Hartley, *Oil Palm*, 4-5.

Photograph 7. An oil palm fruit bunch, circa 1920. Reproduced with permission from Arkib Negara Malaysia.

Although the costs of packing and storing palm oil and kernels could be outsourced to mills, this still meant that handling challenges between field and factory needed to be overcome. The oil palm fruit's biology permits no intermediate option for long-term storage between harvesting and oil extraction. Trader intermediaries had less than 48 hours to consolidate a batch of raw fruit for consignment to mills, if low-acid palm oil was desired.

Such a problem, however, was less about cost economies than coordination between growers and traders within the vicinity of a mill, especially when smallholders had no oil palms to begin with.[135] Growers would only be incentivised to start cultivation if they could be assured of a buyer for their produce, usually in the first instance a trader. Traders, however, needed the assurance of prior fruit supplies from a reasonably compact area of cultivation before they could commit to purchases, a task further complicated by the difficulties of harvesting and handling palm fruit. Millers, if they were not already crop dealers to begin with, wanted regular and reliable quantities of palm fruit from traders. All this led to a chicken-and-egg conundrum. As subsequent decades would demonstrate, the ability of smallholders to enter the oil palm industry was dependent

[135] Allen et al., *Western Enterprise*, 145.

on overcoming this conundrum. Yet successful entrance also hinged upon support from the state, or least benign neglect, qualities which were, despite internal differences between officials, generally not forthcoming until the mid-1950s.

For all other Malayan tree crop mainstays, the coordination challenge had been surmounted by the 1920s. *Hevea* rubber's relatively high commodity value, and its ease of handling and portability, meant that smallholder supplies could be consolidated at multiple trading tiers for re-processing and export without issue.[136] Coconuts (as well as arecanuts) were similarly easy to transport and store. Harvesting and handling were less time-sensitive than oil palm fruit. Once prepared as copra, coconut produce could be stored for months prior to milling, making relatively small quantities from remote areas amenable to trade and consolidation (Table 1).

Operation	**Time (days)**
House storage	1 to 7
Shophouse storage	0 to 7
Local dealers' stores	0 to 7
Road, river or coastal transport	1 to 4
Warehousing at export centre	0 to 150
Ocean shipment	30 to 40
Bulk storage before milling	3 to 14
Total	**35 to 229**

Table 1. Malayan smallholders' copra: approximate time for various operations, circa 1930. Source: F. Cooke, "Copra Deterioration During Storage and Shipment." *Malayan Agricultural Journal* 27, no. 11 (1939), 425.

The only point at which coconut handling placed severe time pressures on labour was when kernels were first split in half, exposing the wet fatty inner tissue to oxidation and decay. As will be seen shortly, this made copra production more suitable for outsourcing to traders. For households extracting milk (*santan*) and oil from coconuts, processes

[136] Robert Edward Elson, *The End of the Peasantry in Southeast Asia: A Social and Economic History of Peasant Livelihood* (New York: St Martin's Press, 1997), 99.

were similarly time-specific. Before the advent of refrigeration, freshly squeezed *santan* would not keep for more than a day. Households either typically cultivated a small grove of palms in their backyards for the occasional harvest, or otherwise stockpiled coconuts purchased from local markets, to be opened one at a time whenever required (Photograph 8). Why the oil palm did not become a similar backyard cultivar is a tricky question, but insufficient household demand must surely play a role.

Photograph 8. Hawking coconuts at Kajang, Selangor, circa 1900-1920.
Reproduced with permission of Arkib Negara Malaysia.

Marketing

Coconut palms held one other major advantage over oil palms, in that there had already been a vigorous market for Malayan coconut produce prior to the copra boom. Dealers were consequently assured of supplies for export markets, with the main variable being the price of copra itself. For the oil palm however, its raw products held relatively little allure for domestic Malayan consumers between the 1920s and 1960s, whether as an edible relish, cooking oil, livestock feed, construction material, or combustible fuel source. Without this subsistence-oriented profile, the critical mass of smallholder supplies needed to overcome the coordination problem could not be achieved easily. This was a mirror

image of the situation in West Africa, where a wide range of local uses has made oil palms suitable for spontaneous diversification away from ageing cocoa stands.[137]

It bears emphasising that until the recent turn towards odourless, bland-tasting and colourless cooking oils, edible oils have usually been prized for their inherent fragrance and colour.[138] Those accustomed to the taste of freshly squeezed palm oil often found much pleasure in its consumption. As famously remarked by a Venetian merchant visiting West Africa in the fifteenth century, palm oil had 'the scent of violets, the taste of our olive oil, and a colour which tinges the food like saffron, but is more attractive'.[139] For Malayans, however, whose habitual cooking oils tended to be pale-coloured to begin with, their initial interwar-era encounters with crude palm oil's vibrant hue were jarring ones.

Yet, such apparent differences masked similarities in taste profiles. In the same way as many West Africans appreciated palm oil with an increased free fatty acid content for its additional 'bite', Malayans had a distinct fondness for 'tangy' coconut oil, accentuated by moderate amounts of free fatty acids.[140] The need for an unfermented low-acid oil, and accompanying pressures to deliver a raw product as rapidly as possible to processors, was driven by the interests of refiners seeking to minimise the costs of creating interchangeable oils for further industrial treatment. In doing so, the inverse relationship between crop delivery time and product quality was simplified and exaggerated.[141] In Malaya, any movement towards a liking for unrefined palm oil would have reduced the labour demands associated with rapid crop harvesting, handling, and

[137] François Ruf and Götz Schroth, "Introduction." In *Economics and Ecology of Diversification: The Case of Tropical Tree Crops*, eds. François Ruf and Götz Schroth (Dordrecht: Springer, 2015), 30; Götz Schroth and François Ruf, "Farmer Strategies for Tree Crop Diversification in the Humid Tropics. A Review." *Agronomy for Sustainable Development* 34, no. 1 (2014), 147-150.
[138] Jaya Gopal, "The Development of Malaysia's Palm Oil Refining Industry: Obstacles, Policy and Performance." (PhD Thesis, Imperial College, 2001), 139.
[139] Hartley, *Oil Palm*, 2.
[140] UNI: GB1752.UNI/RM/OC/2/2/64/12, A. Knox and J. Buxton, 'Malaya: Report on Soap & Edible Factory Proposition', 19.10.1946, 23; Kwasi Poku, *Small-Scale Palm Oil Processing in Africa* (Rome: FAO, 2002), 11.
[141] United States Interdepartmental Committee on Nutrition for National Defense, *Federation of Malaya: Nutrition Survey, Sept.-Oct. 1962: A Report* (Bethesda: National Institutes of Health, 1964), 39.

extraction, and lowered its opportunity costs substantially. The growth of a home market for artisanal oil palm produce would have made coordination between growers, dealers and processors much less problematic.

Yet, during the 1930s and 1940s, unrefined palm oil became both increasingly well-known and increasingly detested by Malayan consumers. This was completely the result of consumption policies fostered by highly-educated elites in Malaya over three decades. These figures, who included chemists, nutritional experts, administrative officials, school teachers, and estate managers, unintentionally accomplished the rare task of turning what was initially an unknown substance into an object widely recognised by the disgust it invoked in recipients. Aside from situations of severe food scarcity, traders saw little sense in sourcing palm oil for local consumption, when coconut oil was more easily obtainable, and more happily ingested.

Although palm kernel oil and coconut oil have similar chemical profiles, extracting oil from palm kernels requires significantly more effort, not least because they are smaller, more numerous, and usually have harder shells to crack.[142] It did not help that the predominant Malayan *Deli* palm fruit variety had a much smaller proportion of kernel to palm oil than its West African brethren. In the early 1930s, the value of Malayan palm kernels obtained from an acre of land was merely one-tenth the value of palm oil from the same.[143] Worse still, there was no drinking water to be had from the tree's fruits.

For these reasons, smallholders who did adopt the oil palm before the 1960s preferred to harvest whole bunches for sale to mills of varying sizes and sophistication, rather than undertake their own crop processing for household use. The presence of interested dealers was thus of crucial importance in lowering the opportunity costs associated with palm fruit marketing and processing. Indeed, for smallholders, one of the main

[142] Hugh C. Harries, e-mail message to author, 18.10.2015; B. Bunting, C. D. V. Georgi, and J. N. Milsum, *The Oil Palm in Malaya* (Kuala Lumpur: Department of Agriculture, Malaya, 1934), 132; Hartley, *Oil Palm*, 11

[143] Bunting et al., *Oil Palm,* 115; Lim, *Malaya*, 129.

attractions of export-oriented coconut cultivation was the fact that labour could be minimised through the outsourcing of processing tasks to dealers.

Copra processing

Despite the coconut's light labour demands, most Malayan smallholders found copra manufacture impractical to adopt from the outset of the copra boom. Here, and contrary to what scholars have suggested in other contexts, the opportunity costs of coconut processing were prohibitively high.[144] Copra was an intermediate product, meant ultimately for crushing by mills. It lacked the flexibility associated with whole nuts, which could either be sold straight to traders, or made into coconut milk or oil within the household on demand. Moreover, most smallholders preferred to save labour by harvesting coconuts on a monthly or bimonthly basis, compared to the fortnightly practice of most estates. Although this generated a fair number of unripe nuts alongside ripe ones, the former had many non-copra uses, and could be stored separately for further 'seasoning' (although this required additional time for nut sorting).[145] Sometimes even harvesting tasks were outsourced to labourers brought in by traders, and grower compensation reduced accordingly.[146]

This tendency to generate large but infrequent consignments of coconuts made it difficult for smallholders to commit to copra processing, which exhibited modest cost economies. A facility large enough to process a batch of nuts from single harvest would go unused for the rest of the month, unless other smallholdings were included.[147] Furthermore, copra production required many continuous hours of labour in order to split hundreds of kernels prior to drying (Photograph 9). Kernels decompose rapidly once exposed to air, owing to their high moisture content (up to

[144] Yujiro Hayami, "The Peasant in Economic Modernization." *American Journal of Agricultural Economics* 78, no. 5 (1996), 1159-1160; Heersink, *Green Gold*, 174.
[145] Appendix 1; LSE: FIRTH MPA, 210-211; Ministry of Agriculture, Federation of Malaya, *The Coconut Palm* (Kuala Lumpur: Department of Agriculture, Federation of Malaya, 1959), 20; Woodroof, *Coconuts*, 128.
[146] ANM-KL: CO-OP 1136/56, Enc. 1A.
[147] LSE: FIRTH MPA, 208-209.

50 per cent of total kernel weight). Such moisture attracts the attention of bacteria, mould and insects within hours, causing, amongst other things, a rise in free fatty acid levels.[148] Smoking kernels swiftly after nut splitting halted decay, but drying could take several days per kernel batch, thus requiring continual attention to avoid scorched or under-dried copra. These time-sensitive processes clashed with other daytime activities, such as subsistence farming, plantation wage labour, mining, rubber tapping, and forest product gathering. The main alternative copra preparation method, sun-drying, ought to have been easily integrated into smallholder livelihood strategies, owing to its negligible material costs (including firewood), and its ability to produce uniformly dry, high-quality copra. However, for much of Malaya, including Johor, extensive sun-drying was precluded by the absence of a prolonged dry season. Sun-drying was more typically used to round out copra before and after smoking.[149]

Photograph 9. Copra preparation prior to smoking, circa 1920-1950. Reproduced with permission of Arkib Negara Malaysia.

[148] F. S. Ward and F. C. Cooke, "Copra Deterioration." *Malayan Agricultural Journal* 20, no. 7 (1932), 351-357.
[149] LSE: FIRTH MPA 209-214; CO 717/82/4, 'Report of Progress in Relation to Coconut Research for Period Ending 30th June, 1931', 35-37.

Trader intermediaries were well-positioned to take on copra processing tasks in Malaya, given their experience with consolidating produce from multiple smallholdings. In most cases, the use of moderately large kilns or drying racks favoured operations by small groups of specialist labourers, usually drawn from the trader's family or a pool of part-time workers.[150] Dealers could also benefit from economies of scope by smoking copra in rubber sheds, and stockpiling the material in facilities occupied by other businesses, like sundry goods retailing.[151] Copra manufacturing in Malaya thus provided a typical example of how smallholders and traders often maintained mutually symbiotic relationships. And in doing so, such divisions of labour copra gave both parties further reason to entrench their respective participation in the coconut sector throughout the colonial period.

CONCLUSION

By end of the 1920s, the smallholder participation gap between oil palms and other major tree crops in Malaya was firmly established. Smallholders already accounted for two-fifths of rubber acreage in Johor, and virtually all coconut holdings.[152] Of the 57,000 acres already planted with oil palms across Malaya, 95 per cent were held by estates with at least 500 acres of land. The remainder was in the hands of smaller estates in Selangor and Negri Sembilan, with no smallholdings in sight.[153]

It is important to stress that until 1929, there was no concerted official effort to keep smallholders out of the Malayan oil palm sector. Policies encouraging oil palm cultivation were subsumed within a need to encourage various agricultural alternatives to rubber cultivation.

[150] TNA: CO 717/97/15; Asst Chemist for Copra Research, SS & FMS, 'Annual Report 1932. Copra Research', 5. LSE: FIRTH MPA, 257; T. W. Main, "The Copra Industry." *Agricultural Bulletin of the Straits and Federated Malay States* 8, no. 1 (1909), 2.
[151] ANM-KL: A.D.SEL. EST 85/02, Enc. 7; Government of Johore, *Annual Report of the State Agricultural Officer, Johore, for the Year 1938* (Johore Bahru: Government Printer), 10; Drabble, *Interwar Years*, 121; Hill, *Agriculture*, 149.
[152] Appendix 5.1.
[153] Department of Agriculture, FMS and SS, *Malayan Agricultural Statistics 1931* (Kuala Lumpur: Caxton Press), Table 20.

European estates indirectly benefitted from this situation, not just because they had difficulties coping with a low price environment for rubber, but because they found it extremely challenging to get around official restrictions on new rubber planting. Smallholders, with their lower production costs and higher official monitoring costs, had fewer problems with either issue. One can only wonder how much oil palm planting would have actually materialised in Malaya if the rubber situation had not deteriorated during the early 1920s.

Crop dealers were a critical enabler of smallholder cash cropping of coconuts, rubber and arecanuts. But they remain absent from many scholarly discussions of smallholder activity. This has perpetuated the mistaken notion that smallholders were responsible for most small-scale crop processing activities, when in reality, dealers took on most of the work themselves, enabling trade to expand rapidly. If palm fruit processing is to be studied from a smallholder-centric perspective, dealers, and their relationships with smallholders, also need to be primary subjects of enquiry. Similarly, while sufficient source materials may exist for a broad-based study of the historical contributions of crop dealers to Malaya's agricultural development, very little of the sort has been attempted to date.[154] Historians have been redressing this lacuna in neighbouring regions for some time now, making scholarship on Malaya appear increasingly outdated.[155]

That being said, the regional dynamics enabling Malaya's rise as a major exporter of coconut products by the nineteenth century could benefit from further investigation. Burma, for instance, appears to have become a significant importer of Malayan coconuts after devoting much of

[154] L. A. Peter Gosling, "Chinese Crop Dealers in Malaysia and Thailand: The Myth of the Merciless Monopsonistic Middleman." In *The Chinese in Southeast Asia. Volume 1: Ethnicity and Economic Activity*, eds. L. A. Peter Gosling and L. Lim (Singapore: Maruzen Asia, 1983), 131-70.

[155] M. R. Fernando and David Bulbeck, *Chinese Economic Activity in Netherlands India: Selected Translations from the Dutch* (Singapore: ISEAS, 1992); Shozo Fukuda and George L. Hicks, *With Sweat & Abacus: Economic Roles of Southeast Asian Chinese on the Eve of World War II* (Singapore: Select Books, 1995); Aditya Goenka and David Henley, eds., *Southeast Asia's Credit Revolution: From Moneylenders to Microfinance* (London: Routledge, 2009).

its arable land to rice farming, but this notion needs more investigation.[156] Price data for coconut produce relative to other prominent crops during the nineteenth century, including arecanuts, also awaits reconstruction. Given that much agricultural activity was subsistence-oriented and difficult to record, this may be an impossible task. Nonetheless, an outline of the coconut trade and its geographic coverage could at least be sketched out, in ways similar to those already attempted for the areca palm trade.[157]

Finally, the question of historic smallholder opportunity costs could benefit from enquiries beyond Malaya. More still needs to be known about the smallholder situation in the Dutch East Indies, especially Sumatra, where the oil palm industry expanded more rapidly at the outset than in Malaya.[158] Limited resources, and lack of proficiency in the use of Dutch-language archival material, precluded any attempt to redress this gap personally. To my knowledge, no historical investigations have yet been conducted on the oil palm industry in the Dutch East Indies from the perspective of smallholders. This study will now continue to show why such a task may be worth undertaking.

[156] R. Watson and J. W. Grant. *Coconut Survey of the Coastal Areas of the Arakan, Irrawaddy and Tenasserim Divisions*. Rangoon: Supdt., Government Printing and Stationery, Burma, 1928.
[157] Appendices 3.10, 3.11; Bulman, *Areca Catechu*.
[158] Karl J. Pelzer, *Planter and Peasant. Colonial Policy and the Agrarian Struggle in East Sumatra, 1863-1947* (The Hague: Martinus Nijhoff, 1978), passim, esp. 56.

Chapter Three

COLONIAL RESPONSES TO THE PARTICIPATION GAP BEFORE 1930

By 1929, official Malayan views of agriculture had coalesced into a formal belief that oil palms were unsuitable for small-scale cultivation. Earlier, fragmented views had sometimes rationalised this unsuitability on the grounds of the crop's inherently higher labour demands. The new arguments, in contrast, emphasised capital intensity, namely the notion that oil palm fruits supposedly exhibited greater processing cost economies than other tree crops in Malaya. Yet, fearful of smallholder involvement, Malayan oil palm cultivation was officially restricted to enterprises that would support capital-intensive estate arrangements. Concurrently, support for smallholder cultivation of a different palm, the coconut, was expanded.

However, the notion that the Malayan oil palm industry's enclave character had to be safeguarded by the colonial state lay in tension with a second official impulse that had developed during the 1920s. Unlike rubber, palm oil lent itself to use as a consumer edible, at least in theory. This possibility quickly led to the notion that Malayan palm oil could be widely consumed by residents in a manner similar to coconut oil. In practice, palm oil consumption was initially promoted as a way to entice plantations unsure of the oil palm's commercial prospects. Policies encouraging palm oil consumption were also motivated by efforts to reduce Malaya's dependence on food supplies from non-sterling areas. However, rising concerns about the need to improve local nutritional levels eventually took precedence. This shift increased the likelihood of a clash between a policy that actively discouraged oil palm smallholder cultivation, and one that implied the opposite.

Both of these official Malayan responses to local involvement in the oil palm and its products were linked to fundamental tensions rooted

in imperial economic exploitation. Fractious arguments regarding appropriate methods of producing export commodities from Britain's colonies often broke out, as the relative merits of labour-intensive small-scale production systems were expounded, often in opposition to capital-intensive, large-scale arrangements. Moreover, regardless of the arrangements used, wealth accumulation bred both winners and losers within the colonies. Colonial governments thus came under pressure to respond to the needs of disenfranchised locals, or otherwise risked undermining the legitimacy that underpinned colonial rule.

These broad-based conflicts played out in Malaya with major consequences for long-term policies towards the coconut and oil palm sectors. During the 1910s, attempts to raise the quality of coconut-based exports by excluding smallholders from supply chains failed. This put the authorities in the difficult position of trying to get coconut smallholders to behave more like coconut estate labourers. The fact that coconut smallholders refused to behave like specialist estate labourers, coupled with the continued dominance of smallholders in the coconut sector, gave rise to concerns that it would become impossible to dislodge smallholders from the oil palm sector if they got involved. Fearing a repeat of the coconut situation, where exports failed to attain a significant quality premium in Western markets, colonial authorities eventually took unprecedented measures to restrict small-scale oil palm cultivation. Ironically, the initial success of these measures stemmed mostly from the fact that most smallholders had little interest in oil palms to begin with. In short, the initial smallholder participation gap between oil palms and other tree crops in Malaya both provoked and enabled the Malayan authorities to take measures to reinforce existing disparities in crop cultivation patterns.

THREE FACES OF COLONIAL EXPLOITATION

During the late nineteenth and early twentieth centuries, the legitimacy of British imperialism was challenged by the impacts of state-

abetted capital accumulation within British colonies. These included growing landlessness, socio-economic differentiation, and rural discontent. Many of the policies that arose in connection with these concerns came under the rubric of 'colonial development'. A number of important studies have explored this complex topic.[1] Particularly relevant here is Joseph Hodge's wide-ranging enquiry, in which he retraces the evolution of three strategic approaches to the exploitation of Britain's tropical colonies.[2]

The first of these approaches was the mercantilist call for state intervention to help open up Britain's colonial possessions to British capitalist investment. Ultimately, the argument went, this would unlock the economic potential of the colonies, harnessing their natural resources and grooming their consumer markets for the benefit of British industry and trade (and empire in general). Most eloquently propounded by then-colonial secretary Joseph Chamberlain in his speech about managing Britain's 'great estate' in 1895, this was imperialism envisioned in its most directly expansionist form, and it gained more followers in the wake of the First World War.[3] In the agricultural sector, European-owned plantations were believed to be integral to the extraction of maximum surplus. Bolstered by the rising scientific status of tropical agronomy, they became physical emblems of European power.[4]

The second and third approaches arose largely as reactions to the first. The more moderate of the two retained the ethos of colonial commerce as the fundamental driver of human well-being, but argued that such arrangements would be less ethically questionable, and more economically productive, along 'native lines' of development. Social reform campaigners and prominent colonial officials like Frederick Lugard

[1] Kenneth Robinson, *The Dilemmas of Trusteeship* (London: Oxford University Press, 1965); John M. Lee, *Colonial Development and Good Government* (Oxford: Clarendon Press, 1967); Stephen Constantine, *The Making of British Colonial Development Policy 1914-1940* (London: Frank Cass, 1984); Michael Havinden and David Meredith, *Colonialism and Development: Britain and Its Tropical Colonies, 1850-1960* (London: Routledge, 1993).
[2] Joseph Morgan Hodge, *Triumph of the Expert*: *Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007).
[3] Ibid., Chs. 1-2, passim.
[4] Corey Ross, *Ecology and Power in the Age of Empire: Europe and the Transformation of the Tropical World* (Oxford: Oxford University Press, 2017), 73.

contended that the traditional laws and cultures of colonial societies should be respected and upheld. In their view, commodity production was best based upon existing local arrangements, namely peasant farming, rather than concessionary monopolies to foreign investors. In short, indirect forms of exploitation were economically efficient and morally virtuous.[5] At the same time, advocates of this approach often saw a need to redress the alleged shortcomings of smallholder farming practices through scientific methods, themselves often based on European agricultural practices.[6]

The third approach placed much more emphasis on colonial trusteeship and the 'human' side of development. Proponents contended that the labour productivity of colonies could be significantly improved if colonial governments paid more attention to problems of native health and education. Improving native welfare would help intensify colonial exploitation, but in a manner which would strengthen the legitimacy of colonial rule.[7] Pressures to move in this direction also came from external parties, as international organisations like the League of Nations and the Rockefeller Foundation developed their own health commissions, compelling colonial powers to expand public healthcare services within their colonies.[8]

Despite their very real differences, all three approaches harboured fundamental similarities. They all addressed difficult questions regarding who the prime beneficiaries of colonial policies ought to be, and the means through which such benefits could be delivered. Also common to each approach was a moral belief in a European civilising mission. This could take the form of an obligation to harness a colony's natural resources using the most efficient means believed possible, or a drive to educate natives in the finer aspects of nutrition and crop maintenance.

[5] Hodge, *Triumph*, 47-51, 118.
[6] Ross, *Ecology*, 308.
[7] Hodge, *Triumph*, Chs. 2-4, passim.
[8] Ibid., 121; Sunil S. Amrith, *Decolonizing International Health: India and Southeast Asia, 1930-65* (Basingstoke: Palgrave Macmillan, 2006), Ch. 1.

In doing so, all three approaches to colonial development deepened their reliance on Western-controlled knowledge of science and technology.[9] The high esteem attached to scientific knowledge helped to support Western claims to superiority over 'primitive', non-Western societies. As the international trading system grew increasingly protectionist after the First World War, and the powers of European states were expanded to meet the needs of reconstruction efforts, scientific innovation was further embraced as a tool to help governments transform colonial economies so as to increase their compatibility with the metropolitan economies of each respective imperial network.[10] For instance, under the stewardship of Leopold Amery, Britain's Colonial Secretary from 1924 to 1929, a number of metropolitan institutions were created to support infrastructural development and scientific research within British colonies themselves. These included the Empire Marketing Board, the Colonial Development Fund, and specialist advisory bodies in the areas of medicine and agriculture.[11]

Such initiatives supported long-term research in aid of tropical commodity exports. Their successful dissemination, however, was premised on backing from governments of the colonies themselves. In Malaya, prior research conducted within the Federated Malay States helped secure Whitehall's support for future work. By the 1920s, colonial development had become a multifaceted phenomenon in which interactions between the metropole, colonies and transnational organisations shaped the direction and nature of imperial exploitation.

COCONUTS ALONG 'NATIVE LINES'

In contrast to the smallholder cultivation of rubber, which attracted censure from the Malayan authorities for its apparent neglect of

[9] Hodge, *Triumph*, Chs. 2-4, passim.
[10] Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca: Cornell University Press, 1989), passim, esp. 339-340, 413; Hodge, *Triumph*, 91-93.
[11] Hodge, *Triumph*, 93-97, 107, 120-121, 137, 304 fn. 32; Constantine, *Colonial Development*, Ch. VII, passim.

subsistence production, exports of coconuts from smallholdings were officially supported from the outset. Since the late nineteenth century, Federated Malay States authorities had sought to encourage smallholder coconut palm cultivation, on the grounds of export diversification, local food security, secure land tenure, and rural income generation. Officials also expected that the multi-functional palm would help anchor Malay society in notions of rural self-sufficiency and social stability. Considerable publicly-funded work was thus undertaken around the turn of the twentieth century to excavate drainage systems in low-lying coastal flatlands, and control the spread of coconut palm pests, especially the coconut beetle (*Oryctes rhinoceros*).[12]

These efforts were problematized by the rubber boom a decade later. Where soil conditions permitted, growers began to violate cultivation conditions associated with coconut planting, in favour of rubber. This included planting rubber immediately after receiving new lands, to the gradual inter-planting of coconut lands with rubber, to the outright removal of palm trees in order to plant rubber. This last strategy appears to have rattled the authorities, who eventually promulgated the Coconuts Preservation Enactment of 1917 to try and stop such practices. Concerns about an impending post-war shortage of food imports also weighed on official decisions to support coconut cultivation.[13]

When oil palm estates began to expand across Malaya in the 1920, senior agricultural officials voiced similar concerns about the possible neglect of smallholder coconut palms. Malaya's Chief Field Officer implored his colleagues to ensure that smallholders continued cultivating coconuts on fertile alluvial soils along the western coastline, where yields and incomes might outweigh the 'possible counter-attraction of Oil Palm'.[14] It appears that even at this early stage, some agricultural officials

[12] Lim Teck Ghee, *Peasants and Their Agricultural Economy in Colonial Malaya, 1874-1941* (Kuala Lumpur: Oxford University Press, 1977), 51-52, 80.
[13] Ibid., 116, 120, 125-126; R. W. Munro and L. C. Brown, *A Practical Guide to Coco-Nut Planting* (2nd ed.) (London: Bale, Sons & Danielsson, 1920), 173.
[14] F. W. South, "Annual Report of the Chief Field Officer, 1924." *Malayan Agricultural Journal* 13, no. 7 (1925), 192.

had begun to acknowledge the smallholder participation gap between the two palms, and were already thinking of ways to keep the gap in place.

Despite these concerns, little government research was conducted on coconuts, compared to rubber and other cash crops. Ostensibly this was because the coconut industry remained mostly in the hands of smallholders, unlike rubber.[15] But the fact that Malayan palm varieties already contained a wide range of indigenous breeds, each with differing characteristics, complicated Malayan coconut research from the beginning.[16]

Following the reorganisation of Malaya's Department of Agriculture in 1920, more systematic efforts at applied research were made, covering statistical data collection, palm breeding, copra preparation, manuring, drainage, and the study of pests and diseases. The establishment of a dedicated field station near Klang helped to consolidate research activity, and reportedly encouraged similar initiatives in newly established stations in Ceylon and the Dutch East Indies. For Malaya, however, much of the agronomic knowledge gained from Klang was arguably discountable until another field station sited on the kinds of muck soils typical of West Coast coconut holdings was established in Johor during the 1950s.[17] This misstep may have hampered efforts to understand the soil-related challenges of Malaya's West Coast coconut holdings, aggravating the sector's gradual decline over the next four decades.

In the meantime, attention was showered on copra quality improvement. Quality had become an urgent concern due to mounting

[15] Straits Settlements Vegetable Oils Committee, *Report of a Committee…on the Present Economic Condition of the Coconut and Other Vegetable Oil Producing Industries in Malaya* (henceforth SSVOC) (Kuala Lumpur: Government Press, 1934), 45.
[16] G. E. Coombs and W. S. Cookson, "Observations on Coconut Experiments." *Agricultural Bulletin of the Federated Malay States* 5, no. 10 (1916), 381-88; Ahmed Bin Haji Omar, "Races of the Coconut Palm." *Gardens' Bulletin, Straits Settlements* 2, no. 5 (12 September 1919), pp.143-144.
[17] ANM-KL: DA/GEN/100, Enc. 27; Department of Agriculture, FMS and SS, *Annual Report* (henceforth AR DAFMS) *for the year 1924* (Kuala Lumpur: Government Printer, 1925), 4-5; Frank Stockdale, *Report by Sir Frank Stockdale, …, on a Visit to Malaya, Java, Sumatra and Ceylon, 1938* (London: Colonial Office, 1939), 47; SSVOC, *Report*, 45-46; D. J. M. Tate, *The RGA History of the Plantation Industry in the Malay Peninsula* (New York: Oxford University Press, 1996), 438.

competition between different oils and fats for access to industrial markets. Although copra oil's composition and sweetness ensured that it remained a principal ingredient in margarine and vegetable shortening, shifting patterns of international trade after the First World War saw more fats vying for entry to Western consumer markets. These included butterfat, whale oil, soybean oil, cottonseed oil, West African palm kernel oil, Philippine copra, and low-acid palm oil from Sumatra.[18]

Even before the First World War, Malayan agricultural officials frequently lamented the highly uneven quality of local copra. Material sourced from dealers affiliated with smallholdings and Asian estates was often found to be discoloured, slimy, and mouldy. In contrast, copra produced by European-owned plantations tended to be white, crisp, and hard, the very best comprised of two-thirds oil and less than one per cent free fatty acid content, maximising the amount of oil that could be subsequently extracted.[19]

Officials typically underestimated the structural constraints militating against efforts to prod dealers and smallholders into producing high-quality copra. Initially, they hoped that market premiums awarded for first-class copra would motivate smallholders to diligently harvest coconuts at their optimal ripeness, rather than via the usual infrequent mixed collections of ripe and unripe fruit.[20] But the quality premium for copra was usually too slim to merit the additional production cost and efforts involved. For most of the 1920s, the Singapore premium never

[18] UNI: GB1752.UNI/RM/OC/2/2/64/12, A. Knox and J. Buxton, 'Malaya: Report on Soap & Edible Factory Proposition', 19.10.1946, 9; AR DAFMS 1924, 5; Katherine Snodgrass, *Copra and Coconut Oil* (Palo Alto: Food Research Institute, Stanford University, 1928), 48-52, 57-62, 107; SSVOC, *Report*, 6; Tate, *Industry*, 437; William Gervase Clarence-Smith, "The Rivaud-Hallet Plantation Group in the Economic Crises of the Inter-War Years." In *Private Enterprises During Economic Crises: Tactics and Strategies*, eds. Pierre Lanthier and Hubert Wateler (Ottawa: Legas, 1997), 123-124; Peter J. Yearwood, "The Great War and the Triumph of King Copra, 1914-21." *South Pacific Journal of Philosophy and Culture* 6 (2002), 22-35; Ines Prodöhl, "Versatile and Cheap: A Global History of Soy in the First Half of the Twentieth Century." *Journal of Global History* 8, no. 03 (2013), 472.
[19] D. H. Grist, "Review of the Copra Market (October 1929)." *Malayan Agricultural Journal* 18, no. 2 (1930), 82.
[20] J. B. Carruthers, "Federated Malay States: Report of the Director of Agriculture for the Year, 1908." *Agricultural Bulletin of the Straits and Federated Malay States* 8, no. 9 (1908), 394-395.

exceeded five per cent more than second-class copra's price.[21] Indeed, across Southeast Asia and beyond, copra was a cheap and bulky commodity usually valued in quantity rather than quality. This gave producers perverse incentives to manufacture copra laden with excess moisture, while buyers depressed their quotations on the basis that such adulteration was already commonplace.[22]

Furthermore, little official consideration seemed to have been given to the fact that dealers serving local and regional markets for whole nuts often preferred purchasing under-ripe green nuts from smallholders, probably due to their longer shelf-life.[23] Moreover, smallholders often hedged between the markets for fresh nuts and that for copra, because these competed for ripe coconuts.[24] Ripe nuts were frequently reserved for meal preparations, leaving smaller, less ripe nuts for copra manufacture.

The copra quality conundrum was exacerbated by Malaya's long-standing position as a regional coconut trade centre. Malaya's standing was grounded in Singapore and Penang's common functions as staple ports, specialising in the export of raw materials and resource-intensive goods. This pattern pre-dated the Western-oriented copra boom. Since the early nineteenth century, Malayan Chinese entrepreneurs had operated small foot-pedal mills, adapted from technology previously used in Guangdong and Fujian, to make oil out of coconuts from Penang, for export to Burma and other neighbouring territories.[25]

With the advent of Western demand for copra, small-scale mills gave way to much larger steam-driven machinery by the end of the nineteenth century. A new generation of Straits Chinese businessmen

[21] Appendix 2.2.
[22] R. W. Munro and L. C. Brown, *A Practical Guide to Coco-Nut Planting* (1st ed.) (London: Bale, Sons & Danielsson, 1916), 164; Snodgrass, *Copra*, 87; Christiaan Heersink, *Dependence on Green Gold: A Socio-Economic History of the Indonesian Coconut Island Selayar* (Leiden: KITLV Press, 1999), 177-181, 239.
[23] F. C. Cooke, "The World's Coconut Crop." *Malayan Agricultural Journal* 18, no. 7 (1930), 344.
[24] Appendix 1.
[25] Wong Yee Tuan, "The Rise and Fall of the Big Five of Penang and Their Regional Networks, 1800s-1900s." (PhD Thesis. The Australian National University, 2007), 31; Id., "Before Palm Oil, There Was Coconut Oil..." *Penang Economic Monthly* 13, no. 2 (February 2011), 46.

were looking to increase their family fortunes on the backs of Asian and Western demands for Southeast Asian commodities. In order to dominate the regional milling industry, Malayan crushers had to offer higher prices for copra than competitors elsewhere in Southeast Asia. They did so by investing in state-of-the-art European-made crushing machinery, with the highest oil extraction ratios possible at the time. These capital-intensive facilities, armed with copra disintegrators, Anderson oil expellers, and in-house barrel-making services, were explicitly geared towards attracting produce from the wider Malay Archipelago.[26] Such initiatives probably took their lead from the pioneering example of the Singapore Oil Mills, a German-owned concern arising from the merger of two separate Singapore-based crushing facilities during the 1890s, both of which drew heavily on copra supplies from the Dutch East Indies.[27]

One of the most prominent new entrants was Ho Hong Oil & Rice Mills. Led by Lim Peng Siang, an heir to the growing Ho Hong business empire, crushing facilities were established in Singapore by 1905, with the potential to produce roughly 6,700 tons of copra oil per year. By 1908, Ho Hong Oil Mills was reportedly working at full capacity in response to overseas orders. Ho Hong's crushing facilities drew upon a daily copra supply from the equivalent of between 20,000 to 37,000 acres of land, far larger than any oil processing facility that would be established by the Malayan oil palm industry during the interwar years.[28] With heavy advertising, Ho Hong's oil-based products quickly became well-known, and its 'Elephant and Palm Tree' marque inspired a number of imitators (Illustration 1). Ho Hong also developed in-house steam shipping facilities that enabled the enterprise to import regular supplies of copra from island

[26] Arnold Wright, ed., *Twentieth Century Impressions of British Malaya: Its History, People, Commerce, Industries and Resources.* (London: Lloyd's Greater Britain Publishing Company Ltd, 1908), 647-650, 652, 750-751, 824, 828, 833, 907-908; Wong, 'Rise and Fall', 111-114; Chuleeporn Virunha, "From Regional Entrepôt to Malayan Port: Penang's Trade and Trading Communities, 1890-1940." In *Penang and Its Region: The Story of an Asian Entrepot*, eds. Yeoh Seng Guan, Loh Wei Long, Khoo Salma Nasution and Neil Khor (Singapore: NUS Press, 2009), 118-121; William Tai Yuen, *Chinese Capitalism in Colonial Malaya, 1900-1941* (Bangi: Penerbit Universiti Kebangsaan Malaysia, 2013), 192-193.
[27] Wright, *Malaya,* 647.
[28] Ibid., 652; Snodgrass, *Copra*, 44-45.

Southeast Asia during the First World War.[29] But like other millers, the firm relied on a larger Chinese-dominated trading ecosystem extending to Hong Kong, Indochina, Siam, Burma, British Borneo, and the Dutch East Indies, in which rice, dried fish, coconuts, arecanuts, and other produce were widely circulated.[30]

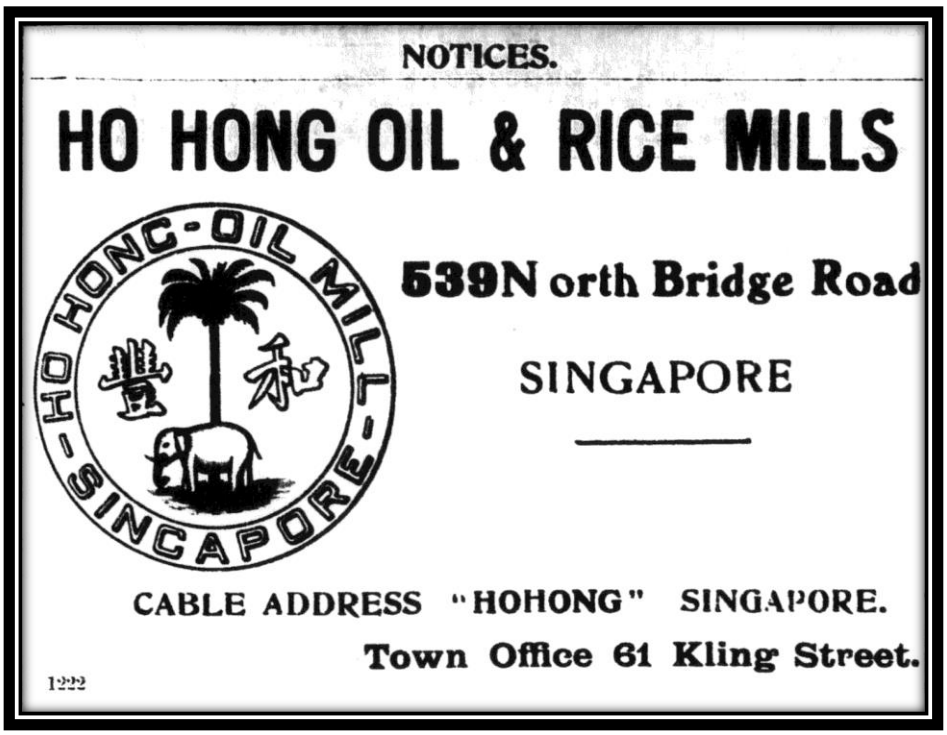


Illustration 1. Advertising notice for Ho Hong Oil & Rice Mills, 1906. Source: *The Straits Times*, 27.1.1906, 9.

The trans-imperial reach of Malaya's staples trade made it impossible to effect any lasting changes to copra quality within the ambit of Malaya alone. Wholesale merchants in Singapore and Penang earned their living by purchasing and sorting copra assignments of varying quality from all over the Malay Archipelago, especially stocks from the Dutch East Indies, eventually bartering them for rice and other essential goods.[31] Lower-quality material was sold to Malayan oil millers for processing into crude copra oil, which proved popular within regional

[29] C. F. Yong, "Lim Peng Siang and the Building of the Ho Hong Empire in Colonial Singapore." *Asian Culture* 28 (2006), 13.
[30] Wright, *Malaya*, 647-650, 652, 824, 828; W. G. Huff, *The Economic Growth of Singapore: Trade and Development in the Twentieth Century* (Cambridge: Cambridge University Press, 1994), 92-102; Tai, *Chinese Capitalism*, 192-193.
[31] Huff, *Singapore*, 63-64, 86, 98, 102-105.

Asian markets at the time. In 1919, a nominal $6 million' worth of copra oil was exported from Singapore, mostly to the Federated Malay States, Java, Borneo, and Siam, with only a small quantity sent to Great Britain.[32] Some copra oil was retained within Singapore for further processing into laundry soap, fragrant cooking oil and copra cake. Higher-quality stocks of copra, copra cake, and copra oil were exported to Europe and Australia.[33]

By the mid-1920s, Malaya's physical copra market had turned the colony into the world's second largest gross exporter of copra. Nearly two thirds of Malaya's trade volumes consisted of consignments from the Dutch East Indies.[34] In this, Malayan copra merchants had benefited from the implosion of an overextended milling industry in the Dutch East Indies and the Philippines after the end of the First World War, when long-distance freight rates reversed in favour of copra.[35] To be sure, Malayan crushers suffered from similar overcapacity, with actual industrial copra oil production never exceeding 20 per cent of total estimated production potential in the decade after the war. But their survival appears to have been sustained by the fact that production was concentrated in the hands of a few large owners in Singapore and Penang, who had substantial business interests in other areas of commerce, such as shipping and rice trading.[36] Domestic competition was also somewhat limited by the fact that Ho Hong's chief competitor, the German-owned Singapore Oil Mills, was first liquidated as enemy property during the war, and then acquired by Ho Hong shortly after.[37] In fact, such overcapacity meant that when freight rates changed once again to favour copra oil over

[32] Department of Agriculture, Federated Malay States and Straits Settlements, *Malayan Agriculture: 1922 Handbook* (Kuala Lumpur: Department of Agriculture, Federated Malay States, 1922), 86.
[33] The Singapore Oil Mills Manager, "Letters to the Editor." *Agricultural Bulletin of the Straits and Federated Malay States S* 1, no. 10 (1902), 400; Wright, *Malaya,* 647-650, 652, 824, 828; Cooke, *Coconut Crop*, 344.
[34] TNA: CO 323/1050/2, Enc. 2, 'Table B: Domestic Exports of Copra From Producing Countries in the Empire'.
[35] H. W. Wamsteker, *60 Years Unilever in Indonesia 1933-1993* (Jakarta: P.T. Unilever Indonesia, 1993), 15-19; Heersink, *Green Gold*, 187-189; Wong Kwok-Chu, *The Chinese in the Philippine Economy, 1898-1941* (Quezon City: Ateneo De Manila University Press, 1999), 56-57.
[36] Appendices 6.1, 6.3; Huff, *Singapore*, 225; Yong, *Lim Peng Siang*, 11-21; Wong, *Big Five*, 113-114.
[37] Anon., 'Singapore Oil Mills.' *The Singapore Free Press and Mercantile Advertiser*, 18.10.1917, 244; Huff, *Singapore*, 225.

copra, as they would by the early 1930s, Malaya's millers would be well-positioned to expand copra oil production rapidly, helping to support farmgate prices at a time when traditional European markets for coconut produce were flagging. In the meantime, this regional arrangement fuelled an interlocking system where local Malayan copra producers were heavily dependent on millers and merchants in Penang and Singapore for their livelihoods, but where the latter enterprises themselves were profoundly reliant on copra imports to run their businesses profitably.[38]

In the ostensible interests of improving the quality of Malayan coconut exports, European businesses made several attempts to bypass the Malayan copra market. The most ambitious of these occurred towards the end of the First World War, when changes to long-distance freight rates temporarily favoured the transport of copra oil over bulky copra from Southeast Asia. In 1918, a number of British trading houses, coconut businesses and European planters lobbied the Federated Malayan authorities for funding to build several large-scale mills that would only accept first-class copra supplies from European-owned estates. In essence, lobbyists sought to carve out a completely separate coconut commodity chain within Malaya, free of 'unreliable' produce from smallholders, smaller Asian estates, Chinese copra-makers, and Chinese millers. However, the proposal was aborted due to official concerns over cost-sharing, and more importantly, the politically untenable idea of using public funds to exclude Malay smallholders from a 'traditional' industry within a British Protectorate.[39]

This unwillingness to exclude coconut smallholders (and initially, Chinese dealers) from producing copra for Western markets prompted administrators to fully embrace Asian participation. This was to be managed by scaling up efforts to develop crop processing technologies that might help improve smallholder copra quality.[40] In this, Malayan officials shared a common scientific concern with other tropical territories

[38] Appendix 7.1.
[39] ANM-KL: HCO NO 1904/1918, Encs. 1-3; Ibid., Minute, Governor FMS, 4.7.1918; Ibid., Minute, Chief Secretary FMS, 28.8.1918.
[40] AR DAFMS 1927, 6.

whose coconut zones had no extended dry season, such as Fiji, Zanzibar, and much of maritime Southeast Asia. The goal was to realise affordable artificial copra drying methods that could match the quality benchmark of first-class, sun-dried copra from Ceylon and British India's Malabar Coast.[41]

Between 1928 and 1929, ongoing Malayan research was given a boost from London, where copra had been recently identified as a commodity of imperial importance (Illustration 2). Malaya was awarded funding by the Empire Marketing Board's Research Committee for a new copra research scheme, with the personal approval of Amery at the Colonial Office. Malaya's successful bid also stemmed from recommendations by botanical advisers from Kew Gardens, who noted its already considerable research staffing, as well as its habitually rainy climate. As argued in a memorandum from Kew, any future research into Malayan copra quality would not only improve Malayan copra's reputation among overseas copra buyers, but would also benefit other climatically disadvantaged territories once results were disseminated.[42]

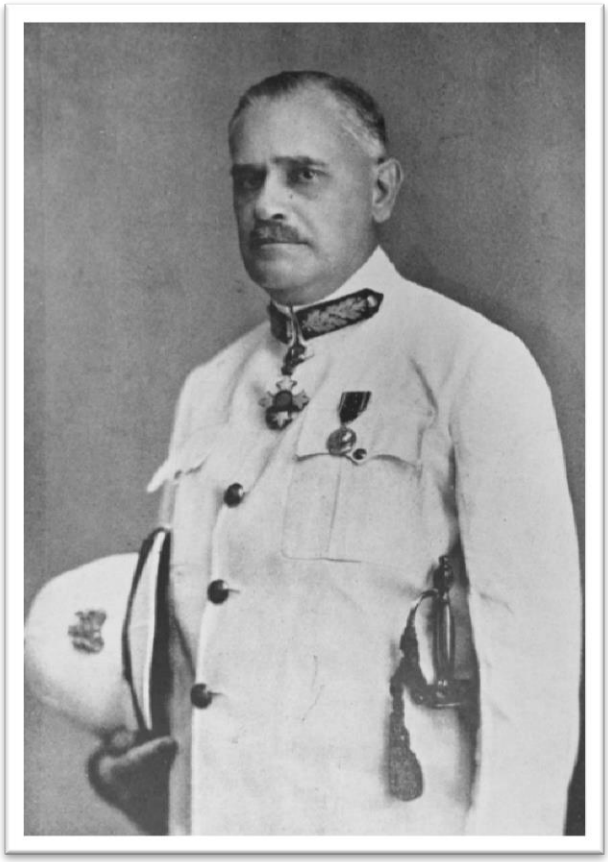
[41] TNA: CO 758/71/1, H. Sampson, 'Memorandum: Copra Research', n.d; Ibid., Director of Agriculture and Fisheries, Travancore, to Agricultural Adviser, Govt. of India, 18.12.1928, 1; Hugh Charles Sampson, *The Coconut Palm: The Science and Practice of Coconut Cultivation* (London: J. Bale, Sons and Danielsson, 1923), 218-225; Snodgrass, *Copra*, 12-13, 40-45, 100.
[42] TNA: CO 758/71/1, H. Sampson, 'Memorandum: Copra Research', n.d.; Ibid., HC FMS to Secretary of State CO, 10.7.1928; Ibid., G. Grindle, CO, to Asst Secretary Empire Marketing Board, 4.9.1928; Ibid., Director RBG Kew, to Asst Secretary Empire Marketing Board, 21.9.1928.

Illustration 2. Empire Marketing Board artist's depiction of copra production in South Asia, circa late 1920s-early 1930s. Accompanying text reads: 'Our factories depend more and more on the tropics for their raw material. This comes west while in exchange our goods steam east through the [Suez] Canal.' Sources: TNA: CO 956/119; CO 956/120. Image reproduced with permission of The National Archives of the United Kingdom.

Most of the preliminary logistics for the scheme were settled quickly. The Empire Marketing Board agreed to fund half of the four-year research programme's projected costs, with the other half to be shouldered by the Malayan authorities.[43] Seemingly by coincidence, the officials tasked with leading the copra push from within Malaya were also appointed in 1929. First came Dr. Harold Tempany, who had previously served as Mauritius' Director of Agriculture, where he had become familiar with the use of Empire Marketing Board funds to facilitate sugar cane breeding research.[44] Tempany took up the post of Director of Agriculture in Malaya in early 1929, and henceforth became Malaya's *de facto* leading scientific authority on all matters pertaining to economic botany (Photograph 10). Next came Francis Cooke, formerly employed

[43] Ibid., Memo, Acting Secretary for Agriculture, SS and FMS, 12.6.1928.
[44] Ibid., DA DAFMS to Asst Secretary Empire Marketing Board, 3.7.1933; Ray Desmond, ed., *Dictionary of British and Irish Botanists and Horticulturalists* (London: Taylor & Francis Ltd and The Natural History Museum, 1994), 675.

with Lever Brothers, who was specifically hired through the Board to lead the copra research scheme. He arrived in Malaya in September 1929 to take up a specially created post, the Assistant Chemist for Copra Research, under Tempany's watch.[45]



Photograph 10. Dr. Harold Augustin Tempany, 1936. Source: Anon., "Retirement of Dr. H. A. Tempany, C.B.E.". *Malayan Agricultural Journal* 24, no. 6 (1936), 305-306.

This renewed enthusiasm for improving Malaya's copra quality had been partly driven by Malaya's rising importance as source of copra for Europe during the 1920s, relative to British India and Ceylon, as well as the prospect of selling British-made crop processing equipment to the tropics.[46] But the scientific nature of the enterprise indicates, above all, the sense of optimism shared by technical experts and sympathetic

[45] Tate, *Industry*, 448, n. 12.
[46] TNA: CO 758/71/1, Secretary of State CO to HC FMS, 18.12.1928; Ibid., DA DAFMS, 'Memorandum: The Position Relating to Copra Research in Malaya', 25.11.1929, 3; Snodgrass, *Copra*, 128-130.

colonial administrators in the potential for applied research to improve the exploitation of Britain's colonies. This was particularly so with the products and growers of the coconut palm, long associated in the West with tropical idyll, backwardness and indolence even before the late nineteenth century's copra boom.[47] Thus, despite the gravity of Malaya's regional economic context having worked against decades of official calls to improve local copra quality, the coconut smallholder sector was now targeted with unprecedented levels of publicly-sanctioned scientific support.

MANAGING MALAYA'S GREAT (OIL PALM) ESTATE

The tensions between 'native' and 'Western' patterns of commodity circulation also extended to Malaya's oil palm industry. Here, however, most knowledge and methods of production, processing and trade were severed from their indigenous West African origins, and dominated by European actors from the outset. The Sumatran industry, which pioneered the pursuit of high-quality palm oil under plantation conditions, became the one for Malayan investors to emulate.[48]

In doing so, Malaya's oil palm industry was able to achieve much higher levels of product quality than the Malayan coconut sector from early on. By the mid-1920s, initial exports of Malayan palm oil in wooden barrels averaged two to three per cent free fatty acid content, which made them theoretically cheaper to bleach for margarine-making. Colonial administrators, technicians, and planters tended to credit this achievement to the industry's own 'scientific manipulations' of the crop.[49] The obvious contrast was with the supposedly primitive smallholder-dominated coconut sector. But there was also clear pride in the fact that

[47] Emily Ming Li Pooi, "Not Just a Coconut: The History of Coconuts in British Malaya 1900-1930." (BA (Hons) Thesis. National University of Singapore, 2013), 10-13.
[48] C. D. V. Georgi, "Modern Factory Practice in the Preparation of Palm Oil." *Malayan Agricultural Journal* 10, no. 8 (1922), 211-17; Id., "The Manufacture of Palm Oil." *Malayan Agricultural Journal* 16, no. 6 (1928), 234-254; Tate, *Industry*, 451-455.
[49] D. H. Grist. "Report of the Agricultural Economist for 1926." *Malayan Agricultural Journal* 15, no. 5 (1927), 196.

European prestige was being upheld through European initiation and domination of a new agricultural enterprise in Malaya. Official attention was lavished on the oil palm industry's initial use of sophisticated large-scale equipment to transport, sterilise and mill palm fruit rapidly, including railways, autoclaves, bunch threshers and motorised presses. The industry's tight control over specialised estate labour was also lauded, as frequent plantation harvests helped maximise fruit quality and oil yields.[50]

In contrast to the coconut sector, government scientists and officials in the 1920s were left with the task of maintaining existing quality standards in the oil palm industry, rather than trying to improve them. They remained mindful that European-owned coconut estates, constituting a small proportion of overall copra production, had been unable to raise the overall middling quality of Malaya's copra and copra oil exports, despite their careful attention to harvesting and copra manufacture.[51] This reinforced a sense that any future smallholder participation in Malaya's oil palm trade needed to be policed tightly.

Anxieties regarding smallholder participation were compounded by a crucial impediment to the oil palm industry's quest for profit. Unlike Sumatran palm oil, which had already attained sufficient recognition in Western margarine markets to be paid a premium similar to other high-grade edible oils such as coconut and groundnut oil, the Malayan variant struggled to solicit the same interest from buyers, even into the 1930s. Malayan palm oil's relatively small contribution to palm oil exports during the late 1920s (roughly 1/20th of the Dutch East Indies') prevented it from obtaining independent quotations from edible oil buyers in both Europe and North America.[52] The largest North American palm oil buyers also penalised sellers who tried hawking individual consignments below

[50] AR DAFMS 1924, 5; B. Bunting, B. J. Eaton, and C. D. V. Georgi, "The Oil Palm in Malaya." *Malayan Agricultural Journal* 15, nos. 9-10 (1927), 343-347.
[51] C. D. V. Georgi, "Chemical Investigations on Coconuts and Oil Palms." *Malayan Agricultural Journal* 17, no. 5 (1929), 128.
[52] Bunting et al. 1927, *Oil Palm*, 375-76; Georgi, *Chemical Investigations*, 135; Lim Chong Yah, *Economic Development of Modern Malaya* (Kuala Lumpur: Oxford University Press, 1967), 336; Clarence-Smith, 'Rivaud-Hallet', 123-124.

preferred volumes.[53] Malayan palm oil was consequently graded and sold mostly under the old British-based Lagos Standard that catered primarily to lower-grade inedible uses, such as laundry soap. Any premium awarded by this system was insufficient to justify production of high-quality palm oil in the long run: a mere four per cent more than what West African sellers of a 'standard' 18 per cent free fatty acid palm oil would have earned in 1927.[54] In this sense, Malayan oil palm growers at the time still had more in common with Malayan coconut producers (and West African oil palm smallholders) than they would have wished.

The pursuit of a premium niche in the West required increases in palm oil production up to levels that margarine manufacturers in America and Europe would be willing to consider purchasing in bulk. This was the commercial context in which overwhelming encouragement was being given to the large-scale mechanisation of Malayan palm oil extraction.[55] Older, labour-intensive methods of bunch transport, fruit separation, and oil extraction were consequently mostly ignored by newspapers, trade journals and officials by the late 1920s, despite their proven ability to produce technically excellent palm oil of less than four per cent free fatty acid content.[56] Before mechanical bunch threshers were widely adopted, many estates required labourers to lay out fruit bunches on racks at designated field collection centres for up to three days, so as to allow ripened fruit to detach from the bunch on its own. Any remaining fruits were then removed promptly by the labourers themselves (Photograph

[53] C. D. V. Georgi, "Bulk Shipment of Malayan Palm Oil." *Malayan Agricultural Journal* 19 (1931), 570-572.
[54] Bunting et al. 1927, *Oil Palm*, 378.
[55] Georgi, *Chemical Investigations*, 135; Department of Agriculture, Straits Settlements and Federated Malay States, "The Palm Oil Factory at Elaeis Estate, Johore." *Malayan Agricultural Journal* 18, no. 10 (1930), 497-501; B. Bunting and C. D. V. Georgi, "Oil Palm Factory at Serdang." *Malayan Agricultural Journal* 19, no. 8 (1931), 384-389; R. Siebert., "The Production of Palm Oil on a Large Scale." *Malayan Agricultural Journal* 19, no. 11 (1931), 535-541; C. D. V. Georgi, "A Comparison of the Press and Centrifugal Methods for Treatment of Oil Palm Fruit." *Malayan Agricultural Journal* 21, no. 3 (1933), 103-118; Id., "A System of Control for Oil Palm Factories." *Malayan Agricultural Journal* 21, no. 9 (1933), 413-428.
[56] B. J. Eaton, "Recent Developments in Oil Palm Machinery." *Malayan Agricultural Journal* 12, no. 12 (1924), 384; M. M. Kehoe and L. C. Chan, *Buffalo Draught Power on Oil Palm Estates* (Kuala Lumpur: Incorporated Society of Planters, 1987).

11).[57] At the oil extraction stage, estates found manual methods to be particularly useful where fruit volumes were relatively low. In a visit to Malaya in 1925, British North Borneo's Agricultural Adviser reported that:

> At the present price of palm oil it seems possible to make a profit by extraction with the simplest of appliances. On one estate in the [Federated Malay States],...the fruit is boiled in open shallow pans, squeezed in a hand press to extract some of the oil, then steamed over boiling water and pressed again. About 50 per cent of the total amount of oil in the pericarp is thus obtained; the quality is high.[58]

Such figures were corroborated and updated in an official planting advisory published by Malaya's Department of Agriculture in 1934, which noted that oil extraction rates using such methods could actually reach 70 per cent with additional pressings.[59]

[57] Eaton, *Machinery*, 383; Bunting et al. 1927, *Oil Palm*, 354-355; J. H. Maycock, "Developments in Palm Oil Mill Technology since 1900's." In *7th Engineers Training Course* (Kuala Lumpur: Malaysia Oil Palm Growers' Council, 1985), 2.
[58] TNA: CO 874/158, E. Bateson, "Report on Oil Palm Cultivation.", 5
[59] B. Bunting, C. D. V. Georgi, and J. N. Milsum, *The Oil Palm in Malaya* (Kuala Lumpur: Department of Agriculture, Malaya, 1934), 135.

Photograph 11. Estate labourers extracting palm fruits by hand in a collecting shed, circa 1920. Reproduced with permission from Arkib Negara Malaysia, Kuala Lumpur.

Bearing these small-scale practices in mind, the main commercial advantages of the new large-scale factory presses being deployed in Johor, Perak and Selangor by the late 1920s were two-fold. First, they were more efficient extractors of palm oil, reaching 90 per cent extraction rates. Their large capacities also enabled them to handle rising volumes of harvested estate fruit, as recently planted trees began maturing during the late 1920s. Second, they allowed estates to substitute capital for the labour need to manually separate and sterilise fruits, extract palm oil, and remove kernels for shelling and drying. This helped lessen the heavy demands on management associated with supervising labour dispersed over a wide area. Supervision was necessary to ensure that labourers did not neglect their tasks and allow product quality to slip.[60] During this transition, estates were fortunate that the most popular variety of oil palm

[60] Yujiro Hayami, "The Peasant in Economic Modernization." *American Journal of Agricultural Economics* 78, no. 5 (1996), 1161.

grown on Malayan estates during the interwar years, the *Deli dura,* had a much thicker palm oil-rich outer layer in its fruits than many other African oil palm varieties.[61] The pulpy fibre of the flesh cradling the *dura* fruit's kernel helped to prevent the kinds of accidental kernel breakages known to have frequently occurred when such machines were trialled on thinner-fleshed palm fruit varieties in West Africa during the early twentieth century. Such breakages had resulted in palm oil being contaminated by kernel oil, and vice versa.[62]

However, compared to earlier labour-intensive methods, large-scale processing machinery in Malaya did not improve on palm oil quality itself, and even produced inferior-quality palm kernels. High-pressure steam – used by autoclaves to sterilise palm fruit bunches in bulk – produced kernels that, while intact, yielded discoloured oil of lower quality than that from manually-extracted West African kernels, creating additional bleaching costs for refiners in Europe.[63] But Malayan palm fruit millers were willing to accommodate this setback, since the high proportion of palm oil in Malayan *Deli* fruits made it more lucrative to focus on palm oil production, rather than palm kernel sales to Europe (Chapter Two). Colonial officials themselves reinforced this palm oil-centric trajectory. When a Straits Chinese businessman applied for land in Johor in 1928 to grow oil palms for the sole purpose of palm kernel production for English markets, his request was denied because his proposed processing arrangements had made no provisions for palm oil collection.[64]

Increasing confidence in large-scale palm fruit processing arrangements seems to have contributed to a reluctance to alienate smaller parcels of land for oil palm cultivation. Before the mid-1920s, concessions below 100 acres had been granted for oil palms in Selangor, on the grounds that they supported larger clusters, such as one centred on

[61] Charles William Stewart Hartley, *The Oil Palm* (3rd ed.) (Harlow: Longman Scientific and Technical, 1988), 82.
[62] A. G. Barnes. "The Extraction of Oil Palm Products." Proceedings of the First West African Agricultural Conference, Lagos, 1927, 47-48.
[63] Bunting et al. 1934, *Oil Palm*, 132, 140-141, 196-199; SSVOC, *Report*, 54.
[64] ANM-JB: CLR BP 325/29, Encs. 5, 6.

Brookfields Estate (Chapter Two). By 1926, there were signs of a tightening of criteria used to assess such land applications. An attempt by the Sungei Manggis Company to obtain 150 acres of land near the afore-mentioned cluster was personally disparaged by the Secretary of Agriculture, who now expressed concerns that Brooklands Estate would be unwilling to process the smaller holding's crops 'on terms which will be remunerative to both'. This response was sufficiently exacting to make the firm withdraw its application.[65] The growing official preference for large-scale oil palm concessions was also reinforced by a coconut-centric argument, namely that the quality of harvested palm fruit could be better controlled if left to plantation labour, rather than peasants, due to the latter's apparently 'indiscriminate' methods of fruit collection (as opposed to alternative uses of nuts beyond first-class copra).[66]

A more careful consideration of the differences between the oil palm and coconut industries in Malaya would have given administrators less reason to worry about smaller agriculturalists in the former sector. The primary factors driving the rudimentary quality of Malayan coconut produce – a heavy reliance on Dutch East Indies supplies for the staple trade, the vibrancy of local and regional markets for semi-manufactured coconut oil, and the ease of obtaining a year-round income from the occasional harvest – were absent in Malaya's oil palm sector. There was comparatively little demand for low-grade palm oil within Malaya or the neighbouring region during the early years of the industry, whose fruits were in any case more troublesome to harvest and process than coconuts. This also accounted for the relative absence of trader and smallholder interest in oil palms to begin with. Accordingly, the Malayan and Dutch East Indies oil palm industries were both focused on high-quality exports directly to Europe and North America, operating in parallel with each other. In these closed systems, quality control was more straightforward.[67]

[65] ANM-KL: SEL.SEC 2015/1926, Minute, Secretary for Agriculture, 12.5.1926; Ibid., Minute, DO Kuala Langat, 2.7.1926.
[66] AR DAFMS 1925, 5.
[67] Appendix 7.2.

Some Malayan expatriates already seemed keenly aware of such differences. In 1928, a veteran planter by the name of Cuthbert Malet made his views known in the local press, exhorting associates to diversify out of rubber into oil palms. Appealing to the notion that planters would face less competition for land with smallholders if oil palms were cultivated, he contended that

> [o]ne great advantage [oil palm] planting has over rubber lies in the fact that the smallholder cannot plant it – it is utterly useless to him. It is not his national food (as in Africa – the trade growing out of surplus stock) and he can do nothing with a basket full of fruit once a week! Unless natives deliberately took up several thousand acres of land for Palm Oil in one region so that a local Tan Kah Kee factory could be built, they could do nothing with the fruit at all. Making crude native Palm Oil is a very laborious process, and there would be no market for the product.[68]

Malet's comments underline the extent to which the smallholder participation gap between oil palms and other tree crops had already become an empirical reality by 1928, despite the absence of any official prohibitions against smallholder involvement in the Malayan industry.

Nevertheless, official anxieties about smallholder threats persisted, and erupted at the end of the 1920s. In September 1929, Malaya's new Director of Agriculture, Harold Tempany, circulated a memorandum among the senior administrators of Johor and all Federated Malay States, seeking to clarify and streamline official policies towards small growers of oil palms. In contrast to the previous two decades, when 'unfolding surprise' at the speed and extent of smallholder rubber planting had provoked reactionary official responses, Tempany's attempt to restrict oil palm smallholder cultivation was largely pre-emptive, occurring at a time when rubber and copra prices were falling, and no known peasant-run oil

[68] C. C. Malet, "The Third Basket." *The Singapore Free Press and Mercantile Advertiser*, 25.4.1928, 7.

palm farms existed.[69] His intervention was likely to have been provoked by earlier competition from rubber smallholders, as well as the alleged technical shortcomings of coconut smallholdings, given that one of Tempany's concurrent tasks was to oversee the new copra research scheme. Previous scholarship appears to have relied on second-hand information regarding the memo, badly distorting its content, as well as its subsequent effects.[70] To redress any further misunderstandings, the memo is fully reproduced in Appendix 8.1.

Tempany's despatch was a direct attempt to prevent smallholders from cultivating oil palms for domestic use. The underlying rationale justifying this attack was that of product quality. However unlikely that oil palms might be assimilated into smallholder subsistence arrangements and rural trading networks, Malaya's budding industry could not afford any 'indigenisation' if it led to the kinds of quality issues permeating the coconut palm industry. With its relatively low export volumes during the late 1920s, Malaya's oil palm sector had yet to achieve a level of recognition from the edible oils market akin to Sumatra's. Moreover, the Malayan industry's use of wooden barrels to export palm oil rendered the sector vulnerable to reputational risk, due to the difficulty of checking each and every barrel for quality control before shipment. Again, Sumatra was ahead of the game, having initiated centralised bulk storage and shipment of palm oil from Belawan in 1925.

This did not mean that small growers were forbidden from acquiring lands for oil palms in Malaya, as scholars have mistakenly claimed. Tempany's memo, which had no legal power to begin with, was a classic example of the broader tendency for colonial authorities to restrict smallholder tree crop cultivation to avenues that would support plantation development.[71] The memo argued that small grower

[69] Appendix 2.1; C. Barlow and S. K. Jayasuriya, "Stages of Development in Smallholder Tree Crop Agriculture." *Development and Change* 17, no. 4 (1986), 641.
[70] Ooi Jin-Bee, *Land, People and Economy in Malaya* (London: Longmans, 1963), 197; J. Kathirithamby-Wells, "The Implications of Plantation Agriculture for Biodiversity in Peninsular Malaysia: A Historical Analysis." In *Beyond the Sacred Forest: Complicating Conservation in Southeast Asia*, eds. Michael R. Dove, Percy E. Sajise and Amity A. Doolittle (Durham: Duke University Press, 2011), 74.
[71] Barlow et al., *Stages*, 641.

participation should be permitted, provided cultivators rely on a 'factory' to process fruit supplies promptly, in the interests of maximising the output of high-quality palm oil. In this sense, Tempany's guidelines remained consistent with decisions by the Selangor authorities to grant oil palm lands less than 100 acres in size to South Asian planters during the mid-1920s. The implication here was that, if and when the economics of small palm fruit processing facilities improved, such strictures on smallholder participation could be lifted.

From the outset, however, the subtleties of Tempany's memo were lost on general administrators more concerned with maximising land revenue and minimising the hassle of potentially innumerable applications from small growers, amidst the looming threat of Depression-era staff cuts.[72] In subsequent correspondence meant to clarify the minimum size of land that could be alienated without the recommended restrictions, Tempany suggested 150 acres, a figure which may have been derived from the earlier pronouncement of the Secretary of Agriculture in 1926. This went considerably beyond the official Malayan definition of an estate of 100 acres of farmland. But even so, Tempany's recommendation was criticised by the Resident of Pahang, who suggested a lower limit of 1,000 acres, though it seems Tempany's suggestion was followed in the end.[73]

The first casualties of the new official policy towards small-scale oil palm farming surfaced almost immediately. In Klang District, a unresolved application for 100 acres of land for oil palms by the Sultan of Selangor himself was rejected by the British Resident without any reference to nearby factories, on the terse grounds that the 'Govt. is not prepared to give grants of small areas…for this form of cultivation'.[74] Thus, within several months of circulation, the memo had already become an instrument which Malayan administrators could wield for their own

[72] Zaleha Binti Aman, "Zaman Kemelesetan Ekonomi Di Negeri Johor (1928-33): Kesannya Ke Atas Sektor Pertanian Dan Sektor Perlombongan Bijih Timah (The Economic Depression in Johor (1928-33): Its Impacts on Agriculture and Mining)." (BA (Hons) Thesis, Universiti Kebangsaan Malaysia, 1994), 116-118.
[73] ANM-KL: SEL.SEC.G 1646/1929, Encs. 4, 5.
[74] ANM-KL: SEL.SEC.G 1646/1929, Minute, Secretary, BR Selangor, 16.1.1930.

imperatives. In Johor, a state about to become Malaya's leading grower of oil palms, administrators would repeatedly adopt this strategy against smallholders in a variety of contexts during the 1930s, with far-reaching consequences for the eventual shape of Malaya's oil palm industry.

EARLY ATTEMPTS TO PROMOTE LOCAL PALM OIL CONSUMPTION

Ironically, some Malayan officials had few qualms about promoting policies that could conceivably undermine the industry they sought to protect from small-scale involvement. The local consumption of oil palm fruit appears to have been condoned from a very early stage in the industry's development. In 1923 and 1924, the Perak and Selangor land authorities recommended waiving special conditions on oil palm estates to set aside one tenth of their land for food cultivation, on the grounds that the oil palm's products 'were largely foodstuffs'.[75] Although these moves were partly motivated by the Federated Malay States governments' then-general policy of encouraging diversification away from rubber planting, they were also based on the common observation that most European estates tended to apportion land for coconut palms for the subsistence requirements of their Indian and Javanese labour forces.[76] However, given the liberal concessionary atmosphere at the time, it cannot be ruled out that land officials did not seriously think that estate workers would actually take to oil palm fruit voluntarily, and were simply trying to find new ways to entice plantation investments, even if this meant eroding the ability of labourers to maintain their preferred dietary patterns.

From mid-1920s onwards, palm oil provisioning began to be developed in a more deliberate fashion. The Department of Agriculture's chemists had been working on ways to promote local substitutes for groundnut products, most of which were from China and the Dutch East

[75] ANM-KL: SEL.SEC 686/1924, BR Perak, 'Memorandum', 14.12.1923; SEL.SEC 1081/1926, Enc. 1.
[76] Government of Johore, *Annual Report of the Principal Agricultural Officer, Johore, 1929* (Johore Bahru: Government Printer), 14.

Indies, so as to reduce Malaya's dependence on edible oil products from non-sterling areas.[77] At the time, the three most commonly consumed edible oils in Malaya – those of coconuts, groundnuts and sesame seeds – had pale complexions, and did not visibly alter the colour of the foods being cooked in them.[78] Freshly squeezed Malayan palm oil, however, was a 'thin, pasty, deep orange-yellow mass', tinting food during the cooking process.[79] This colour shift convinced the scientists that local consumers would not consider trying oil with such a strong colour in their existing recipes.

This state of affairs contrasted sharply with two other ongoing dynamics. Outside of Malaya, in parts of Central and South America, West Africans brought over via the slave trade had already spontaneously propagated the oil palm for subsistence purposes centuries earlier, having brought with them familiar associations with the tree and its socio-cultural significance.[80] No such West African migrant presence had accompanied the oil palm's introduction to Malaya. This, however, did not necessarily mean that other social groups could not transmit similar cultural messages surrounding the oil palm to Malaya, including Europeans themselves.

Indeed, within Malaya itself, many Europeans had already become habituated to non-European foodways. However, these were not preparations of West African origin, but dishes of Malayan provenance, often introduced through the cooking of Malayan servants. In the process, many Europeans in Malaya, like other inhabitants of Southeast Asia, had begun to prize simple, kitchen-made coconut oil for the rich, tangy flavour it added to curries.[81]

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[77] Grist, *Report*, 198; SSVOC, *Report*, 64.
[78] SSVOC, *Report*, 64-66.
[79] C. D. V. Georgi and Gunn Lay Teik, "Bleaching of Palm Oil." *Malayan Agricultural Journal* 21, no. 1 (1933), 23-24.
[80] Case Watkins, "African Oil Palm Agroecologies in Bahia, Brazil, and Implications for Development." *Journal of Latin American Geography* 10, no. 1 (2011), 9-33.
[81] Carveth Wells, *Six Years in the Malay Jungle* (New York: Oxford University Press, 1988), 36-37; Cecelia Leong-Salobir, *Food Culture in Colonial Asia: A Taste of Empire* (Abingdon: Routledge, 2011), 20, 34, 58.

The internalisation of such Malayan aesthetics in Europeans was not matched by a growing affinity with West African meals when the oil palm was introduced to Malaya. For instance, one research official had spent a considerable amount of time with the oil palm at Singapore's Botanic Gardens during the early 1920s, and had tried using unrefined palm oil to fry his eggs. He found the experience annoying, noting that his eggs 'came to the table with a deep orange film, suggestive of varnish or floor polish – and the flavour, to a palate accustomed to fresh coconut oil or [sesame oil], was not quite pleasant'.[82] Indeed, many Malayan officials and planters had never spent much time in West Africa. And amongst the few who had done so, considerable reservations were expressed about dishes of West African provenance. This was evident in one planter's description of palm oil chop, in a recipe widely disseminated by Malaya's leading journal for estate staff, *The Planter*: 'a delicious dish, though very unappetizing in appearance'.[83] It was as if those promoting palm oil did not really believe their own claims about its desirability. This general apathy and detachment from West African meal preparations was one reason why, throughout the colonial period and beyond, officials and chemists keen on promoting small-scale involvement in the palm oil trade would only consider West African preparatory techniques for palm fruit if they aided palm oil and kernel production, and not their consumption.

Meanwhile, Malaya's Department of Agriculture had begun promoting finished samples of bleached palm oil, denuded of its orange flush, at a major public exhibition in Kuala Lumpur in 1925. Bottles of oil were displayed alongside a picture of the oil palm, making the connection between tree and oil more explicit to attendees.[84] However, reception was poor. This was apparently because the prevalent air-bleaching techniques used at the time to heat the oil to very high temperatures had actually increased its odour, which, while not necessarily unpleasant in itself, must have been jarring to those expecting a fragrance similar to that of fresh

[82] E. Mathieu, "The Oil Palm (Elaeis Guineensis,) in the East." *Gardens' Bulletin, Straits Settlements* 2, no. 7 (1920), 222.
[83] Incorporated Society of Planters, *1919-1994. A Miscellany of 75 Years* (Kuala Lumpur: United Selangor Press, 1995), 14; Susan M. Martin, *The UP Saga* (Copenhagen: NIAS Press, 2003), 53.
[84] AR DAFMS 1925, 7.

coconut or groundnut oil. The rudimentary bleaching techniques used at the time also left a curious brown tinge in the palm oil.[85]

Nevertheless, the Department's chemists continued promoting palm oil's usage. Several years later, another version of bleached palm oil was prescribed to Chinese miners as a substitute for groundnut oil. Again, the oil held little attraction for its recipients. Refining techniques used were still too unsophisticated to shift palm oil's melting point (35 degrees Celsius) closer to that of groundnut oil's (three degrees Celsius). The chemists had also not yet learnt to separate the liquid and more solid fractions of palm oil prior to bleaching: a technique which was only initially explored in Malaya from the early 1930s onwards.[86] When the samples were poured over lukewarm rice, as Chinese labourers usually did with groundnut oil in mixed rice dishes, they gave a greasy, unpleasant mouthfeel to the meal.[87] Without more sophisticated refining techniques, palm oil could not mimic the appearance, scent, texture, and taste of other fats commonly featuring in Malayan food culture at the time.

Despite these early failures, enthusiasm surrounding palm oil's potential consumer market in Malaya continued to grow, chiefly because of the unrefined oil's potential to alleviate vitamin deficiency diseases among local workers. The crucial developments underpinning the nutritional dimensions of palm oil's rise to prominence occurred during the 1910s and 1920s, as part of a wider imperial interest in public health in the colonies after the First World War.[88] General problems of native welfare and scarce labour supplies had begun to impinge on the original Chamberlainite aims of imperial exploitation by the early 1920s. Colonial governments came under increasing pressure to ensure that their labour forces were managed better.[89] In Malaya, the events of the First World

[85] Ibid.; B. J. Eaton, "Annual Report of the Chemical Division for 1925." *Malayan Agricultural Journal* 14, no. 6 (1926), 136; Georgi et al., *Bleaching*, 26, 30-31; Anon., "Palm Oil and Palm Kernel as Soap-Making Materials." *Malayan Agricultural Journal* 28, no. 4 (1940), 194.
[86] AR DAFMS 1934, 59.
[87] SSVOC, *Report*, 62; T. A. Buckley, "The Solid and Liquid Components of Palm Oil." *Malayan Agricultural Journal* 23, no. 7 (1935), 316.
[88] Lenore Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940* (Cambridge: Cambridge University Press, 1996), 89-92.
[89] Hodge, *Triumph,* 118-124.

War and a consequent rice shortage during 1920-1921 also brought food security to the forefront of official concerns throughout the 1920s. Increasing numbers of medical, technical and scientific personnel were consulted on these issues, and many felt it worthwhile to initiate their own contributions.[90]

By the second half of the 1920s, anxieties about food supplies were compounded by concerns about food quality. This policy shift was initially driven by medical practitioners. As colonial public health services expanded, and Western scientific literature on vitamin deficiencies proliferated, Malayan medical personnel became better at identifying vitamin A deficiencies in Indian plantation labourers.[91] These diseases were typically associated with an inability to shed tears. Mild cases consisted of 'night blindness', while more severe forms included xerophthalmia, Bitot's spots and Keratomalacia (Illustration 3). The last condition, with its characteristically opaque and perforated corneas, was irreversible.[92]

[90] TNA: CO 273/548/10, Encs. 5, 6; CO 273/558/1, J. Kay-Mouat and J. Rosedale, 'Enclosure No. 1 to Straits Despatch Secret of 25 February 1929', 26.11.1928; I. H. Burkill, "It Needs Want to Make People Change Their Food-Habits." *Gardens' Bulletin, Straits Settlements* 2, no. 4 (1919), 135-136; Paul K. Kratoska, "Rice Cultivation and the Ethnic Division of Labor in British Malaya." *Comparative Studies in Society and History* 24, no. 2 (1982), 280-314.

[91] Manderson, *Sickness*, 63-66, 77-79; Richard D. Semba, *The Vitamin A Story* (Basel: Karger, 2012), 73-74.

[92] A. Viswalingam, "Keratomalacia." *Malayan Medical Journal 3,* (1928), 86; Id., "Food and Disease in Malaya: With Observations on Pellagra and Keratomalacia." *Malayan Medical Journal* 4, no. 2 (1929), 65-69; J. W. Field, "Some Observations on Vitamin 'A' Starvation among Immigrant Indians in Malaya." *Malayan Medical Journal* 6, no. 1 (1931), 46-52.

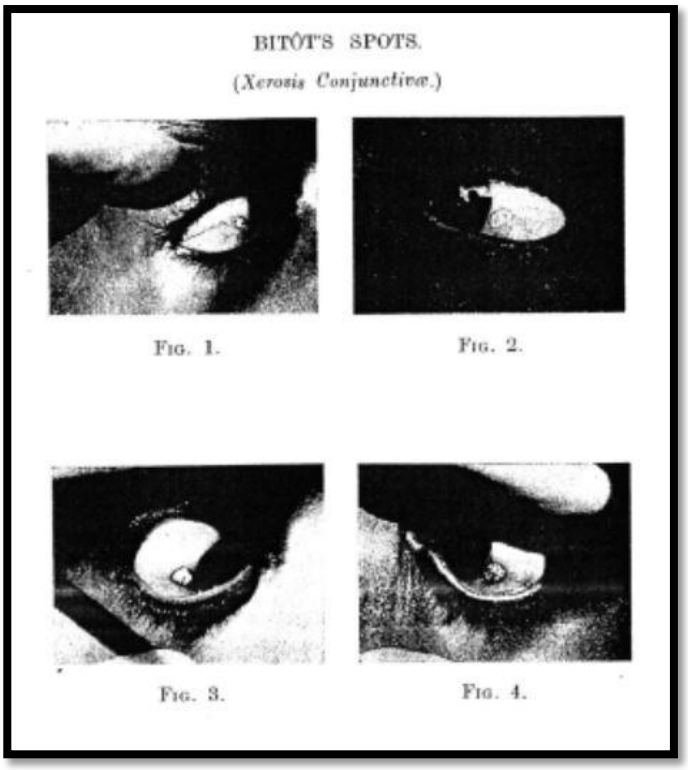

Illustration 3. Bitot's spots, documented in Malayan Tamil children, circa 1940. Source: A. Kingsbury and P. Fasal. *A Nutritional Survey of the Federated Malay States. I. Illustrated Descriptions of Common Clinical Manifestations of Subnutrition among Rural Malays and Tamils.* Kuala Lumpur: Federated Malay States Government Press, 1940, Plate I.

However, comparatively little was known within medical circles about the kinds of locally accessible food that might alleviate such deficiency diseases. Extant knowledge was limited to food more easily available in Europe and North America, such as milk and cod liver oil. These were items rarely consumed in Malaya at the time.[93] Instead, some Malayan medical officers found themselves following the lead of Indian estate labourers themselves, who typically consumed vitamin A-rich goat's liver, where locally accessible, as an effective cure for night blindness.[94] Yet it is unclear why this practice, with its roots in Ayurvedic medicine, did not occur often enough to stop such diseases from occurring widely. It

[93] Geoffrey Kevin Pakiam, "The Consumption of Dairy and Vegetable Oil Products in the Malay Peninsula, c. 1890-1960." In Food, Feeding and Eating in and Out of Asia, 7th Annual International Asian Dynamics Initiative Conference, University of Copenhagen, 24-26 June 2015, 23; Semba, *Vitamin A*, 92-93.
[94] Field, *Starvation*, 50.

may have had to do with the fact that estate managers usually prohibited their field workers from keeping livestock onsite, for fear of damage to rubber saplings and other young cultivars.[95]

Healthcare practitioners were torn in their responses to these challenges. They realised that labourer diets were generally very heavy in carbohydrates, and lacked protein and fat. Noting the degraded quality of many of these mostly imported foodstuffs, they argued that the problem was not specifically vitamin A-related, but one of general living standards. These included a lack of access to fresh food, better housing, and potable water.[96] At the same time, growing scientific knowledge regarding the causes and consequences of vitamin A deficiency – which included not just eye problems but stunted physical growth and weakened immune systems – prompted medical officers to suggest that surveys of local foods rich in vitamin A would assist the cause of preventive medicine.[97] Somewhat ironically, estate managers were singled out as potential collaborators for improving the nutritional status of labourers and their families.[98] In fact, by the late 1930s, numerous Malayan estates would be found launching palm oil provision schemes for their labourers, with highly questionable outcomes for all involved.

Malayan doctors were not the only clinicians to be caught in this bind between broad and narrow approaches to native welfare. In a classic essay on imperial public health, Michael Worboys has argued that this conundrum was intrinsic to British colonial nutrition policies. Worboys contended that medical officers concerned about deficiency diseases in non-European populations were often aware of colonialism's role in the matter, namely its encouragement of cash crop production and reliance on international food markets at the expense of local food production strategies and household economic resilience. Unease about colonialism was nevertheless tempered by the rapid and still-novel advances of nutritional science. With their tantalising promise of fostering better lives

[95] H. Walker, "Livestock on Estates." *Malayan Agricultural Journal* 28, no. 2 (1940), 69-71.
[96] Field, *Starvation*, 50; Viswalingam, *Observations*, 68.
[97] Field, *Starvation*, 52; Viswalingam, *Observations*, 67-68.
[98] Viswalingam, *Keratomalacia*, 86.

through more precisely calibrated diets, nutritional findings tended to encourage paternalistic, piecemeal, and depoliticised approaches to poverty alleviation.[99]

The Malayan dilemma was pushed in the direction of nutritionism when research along biochemical lines was given a tremendous fillip from abroad. In the interests of 'human development', an endowment of $350,000 was bestowed by the Rockefeller Foundation on Singapore's King Edward VII College of Medicine in 1925, establishing two Chaired Professorships in Bacteriology and Biochemistry in the process. These also led to the founding of the Biochemistry Department, and the appointment of John Rosedale, aged 37, as the inaugural Chaired Professor in Biochemistry.[100] The son of an English clergyman, Rosedale came to Malaya in 1927 armed with a trans-Atlantic research background in the nutritional properties of amino-acids, as well as the distinction of having studied under Elmer McCollum, an American already famous for pioneering nutritional experiments with rats, and more controversially, his claim (eventually disproven) to have been the first chemist to identify vitamin A.[101]

In 1928, Rosedale's unfolding research objectives and agenda were publicised in a leading Malayan academic journal for public health researchers. In a brief article, Rosedale argued that applied nutritional research on Malayan foodstuffs could contribute significantly to imperial goals. Playing on imperial insecurities regarding starvation-induced political instability at the British Empire's peripheries, Rosedale pointed out that medical investigators had already shown that Malayan diets urgently needed improvement. With sufficient support, biochemists could provide medical practitioners with new scientifically-proven knowledge of

[99] Michael Worboys, "The Discovery of Colonial Malnutrition between the Wars." In *Imperial Medicine and Indigenous Societies*, ed. David Arnold (Manchester: Manchester University Press, 1988), 208-209.
[100] D. W. G. Faris, "History of the King Edward VII College of Medicine Singapore. 1905-1949." *Medical Journal of Malaya* 4, no. 1 (1949), 7; J. W. H. Lugg., "The Place of Biochemistry in a University." *Medical Journal of Malaya* 4, no. 1 (1949), 45; H. E. Khoo, "Teaching Biochemistry to Medical Students in Singapore - from Organic Chemistry to Problem-Based Learning." *Annals, Academy of Medicine, Singapore*, 34, no. 6 (2005), 79.
[101] WLA: SA/BMF/A.2/78, J. Rosedale, 'Application for a Beit Memorial Medical Research Fellowship', 15.5.1922; Semba, *Vitamin A*, 80-92.

how to prescribe food as medicine. Once hundreds, if not thousands, of known Malayan food ingredients were deconstructed by Rosedale and his colleagues at the Biochemistry Department's laboratories, 'irrational' local food preferences could be transformed into a nutritionally superior dietary regime. A new diet would include foodstuffs with higher levels of calcium, phosphorus, and vitamin A, substances that were found lacking in popular staples like polished rice and coconut oil.[102]

The first steps towards discovering which local foods were nutritionally superior were taken during the late 1920s, when preliminary chemical surveys were conducted on various individual Malayan food items. The Biochemistry Department appears to have relied on food markets in Singapore and the cooperation of the Malayan Department of Agriculture for most of its samples.[103] Investigations were accelerated from mid-1929 onwards, thanks to fresh funds from a joint arrangement between the Straits Settlements authorities and the newly-established Colonial Development Fund. Spurred by Rosedale's appeal for support regarding 'the subject of vitamins in Malaya', the latter body agreed to contribute £6,000 to the Department's research scheme.[104]

The Colonial Development Fund's support for Rosedale's work was founded on reasons similar to those of the Empire Marketing Board's for Malayan copra research. The Fund had a positive view of broad-based research initiatives spearheaded by resident experts, and was encouraged by the likelihood that Rosedale's findings would be useful beyond Malaya. Moreover, the Colonial Office's chief medical expert, Ambrose Stanton, had previously conducted path-breaking research into deficiency diseases in the Federated Malay States before the First World War, and had a keen interest in seeing similar work continued in the colonies.[105]

[102] John Lewis Rosedale, "Has Malaya Any Food Problems?" *Medical Journal of Malaya* 3, no. 2 (1928), 86-88.
[103] TNA: CO 273/590/15, Encs. 2, 4; Biochemical Laboratory, King Edward VII College of Medicine, Singapore. "Food Facts I." *Medical Journal of Malaya* 4, no. 4 (1929), 149.
[104] TNA: CO 273/564/20, Enc. 5.
[105] TNA: CO 273/564/20, Enc. 10; Rosedale, *Food Problems*, 86; Hodge, *Triumph*, 119-120.

It also helped that the Straits Settlements authorities had agreed to supply 'the larger share' of funds involving staffing and laboratory facilities.[106] The enthusiasm of the Straits Settlements authorities had probably been fuelled by a similar interest in the potential power and utility of new nutritional discoveries. After reading one of Rosedale's later reports on vitamin content in Malayan foods, Harold Tempany, who served as Director of Agriculture of the Straits Settlements between 1929 and 1936, professed a strong belief in the ability of vitamins to influence native consumption patterns, despite the lack of any supporting evidence. Upon reading that betel leaf, typically used in Asia as a flavoursome wrapper for arecanut chewing, was richer in vitamin A than any known green leafy vegetable in Malaya, he concluded that betel leaf's vitamin content was 'one of the reasons for its great popularity among orientals'.[107] Such comments were also suggestive of a general inability on the part of colonial officials to fully appreciate the long-standing cultural attractions of betel quid consumption for Asians, let alone condone its increased consumption.

Although financial support from the colonial authorities was crucial to Rosedale's nutritional investigations, the vitamin-bearing properties of unrefined palm oil were already well-known within scientific networks, particularly those related to nutrition. Thanks to a growing body of biochemical research previously conducted in Britain, scientists had already shown that carotenoids, substances which gave palm oil its characteristic ruddy glow, could be converted into vitamin A in rats.[108] The main task facing Rosedale and his colleagues was to localise such research, comparing the nutritional profile of Malayan palm oil with that of other locally available oils. Preoccupied with a large number of experiments on other Malayan food ingredients, local laboratory results backing Malayan palm oil's superior nutritional profile would only be published in the early 1930s. Nonetheless, the path to Malayan palm oil's rise as a superfood had already been mostly paved by 1929. All that was

[106] TNA: CO 273/564/20, Encs. 1, 5, 7; CO 273/559/26, Enc. 2A; CO 825/7/1, Enc. 1.
[107] TNA: CO 273/656/2, Minute, H. A. Tempany, 23.1.1940; J. L. Rosedale, *Chemical Analyses of Malayan Foods* (Singapore: W.T. Cherry, 1935), 13-16.
[108] Semba, *Vitamin A Story*, 93-94.

needed now was the stamp of local scientific authority, and a cabal of enthusiastic promoters, conditions that would soon be fulfilled during the events of the Great Depression and their aftermath.

CONCLUSION

Official colonial responses to smallholder tree crop agriculture in Malaya were initially guided by a number of overarching goals, including diversification beyond rubber, alleviating local food insecurity, enhancing rural Malay livelihoods, and upgrading the quality of Malaya's agricultural exports. From early on, the improvement of the coconut sector was viewed as a way to fulfil these objectives simultaneously. Public administrative and scientific support was channelled accordingly. When these efforts failed to address quality concerns, anxieties about smallholder production repertoires were transferred to the recently established oil palm industry. At different times in both sectors, exclusionary policies against smallholders were attempted on the grounds of quality control. Only in the oil palm sector, however, was there little to stand in the way of policy implementation, since relatively few smallholders were interested in the industry to begin with.

To date, historians have not recognised the intimate relationship between the coconut and oil palm industries in the making of colonial regulatory strategies. Instead, scholars recounting the emergence of Malaya's oil palm industry have typically made two interrelated claims. First, they contend that industry's initial commercial success during the interwar years lay in its deployment of large-scale processing machinery, which in turn allowed estates to produce palm oil of a consistently high quality.[109] Second, they assert that it was the spread of these large-scale mills which kept smallholders out of the oil palm sector, since they rendered labour-intensive small-scale processing methods obsolete.

[109] Tate, *Industry*, 453-454, 457; Kurt G. Berger and Susan M. Martin, "Palm Oil." In *The Cambridge World History of Food. Volume One,* eds. Kenneth F. Kiple and Kriemhild Conee Ornelas (Cambridge: Cambridge University Press, 2000), 404; Martin, *Saga*, 52-53.

Both views, based on uncritical readings of colonial discourses of European technological superiority, require revision in the light of evidence presented in this chapter. Low-acid palm oil was, in the first instance, the result of careful attention to crop handling, transport and sterilisation prior to oil extraction, all of which were already in play during the most labour-intensive phase of the Malayan industry's establishment. In short, decisions to focus on quality improvement were made prior to heavy mechanisation of the production process, just like how Nigerian smallholders, motivated by sufficiently large price premiums, had begun to produce large amounts of low-acid palm oil for export after the Second World War.[110] The heaviest pressures to mechanise palm oil processing in Malaya arose not just from the prestige associated with modern machinery, but also from the manner in which Western buyers only awarded quality premiums for large palm oil consignments, pushing larger plantations to substitute labour with capital. Again, this was not because labourers could not produce high-quality oil, but probably because of the managerial problems associated with supervising time-sensitive operations by large numbers of geographically dispersed field workers.

Extant scholarly interest in Malaya's oil palm sector has also neglected an even more pertinent fact. Far greater processing economies were to be found in the coconut industry during the first half of the twentieth century, partly because huge quantities of copra could be consolidated from dispersed areas, and stored for far longer intervals than palm fruit. It should therefore come as no surprise that significant numbers of oil palm estates continued to successfully use small-scale processing methods to generate palm oil throughout the 1920s. In fact, once a domestic market for Malayan oil palm produce began to emerge during the 1930s, sections of the local plantation industry found it commercially sensible to produce small quantities of palm oil for the domestic scene on a regular basis, using relatively labour-intensive methods of production.

[110] Susan M. Martin, "The Management of Palm Oil Production in Colonial Nigeria and Malaya: 1900-1940: A Comparative Study." South East Asia Regional Conference of the Academic of International Business, Kuala Lumpur, 27-29 August 1987, 4.

As already seen in Chapter Two, what really made the oil palm less amenable to smallholder cultivation were the numerous advantages that tree crops like coconuts and rubber offered to smallholders at the harvesting, handling, and marketing stages, avoiding the tedium and physical danger associated with oil palm cash cropping. After 1929, these advantages were compounded by official policies towards smallholders, which were openly supportive of coconut farming, but not oil palm cultivation.

Finally, this chapter raises important issues about industrialisation under colonial rule that would benefit from further research. The first is the extent to which Malaya's industrial development, including its large-scale oil extraction and chemical manufacturing facilities, was typical of broader trends operating within East, Southeast, and South Asia during the first half of the twentieth century.[111] The second is the degree to which Malaya's industrialisation actually benefitted British interests, including those of high finance. Both are big, complex questions which have only begun to be revisited in extant scholarship, in the light of recent findings by Japanese economic historians and scholars of British imperial history.[112] To be sure, both of these queries lie well beyond the scope of a thesis focused on smallholder farming practices. Nonetheless, the historical details surfaced in this chapter and following ones can hopefully serve as raw material for future debates regarding the shape and significance of non-Western industrialisation during the colonial period.

[111] Nasir Tyabji, *Colonialism, Chemical Technology and Industry in Southern India* (Delhi: Oxford University Press, 1995).
[112] Nicholas J. White, "Gentlemanly Capitalism and Empire in the Twentieth Century: The Forgotten Case of Malaya, 1914-1965." In *Gentlemanly Capitalism and the British Imperialism: The New Debate on Empire*, ed. Raymond Dumett (London: Longman, 1999), 175-195; Id., "Malaya and the Sterling Area Reconsidered: Continuity and Change in the 1950s." In *The International Order of Asia in the 1930s and 1950s*, eds. Shigeru Akita and Nicholas J. White (Farnham: Ashgate, 2010), 152-76.

Chapter Four

SMALLHOLDER INVOLVEMENT IN TREE CROPS DURING THE GREAT DEPRESSION, 1929-1934

Several months after Malaya's oil palm industry had acquired official protection from an imagined smallholder threat, it was forced to confront the far more tangible danger of a global commodities bust. The Great Depression became the industry's baptism of fire. The Malayan coconut sector, while more familiar with price volatility, also suffered from unprecedented export price cuts during the first half of the 1930s.

The period between 1929 and 1934 is marked by two enigmas. First, while both the oil palm and coconut industries experienced setbacks during the Depression, the former emerged from the period in far better shape than the latter. Throughout the period, the oil palm sector expanded steadily in acreage, while the coconut industry's landholdings stagnated, and began to thin out. Second, despite the divergent trajectories of these industries, most smallholders remained committed to coconut farming, and very few tried moving into oil palms.

Geography accounts for much of the initial parting of fortunes between the two sectors. Malaya's main coconut-growing areas were located along the western coastline, where suitable land was becoming scarce, and increasingly prone to prolonged flooding. Coconut yields on affected lands subsequently plummeted, compounding the misery of falling prices for farmers. In contrast, most oil palm estates, including those in Johor, were sited on inland soils, relatively free of the drainage problems harassing the West Coast. Here, where agricultural land was still relatively abundant, oil palm growers were able to take advantage of falling input costs to expand their plantings, in anticipation of a future price recovery.

The question of smallholder persistence with coconut farming, and a continued aversion to oil palms, is more complicated. With some official support, coconut growers across Malaya used an array of approaches to stabilise incomes and manage the decline of forest rent associated with waterlogged soils. To borrow a concept used by François Ruf and Götz Schroth, agricultural diversification took place both vertically (through increased coconut processing), and horizontally (through the increased channeling of labour into other cultivars adapted to poorly-draining soils).[1] To help meet the increased demands on agricultural labour that these strategies required, smallholders appear to have intensified sharecropping and the use of animal labour on coconut farms. In some circumstances, these techniques even led to income growth. Generally, however, they were insufficient to address mounting problems of drainage and localised flooding.

The oil palm situation evolved differently. In Johor, where one might have expected spontaneous smallholder diversification into a new cash crop, given how quickly estates were planting up land with oil palms during this period, the relative absence of any known local uses for the oil palm diminished general household interest in its cultivation. Without the advantage of prior smallholder involvement in the crop, forming collectives to pioneer bulk sales became the only way for smallholders and dealers to surmount the opportunity costs of diversification into oil palms. This strategy was indeed attempted several times during the period, particularly in the vicinity of estates. However, such activities also courted official attention, due to their heightened visibility. A new restrictive official policy towards oil palm smallholdings, catalyzed by Tempany's memorandum of 1929, was consequently deployed, inhibiting whatever interest remained in small-scale oil palm planting. State authorities effectively reinforced the notion that rubber, coconuts and other cultivars, with their already extensive marketing networks, were much safer options for smallholder labour during the period.

[1] François Ruf and Götz Schroth, "Introduction." In *Economics and Ecology of Diversification: The Case of Tropical Tree Crops*, eds. François Ruf and Götz Schroth (Dordrecht: Springer, 2015), 1.

It is nonetheless premature to conclude that developments during this period irrevocably shut smallholders out of the oil palm industry. Instead, the Great Depression saw the continuation of a trajectory that would harden the implicit terms on which smallholders could feasibly cash crop the palm. This involved the consolidation of the oil palm's commodity form as a crop purely for industrial purposes, as opposed to a household crop with a mixture of subsistence and commercial functions, like the coconut palm.

The upheavals of the Depression spurred this form of commodification in several ways. First, they encouraged Malayan chemists to promote unrefined palm oil consumption on the grounds of better nutritional intake among locals, in a bid to improve local standards of living. These attempts to change dietary preferences, via purely biomedical understandings of food, failed to persuade locals to view palm oil as an aesthetically attractive substance.

Second, the Malayan chemical industry took advantage of falling prices for both copra and palm oil to boost domestic soap production, and displace more costly imported soaps. Palm oil, used in this manner, was rendered invisible to its consumers. Knowledge of how its raw form could be used by households was supplanted by consumer interest in branded, locally-made industrial products.

Third, cost-cutting measures taken by leading oil palm enterprises to survive the lean years ultimately spurred smallholder involvement in oil palms. This would only become more apparent decades later, after the Second World War. By investing in large-scale infrastructure to reduce transport and packaging overheads during the Depression, the industry put itself in a better position to take advantage of heavier international demands for palm oil during the 1950s, inadvertently encouraging more smallholders to sell palm fruits to already existing estate mills. In the early 1930s, however, the attractions of oil palm farming were driven primarily by market slumps in other cash crops, including coconuts and rubber.

THE MATURING OF WEST JOHOR'S COCONUT FRONTIER

Although not immediately obvious at the time, the Great Depression became the proverbial straw that broke the back of Malaya's coconut farming sector. International demand for copra, which had been a major driver of Malayan coconut palm expansion since the early twentieth century, petered out during the later stages of the slump, as international markets dealt with a growing glut of fats and oils.[2] In Johor, where coconut production was almost completely derived from smallholdings, state-wide copra exports peaked in 1933.[3] A similar peaking of copra exports appears to have occurred in Perak and Selangor, but at an earlier date, sometime between 1930 and 1931.[4]

Taken alone, the copra slump of the early 1930s dealt a serious blow to the Malayan industry, but not one which did irreparable damage to its prospects. The crash was mitigated by the extremely low cash costs of smallholder coconut production, which, by one educated estimate, were even lower than those of most rubber smallholdings during the same period.[5] Moreover, as will be seen later, local and regional demands for surplus coconut produce provided a level of support that rubber was not privy to.

What was particularly problematic about the slump was how it exacerbated other entrenched problems. A gradual but persistent deterioration in Malayan copra and copra oil prices had already set in from around 1924-1925, about five years before the beginning of the period typically associated with the Depression (see Figure 1). This had been largely due to a growing number of substitutes for coconut oil entering international markets following the First World War. In Perak and Selangor, the price decline, coupled with a rubber price boom during the mid-1920s, appears to have discouraged further coconut planting on

[2] D. J. M. Tate, *The RGA History of the Plantation Industry in the Malay Peninsula* (New York: Oxford University Press, 1996), 447.
[3] Appendix 4.1.
[4] Anon., "Malayan Coconut Statistics." *Malayan Agricultural Journal* 20, no. 7 (1932), 369.
[5] LSE: FIRTH 2/7/10, Raymond Firth and A. E. P. Collins, 'Malay Peasant Agriculture' (henceforth MPA), 297-307.

smallholdings by 1927.[6] Unlike the Stevenson Plan of the 1920s, whose restrictions on rubber production in Ceylon and Malaya helped bring about this rubber price spike, nothing comparable could be put in place for coconuts owing to the wide range of substitutes already in international circulation.[7] Thus, even before the Depression's onset, the coconut frontier's expansion had effectively ceased in Perak and Selangor.

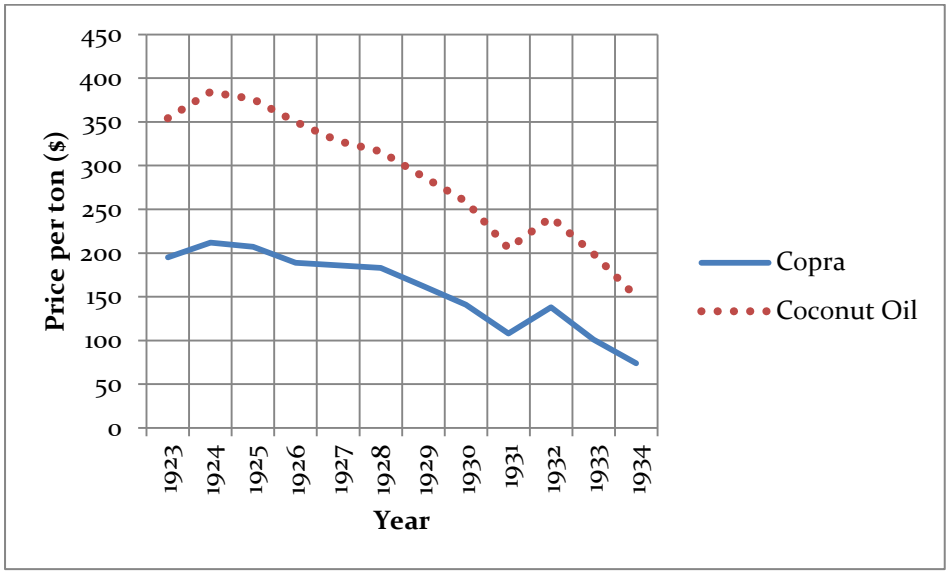

Figure 1. Singapore: wholesale prices, copra and coconut oil, 1923-1934, deflated by the Sugimoto Consumer Price Index (1928=100). Source: Appendix 2.1.

In Johor, however, the frontier had yet to close. Where agricultural land was still relatively abundant further inland, and much of this terrain suitable for coconuts but not rubber, new coconut planting continued in spite of copra price declines. In 1929, large numbers of Javanese and Bugis migrants were found establishing palms in new settlements along the West Coast, extending the inward reach of coconut belts in the Batu Pahat and Muar districts.[8] Malaya's inaugural Coconut Census of 1930 also corroborates the view that coconuts remained a popular crop for new planting in Johor during the early years of the Depression. At the time of

[6] F. W. South, "Annual Report of the Chief Field Officer for 1926." *Malayan Agricultural Journal* 15, no. 5 (1927), 142.
[7] John H. Drabble, *Malayan Rubber: The Interwar Years* (Basingstoke: Macmillan, 1991), 15-17.
[8] Government of Johore, *Annual Reports of the Principal Agricultural Officer,* Johore (henceforth PAOJ), *1929* (Johore Bahru: Government Printer), 13-14.

the survey, two out of every seven of Johor's planted coconut palms were thought to be very recent plantings.[9]

The flipside to these inland expansions was the scarcity of land closer to Johor's low-lying western coastline, already observable since the 1910s. Here, pre-existing problems with prolonged flooding were compounded by three factors: inward migration (which placed further pressure on common drainage infrastructure), the unprecedented fall in copra prices between 1929 and 1934, and what seems to have been a resultant shortage of labour to maintain existing drainage systems. This conjuncture caused the longest-established households near the foreshore to bear the brunt of increased flooding. At Sri Menanti, a prominent coconut settlement in northwest Johor, swathes of coastal palms were found moribund in 1934, despite having produced some of the largest nuts in Muar district just a few years earlier.[10] Although the predominant canals in the area had been enlarged by smallholders during the 1920s to accommodate a growing Malay population, work had halted during the Depression. The worst-affected households near the coast sought to outlast the slump by mortgaging their holdings to either Chettiar moneylenders, or Chinese crop buyers. By the end of 1934, however, many such households had given up, forfeiting their properties to creditors, and had migrated elsewhere. This abandonment accelerated the decay of coastal drainage infrastructure, setting off a chain reaction of misfortune further inland for growers and dealers alike.[11]

Johor's coconut woes would have been even more serious, were it not for the attempts of smallholders to stabilise their falling incomes through several different strategies. The first was the rise of Malay participation in copra manufacture. By the 1920s, a wealthier stratum of coconut growers doubling up as copra-makers had emerged within migrant Javanese communities in West Johor, fuelled by their earlier use

[9] D. H. Grist, "The Malayan Coconut Census, 1930." *Malayan Agricultural Journal* 19 (1931), 62.
[10] Department of Irrigation and Drainage, FMS, *Report of Mr. A. G. Robinson…on His Visit to Johore, 1938* (Kuala Lumpur: Government Press, 1938), 23-24, 26.
[11] Ibid., 23-26.

of bonded labourers (*orang tebusan*) for agricultural work.[12] This dynamic was accelerated by a sharply rising premium for first-class copra during the glut, which saw top-quality copra fetch a fifth more value than second-class copra by 1934.[13]

By 1932, about 1,660 kilns were in operation in West Johor, with three-fifths of these in the hands of Chinese intermediaries. The remainder were owned by 'Mohammedans', who seem to have been predominantly of Javanese and Bugis origin.[14] Some of the kilns owned by wealthier non-Chinese owners were permanent constructions made of clay, brick, metal and cement.[15] Most of the newer entrants, however, used low-cost imitations of small Chinese-designed open-air rack furnaces, attracting criticisms from technical officials for the draughtiness of such racks and their inability to dry copra uniformly (Photograph 12).[16]

Photograph 12. Copra drying rack, circa 1900-1950. Reproduced with permission of Arkib Negara Malaysia.

[12] Syed Husin Ali, *Social Stratification in Kampong Bagan. A Study of Class, Conflict and Mobility in a Rural Malay Community (*Singapore: Malaysian Branch of the Royal Asiatic Society, 1964), 28-31.
[13] Appendix 2.2.
[14] PAOJ 1932, 14, 21-22; H. A. Tempany, *Report on Agricultural Development in Johore* (Johore Bahru: Government Printing Office, 1934), 6.
[15] TNA: CO 717/97/15, Asst Chemist for Copra Research, SS & FMS, 'Annual Report 1932. Copra Research', 10-11.
[16] PAOJ 1932, 14.

The ethnic dimensions of this rising competition in the copra production segment can be easily exaggerated, given the increasingly racist overtones of government records for the era. But it is clear that federal and state policies were turning against Chinese copra producers, and affecting the playing field somewhat. Official views of Malayan Chinese crop buyers had grown increasingly disparaging since the First World War, due to the dwindling reliance of colonial administrations on Chinese intermediaries for revenue collection, a heightened sense of European superiority, and the rapid expansion of the Chinese population within Malaya, including Johor.[17] Running parallel to this official prejudice was the growing sense that coconut and copra producers perceived as ethnically Malay needed support if they were to avoid destitution. Although a significant minority of agricultural officials continued to argue that all producers should be aided, regardless of race, fears that Malay growers would forfeit their lands to Chinese intermediaries eventually won out.[18]

The Depression thus created an opening for agricultural officials, led by Francis Cooke, Malaya's resident copra research expert since 1929, to apply the full force of their technical knowledge to date. Ideally, all Malay-owned kilns were to be upgraded so that the full benefits of the copra premium could be passed onto growers. From 1932 onwards, sub-district officials (*penghulu*) and influential Malay copra makers were co-opted into programmes where they received instructions on copra preparation at the Federal Coconut Experiment Station in Klang, in preparation for establishing larger kilns of government design.[19] Typical of such participants was a wealthy Johor-based landowner, claiming a

[17] Christopher Stephen Gray, "Johore, 1910-1941, Studies in the Colonial Process." (PhD Thesis, Yale University, 1978), 102; Howard Dick, "A Fresh Approach to Southeast Asian History." In *The Rise and Fall of Revenue Farming: Business Elites and the Emergence of the Modern State in Southeast Asia*, eds. John Butcher and Howard Dick (New York: St. Martins, 1993), 10-12; B. Andaya and L. Andaya. *A History of Malaysia* (2nd ed.) (London: Macmillan, 2001), 244.

[18] ANM-KL: HCO 425/1934, Enc. 4, 7-8; ANM-KL: 2006/0009847, Minutes, Fourth Inter-Departmental Agricultural Conference, Kuala Lumpur, 8-12 August 1933, 13-14; Gray, 'Johore', 101; Lim Teck Ghee, *Peasants and Their Agricultural Economy in Colonial Malaya, 1874-1941* (Kuala Lumpur: Oxford University Press, 1977), 198-199.

[19] Ezwan Arman, Mohd Zufri Mamat, and Maisarah Hasbullah, "Agricultural Education as a Medium for the Transmission of Western Science During British Rule in Malaya, 1905–1957." *History of Education* 45, no. 5 (2016), 593.

following of growers from 1,500 acres of coconut lands in the coastal sub-district of Benut.[20] In exchange for government largesse to build the kiln, output quality was to be officially supervised for two years from the start of production.[21] Cooke and his colleagues ultimately intended for these pilot projects to catalyse interest among other producers.[22]

In Johor, however, initial progress was painfully slow. Only two such kilns had been launched by 1934, both under the ownership and control of their respective *penghulus* at Sri Menanti and Ringgit. It was clear that both kilns were technically excellent and capable of producing first-class copra, but the benefits derived from the premium were offset by heavy transport costs to Singapore, making it more worthwhile to sell the copra locally to dealers at lower prices.[23] The model kilns were also quickly losing the fight for nut supplies in what was already a crowded field.[24] During the slump, Chinese dealers had reacted to increased competition by offering higher farmgate prices for coconut produce. This, in turn, narrowed the price gap between lower and higher grade nuts in Johor, reducing the incentives of copra producers to prepare copra more carefully.[25] Similarly, Malay copra marketing cooperatives formed with the support of Johor authorities did not last long, owing to more attractive cash-on-delivery facilities offered by Chinese dealers.[26] Despite a redoubling of official efforts to encourage Malay copra manufacturing and collective sales until the end of the interwar years, narrow copra price premiums persisted, and heavy competition between existing dealers meant that copra quality generally remained mediocre.[27]

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[20] ANM-KL: HCO 425/1934, Enc. 4, Appendix II.
[21] Ibid., Enc. 4.
[22] TNA: CO 717/90/12, Asst Chemist for Copra Investigations, SS & FMS, 'Annual Report for Copra Research, 1931', 20.1.1932, 4; PAOJ 1932, 14.
[23] LSE: FIRTH MPA, 351-352; PAOJ 1934, 21-22.
[24] TNA: CO 717/71/5, Enc. 7; CO 717/82/4, Enc. 19; CO 717/97/15, DA DAFMS, 'Memorandum', 1.4.1933; PAOJ 1934, 21-22; F. C. Cooke, "The Economic Factors of Copra Research." *Malayan Agricultural Journal* 19, no. 2 (1931), 55-59.
[25] H. A. Tempany, "Coconuts and Copra in Malaya in 1932." *Malayan Agricultural Journal* 21, no. 11 (1933), 541.
[26] PAOJ 1934, 22; Tempany, *Johore*, 6.
[27] Appendix 2.2; Government of Johore, *Annual Report of the State Agricultural Officer, Johore* (henceforth SAOJ), *1938* (Johore Bahru: Government Printer 1939, 19; Government of Johore, *Annual Report on the Social and Economic Progress of the People of Johore for 1939*

While such competition helped support underlying coconut prices, other competing uses of coconuts limited the numbers of nuts copra-makers could acquire from farmers. One of these was the relative attractiveness of the fresh produce market in Malaya. By the end of 1933, the sale price of fresh nuts had exceeded that of copra in West Johor.[28] When copra prices plunged further during 1934, coconut smallholders shifted sales further towards local and regional markets for whole nuts. More coconut products were sold to areas that were traditionally coconut-deficit regions, such as Pahang and Negri Sembilan, suggesting that coconut consumption had been low in these areas to start with.[29] Even in areas with a traditional surplus of coconuts, such as Selangor, Malacca and Johor, village-made coconut oil was put on sale in nearby markets (*pasar*), where previously little had been found.[30]

The home market for village-made coconut produce was undoubtedly important in providing an additional safety net for coconut farmers during the global slump. But the absence of any systematic field surveys of Malayan rural trade and consumption during this period makes its significance difficult to measure. Such methodological problems are probably not uniquely Malayan, given the paucity of detailed scholarship on peasant consumption in Southeast Asia.[31] Nevertheless, however rudimentary, some measure of domestic coconut consumption is necessary. We can then begin to address the important question regarding the extent to which local circulations kept an export-oriented industry afloat during a global commodities slump, a question which may also be of interest to those studying contemporary events in Southeast Asia (a theme we will return to in Chapter Eight).

(Johore Bahru: Government Printer, 1940), 9-10; Gray, 'Johore', 184; F. C. Cooke, "Copra Manufacture." *Malayan Agricultural Journal* 24, no. 4 (1936), 167-176.

[28] F. W. South, "From the Districts." *Malayan Agricultural Journal 21,* no. 12 (1933), 700.

[29] ANM-KL: HCO 425/1934, Enc. 4, 6.

[30] Mohamed Noor, "Report on the Weekly Fairs in Krian." *Malayan Agricultural Journal* 13, no. 1 (1925), 13-16; LSE: FIRTH MPA, 143, 211; Straits Settlements Vegetable Oils Committee, *Report of a Committee…on the Present Economic Condition of the Coconut and Other Vegetable Oil Producing Industries in Malaya* (henceforth SSVOC) (Kuala Lumpur: Government Press, 1934), 39; F. W. South, "From the Districts." *Malayan Agricultural Journal* 21, no. 11 (1933), 578-580.

[31] Ian Brown, "Rural Distress in Southeast Asia During the World Depression of the Early 1930s: A Preliminary Reexamination." *The Journal of Asian Studies* 45, no. 5 (1986), 1006.

For this period, per capita consumption estimates of artisanal coconut produce, primarily in terms of fresh nuts and coconut oil, came from agricultural officials tasked with investigating the overarching operations of the Malayan coconut sector. As with later estimates, the methodologies used to obtain consumption estimates were riddled with questionable assumptions and unclear methodologies. It is from these impressionistic beginnings that estimates of rural coconut product trade are formed.

In 1930, local coconut expert Francis Cooke claimed that the average Malayan consumed the equivalent of 50 coconuts per year in terms of village produce, including coconut oil, coconut milk and so forth. Such consumption took up a quarter of the estimated annual Malayan crop.[32] Four years later, an official committee convened to review the affairs of Malaya's oil crop industries offered a per capita estimate almost twice of Cooke's, which amounted to roughly two-fifths of the entire coconut production of Malaya.[33] Either domestic consumption per capita had doubled within four years, or else the estimates themselves were grossly inaccurate. The latter seems more likely. As outsiders to village life, officials often underestimated the sheer amount of coconut material that was being used behind closed doors, whether in the form of coconut water, cooking oil, sweet cakes, curry gravy, palm sugar, alcohol, firewood, construction materials, and soap. Moreover, the Committee may have had a vested interest in underestimating local consumption figures, given that their attention was motivated by the need to increase domestic coconut consumption in future years, so as to blunt the impact of export shortfalls.[34] More rigorous consumption estimates based on long-term embedded field research in Malaya during the late 1930s offered a much higher figure than those earlier in the decade, although, as will be seen in Chapter Five, such estimates were not infallible either. Perhaps the best that can be said is that there was a significant amount of flexibility built into local coconut consumption systems at the time.

[32] Appendix 6.5.
[33] SSVOC, *Report*, 22.
[34] Ibid.

Besides Malayan consumers, regional markets also took advantage of the Malayan surplus in whole nuts. Echoing nineteenth-century patterns, much of this trade continued to flow through Penang, enroute to Burma.[35] But in the first half of 1934, amidst the lowest prices yet seen for copra, a vigorous export trade in fresh unhusked nuts was being conducted between Benut, in central West Johor, and China. The nuts were reportedly being used for rope-making before coconut oil was extracted, possibly for soap manufacture by Unilever's new factory in Shanghai. Such a trade, however, was apparently possible only because Benut's households, exhibiting signs of 'severe poverty', had few alternatives to coconut cultivation at the time, save for some odd jobs, and, for those with boats, fishing.[36]

Benut's situation was a harsh reminder of the inherent risks associated with overreliance on a single crop, even one with markets as diverse as the coconut palm's. In general, rural households tried to increase their involvement in other farm activities where possible, while retaining an interest in coconuts, with the expectation that prices would eventually recover. Some coconut-related work was outsourced accordingly, mostly through an expansion of share-cropping.[37] Agricultural intensification through livestock use also seems to have occurred, although Johor's coastal muck soils, prone to compaction and puddling, limited the cattle farming strategies typical of coconut agro-pastoral systems in many other regions, including long stretches of Malaya's sandier East Coast.[38] In contrast, the use of coconut monkeys for nut harvesting appears to have increased, although its extent is difficult to quantify. The employment of such labour had previously been confined

[35] Department of Agriculture, SS and FMS, *Annual Report for the Year 1934* (Kuala Lumpur: Government Printer, 1935), 10.
[36] F. W. South, "From the Districts." *Malayan Agricultural Journal* 22, no. 4 (1934), 199; SSVOC, *Report*, 15, 20.
[37] PAOJ 1930, 9-10.
[38] ANM-KL: SA 28/6, Enc. 28; Tempany, *Johore*, 24; Ministry of Agriculture, Federation of Malaya, *The Coconut Palm*. Kuala Lumpur (Department of Agriculture, Federation of Malaya, 1959), 17; Laurène Feintrenie, Frank Enjalric, and Jean Ollivier, "Coconut- and Cocoa-Based Agroforestry Systems in Vanuatu: A Diversification Strategy in Tune with the Farmers' Life Cycle." In *Economics and Ecology of Diversification: The Case of Tropical Tree Crops*, eds. François Ruf and Götz Schroth (Dordrecht: Springer, 2015), 283-322.

mostly to Kelantan and Trengganu, but by the early 1930s, oral testimonies suggest that Johor was adopting the practice as well.

These labour-intensive arrangements sometimes led to leaps in field productivity. For instance, in 1931, Omar Sukri, a young migrant from Riau, came to work as a coconut harvester and copra maker for a family relation who was a village headman (*ketua kampung*) in Johor. Initially, he harvested 40 nuts daily, and was paid $12 a month for his efforts. After about eight months, Omar used his savings to purchase a coconut monkey for $4, subsequently increasing his daily collection to 60 nuts. His monthly harvesting wage consequently rose to $15. All in all, the monkey's contribution to Omar's productivity, and Johor's coconut industry as a whole, was roughly around 21,000 more nuts than what Omar would have collected alone between 1932-1934.[39] After three years, Omar had saved enough to move to Kluang, where he acquired his own rubber holdings. Not only was Omar able to earn a steady income from coconut sales during this interval, but falling food prices during the Depression, coupled with his refusal to purchase costly items like new clothes, meant that he was actually able to achieve a significant degree of upward mobility within several years.[40] Omar's story of resilience, possibly one amongst many, alludes to a range of possible strategies that seem to have eluded the official records during these lean years.

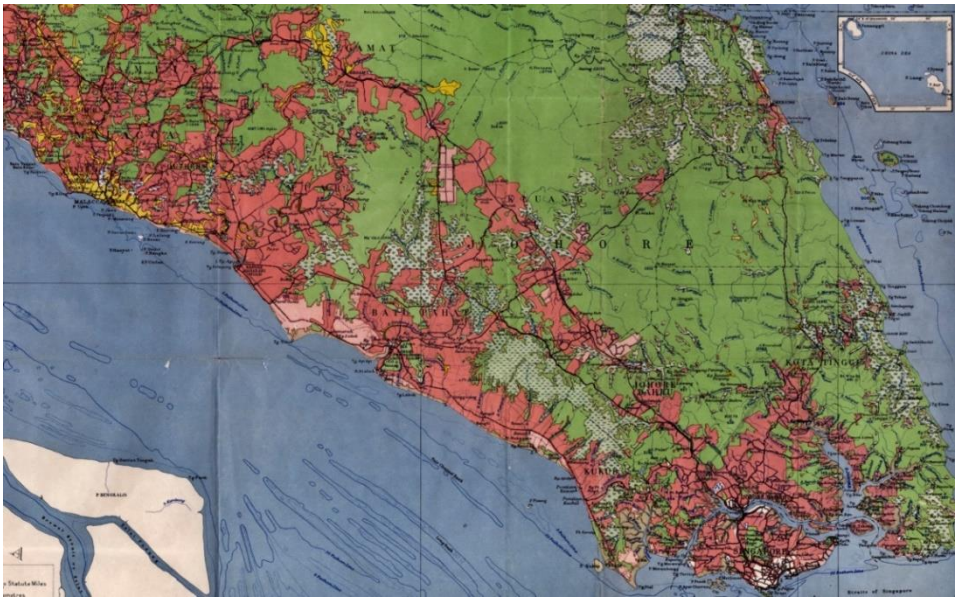
Economic diversification was also tied to other local environmental factors, chiefly the decline of forest rent. In the western districts of Batu Pahat, Muar, and Kukub, renewed attention was given to areca palms, which adapted better to the region's peatier soils, and whose crop price declines were less severe than those of the coconut palm.[41] Consequently, the interval between 1931 and 1934 witnessed a Malaya-wide rise in net arecanut exports, from 19,260 to 27,336 tons, mostly destined

[39] Wan Ladin b. Hj. Wan Ibrahim, "Proses Sosial Ekonomi Yang Ditempuh Oleh Omar Sukri (*Socio-Economic Strategies Pursued by Omar Sukri*)." In *Penghijrah Dan Penghijrahan: Kumpulan Esei Sejarah Malaysia Oleh Pelajar-Pelajar University Sains Malaysia (Migrants and Migration: A Collection of Essays on Malaysian History by Students at University Sains Malaysia),* ed. Paul H. Kratoska (Pulau Pinang: Universiti Sains Malaysia, 1982), 55-59.
[40] Ibid., 56-57.
[41] Appendix 4.1; D. H. Grist, "The Betel-Nut Industry." *Malayan Agricultural Journal* 14, no. 7 (1926), 220.

for British India and mainland Southeast Asia.[42] In addition, Johor's exports of coffee, a plant commonly found in many West Johor coconut settlements, tripled between 1929 and 1932. Much of this seems to have been of the pricier Liberian variety, with a smaller Robusta crop grown around Batu Pahat.[43] Other crops that could survive the West Coast's increasingly waterlogged soils, including sago, pepper, tubers, and pineapples, saw massive surges in export values during the interval.[44] Again, on these same soils, efforts to diversify into rubber were problematic. But where soils were less dense, and smallholders had access to both rubber and coconuts, living conditions appeared 'considerably better' than in areas where coconuts were the main cash crop.[45]

Despite its suitability for many of West Johor's soils, the oil palm option remained problematic for coastal cultivation, given the coast's considerable distance from estate mills in Central Johor. These difficulties would have been eased somewhat by the construction of more roads between the coast and interior, but throughout the 1930s, the Johor authorities preferred to focus on building roads in a north-south orientation, effectively keeping the coastal and inland agricultural frontiers separate. This, however, seems to have been less an attempt to foster a dual economy, than about the sheer physical difficulty of constructing roads across vast areas of peatland and freshwater swamp forest (Map 4). Such roads, in any case, would do little to foster successful agricultural expansion along their axes, given what was already then known regarding the serious difficulties of planting tree crops on Malayan peat soils.[46]

[42] Appendices 3.2, 3.10.
[43] SAOJ 1937, 22.
[44] PAOJ 1929, 26, 32; PAOJ 1930, 22-24; PAOJ 1932, 13, 37-38.
[45] SSVOC, *Report*, 15; P. T. Bauer, *The Rubber Industry. A Study in Competition and Monopoly* (London: Longmans, 1948), 45-46, 61.
[46] F. C. Cooke, "Coconuts on Peat." *Malayan Agricultural Journal* 18, no. 12 (1930), 587-595.



Map 4. Johor: land use, 1943. Areas in dark pink denote rubber, areas in light pink denote oil and coconut palms, areas in dotted green denote peatland and swamp forest. Source: *B.R. 877 J 15C, Sheet No. 3, Malayan Land Utilisation Map: Singapore*. From the Collection of ISEAS Library, Courtesy of ISEAS-Yusok Ishak Institute, Singapore.

Domestic interest in the use of the oil palm's fruits for household purposes would have helped overcome distance-based marketing problems among coastal growers. Yet such demand appears to have been non-existent, despite a growing awareness of palm oil's nutritional benefits. In the end, this still did not stop growers and dealers who resided along the coastline, with the resources to farm Johor's interior, from making attempts to diversify into oil palms during the slump.

EARLY SMALLHOLDER INTEREST IN OIL PALMS IN JOHOR

The Malayan oil palm industry's main challenges during the Depression period were strikingly different from those of the coconut palm's. Most estates, including Johor's, were located on better-draining, but nutrient-poor inland soils, where the accompanying loss of forest rent could be mitigated relatively easily, if imperfectly, through various means,

including artificial fertilizers.[47] Following on from the late 1920s, administrators and the majority of planters continued to prioritise the aim of preserving palm oil export quality, scaling up production to quantities that could fetch better premiums than those offered by the prevailing British-based Lagos grading system.

During the 1920s, this task had been indirectly aided by liberal concessionary policies promoting a wide variety of crops beyond rubber. By the end of the 1920s, however, the oil palm industry's quest for scale received a massive boost from Malayan Cultures Co. Ltd., when the enterprise successfully acquired 25,000 acres of land at Labis, Central Johor, at less than half the cost of oil palm lands in the Federated Malay States.[48] This handed Johor the distinction of hosting the largest spread of oil palm lands in the Malay Peninsula, a position retained until today.[49]

Malayan Cultures' then-agent and part-owner was the Compagnie du Selangor, which in turn acted as the local agent for the Socfin group of companies until 1932.[50] Socfin Co. Ltd. was a global entity that emerged from transactions between its founding Franco-Belgian members over a decade earlier.[51] By 1928, the group could plausibly claim to be 'the Biggest Oil Palm Co. in the World', with interests in over 250,000 acres of planted land in regions as diverse as Indochina, Java, Sumatra, Malaya, the Belgian Congo, Cameroon, Senegal, the Ivory Coast, and Abyssinia. A fifth of these lands were already under oil palms, and another 170,000 acres under rubber.[52] Malayan Cultures' acquisition of Labis came at a time when factor production costs were falling amidst the unfolding Depression, buttressing Socfin's countercyclical gamble of acquiring and planting large

[47] Anon., "Experiments on the Manuring of Coconuts and Oil Palms." *Malayan Agricultural Journal* 20, no. 3 (1932), 105-112; J. H. Dennett, "The Classification and Properties of Malayan Soils." *Malayan Agricultural Journal* 21, no. 8 (1933), 347-61.
[48] ANM-JB: CLR BP 208/29, Enc. 3; SSVOC, *Report*, 62.
[49] Appendix 5.1.
[50] William Gervase Clarence-Smith, e-mail messages to author, 7.6.2016 and 23.3.2017.
[51] William Gervase Clarence-Smith, "The Rivaud-Hallet Plantation Group in the Economic Crises of the Inter-War Years." In *Private Enterprises During Economic Crises: Tactics and Strategies*, eds. Pierre Lanthier and Hubert Wateler (Ottawa: Legas, 1997), 118-119.
[52] ANM-JB: CL&M 325/29, Minute, CL&M Johore, 20.7.1929; CL&M 997/28, Enc. 1.

areas of land on the cheap with slower-maturing tree crops, in the belief that yields would eventually rise in tandem with demand.[53]

Where resources permitted, similar strategies appear to have been pursued by other Johor estates of varying sizes. As rubber prices dropped, 1929 saw a spurt of interest in applications for oil palm concessions from Asian investors. Land was awarded to individuals such as Mirza Mohamed Ali Namazie, a Singapore-based trader of Persian-Indian origin, as well as enterprises backed by wealthy Chinese planters, including Tan Cheng Lock, doyen of the Straits Chinese community.[54] An additional 10,000 acres of oil palms was subsequently planted between 1930 and the end of 1933.[55] The figure would have been even higher if not for Depression-induced credit shortages, which unsettled the initial expansion plans of some estates, including Namazie's.[56] But even a relatively small plantation, such as Lee Quee Choo's 1,700 acre estate in Kulai, managed to stay afloat during the slump, commencing palm oil production with a small-scale press by the end of 1935. With lower labour costs, Lee was able to hire 80 workers for field preparation and planting activities during the Depression, reducing employee numbers to just 20 once his oil palms matured.[57]

After 1933, oil palm planting slowed down, reinforced by the Johor authorities' relatively lenient deadlines for planting up reserve lands, and their growing reluctance to alienate any additional land parcels for oil palm estates. Comparatively little further expansion was undertaken for the rest of the interwar years.[58] The slump of 1929-1934 thus both hastened and ended Johor's first great wave of oil palm planting (Figure 2).

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[53] Clarence-Smith, 'Rivaud-Hallet', 125.
[54] Appendix 5.3; ANM-JB: CL&M 194/29, CLR Johore Bahru to CL&M Johore, 25.3.1929; NAS-OHC: Haji Mohd Javad Namazie, Transcript Nos. 000189/1-2, passim; PAOJ 1929, 16; Anon., "An Easy Road to Wealth?" *The Straits Times*, 16.10.1928, 8; R. O. Winstedt and Khoo Kay Kim, *A History of Johore, 1365-1941* (Kuala Lumpur: Malaysian Branch of the Royal Asiatic Society, 1992), 156-157.
[55] ANM-JB: CL&M 260/30, 'List of Oil Palm Estates and details of planting', n.d.; CL&M 638/31, Enc. 66; Winstedt et al., *Johore*, 157-158.
[56] ANM-JB: CL&M 780/26, Encs. 7, 13.
[57] ANM-JB: CL&M 575/28, Enc. 12; SAOJ 1935, 20.
[58] ANM-JB: CL&M 638/31, Enc. 66; CL&M 68/35, Enc. 64; CL&M 500/32, Enc. 3.

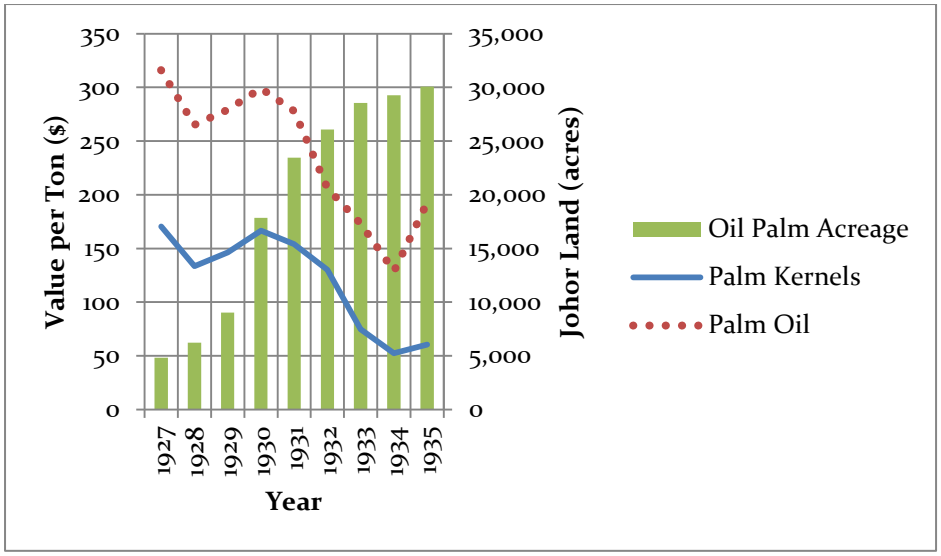


Figure 2. Johor: land planted with oil palms (right axis), and annual export values per ton, Malaya (left axis), 1927-1935. Sources: Appendices 2.1, 5.1.

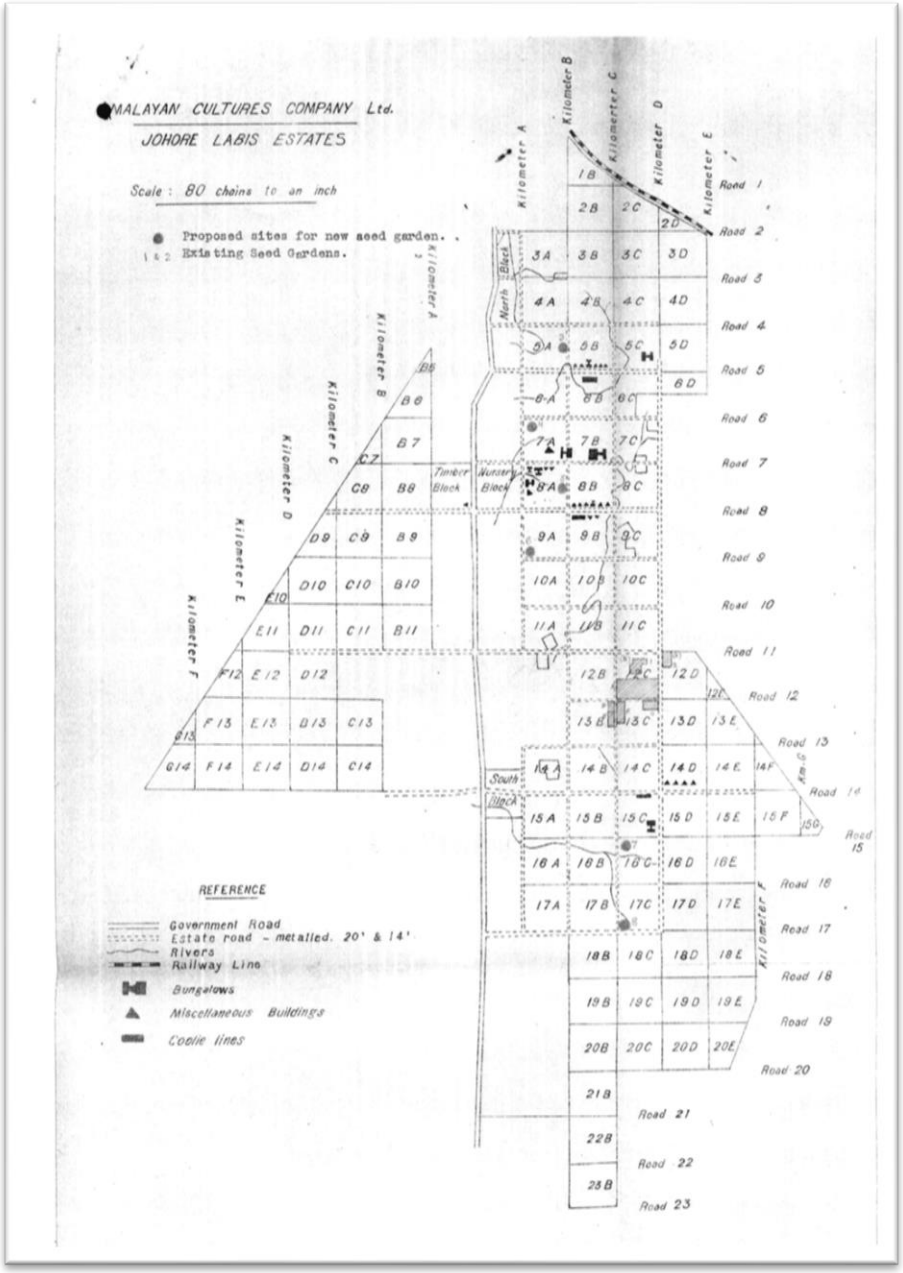
Given surging interest in oil palms in Johor during 1929 and 1930, it should perhaps come as little surprise that Malayan Cultures' land application at Labis provoked curiosity among smaller growers in the vicinity. Thanks to previous pepper, gambier, coconut, and rubber crop booms, Labis already had a colourful history of agricultural settlement. An old riverine village populated by Chinese Teochew households, *Kangkar Cha'ah,* continued to exist near the concession's boundaries. Many of the *kangkar*'s surrounding lands were still being denuded of primary forest, and rubber stands were progressing upending swathes of pepper, gambier and cassava plantations carved out from the rainforest during previous decades. Extensive tracts of scrubland had also been left to fallow.[59] But Johore Labis Estate's new plans ensured that local agriculture would henceforth become much more oil palm-focused. Moreover, the development of a new metalled road bisecting the area between Labis and Yong Peng, and news that a big corporation was planning to construct over 160 kilometres of ancillary roads out of its own pocket, could only have increased demands for land from other parties in the know.

Over the next decade, Johore Labis executives used a four-pronged strategy to manage the presence of smallholdings within and around the

[59] ANM-JB: CL&M 325/29, Encs. 4, 27.

concession. The first approach was to physically partition them off from estate grounds as soon as possible, through the construction of an extensive road network (Map 5). Field surveys in 1930 had found some blocks of concessionary land to be so densely populated by rubber, coconut and fruit trees, that it made little commercial sense for Labis Estate to occupy them. Ultimately, in management's view, roads needed to be built quickly to prevent such smallholdings, which were feared were choked with *lallang* (*Imperata cylindrica*) and other weeds, from 'infecting' its own estate grounds with unwanted flora and diseases.[60]

[60] ANM-JB: CLR BP 208/29, Encs. 30-31.



Map 5. Johore Labis Estate, 1933. Source: ANM-JB: CL&M 325/29, Enc. 68.

Second, estate management sought to purchase better-maintained smallholdings within the concession at mutually agreeable prices. The problem with this approach was the time needed, due to the sheer number of smallholdings present and ensuing haggling between prospective parties. As late as February 1938, the estate had yet to receive its official land title because of ongoing negotiations with smallholders.[61]

[61] ANM-JB: CLR BP 208/29, Encs. 146, 158.

Furthermore, this still left unaddressed the question of small growers who were actually interested in oil palm farming, despite the considerable opportunity costs involved.

Here, Labis Estate management appeared to have pursued two different approaches. One strategy, which will be recounted below, began several years after Labis Estate had begun planting oil palms, at which point it was better positioned to lead initiatives with smallholders through what is best described as an outgrower scheme. Initially, however, management was much more defensive in its outlook, and sought to prevent smallholdings and smaller estates from starting any form of oil palm cultivation in the vicinity of its grounds. Executives did so by denying these prospective growers access to its planned factory, deliberately raising grower opportunity costs further. The unusually dense nature of Johor official records surrounding Labis Estate's early development allows for the reconstruction of detailed cases where both smallholders and trader intermediaries sought entry to the oil palm industry. As will become apparent, these historical reconstructions also shed light on why Labis Estate pursued such differentiated treatments towards smallholders, as well as the contribution made by official responses to such developments.

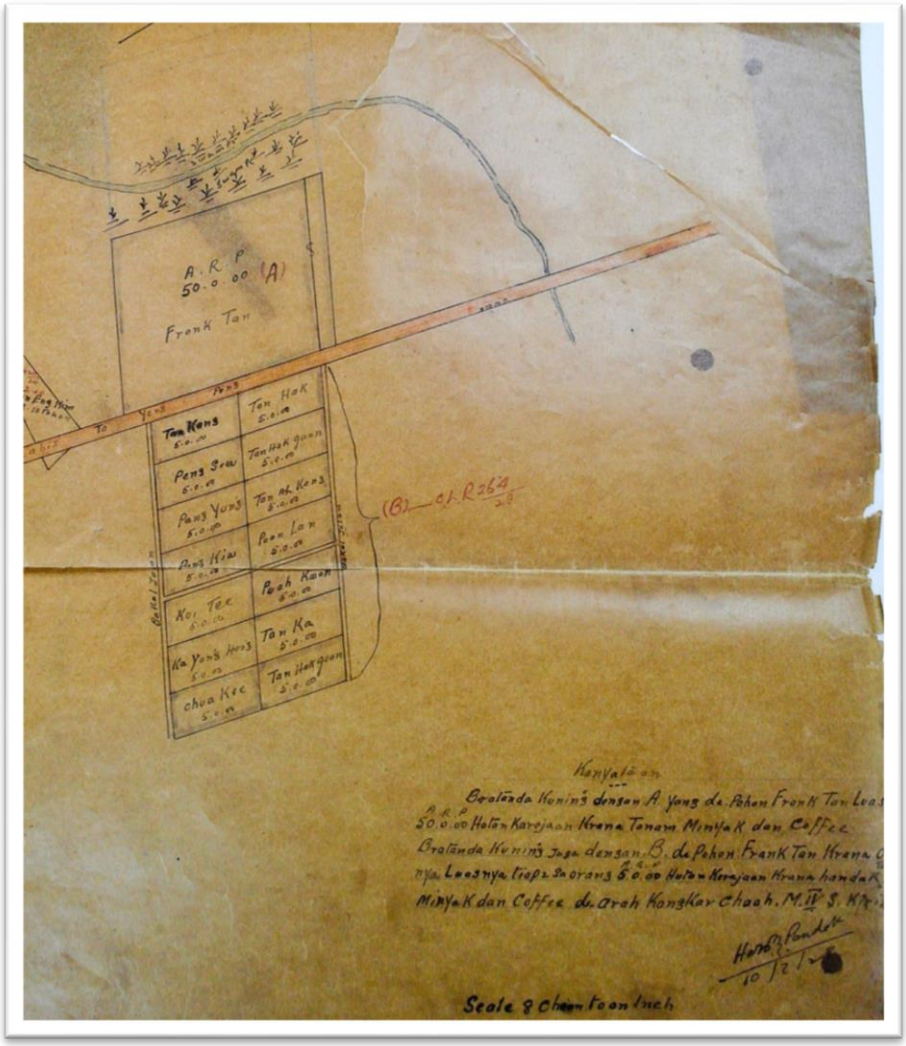
While the Johor records contain numerous instances of small growers interested in oil palm planting near the Labis concession in 1929, we will focus on the case involving Frank Tan @ Tan Joon Mong, because of its exemplary detail and historical significance.[62] At the time of his application for oil palm land, Tan was a 40-year-old Teochew entrepreneur of Straits-Chinese descent, operating out of northwest Johor's Batu Pahat district. His assets included a boat shed, a small private medical facility, and a land auction outfit in Batu Pahat Town (Bandar Penggaram). He was also a member of the local Chinese Chamber of Commerce, and was licensed to trade in firearms and ammunition.[63] Tan was probably a middling gentleman with some savings in hand, and his

[62] For other cases, see ANM-JB: CLR BP 325/29; CLR BP 597/29.
[63] ANM-JB: CLR BP 814/26, Enc. 3; CLR BP 556/28, Enc. 3; SS 3439/28, Minute, 'P of C', 17.12.1928; *The Straits Times*, 22.9.1931, 5

general correspondence with district authorities suggests that he was familiar, trusted, and held with some esteem.

In June 1929, Tan made two concurrent land applications for oil palms. The first was a joint submission with another trader for 50 acres near *Kangkar Cha'ah*. Both applicants stated they had already visited the area, finding it suitable for oil palms. Tan's second application involved a request on behalf of 26 of his mostly Chinese and Sakai associates, for five acres of land each. Both applications sought to capitalise on the recently-constructed road between Labis and Yong Peng (Map 6).[64] To weather the long maturity period of the oil palm, Tan proposed planting coffee as a catch crop where soils permitted. Sago palms would be cultivated in the swampier areas of the proposed concession. These initial bids were subsequently reduced from a total of 180 to 100 acres, so as to assuage the Batu Pahat authorities' concerns that they did not take up excessive road frontage. Following further checks, Batu Pahat's Collector of Land Revenue then wrote to Johor's most senior land official, the Commissioner of Lands and Mines, in full support of the application, citing Tan's qualities as 'an intelligent man of various activities', who 'has his oil palm seedlings ready for planting…as early as possible'.[65]

[64] ANM-JB: CLR BP 264/29, Encs. 1-2.
[65] Ibid., Enc. 2; Ibid., Minute, CLR Batu Pahat, 18.7.1929.



Map 6. Extract from land application by Frank Tan and associates to grow oil palms and coffee, 1929. Source: ANM-JB: CLR BP 264/29, Enc. 2.

The subsequent replies of Walter Pepys, Johor's Commissioner at the time, revealed an official more concerned with facilitating land applications from larger entities. His immediate response had been to ask how Tan would deal with the factory issue given the small size of his proposed holding. The Batu Pahat's land official wrote back to reassure Pepys that Tan and his associates were in a good position to sell fruits to Labis Estate's future mill, adding that he himself understood from Mr. Roels, a Compagnie du Selangor executive, that the enterprise 'would by no means object to such agreements with small-holders'.[66] Pepys then

[66] ANM-JB: CLR BP 264/29, Minute, CL&M Johore, 24.7.1929; Ibid., Minute, CLR Batu Pahat, 27.7.1929.

took the trouble to make his own enquiries, and was emphatically told by the Compagnie's designated agent, Robert Michaux, that the firm was unwilling to consider such arrangements for Labis because 'this would mean pilfering of the seeds from the Company's land'.[67] Despite the fact that Tan already had his own planting materials, Pepys subsequently turned down Tan's application, as well as any other forthcoming application for oil palms where the applicant was 'not prepared to build a factory and run the show himself'.[68] Nevertheless, Tan persisted with his application during August 1929, claiming to have 'his own method of extracting the oil (a Chinese one) and is prepared to run the place himself with his own presses'.[69]

Just before Tan could be asked for further details of his processing arrangements, Harold Tempany, Malaya's Director of Agriculture, began circulating his landmark memorandum, advocating Malaya-wide restrictions on small-scale oil palm cultivation.[70] The memo reached the Johor authorities in mid-September 1929, prompting Pepys to conclusively reject Tan's application the following month.[71] The Commissioner based his decision on two criteria. First, despite the memo's recommendation that small growers be allowed to sell fruits to large estate mills, Labis Estate was unwilling to entertain such arrangements. Second, Pepys' misgivings towards non-European oil extraction methods were reinforced by the memo's pejorative references to hand methods, which were likely to have sparked concerns that Tan's activities would set an undesirable local precedent for Malaya if they were permitted by the Johor authorities (despite the fact that some Malayan estates were still using hand methods to produce palm oil at the time).[72]

Put bluntly, Tan had been the victim of unfortunate timing and discriminatory treatment. The Compagnie's land application had been given top priority among all ongoing bids for land in the area. The only

[67] ANM-JB: CL&M 566/29, Minute, CL&M Johore, 12.8.1929.
[68] ANM-JB: CLR BP 264/29, Minute, CL&M Johore, 12.8.1929.
[69] ANM-JB: CL&M 566/29, Minute, CLR Batu Pahat, 14.8.1929.
[70] Appendix 8.1.
[71] ANM-JB: CLR BP 264/29, Minutes, CL&M Johore, 15.8.1929, 18.9.1929.
[72] Ibid., Minute, CL&M Johore, 16.8.1929.

exceptions to this general rule of thumb stemmed from a July 1929 decision by Johor's Executive Council, with the Sultan in attendance, that any lands with frontage facing the Yong Peng-Labis road were to be reserved for 'Malay kampong settlement', presumably as part of a long-term political imperative to facilitate the enlargement of Johor's permanent Malay population.[73] Strangely enough, this latter decision was not conveyed to Tan until November 1929, suggesting that the authorities maintained a discreet level of flexibility when deciding on an individual applicant's merits.

As for Tan himself, he was evidently used to pursuing multiple ventures, like the Asian planters before him who had made modest forays into Malayan rubber cultivation two decades earlier.[74] In response to his bureaucratic difficulties, he began trying to sell off his entire stock of planting material (20,000 seeds and 4,000 oil palm seedlings) by September 1929.[75] Two years later, he was found expanding his commercial activities in the neighbouring town of Benut, offering services in taxidermy, leather tanning, arms sales, and rubber tree bark medicine (*ubat kulit getah*).[76] Oil palms had been intended to supplement, rather than displace his wide array of activities, which, like smallholder repertoires, were geared towards diversifying risks, particularly during times of considerable economic uncertainty.

The consequences of such an episode for the smallholder participation gap were significant. Like a number of other traders interested in oil palm cultivation in Johor during the Depression, Tan, with or without his small-scale processing facilities, would have become both a palm fruit dealer and wealthy smallholder had his bid been approved. With the support of his associates, he would have made significant progress towards overcoming the old chicken-and-egg problem of acquiring a reliable supply of palm fruits from small growers. Thus, in preventing dealers like Tan from acquiring oil palm lands, Johor officials

[73] ANM-JB: CL&M 325/29, Enc. 8.
[74] J. H. Drabble, *Rubber in Malaya, 1876-1922: The Genesis of the Industry* (Kuala Lumpur: Oxford University Press, 1973), 71.
[75] Anon., *The Straits Times*, 2.9.1929, 8.
[76] ANM-JB: CLR BP 182/31, Enc. 1.

were effectively preventing smallholders from developing relationships with buyers of small quantities of palm fruit, relationships that were already commonplace in the coconut, rubber, arecanut, and rice sectors. In doing so, the authorities also inadvertently ensured that Johore Labis would have a local monopoly over fruit processing. This monopoly, as we will now see, became a major concern for the authorities when vetting future smallholder developments in the area.

Although historians have credited Socfin with a string of oil palm-related technological innovations in Malaya, nothing to date has been written regarding the group's attempt to establish Malaya's first oil palm outgrower scheme in the early 1930s.[77] The main reason was for this was that the scheme never actually saw the light of day, despite being a concrete proposal. It therefore contributed little to the company's public profile. Yet, given the group's prior experiences in West and Central Africa, where locals were employed to harvest semi-wild oil palms, it should perhaps be unsurprising that somewhat similar arrangements would have been tried in Malaya where opportunities arose.[78]

The reasons behind the timing and location of the initiative are not hard to fathom. Between the end of 1929 and mid-1932, a remarkable 11,000 acres of land had already been cleared and planted up with oil palms at Labis.[79] The only areas which Johore Labis Estate had been unable to plant were numerous Asian-owned smallholdings scattered across the entire concession, as well as two long strips of land on either side of the Yong Peng-Labis road axis, one to two kilometres in depth (Map 7). While the Johor authorities were content to let Labis buy out the former group of smallholdings, they were keen to prevent acquisitions of the latter, in line with the Johore Executive Council's July 1929 decision to promote more Malay settlement in Labis. By August 1931, out of an estimated 4,648 acres reserved for migrants from the Dutch East Indies,

[77] J. Sig. D. Rawlins, "French Enterprise in Malaya." *Journal of the Malaysian Branch of the Royal Asiatic Society* 39, no. 2 (1966), 65-66; Tate, *Industry*, 398, 458-463; Clarence-Smith, 'Rivaud-Hallet', 129-130; Susan M. Martin, *The UP Saga* (Copenhagen: NIAS Press, 2003), 68.
[78] Clarence-Smith, 'Rivaud-Hallet', 121-122.
[79] ANM-JB: CLR BP 208/29, Enc. 30; Ibid., Minute, CLR Batu Pahat, 13.8.1931; GA 235/32, Manager Johore-Labis Estate to Mentri Besar Johore, 1.4.1932.

1,674 acres had been taken up.[80] This reserved frontage, all on prime land, was equivalent to one fifth of Labis Estate's already considerable land area. By this time, estate management, bearing witness to a growing inflow of settlers, probably realised that they had a potentially large pool of contract labour confined to a compact set of landholdings lodged within the heart of the concession.

Map 7. Johore Labis Estate, with roadside smallholding reserves demarcated, 22 August 1931. Each blue grid square represents roughly 1 square kilometre of area. Source: ANM-JB: CLR BP 208/29, CLR Batu Pahat to Executive Engineer, P.W.D., Segamat, February 1936.

Naturally, the incoming settlers had their own ideas about what to do with their lands. They made their presence felt early on, matching, if not surpassing Labis Estate's speed in clearing overgrowth on their allotments. Their methods of removing vegetation were so effective that Labis Estate's General Manager, Sydney Rhodes, was compelled to request assistance from the Batu Pahat authorities to persuade the smallholders to

[80] ANM-JB: CLR BP 208/29, Minute, CL&M Johore, 6.7.1929; Ibid., Minute, General Adviser, 29.7.1929; CLR BP 374/31, Minute, SO Haron, 29.6.1931; Ibid., 29.8.1931; Minute, CLR Batu Pahat, 3.9.1931.

temporarily halt their planting preparations in January 1931. Ostensibly this was because any fires used by the smallholders to clear underbrush would spread to the estate's own holdings, clashing with the latter's plans to plant up adjacent lands in mid-1931, and add to the costs of weed suppression and anti-erosion measures in the meantime by five extra months.[81] Rhodes, however, may have already been planning to reserve these smallholdings for Socfin-approved oil palms, although by September 1931, the settlers were reportedly already cultivating 'fruit' on their lands, which may have included coconuts, durians, rambutans or smaller, faster-maturing annuals.[82]

Rhodes seems to have broached the idea of a contract farming scheme with the Johor authorities in June 1931, close to the end of Johore Labis' own initial planting schedule.[83] By this time, Malayan Cultures' agency had been taken over by Socfin Co. Ltd. itself, due to ongoing internal group restructuring.[84] As discussions progressed, Rhodes revealed more details, encapsulated in a draft contract approved by the Director of Socfin himself. Socfin would assist the smallholders by providing most of the investment capital for the new crop. In exchange, Socfin wanted full control over seed distribution and fruit quality, as reflected in the draft contract's terms.[85] With the frontage settlers themselves reportedly 'keen on planting oil palms', the only major remaining concern was that of marketing coordination.[86] Here, as Socfin executives believed, the assistance of district authorities was crucial, for the latter were responsible for helping to nominate suitable marketing representatives among the settlers.

In ensuing internal discussions, Johor officials were considerably more critical of oil palm farming arrangements than in Frank Tan's case. A number of reasons for disapproval were given. There were concerns that suboptimal smallholder harvesting practices would lead to poor fruit

[81] ANM-JB: CLR BP 208/29, Enc. 45.
[82] ANM-JB: CLR BP 374/31, Minute, CLR Batu Pahat, 3.9.1931.
[83] Ibid., Enc. 3; Ibid., Minute, CLR Bahat, 3.9.1931.
[84] Clarence-Smith, e-mail messages to author, 7.6.2016 and 23.3.2017.
[85] Appendix 8.2.
[86] ANM-JB: CLR BP 374/31, Minute, CLR Batu Pahat, 3.9.1931.

quality, as well as the proliferation of rats and other pests. These accusations drew on stereotypical characterisations of Malay rubber and coconut smallholdings, and were based on shallow understandings, if not outright falsehoods surrounding Malay grower behaviour.[87] Moreover, the rat problem was one as old as the oil palm industry itself. Rats typically plagued oil palm estates regardless of palm harvesting frequencies. They even devoured saplings.[88] Nevertheless, Johor's Land Commissioner went one step further, suggesting that any possible infestation on smallholder lots would give Labis Estate an excuse to acquire the holdings and overturn the Malay settlement plans of the authorities.[89] While there were some precedents for such amalgamations in the rubber industry, in this particular case, the Johor authorities' underlying assumptions about smallholder incompetence and lethargy were questionable, given the speed and skill already demonstrated by settlers during land clearance in 1930 and 1931.[90]

Above all, officials were deeply concerned that the Malay smallholders would be putting themselves at the mercy of a monopsony. Labis Estate's General Manager had previously claimed that the outgrower scheme would provide a 'safe 15%' return to all participants, but both the Land Commissioner and Johor's Principal Agricultural Officer worried that the estate would find it convenient to renege on such claims later.[91] Such anxieties among British officials had deeper roots in a liberal tradition of antagonism to monopolistic practices.[92] Yet the one principal safeguard against monopsonistic abuses by a private firm – competition from other fruit buyers – had already been eroded by the Johor authorities themselves, in their rejection of earlier attempts by Chinese dealers to set up their own milling facilities around Labis. Suggestions that the

[87] Drabble, *Interwar Years*, 248.
[88] F. W. South, "Annual Report of the Chief Agricultural Inspector for 1922." *M Malayan Agricultural Journal* 11, no. 10 (1923), 253; B. Bunting, "Rat Control on Oil Palm Estates." *Malayan Agricultural Journal* 27, no. 10 (1939), 403-407.
[89] ANM-JB: CLR BP 374/31, Minute, CL&M Johore, 15.9.1931.
[90] Lim, *Peasants*, 140.
[91] ANM-JB: CLR BP 374/31, Enc. 5; Ibid., Minute, CL&M Johore, 7.9.1931; Ibid., Minute, Principal Agricultural Officer Johore, 15.9.1931; GA 235/32, Minute, Principal Agricultural Officer Johore, 16.4.1932.
[92] Keith Sinclair, "Colonial Office Policy towards British Concessionaires and Investors, 1878-1907." *Modern Asian Studies* 1, no. 4 (1967), 345.

smallholders could consider extracting palm oil themselves were also ruled out, following a review of Tempany's memo criticising labour-intensive processing techniques.[93]

The Johor authorities' unwillingness to assist with organising palm fruit sales was officially communicated to Rhodes in October 1931. This was tantamount to an oblique rejection of the scheme, since cooperatives were notoriously hard to organise without government assistance.[94] Johor's official records offer no evidence that the scheme went ahead. Ironically, in this instance, the smallholder 'threat' to Malayan oil palm industry had been repelled on the grounds that the industry was a threat to Malay smallholders. In doing so, Johor officials had subverted Tempany's own earlier guidelines on the matter.

Prior historiography has typically claimed that oil palm cash cropping in the colonial era remained unattainable for Malayan smallholders due to the lack of capital and expertise allegedly needed to run a vast complex ensuring quick delivery of bulk produce for large-scale milling. The Labis proposal irrevocably demonstrates that the more important issue was one of grower coordination, which in this case meant the willingness of smallholders, processors, and officials to reach a negotiated settlement, if crop dealers were not to be part of the equation. The Johor authorities had been unwilling to take responsibility for introducing the oil palm to Malay smallholders, despite the proposal's safeguards on palm oil quality. Once again, grower stereotypes and fears of Malay destitution had shaped the concerns of the British Malayan officials. The main barrier to participation in oil palm cash cropping was not technological in nature, but political: a fact that would be re-discovered in the 1950s, when another oil palm outgrower scheme in Johor was proposed, this time by the government itself, under the auspices of 'land development'.

[93] ANM-JB: CLR BP 374/31, Enc. 7.
[94] Ibid., Enc. 8; L. J. Fredericks, *The Co-Operative Movement in West Malaysia* (Kuala Lumpur: Dept. of Publications, University of Malaya, 1986), passim.

REAL AND IMAGINED PALM OIL CONSUMPTION

While Malayan administrators fretted over the possible consequences of smallholder participation in the oil palm industry, scientists at Singapore's King Edward VII College of Medicine were endeavouring to turn palm oil into a locally useful consumer item. After running a battery of laboratory tests on edible oils, Professor of Biochemistry John Rosedale and his collaborator, Christopher Oliveiro, were finally able to declare in 1934 that unbleached palm oil was more effective in addressing vitamin A deficiencies than any other locally available vegetable oil, including that of coconuts, sesame seeds, and groundnuts. All of these other 'inferior oils' had no vitamin A equivalent content in them.[95] Although there were concurrent claims elsewhere that coconut water itself contained vitamin A, Rosedale's experiments found these to be untrue.[96]

Rosedale and Oliveiro's praise for palm oil was seemingly vindicated the same year by unrefined palm oil's deployment as a cheap substitute for cod liver oil at child welfare centres across Malaya.[97] For the biochemists, however, palm oil's potential market went well beyond its deployment in medical settings, since palm oil could be used as a cooking fat without significant vitamin loss, unlike animal-derived fats like lard or ghee.[98] In their view, the case for spreading the gospel of palm oil's health benefits to the average Malayan household was undeniable:

> [R]ed palm oil offers an excellent opportunity of improving the health of all communities in [Malaya], and is a most economical and valuable asset to the daily diet in tropical countries…[A]ny attempt to purify it by

[95] John Lewis Rosedale and Christopher Joseph Oliveiro, "The Nutritional Properties of Red Palm Oil." *Malayan Medical Journal* 9, no. 2 (1934), 145.
[96] J. L. Rosedale, *Chemical Analyses of Malayan Foods* (Singapore: W.T. Cherry, 1935), 13-20; I. H. Burkill, *A Dictionary of the Economic Products of the Malay Peninsula* (2nd ed.) (Kuala Lumpur: Ministry of Agriculture and Cooperatives, 1966), 611.
[97] John Lewis Rosedale and Christopher Joseph Oliveiro, "The Fat Soluble Vitamins of Tropical Food Oils." Paper presented at the *Far Eastern Association of Tropical Medicine: Transactions of the Ninth Congress* held in Nanking, China, October 2-8, 1934, 335.
[98] Biochemical Laboratory, King Edward VII College of Medicine, Singapore, "Food Facts I." *Malayan Medical Journal* 4, no. 4 (1929), 149; Rosedale, *Malayan Foods*, 29.

> decolorising is detrimental to the vitamin and the decolorised product should always be refused.[99]

Rosedale and Oliveiro downplayed any possible negative reactions to the unbleached, unrefined version of the oil, claiming that its 'odour and taste…are negligible'.[100] As evidence, they cited an extract from a recent Malayan Agricultural Journal editorial which had noted that crude palm oil had been recently used as a cooking oil by local military personnel of Malay, Chinese, Indian and Eurasian backgrounds 'without any complaint'.[101] Yet they omitted more inconvenient facts found in the same source: that other Malay and Chinese individuals had objected to the strong colour that unrefined palm oil imparted to cooked food, and that palm oil had caused indigestion in some consumers.[102]

Rosedale and Oliveiro's lack of objectivity was symbolic of the dilemma they faced. The relevance of their laboratory work ultimately hinged on their ability to persuade Malayans to eat food items that the biochemists deemed nutritionally superior, including those of an unfamiliar nature. Like the chemists of the Malayan Agricultural Department, who had tried promoting palm oil locally during the 1920s, Rosedale showed no interest in palm oil being introduced through West African dishes. But even if he had wanted to pursue this avenue, he would have needed an understanding of the organising principles that located palm oil within important relationships with other food items. These principles, social and cultural in nature, were what infused palm oil with meaning as a key ingredient in a satisfying meal, and elevated the substance above its prevalent low status as a raw food.[103] However, this was something that Rosedale had neither the training nor aptitude to pursue.

Instead, the problem, as understood in rigid essentialist terms by a contemporary government chemist, was that 'local races prefer the oils to

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[99] Rosedale et al., *Palm Oil*, 145.
[100] Ibid.
[101] Ibid.; Anon., "Editorial." *Malayan Agricultural Journal* 21, no. 1 (1933): 1.
[102] Anon., *Editorial*, 1.
[103] Mary Douglas, "Deciphering a Meal." In *Myth, Symbol and Culture*, ed. Clifford Geertz (New York: Norton, 1971), 61-82.

which they are accustomed, coconut, groundnut, or gingelly as the case may be'.[104] This conflation of dietary preference with racial categorisation was typical of the ethnic pigeonholing associated with British colonial policies worldwide at the time.[105] They precluded any notion that Asians would find a meal of African origin attractive. Paradoxically, any attempt to transform palm oil into a colourless substance that could be substituted for oils in existing Malayan foodways would destroy the main nutritional benefit encased in its pigments.[106]

This paradox created an impasse, typified in the recommendations of an official Malayan committee for vegetable oils, formed in 1934 to find ways to prop up flagging consumer demand for Malayan palm products. The committee, chaired by Harold Tempany, was clearly pressed to support Malayan oil palm estates by whatever means possible. In examining the question of increasing local demand for the industry's products, the Committee acknowledged that palm oil's 'repellent…taste and appearance' limited its domestic popularity, but could only offer a vague assurance that consumption might be increased 'by means of judicious advertisement'.[107]

For the next two decades, the Malayan establishment – chemists, medical practitioners, administrators, and those tasked with dispensing palm oil to targetted social groups – tried to resolve this impasse by adopting Rosedale's approach to dietary supplementation. Shorn of its West African cultural meanings, unrefined palm oil was to be delivered from above to those deemed in greatest need of its nutritional benefits, regardless of whether this incurred the distrust and displeasure of recipients. Adverse consumer reactions did not in fact really matter, as long as valuable nutrients were being ingested by colonial bodies, turning them into a more productive labour force. This was yet another instance of scientifically-backed paternalism, in which palm oil's promoters

[104] T. A. Buckley, "The Dietetic Value of Palm Oil." *Malayan Agricultural Journal* 24, no. 10 (1936), 485.
[105] Richard Wilk, *Home Cooking in the Global Village: Caribbean Food from Buccaneers to Ecotourists* (Oxford: Berg, 2006), 75-76.
[106] Rosedale, *Malayan Foods*, 16.
[107] SSVOC, *Report*, 61, 76.

expected recipients to become grateful subjects once the latter began experiencing the nutritional benefits of palm oil themselves.

More critically, this promotional approach reflected a racialized nutritional philosophy which assumed that Malayans who were malnourished were responsible for their own predicament due to ignorance and defective dietary traditions, rather than one where ill-health was rooted in poverty and structural inequality. As we will see in Chapters Five and Six, these assumptions proved extremely difficult to challenge, even after the mid-1930s, when a surge of new nutritional field surveys across Malaya provided clear evidence of a link between poverty and malnourishment. What the establishment also did not count on was the possibility that in adopting this paternalistic approach to supplementation, palm oil would rapidly accumulate new meanings stemming from these very same interventions, associations that would leave long-lasting negative impressions on the minds of its Malayan recipients, and limit palm oil's uptake in the absence of coercion.

Ironically, there was another channel through which palm oil had already become widely embedded within Malaya's local economy, one which officials had failed to anticipate. This was the domestic soap manufacturing sector, which consisted mostly of Chinese-owned enterprises of varying scales and capitalisation, clustered around urban centres, as well as a rural cottage industry.[108] Large-scale soap-making seems to have begun as early as the first decade of the twentieth century, in tandem with the expansion of Malayan copra milling.[109] Cheap supplies of copra oil were fundamental to the Malayan soap industry's growth.

The upheaval of the Great Depression benefitted soap producers in two ways. First, falling prices for Malayan-manufactured vegetable oils lowered the costs of raw materials for local manufacturers. Second, soap-makers, many of whom were agile Chinese enterpreneurs, found growing local and regional demand for their products during the slump. Not only

[108] Ibid., 25.
[109] S. Selvadurai, "A Survey of the Coconut Oil Milling Industry in Penang." (Graduation Exercise, BA (Hons) Economics. University of Malaya, 1957), 1.

did their offerings cost less than imported Western brands, but they were often of a comparable, if not superior quality. Local manufacturers were thus able to attract poorer customers, as well as wealthier ones looking to switch to cheaper alternatives.[110] Even in rural areas, artisanal soap-making expanded.[111]

The biggest mover in this surge was the Ho Hong Soap Factory, a natural extension of the Singapore-based Ho Hong business empire's interests in vegetable oil manufacturing since the early twentieth century. The soap factory was built close to Ho Hong's oil mills at Havelock Road in 1927, though plans for its erection appear to have begun before the 1920s.[112] Such initiatives were probably prompted by substantial overcapacity in the coconut milling sector since at least the 1920s, given that soap-making was seen as a useful outlet for excess oil.[113] Perhaps because of this raw material advantage, the soap offerings of Ho Hong and other manufacturers became extremely popular during the Depression. Between 1931 and 1934, local manufacturing's share of the Malayan soap market, previously dominated by imports, rose from 10 to 42 per cent. This involved a six-fold increase in local soap output to 3,000 tons, with Ho Hong accounting for nearly half of this surge.[114] However, the popularity of Ho Hong's soaps, especially among middling Malayan classes, was largely due to its superior manufacturing processes and product presentation.[115]

[110] UNI: GB1752.UNI/RM/OC/2/2/64/1, J. Hansard, 'Malaya Visit Report', 6.3.1935, 5; UNI: GB1752.UNI/RM/OC/2/2/64/5, C. Barnish, 'Report on Visit to Malaya', 25.3.1939, 2-3; Peter Boomgaard and Ian Brown, "The Economies of Southeast Asia in the 1930s Depression: An Introduction." In *Weathering the Storm*: *The Economies of Southeast Asia in the 1930s Depression,* eds. Peter Boomgaard and Ian Brown (Singapore: ISEAS, 2000), 8, 11; William Tai Yuen, *Chinese Capitalism in Colonial Malaya, 1900-1941* (Bangi: Penerbit Universiti Kebangsaan Malaysia, 2013), 196-197.
[111] SSVOC, *Report*, 25.
[112] Anon., "Million Dollar Claim", *The Singapore Free Press and Mercantile Advertiser*, 20.4.1922, 12; Anon., "Founder of Ho Hong Enterprises", *Sunday Tribune (Singapore)*, 26.7.1936, 13.
[113] Appendix 6.3.
[114] UNI: GB1752.UNI/RM/OC/2/2/64/1, J. Hansard, 'Malaya Visit Report', 6.3.1935, 1; GB1752.UNI/RM/OC/2/2/64/3, J. Hansard, 'Malaya Visit Report', 22.2.1937, 1.
[115] UNI: GB1752.UNI/RM/OC/2/2/64/1, J. Hansard, 'Malaya Visit Report', 6.3.1935, 5-9; GB1752.UNI/RM/OC/2/2/64/2, A. Knox, 'Malaya Visit Report', 27.3.1936, 4-5.

The enterprise, in fact, emerged from the Depression as 'the largest and best equipped soap factory in Singapore' by 1936.[116]

Sometime in the early 1930s, Ho Hong began to use Malayan palm oil in its operations, both within its lower-grade laundry bar soaps and higher-grade toilet soaps.[117] Sales were primarily domestic, but significant quantities were also sold abroad, including to British India, China and the Dutch East Indies.[118] According to Unilever executives, Ho Hong's premier laundry cleanser, Palm Tree, was a 'very attractive soap…wrapped in a good quality greaseproof wrapper', made from two-thirds copra oil and one-quarter palm oil, and 'faintly perfumed with Safrol' (Illustration 4).[119] Ho Hong's commercial success was underlined by the fact that the firm was able to charge 50 per cent more for Palm Tree laundry soap than products of local competitors in 1934, while still costing a third less than Unilever's competing line, which had to be imported since Unilever had no manufacturing facilities in Malaya at the time.[120] Indeed, by the mid-1930s, Palm Tree laundry soap had become so popular in Singapore and the surrounding region that Unilever's rival soap line, Fine Primrose, had its recipe changed to include foreign-sourced palm oil, in order to keep production costs outside Malaya under control.[121]

[116] C. F. Yong, "Lim Peng Siang and the Building of the Ho Hong Empire in Colonial Singapore." *Asian Culture* 28 (2006), 9.
[117] Anon., "Ho Hong Soap Factory Ltd.", *The Straits Times*, 2.1.1932, 13.
[118] ANM-KL: KELANTAN 586/1933, Encs. 1B-1C; Tai, *Malaya*, 196-197.
[119] UNI: GB1752.UNI/RM/OC/2/2/64/1, J. Hansard, 'Malaya Visit Report', 6.3.1935, 5; GB1752.UNI/RM/OC/2/2/64/2, A. Knox, 'Malaya Visit Report', 27.3.1936, 4.
[120] UNI: GB1752.UNI/RM/OC/2/2/64/2, A. Knox, 'Malaya Visit Report', 27.3.1936, 4-5.
[121] Ibid.

Illustration 4. Newspaper advertisement for Palm Tree Soap and Palm Tree Cooking Oil, 1932. Source: *Singapore Free Press and Mercantile Advertiser*, 2 January 1932, 10.

The use of local palm oil in Malayan soap offerings is a clear example of what anthropologist Richard Wilk, using Marx's notion of commodity fetishism, has identified as capitalism's tendency to erase the origins of a raw material that becomes increasingly commodified. As ingredients are processed, combined, and packaged into a recognisable product, the ability of the finished good to attract consumer interest relies on identification with the brand itself, rather than the initial materials used. However, Wilk exaggerates the geographic distance required, and the role Europe plays, in order for this transformation to occur. In Malaya, where a Chinese-dominated chemical industry was rapidly expanding during the Depression, the erasure of Malayan palm oil's identity from a Singapore-made soap was a product of industrial specialisation itself, and not, as Wilk claims, a system in which 'the raw ingredients of the tropics

and of far-distant exotic places were magically transformed into expensive European luxury products…to be disperse[d] once again around the world'.[122] The making of palm oil into an industrial manufacture, rather than an artisanal good, thus contained significant Chinese capitalist contributions, even prior to the more well-known period after Malaya's independence.

Ho Hong's physical proximity to Johor, where palm oil production was increasing rapidly, put the firm in an excellent position to capitalise on cheap domestic supplies of crude palm oil (as well as Johor-sourced copra). By 1932, a tenth of Malaya's 'poorer quality' oil palm produce was reportedly being retained in-country for local soap manufacture, presumably mostly for Ho Hong's activities.[123] Ho Hong had also reportedly begun selling palm oil abroad by 1931 under its 'Elephant' cooking oil trademark, though little else of this business is known to date.[124] Here, there may have been some similarities to concurrent developments elsewhere in Malaya. For instance, the Danish-owned Ulu Bernam Estate had recently begun production of bleached palm oil for export to British India and the Middle East for soap-making purposes.[125]

In effect, the 'small parcels of low-grade oil' that Harold Tempany had feared would emerge from the Malayan industry had been realised within three years of his memo's circulation, despite the efforts of colonial administrators to stop the spread of oil palm smallholdings and manual fruit processing methods.[126] Contrary to Tempany's assumptions, however, the main sources of this low-quality oil were not smallholdings (which could not possibly have accounted for a tenth of all palm oil and kernel production at the time), but established estates which had had to cut back on field and factory labour during the Great Depression in order to survive.[127]

[122] Wilk, *Cooking*, 48.
[123] Bauer, *Rubber,* 357.
[124] Tai, *Malaya*, 193.
[125] Appendix 7.3; Martin, *Saga*, 68, 70.
[126] ANM-JB: CLR BP 264/29, Enc. 2.
[127] SSVOC, *Report*, 58; Tate, *Industry*, 458.

Most Malayan agricultural officials studiously ignored these developments, which is understandable given that such events lay beyond their range of influence. Only in mid-1934, with Tempany chairing a committee tasked with reviewing the economic health of Malaya's oil crop industries, was the soap industry acknowledged as an outlet for Malayan palm oil. Even then, its presence was begrudged, and limited to a few words noting that some palm oil was 'being consumed by local soap works'.[128] Any further acknowledgement of this avenue was incongruent with the Committee's own preferences, which involved promoting Malayan palm oil's public image and reputation as a premium export, whose quality was supposedly 'uniformly of a very high standard'.[129] Revealingly, in its recommendations for safeguarding the commercial viability of Malaya's vegetable oil producers, the Committee did not suggest increasing the use of palm oil within local soap works, despite advocating higher amounts of copra oil for domestic soap manufacture.[130]

Nevertheless, Tempany's fears of bad oil pushing out the good did not come to pass. The Depression accelerated the one development which helped consolidate control over the quality of palm oil destined for high-grade markets, namely, the permanent establishment of bulk shipping facilities for palm oil in Singapore, and the gradual obsolescence of costly barrels. From 1931 onwards, palm oil produce was pooled in fewer vessels of larger capacities prior to shipment. It became much easier to inspect and reject incoming stocks if they failed to meet low-acid stipulations.[131] Not coincidentally, bulk shipping also drove down overall production costs by at least $34 per ton of palm oil.[132]

Yet, the emphasis on low-acid palm oil belied the fact that the strategy only began to yield significant commercial benefits after the Second World War, when advances in refining techniques amidst a global scarcity of edible oils finally enabled palm oil to enter the margarine

[128] SSVOC, *Report*, 55.
[129] Ibid., 63.
[130] Ibid., 25, 61-62, 73, 76.
[131] B. Bunting, C. D. V. Georgi, and J. N. Milsum, *The Oil Palm in Malaya* (Kuala Lumpur: Department of Agriculture, Malaya, 1934), 222-223; Tate, *Industry*, 459; C. D. V. Georgi, "Sampling of Palm Oil." *Malayan Agricultural Journal* 25, no. 11 (1937), 457-68.
[132] Bunting, *Oil Palm*, 215-220; Martin, *Saga*, 68.

sector in significant amounts. Throughout the 1930s, Malayan oil palm growers failed to make inroads into the much-vaunted American edibles sector. This appears to have been due to concerns over present and future protectionism from the United States, and the preference of Malaya's bulk sellers for British imperial markets during this period.[133] Moreover, margarine makers in the United States and Europe had different raw material preferences, due to varying consumer patterns. In the United States, margarine was typically used as a cooking fat, whereas in the United Kingdom and Europe margarine was used mainly as a butter substitute on bread. These differences made it harder for palm oil (and even copra oil) to make further forays into the European margarine industry. Prevailing refinery technologies meant that whale and soya bean oil were now preferred for their superior vitamin-bearing and hardness-lending properties respectively.[134] As such, most Malayan palm oil exports were channelled into the less remunerative soap and tin-plating sectors in the United Kingdom and Canada.[135]

The commercial survival of the Malayan oil palm industry during the 1930s thus owed little to the much-vaunted quality of its palm oil. Aside from the new transport cost economies derived from bulk shipment, the Malayan authorities themselves helped keep costs down through exemptions on export duties and land rents. Following consultations by an official committee convened to review the affairs of Malaya's oil crop industries in the 1934, all oil palm concession quit-rents in the Federated Malay States were reduced to the level of Johor's (then 50 cents per annum for the first six years, and $1 per acre thereafter). As for Johor, its land tenure conditions were already felt to be so favourable that the committee, chaired by Harold Tempany, did not think any further reductions were possible. These discounts lasted seven years until 1941,

[133] Straits Settlements Trade Commission, *Report of the Commission...on the Trade of the Colony, 1933-1934* (Singapore: Government Printing Office, 1934), 158.
[134] TNA: CO 323/1297/3, Minute, Agricultural Adviser, CO, 8.10.1934; ANM-JB: GA 232/34, Enc. 13, 4; Rayburn D. Tousley, "Marketing." In *Margarine: An Economic and Social History, 1869-1969*, ed. J. H. van Stuyvenberg, 227-79 (Liverpool: Liverpool University Press, 1969), 231.
[135] Appendix 3.3; Susan M. Martin, "An Edible Oil for the World: Malaysian and Indonesian Competition in the Palm Oil Trade, 1945-2000." In *Intra-Asian Trade and the World Market,* eds. A. J. H. Latham and Heita Kawakatsu (London: Routledge, 2006), 212.

the eve of the Japanese Occupation in Malaya. Similar measures were concurrently instituted in the coconut sector, but these tended to benefit larger growers whose land rents were higher to begin with.[136]

It is still a matter of conjecture why dealers and smallholders did not take more advantage of the new local markets for low-quality palm oil in soap and cooking oil manufacture. Besides official discrimination against small-scale oil palm planting, many dealers and wealthier Chinese smallholders in Johor probably still found it more profitable to rely on the catch cropping of pineapples in conjunction with rubber cultivation, where soils permitted.[137] In turn, there were fewer dealers present interested in buying palm fruit from smallholders.

Household demand for unrefined palm oil would have circumvented these obstacles to smallholder oil palm cultivation, but the author was unable to find any evidence during this period to suggest that Malayan households had developed a habit of consuming palm oil on a regular basis. Most signs in fact pointed to the inability of the oil, in its various guises, to penetrate local foodways. On the contrary, it was the coconut that had become even more domestically-oriented during Depression, reflecting a local material culture that continued to prize its products more highly than those of the oil palm's.

CONCLUSION

The Great Depression placed Malaya's export trade in coconut, oil palm, and rubber products under considerable strain. Smallholders involved in these three major cash crops adapted to the impact of falling prices by reducing production costs further, learning (or re-learning) alternative production and marketing practices, and shifting labour into other activities, including arecanut production. Yet the known evidence

[136] ANM-KL: SEL.SEC.G 748/34, Enc 3A; PAOJ 1934, 23-24; SSVOC, *Report*, 62; Anon. "Quit Rents on Coconut and Oil Palm Lands." *Malayan Agricultural Journal* 29, no. 2 (1941), 93.
[137] W. G. Huff, *The Economic Growth of Singapore: Trade and Development in the Twentieth Century* (Cambridge: Cambridge University Press, 1994), 76-77, 190-193, 218-219.

for these strategies remains sketchy, making specific questions regarding rural labour allocation hard to answer conclusively. This is especially significant for studies of the Depression, a period when one would expect major changes in labour allocation to occur, creating new imbalances in various sectors.

In keeping with the general neglect of coconut farming in historical research, there has been virtually no research on the history of animal labour in conjunction with coconut palms in Malaya, not least the use of coconut monkeys for crop harvesting, a strategy which continues in present-day Thailand. Why such practices were apparently less popular in Malaya's southern regions, compared to its northern half, remains unclear. Regional differences in human labour costs may be responsible. Also, because monkeys were used mainly to harvest taller, older trees, this may have limited the application of monkey labour in Johor during this period, since many palms were only planted during the 1920s.[138] Alternatively, since monkeys in general were officially categorised as wildlife rather than livestock, detailed evidence of monkey labour might simply be buried in scattered locations within the Malaysian archives, waiting to be found.

There are similar difficulties with recovering historical information on gendered aspects of coconut-related labour, as opposed to those for other crops, such as rice. Again, this may reflect greater colonial (and scholarly) interest in certain topics, than the reality of women's historical roles in coconut production. Christiaan Heersink has suggested that the burden of copra production in neighbouring Sulawesi fell disproportionately on women during the late nineteenth century, enabling exports to be scaled up, but nothing comparable has surfaced for Malaya to date.[139] Indeed, more work on gender differences in household labour in general might also help to address the question of why drainage infrastructure, so central to coastal Malaya's agricultural efforts, grew increasingly neglected during the Depression.

[138] Burkill, *Dictionary,* p. 609.
[139] Christiaan Heersink, *Dependence on Green Gold*: *A Socio-Economic History of the Indonesian Coconut Island Selayar.* Leiden: KITLV Press, 1999, 174-175.

Even harder to document are intangible but important socio-cultural factors reinforcing the persistence of smallholder coconut farming, and the unpopularity of oil palm smallholdings. These include farmer perceptions of coconuts as a 'safe haven' regardless of current prices, because of their long history of cultivation and established markets. Similarly, the idea that smallholders were averse to oil palm farming because they lacked confidence in the crop's long-term market prospects cannot be excluded.[140] But both notions are difficult to substantiate rigorously, not least because the official records from which such evidence can be drawn are already infused with colonial stereotypes of Malay smallholders as conservative and overwhelmingly traditional in their outlook. Given these difficulties, the comparative study of oil crop consumption patterns undertaken throughout this thesis probably remains the next best solution.

[140] Ruf et al., 'Introduction', 22.

Chapter 5

THE FIRST NARROWING OF THE PARTICIPATION GAP, 1934-1941.

In Malaya, the period between 1934 and 1941 has often been treated as a momentary lull, bookended by the dramas of the Great Depression and the Japanese Occupation (1942-1945). This perspective unfortunately overlooks crucial developments that occurred during this period. Redressing such neglect is not simply a matter of highlighting the longer-term impacts of the Depression on Malayan economy and society, or understanding how the events of the Japanese Occupation had earlier precedents. The closing phase of the interwar years also needs to be appreciated on its own terms, as a time when ideological battles within the halls of Malayan administration entered uncharted territory, and the chasm between locals and Malayan authorities yawned wider than ever. More than anything, it was a supremely frustrating period for smallholders, as opportunities to shift Malaya's agricultural trajectory in greater favour of small-scale arrangements were repeatedly squandered. These issues have been substantively covered for Malayan rubber.[1] Nothing similar has yet been recounted for the oil and coconut palm sectors, where much had been envisioned for smallholders, and little delivered.

This entire episode can be explored through three interconnected enquiries. First, it is crucial to understand why some colonial attitudes towards the plight of smallholders interested in oil and coconut palm farming swung hard in their favour during the period. Second, we need to comprehend why these shifts amounted to little in actual policy implementation by the end of 1941. Third, there is the challenge of assessing what these events actually entailed for smallholder involvement in both crops, given important developments concurrently unfolding within Malaya's broader economy.

[1] P. T. Bauer, *The Rubber Industry. A Study in Competition and Monopoly* (London: Longmans, 1948); John H. Drabble, *Malayan Rubber: The Interwar Years* (Basingstoke: Macmillan, 1991).

Shifts in official attitudes were sparked by the fallout from the Depression, but took different forms in each oil crop sector. In the Malayan oil palm industry, the main impetus for change was external, originating with the Colonial Office in London. Here, a new strategy prizing grower self-sufficiency was formulated by senior agricultural officials, in a bid to stave off social upheaval in Britain's tropical colonies. The new approach acknowledged that smallholders, often presumed to be living within closed-off, subsistence-oriented communities, had actually been at the forefront of a great expansion of commodity production for international markets in previous decades. This was something which colonial administrators in many other colonies, including Malaya's, had previously found difficult to accept, preferring plantation cash cropping arrangements where possible. With its vitamin-rich fruits and latent potential as a peasant food crop, the oil palm was to play an unprecedented role in the promotion of smallholder farming intensification in Malaya.

In the coconut sector, where Malayan authorities were already supportive of smallholder participation, changing attitudes were primarily driven by domestic concerns, as officials began to develop a better appreciation of local environmental challenges threatening to overwhelm coastal farms, albeit one that was still very crude in its understanding of ecological dynamics. Here, the shift was one from a narrow focus on copra production and marketing, to one that encompassed drainage problems endemic to the West Coast since the early twentieth century. This quiet revolution in thought was triggered by the realisation that copra improvement policies would undoubtedly fail if the environmental aspects of the problem were not tackled first.

The inability of these changing attitudes to translate into actual policy delivery stemmed from the weight of bureaucratic inertia. This was especially so in Johor, where decades of government understaffing amidst rapid agricultural expansion had left the state's leading British officials strongly inclined towards consolidating the status quo, rather than launching new initiatives that might strain the state's capacity to govern

further. Where actual oil palm smallholdings did arise, and come to the attention of authorities, responses remained apathetic, if not hostile. The premature departure of Malaya's most senior official proponent of smallholder oil palm farming only worsened this torpor.

In the case of coconuts, Johor authorities had failed to accumulate any local expertise in dealing with the scale of perceived drainage problems along the West Coast, and preferred to delay rehabilitation schemes until they had built internal capacity in the matter. Meanwhile, professional aloofness and political concerns made officials reluctant to embrace alternative strategies. These included allowing Chinese and Indian growers to shore up local coastal defences themselves, and moving settlers from the worst-affected areas of the coastline to better farmland elsewhere in Johor. By being adverse to such alternatives, the authorities limited the range of livelihood options accessible to smallholders, and compounded the agricultural troubles they were already facing.

This situation would have led to even sorrier outcomes for Johor's smallholders, if not for their efforts to tap into the remaining opportunities for livelihood diversification during the period. Most of these approaches bought some time for smallholders, and kept Johor's coconut farms afloat. Growers persisted with strategies adopted during the Depression to stem the decline of coastal forest rent, including the cultivation of a wide variety of crops adapted to waterlogged soils. Participation in non-farm activities such as fishing, mining and forest product gathering also appeared to rise, although mangrove harvesting probably aggravated flooding in localities where extraction was over-intensified. Markets for coconuts themselves continued to be resilient, as new uses for copra were found. Old habits of household coconut consumption persisted, and perhaps even increased.

The omission of oil palms from most smallholder repertoires during the period is glaring, given that the tree adapted well to many of West Johor's poorly draining coastal soils. The main problem was that the crop's industrial orientation continued to be reinforced by local

developments. The domestic market for palm oil as an industrial soap feedstock appears to have expanded further. Efforts to promote unrefined palm oil as an edible substance were also scaled up. However, the persistent inability and unwillingness of elites to conceive of unrefined palm oil as anything more than a vehicle for vitamins constrained palm oil's popularity with recipients. In many cases, provisioning led to counterproductive results. For smallholders interested in oil palm cultivation, all this made proximity to central processing facilities, coupled with collective grower action, essential to successful cash cropping. However, this was a farming strategy that Johor's senior administrators remained unwilling to support, except for crops which met their approval, such as coconuts.

REHABILITATION OF THE MALAYAN SMALLHOLDER

By the mid-1930s, London's Colonial Office had embarked on a major review of its role regarding native welfare. This was partly in response to social unrest roiling its African and West Indian colonies, sparked by the economic upheaval of the Great Depression. Unprecedented drops in primary export earnings had fuelled widespread social deprivation and growing unemployment. Another cyclical downturn in 1937-1938 lent further urgency to the Colonial Office's sense that imperial strategies had to pay closer attraction to trusteeship concerns than they had in the past, if Britain was not to lose control of its colonies.[2]

The Colonial Office's response was to double down on colonial agricultural strategies. It began to craft a more holistic approach to native farming that would prize greater self-sufficiency, heightened levels of soil conservation, and higher nutritional standards than had been allegedly attained previously. This view was shaped by underlying anxieties about land degradation, soil erosion, overcrowding, and malnourishment in the

[2] Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007), 180-181.

colonies. According to historian Joseph Hodge, the principal architects of this new integrated strategy were the Colonial Office's leading agricultural advisers at the time, consisting of Frank Stockdale (the former Director of Agriculture at Ceylon), and Professor Frank Engledow (then-Director of Cambridge University's School of Agriculture).[3]

Inspiration was drawn from path-breaking investigations into indigenous farming systems, conducted in Nigeria during the 1920s. These had been led by two senior agricultural officers stationed in the colony, Odin Faulkner and James Mackie. Their research was driven by the notion that native cultivation methods, while capable of improvement, had been responsible for an astounding degree of commodity production during the late nineteenth and early twentieth centuries.[4] What the Colonial Office found especially useful about Faulkner and Mackie's research was how their findings demonstrated the local utility of peasant agriculture, while leaving room for its improvement through systematic research.[5]

Through Stockdale and Engledow, a growing institutional consensus was forged around the idea that agricultural practices along 'native lines', while now recognised for their suitability to local conditions, needed external guidance to adapt to a world where land scarcity and overpopulation were now supposedly the norm. The institution of the Colonial Office, and its itinerant Agricultural Advisers, were to form the vanguard of this movement towards more intensive smallholder farming practices. Paradoxically, colonial officials knew little about how this was to be achieved, given the paucity of research on smallholdings, relative to that on estate agriculture.[6]

One solution was to promote field experiments within the colonies themselves. In 1935, the Colonial Office identified Malaya as a region long overdue for a visit from the Agricultural Adviser, who at the time remained Stockdale. Stockdale had previously used such visits to the

[3] Anon., "Departmental Notes." *Malayan Agricultural Journal* 24, no. 4 (1936), 194; Hodge, *Triumph*, 180-185.
[4] Hodge, *Triumph*, 149-150, 185-186.
[5] Ibid., 149.
[6] Ibid., 185-196.

colonies to hammer out research priorities and disseminate new ideas. His Malayan tour of early 1938 was geared towards developing measures which would enhance native welfare, including the re-evaluation and promotion of local food and cash crops for their nutritional value. As was usual practice, Stockdale prepared a post-visit report outlining his findings and recommendations.[7]

The portions of the report dealing with oil palms dealt a sharp rebuke to past beliefs and practices of Malayan authorities. Stockdale criticised the fact that oil palm research in Malaya had been mostly to the benefit of estates, rather than smallholders. Efforts to redress this imbalance were overdue: 'there is little doubt that…trials of oil palms, with the use of small presses recently found to be satisfactory in West Africa – are worthy… if only for the production of red palm oil as an addition to the normal diet of the people".[8] This argument harmonised with what Stockdale had generally seen as the need for smallholders to be producing more tropical fruits, for economic and subsistence-related reasons.[9] In practical terms, he suggested using local agricultural stations to foster small-scale oil palm cash cropping experiments, intending to catalyse peasant-centred initiatives across Malaya.[10]

In a region where estates practically monopolised all oil palm cultivation, Stockdale's recommendations must have been controversial. However, his interventions were dwarfed by those launched by Odin Faulkner, whose earlier work with Nigerian smallholders had provide the scientific justifications for the Colonial Office's 'smallholder turn'. In 1936, Faulkner stepped in to fill the vacancy left by the departure of Harold Tempany, Malaya's Director of Agriculture since 1929. Compared to Tempany, Faulkner was more supportive of the notion that smallholders could engage in commercially robust oil palm cultivation. He almost certainly saw his time in Malaya as an opportunity to continue research and extension work previously carried out on Nigerian oil palm cash

[7] Frank Stockdale, *Report by Sir Frank Stockdale, …, on a Visit to Malaya, Java, Sumatra and Ceylon, 1938* (London: Colonial Office), 1939; Hodge, *Triumph*, 151.
[8] Stockdale, *Report*, 52-53, 56-57.
[9] Ibid., 53.
[10] Ibid., 57-59.

cropping. Ironically, this earlier programme been driven by concerns regarding the competitive threat posed by exports of high-quality plantation-sourced oil from Sumatra and Malaya since the 1920s.[11]

In Nigeria, Faulkner had overseen trials of various manually-operated palm fruit processing machines. By 1931, a clear leader had emerged amongst the various contenders: a hand-operated curb press manufactured by wine press makers Andre Duchscher and Co. of Luxembourg. The press raised small-scale palm oil extraction ratios to a maximum of 70 per cent, and soon became popular among producers. At one point, there may have been as many as 10,000 units operating in Eastern Nigeria alone.[12] Nevertheless, the Duchscher press was too costly for most Nigerian households to own. They remained instruments to be possessed by dealers, who rented them out to smallholders, or bought fruit themselves and hired labour to operate the machines.[13]

Within several months of his arrival, Faulkner had arranged for the most popular press model used in Nigeria (the N.G. No. 1 type) to be sent from England, and set up at the Federal Experiment Station in Serdang (Photograph 13). During field trials, the unit was fed with local palm fruit, following established Nigerian practices.[14] The press was able to recover 72 per cent of palm oil from one batch of fruit, with a resultant free fatty acid level of just 2.7 per cent, well below the industry cap of 5 per cent.[15] Although such results seemed impressive, they were not actually very different from the results that been achieved by similar small-scale presses in Malayan estates during the 1920s and early 1930s. But the results nevertheless served as a reminder to interested officials that oil quality was not primarily dependent on machinery size. What mattered was the speed which with harvested palm fruits could be prepared for crushing,

[11] Susan M. Martin, *Palm Oil and Protest: An Economic History of the Ngwa Region, South-Eastern Nigeria, 1800-1980* (Cambridge: Cambridge University Press, 1988), 61.
[12] Charles William Stewart Hartley, *The Oil Palm* (3rd ed.) (Harlow: Longman Scientific and Technical, 1988), 694.
[13] Martin, *Palm Oil and Protest*, 65.
[14] J. N. Milsum and C. D. V. Georgi, "Small-Scale Extraction of Palm Oil." *Malayan Agricultural Journal* 26, (1938), 54-56.
[15] Milsum et al., *Small-Scale Extraction*, 56.

something which had been commonly achieved in 1920s Malaya using labour-intensive methods.

Photograph 13. The N.G. No. 1 Duchscher Press. Source: Milsum et al., *Small-Scale Extraction*, 54-55.

What really made a difference this time round was the desire to engage smallholders, rather than estates. This had completely altered the circumstances surrounding the press's introduction, as well as initial reception to the results of the trials. The research officers in charge of the experiments, John Milsum and Charles Georgi, channelled their enthusiasm into the *Malayan Agricultural Journal*'s February 1938 issue, arguing that smallholders would likely benefit from use of the Duchscher press, due to the machinery's relatively low overheads and operating costs. At this point, however, their views began to diverge from those of Stockdale's and his nutritionally-minded sympathisers. Milsum and Georgi assumed that Malayans had no inclination to ingest unrefined

palm oil, making a subsistence-oriented approach unlikely. Instead, they contended that palm oil production for external industrial markets could be more viable with the press. They envisioned smallholders selling palm oil directly to shippers in steel drums, bypassing the estate-mill complex.[16]

Admittedly, processing cost economies were still significant. Priced at $170, the Duchscher press was well beyond the budget of most households (the average monthly expenditure of a Malay family of five in rural Selangor was estimated to be $11.26 in 1934).[17] Furthermore, the machine only ran at full capacity in conjunction with 80 acres of oil palm holdings. The editorial accompanying Milsum and Georgi's article pointed out that merchants and shippers would be unlikely to accept any quantities of palm oil below 5 tons in volume, making bulk selling arrangements imperative.[18] The likely reality was that, as in Nigeria, dealers would be the main proprietors of the press, but this was not something that could be publicly stated, given the ongoing political unpopularity of non-Malay dealers in Malaya.

Nevertheless, as with the model copra kiln schemes of the first half of the 1930s, federal officials hoped that new processing technologies would transform the economics of smallholder cash cropping. Just months after the publication of Milsum and Georgi's landmark article, the Duchscher press was already being showcased by the Agricultural Department at the Malayan Agri-Horticultural Association's Fifteenth Malayan Exhibition in Kuala Lumpur, a major event attracting some 46,679 viewers that year. With top dignitaries including the Sultan of Selangor in attendance, the Exhibition's guest-of-honour, High Commissioner of the Federated Malay States Sir Shenton Thomas gave the opening speech in which he invited audience members to view the press's workings onsite.[19] These were the actions of federal officials who had every

[16] Ibid., 53.
[17] Drabble, *Interwar Years*, 137.
[18] Anon., "Editorial: Small-Scale Palm Oil Production." *Malayan Agricultural Journal* 26, no. 2 (1938), 52.
[19] D. H. Grist, "Fifteenth Malayan Exhibition." *Malayan Agricultural Journal* 26, no. 9 (1938), 380-386.

intention of encouraging smallholder oil palm farming arrangements in Malaya.

THE BACKLASH AGAINST OIL PALM SMALLHOLDERS IN JOHOR

Nevertheless, federal officials appeared unaware that oil palm smallholder collectives were already taking shape within Malaya, independent of the Duchscher unit's arrival. In Johor, the most detailed record of actual oil palm involvement during this period comes from the sub-district of Ayer Hitam, northwest Johor. Sometime around 1933-1934, an individual named Haji Omar bin Abdullah planted several acres' worth of oil palms in this locality. It is unclear if his lands were expressly alienated for oil palms, in which case conditions specifying the need for a nearby factory (none of which existed at the time in Ayer Hitam) ought to have been stipulated. More plausibly, Hj. Omar's lands were granted for the cultivation of crops other than rubber, with no express condition against oil palms; a regulatory loophole that was only closed by Johor's Commissioner of Lands and Mines in 1936.[20]

Hj. Omar's circumstances are largely unknown, but probably exceptional. According to Muar District's top land official, Hj. Omar was reportedly 'a Japanese who [had] entered Islam and whose family [had] assimilated Malay culture'.[21] How the official acquired such knowledge is unclear, but his claims are corroborated by circumstantial evidence. Prior to the Japanese Occupation of 1942, some Japanese families who had settled in nearby Batu Pahat had already converted to Islam, with 'very good knowledge of local languages such as Malay and Mandarin'.[22] Unfortunately, Hj. Omar's Japanese alias, and details of his family arrangements, remain unknown.

[20] ANM-JB: CL&M 296/36, Enc. 5.
[21] ANM-JB: CL&M 584/41, Enc. 2.
[22] Cheng Kok Peng, "A Brief Study of the Situation in Batu Pahat during the Japanese Occupation." In *Pendudukan Jepun Di Tanah Melayu, 1942-1945: Kumpulan Esei Sejarah Malaysia Oleh Pelajar-Pelajar Universiti Sains Malaysia (The Japanese Occupation in Malaya, 1942-1945: A Collection of Essays on Malaysian History by Students of Universiti Sains Malaya)*, eds. Paul H. Kratoska and Abu Talib Ahmad (Pulau Pinang: Universiti Sains Malaysia, 1989), 27.

On the one hand, Hj. Omar, who had a postal address in the town of Muar by 1941, may have started out as a planter, like many other Japanese nationals who initially had come to Malaya to work for Japanese-owned rubber plantations during the 1910s. The vast majority of these Japanese estates had mushroomed in Johor during and after Malaya's first rubber boom, drawing thousands of new Japanese sojourners to the state.[23] By the early 1920s, however, the Japanese Malayan rubber sector had run into severe headwinds, following the passing of new British Malayan laws discriminating against non-British rubber investment in Malaya from 1917 to 1919, and sharp falls in global rubber prices shortly afterwards.[24] With debts steadily mounting, many Japanese estate owners either sold up their estates during the mid-1920s, or diversified away from rubber.[25] Indeed, within the Sango Koshi Estate group – the oldest and biggest of the Japanese Malayan rubber enterprises - oil palms had been planted experimentally in Johor by the end of 1930.[26] Someone like Hj. Omar may have thus acquired knowledge of oil palm cash cropping via this route.

On the other hand, we cannot rule out the notion of Hj. Omar having engaged in petty trading, perhaps in addition to plantation work. Such activities, like those of other Japanese contemporaries working in Malaya, would have brought him into frequent contact with various individuals and businesses in Johor's hinterlands, including oil palm estates.[27] However, Japanese residents in nearby Batu Pahat were reportedly shunned by Chinese, which would have made it difficult for them to sell popular tree crops, such as rubber, coconuts, and copra, to Chinese dealers dominating the trade.[28] It is otherwise difficult to explain Hj. Omar's willingness and ability to enter a new economic niche by

[23] Abd. Jalil Bin Abd. Gani, "Sejarah Batu Pahat, 1917-1942 (History of Batu Pahat, 1917-1942)." (BA (Hons) Thesis, Universiti Kebangsaan Malaysia, 1976), 56-58; Yuen Choy Leng, "Japanese Rubber and Iron Investments in Malaya, 1900-1941." *Journal of Southeast Asian Studies* 5, no. 1 (1974), 34-35; Ead., "The Japanese Community in Malaya before the Pacific War: Its Genesis and Growth." *Journal of Southeast Asian Studies* 9, no. 2 (1978), 168.
[24] Yuen, *Rubber and Iron*, 20-24.
[25] Ibid., 23-24.
[26] ANM-JB: CL&M 638/31, Enc. 2.
[27] Abd. Jalil, 'Batu Pahat', 136-137; Christopher Bayly and Tim Harper, *Forgotten Armies: Britain's Asian Empire & the War with Japan* (London: Penguin, 2005), 6-7.
[28] Cheng, 'Batu Pahat', 27.

undertaking a large number of oil palm plantings from his own resources, without any other oil palm estates or factories in the immediate vicinity.

We should also avoid excluding the likelihood of Hj. Omar having been recruited as a spy for Japanese intelligence before the Occupation. If he had been taken on, the scope of his social and economic activities (like that of many other Japanese Malayans) would probably have been extended beyond what would normally have been expected.[29] Even so, this possibility should not detract from the fact that Hj. Omar was genuinely committed to Muar's social and economic life in the long term. By 1937, Hj. Omar's holdings were flourishing, with what appeared to be 40 acres of newly fruiting palms.[30] These lands were held via an enterprise known as the Sister Company Ltd., for which Hj. Omar claimed to be 'the managing partner'.[31] Despite the dislocations of the Japanese Occupation during the 1940s, Hj. Omar resumed his business activities after the war. In 1950, he was in fact found applying to the Muar authorities for a new title deed for one of Sister Company's agricultural holdings, to replace losses of documents during wartime from his former residence at Jalan Bakri.[32]

These ambiguities are further confounded by the fact that, by 1941, Sister Company's landholdings formed the core of a much larger 120-acre cluster, owned in parts by 20 other neighbours and associates. This was, in essence, the first ever recorded instance of an independently-run oil palm smallholder collective in Johor. Over half of this entire acreage was held by Malay households, who had only begun to plant oil palms on their lands from 1938-1939 onwards, just one to two years after Hj. Omar's palms had fruited (Table 2).[33] The opportunity to witness the harvesting – and perhaps even processing – of oil palm fruit first-hand would probably have encouraged other smallholders to get involved.

[29] Bayly et al., *Forgotten Armies*, 6-7.
[30] Government of Johore, *Annual Report of the State Agricultural Officer, Johore* (henceforth SAOJ), *1937* (Johore Bahru: Government Printer), 16.
[31] ANM-JB: CLR BP 940/50, Enc. 1.
[32] Ibid.
[33] ANM-JB: CL&M 584/41, Enc. 2.

Presumably, Hj. Omar and his family's integration into Malay society had helped build trust and camaraderie, persuading other smallholders to brave the risks associated with a new tree crop. While the specific context was unusual – not least because the pre-Second World War Japanese community in Malaya was allegedly 'aloof and self-contained' on the whole[34] – the oil palm cluster's underlying dynamics are typical of how innovative smallholders outside the Malay Peninsula continue to persuade their neighbours to adopt new cultivars.[35]

	Lots	Approximate Total Acreage	Held By	Cultivated	Remarks
(a)	19	56	Sister Co. Ltd.	Oil palm 1-8 years old	No breach of condition
(b)	10	28	Malay small holders	Oil palm 1-3 years old	No breach of condition
(c)	13	36	Malay small holders	Oil palm 1-3 years old	Breach of condition
(d)	29	64	Offered to Malay small holders	Not yet alienated	Proposed special condition prohibiting oil palm etc.
(e)	14	40	Malay small holders	Foodstuffs	-
(f)	2	6	State Land	-	-
Total	78	230	120 acres of oil palms		

Table 2. The Ayer Hitam oil palm smallholder cluster, September 1941. Source: CL&M 584/41, CLR Muar to CL&M Johore, 8.9.1941

The cluster began attracting attention from Johor's senior land authorities in 1941. This resulted from the cluster's attempt to acquire more farmland the previous year. In this earlier case, Muar's Land Office had responded by offering 64 fresh acres to the smallholders, provided that they were not used to cultivate oil palms. Disappointed with this

[34] Yuen, *Japanese Community*, 176.
[35] François Ruf and Götz Schroth, "Introduction." In *Economics and Ecology of Diversification: The Case of Tropical Tree Crops*, eds. François Ruf and Götz Schroth (Dordrecht: Springer, 2015), 31.

offer, Hj. Omar and 19 other individuals responded in January 1941 by petitioning the Muar Office to have this restriction removed.

The crucial issue, according to the growers, was that they needed more lands specifically for oil palms, in order to increase the commercial viability of their activities: '[W]e find that it is a very difficult problem to produce the profits thereon from the small area unless we have more areas cultivated [with oil palms]. More over [sic] the expenses for extracting oil from the small holding will cost more money and will incure losses [sic]'.[36] No details of processing methods were given, but it seems reasonable to assume that some kind of small press was being operated by the smallholders, well below capacity at the time.

In contrast to previous responses to smallholder interest in oil palms in Johor during the early 1930s, official attitudes towards the plight of the cluster began on a remarkably positive note. This ideological shift was a direct outcome of earlier efforts made by Faulkner and his colleagues in the federal bureaucracy to promote small-scale oil palm farming across Malaya. Johor's State Agricultural Officer, A. E. Coleman-Doscas, was initially consulted for his views on the issue by Muar's local authorities. His response, detailed in a memorandum, showed familiarity with the recent history of curb press trials at Serdang, as well as Faulkner's strong support for small-scale oil palm farming. Writing to Muar's local agricultural officer in August 1941, he was unreservedly happy to oblige the petitioners' request:

> [T]here appears to be no reason why the cultivation of Oil Palm should not be introduced [in Malaya] in the same manner as in Nigeria, and that the development of the area concerned [at Ayer Hitam] should provide valuable information in this connexion. You should suggest that the aggregate area [for oil palms] should not be more than 200 acres, and that holdings should as far as possible be contiguous to facilitate centralised

[36] ANM-JB: CL&M 584/41, Enc. 1.

> manufacture. We will do all we can to assist in extraction and marketing when the areas come into bearing.[37]

Muar's Collector of Land Revenue was initially enthused by this view. In his missive to Johor's most senior land authority, the Commissioner of Lands and Mines, he recommended that all areas occupied by the smallholders be officially approved for oil palm cultivation, including those previously planted illegally (Table 2). He even suggested going beyond what the smallholders themselves had requested, recommending that another 40 acres being currently used for food crops could be converted to oil palms, if desired by their owners.[38]

The Commissioner, O. E. Venables, was reluctant to support such an unprecedented development. His immediate reaction was to comb through past land regulations concerning oil palms in Johor.[39] Unable to find anything regarding smallholder oil palm cultivation, he pursued a different line of enquiry, asking Johor's State Agricultural Officer if he knew of any actual oil palm smallholdings in Malaya, outside of Johor. Coleman-Doscas had no personal knowledge of such developments, and looked towards Malaya's annual compendium of agricultural statistics for guidance. He was unable to find any such evidence in the compendium's 1940 edition, but this was a foregone conclusion. Since the publication first began in 1931, oil palm acreage statistics had been derived from returns from estates, with no separate category assigned to smallholders, unlike for the rubber and coconut sectors.[40] This flawed methodology was probably responsible for the exclusion of Johor's 40 acre oil palm smallholding from the compendium, despite its mention in the State Agricultural Officer of Johor's annual report for 1937.[41] Coleman-Doscas thus had no written means with which to sway the Commissioner's judgement in a more favourable direction. As had been the case with the

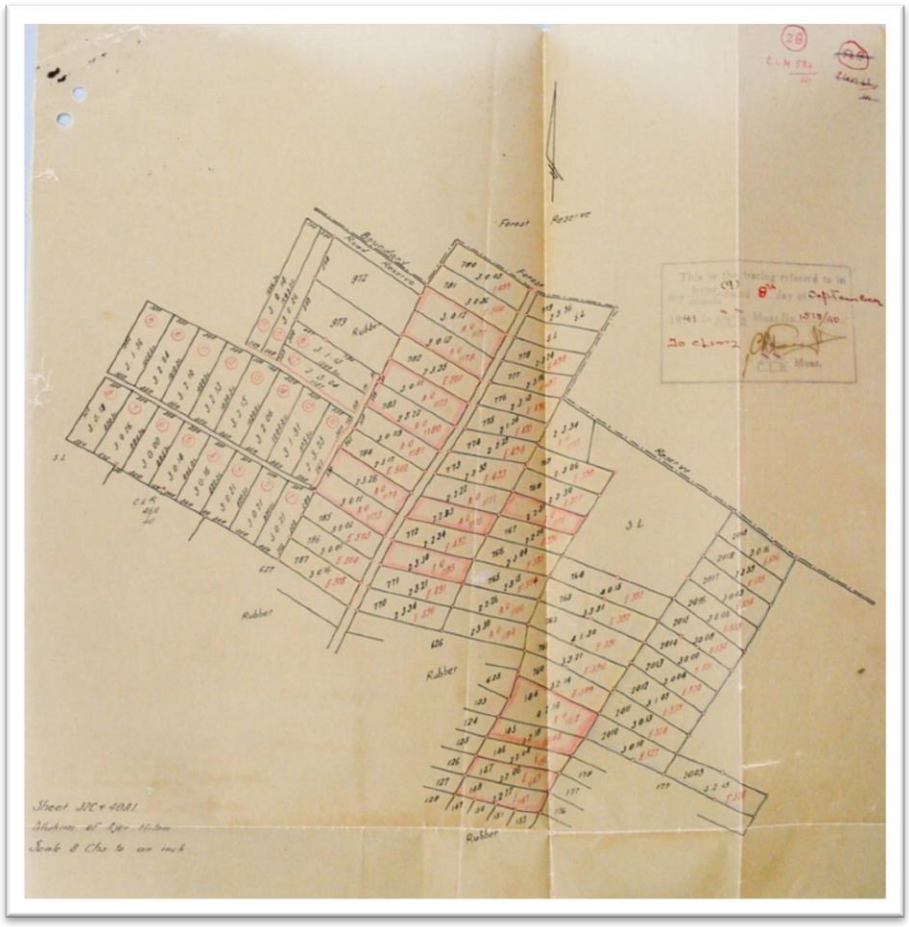
[37] Ibid., Enc. 2A.
[38] Ibid., Enc. 2.
[39] Ibid., Minute, CL&M Johore, 25.10.1941; Ibid., Minute, CL&M Johore, 31.10.1941; ANM-JB: CL&M 296/36, Enc. 1.
[40] Department of Agriculture, SS and FMS, *Malayan Agricultural Statistics 1939* (Kuala Lumpur: Caxton Press, 1940), Tables 18 and 33.
[41] SAOJ 1937, 16; Department of Agriculture, SS and FMS, *Malayan Agricultural Statistics 1937* (Kuala Lumpur: Caxton Press, 1938), Table 30.

authorities' handling of smallholder interest in oil palms during the Depression years, official notions that oil palms were unsuitable for small-scale cultivation were continuing to be a self-fulfilling prophecy.

Worse still, as Coleman-Doscas realised when digging deeper into past records, the most prominent correspondence on the matter had been authored in 1929 by Harold Tempany, Malaya's now-former Director of Agriculture. Upon re-discovering Tempany's memorandum, which advocated the prohibition of oil palm smallholdings except for fruit sales to a nearby estate mill, Coleman-Doscas seems to have felt obliged to submit the document to Venables for the latter's consideration. Coleman-Doscas could not have failed to notice the fundamental conflict between Tempany's hostility to small-scale processing methods, and his direct successor Odin Faulkner's own support for 'Nigerian-style' palm fruit production.[42] Unfortunately for Coleman-Doscas, Faulkner was no longer around to weigh in on the matter, having already left to assume a prestigious posting in Trinidad as Principal of the Imperial College of Tropical Agriculture, barely three years after arriving in Malaya.[43]

Commissioner Venables, evidently taken with Tempany's old memo, forwarded it to Muar's Collector of Land Revenue to consider, prefacing the material with the warning that 'this does not look very hopeful'.[44] The Muar official, a general administrator rather than an agricultural specialist, now sided with the Commissioner. He took it upon himself to deny the petitioners their request. In a complete turnaround from his earlier stance, he also began preparing punitive measures for 36 acres of land on which oil palms had been illegally planted (Map 8).[45]

[42] ANM-JB, CL&M 584/41, Minute, SAO Johore, 11.1.1941.
[43] Anon., "Miscellaneous Notes." *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)*, no. 9 (1938), 396-400.
[44] ANM-JB: CL&M 584/41, Minute, CL&M Johore, 2.11.1941.
[45] Ibid., Minute, CLR Muar 8.11.1941.



Map 8. The Ayer Hitam oil palm smallholder cluster, 1941. Plots outlined in red were already planted with young oil palm, breaching existing land conditions. Source: ANM-JB: CL&M 584/41, Enc. 2.

It did not have to end this way. Those scrutinizing Tempany's missive of 1929 would have found that its denunciation of small-scale palm fruit processing methods was now highly questionable, given the recent advances made by the Duchscher press in Malaya. With their previous experience supporting smallholder copra processing and marketing initiatives, the Johor authorities were enviably well-positioned to support the cluster's efforts. One problem seems to have lain within Johor's bureaucracy, as it gradually expanded in scope and complexity during the interwar years. Bureaucratic authority had become increasingly compartmentalised and reserved for those at its apex, namely general administrators such as the Commissioner of Lands and Mines and the

Collectors of Land Revenue.[46] Agricultural specialists were still relied on for advice, if not increasingly so, but Johor's generalists had the last say in matters of governance.

The fundamental issue was how those holding state power saw their roles in relation to those beneath them. For Johor's senior administrators, the idea of smallholders forming their own producer cooperatives, would, in other circumstances, have been strongly encouraged. Throughout the second half of the 1930s, the Johor government had successfully supported the attempts of a number of coconut-growing localities to establish produce certification schemes, accompanied by higher sales premiums.[47] But oil palms, with their local history of domination by large-scale farming arrangements, particularly in Johor, did not mesh with the state's underlying bureaucratic logic, which assumed that certain crops were inherently unsuitable to smallholder arrangements.

Worse still, in their initial appeal for more farmland, Hj. Omar's associates had unwittingly informed senior Johor authorities that they had already violated the letter of the law by illegally planting a small portion of their lands with oil palms. As Christopher Gray has argued in his landmark study of Johor's colonial-era bureaucracy, "state action had to uphold the forms and principles of the government apparatus: land, for example, was not to be alienated easily to those violating established procedures....Government, in other words, had to maintain its integrity".[48] The Ayer Hitam oil palm cluster's attempts to expand were anathema to colonial officials who treasured consistency and incremental change. Perhaps this general hardening of official attitudes had stemmed from attempts to cope with the chaotic consequences of decades of uncontrolled migration to Johor, migration which had given rise to the

[46] Christopher Stephen Gray, "Johore, 1910-1941, Studies in the Colonial Process." (PhD Thesis, Yale University, 1978), 139.
[47] SAOJ 1938, 19; Department of Agriculture, Malaya, *Annual Report* (henceforth AR DAM) *for the year 1938* (Kuala Lumpur: Government Printer, 1939), 62, 77; Government of Johore, *Annual Report on the Social and Economic Progress of the People of Johore* (henceforth AR JOHORE) *for 1939* (Johore Bahru: Government Printer, 1940), 9-10.
[48] Gray, 'Johore', 158-159.

fastest growing population of all the Malay States since the 1910s.[49] Thus, despite the presence of a number of officials sympathetic to the progressive views of Faulkner and his associates, the weight of local circumstance militated against any attempts to realise smallholder-friendly policies in Johor's oil palm sector.

THE STRUGGLE OVER WEST JOHOR'S COASTLANDS

By this time, in fact, many of Johor's smallholders were grappling with a far more serious agricultural debacle: the West Coast's waterlogged soils. Throughout the second half of the 1930s, officials expressed increasing alarm over drainage systems that were letting in excessive seawater, while being unable to drain off surplus fresh and brackish water that had accumulated inland.[50] Particularly disconcerting for senior agricultural authorities was the growing sense that the fall in palm yields resulting from such inundation was detrimental to copra quality, as copra makers were finding it increasingly hard to acquire enough nuts to fill their kilns before each firing.[51]

In one such fact-finding mission in 1938, Francis Cooke, Malaya's officially-designated expert on copra production, was appalled by the additional decline that had taken place at Sri Menanti, previously one of Muar's most prolific coconut-bearing areas during the late 1920s. Recent clearance of mangroves along the local foreshore had caused extensive coastal erosion and subsidence. Earthen bunds, on the verge of collapse in some areas, were found riddled with holes made by local crabs. Lands nearest the coast were now completely denuded of palms, and those up to three kilometres inland were suffering from taper tops and small crowns, the result of extended immersion in water-logged, brackish soils (Photograph 14). As a result, palms were only yielding half the amount of fruit compared to a decade ago. Indeed, swamp flora and fauna seemed to

[49] Ichirō Sugimoto, "An Analysis of the State of Johore's Finances, 1910-1940." *Journal of the Malaysian Branch of the Royal Asiatic Society* 80, no. 2 (293) (2007), 69-70.
[50] SAOJ 1937, 15-16; SAOJ 1938, 19-20; AR DAM 1937, 12.
[51] ANM-KL: HCO 425/1934, Enc. 4.

be reclaiming the area, with woody shrubs characteristic of brackish conditions proliferating alongside inland palms.[52]

Photograph 14. Parit Rabu, Sri Menanti: eroded bunds and heavily debilitated palms, 1938. Source: ANM-JB: CL&M 299/39, Enc. 1A.

Because of these environmental difficulties, Sri Menanti's coconut-based economy had been effectively crippled. The large state-funded copra kiln at Sri Menanti, first opened to great fanfare in 1934, was now only operating once a month, instead of every three days as originally planned. Many settlers had abandoned their holdings, driving the local Malay population down to a fraction of its former size two decades ago. In their place, a smaller number of Chinese households had moved in, foreclosing or leasing lands from Malay growers.[53] By the late 1930s,

[52] ANM-JB: CL&M 202/39, Enc. 1C.
[53] Department of Irrigation and Drainage, FMS, *Report of Mr. A. G. Robinson, Adviser, Drainage and Irrigation, Malay States, on His Visit to Johore, 1938* (Kuala Lumpur: Government Press, 1938), 23-26.

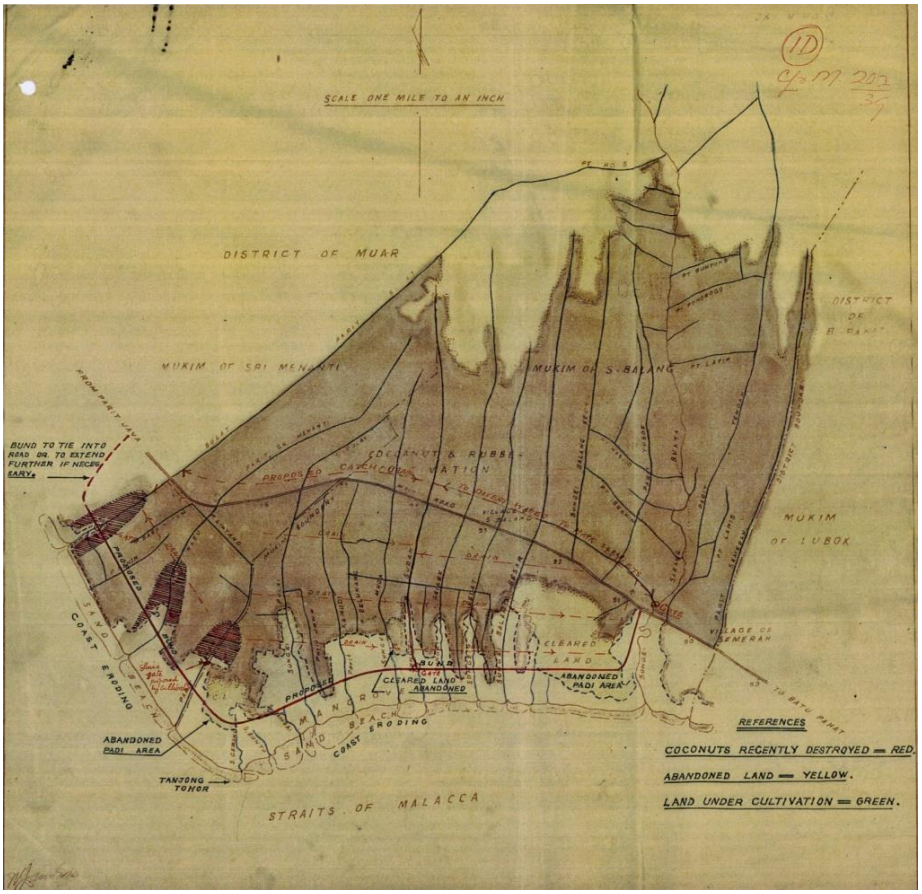
officials believed at least one-seventh of West Johor's coconut farmland was being affected in a similar manner.[54]

Despite this grim prognosis, environmental decline was not inevitable. By the 1930s, state-backed drainage schemes, like other forms of public infrastructure such as irrigation, were becoming expressions of political commitment to Malay welfare in Johor.[55] This shift in priorities appears to have been catalysed by the spread of Chinese and Indian households into former strongholds of Malay coastal settlement. This led to much unease among Johor officials concerned with preserving the socio-cultural foundations of the state, not least the Sultan himself.[56] Thus, during the mid-1930s, state authorities had finally begun to survey coconut areas most heavily affected by flooding, including Sri Menanti and another sub-district, Senggarang, with the intention of launching comprehensive drainage schemes that would prevent salt water ingress permanently.

Moreover, many growers themselves, including the new Chinese and Indian landowners at Sri Menanti, were refusing to give up on coastal coconuts. Wealthier individuals sought to rectify local drainage problems with their own privately-hired engineers. Less badly affected coastal areas were even playing host to large numbers of fresh settlers who had been squeezed out from other coastal settlements during the Depression. For instance, just several kilometres east of Sri Menanti, Bugis settlers from Benut, a particularly stressed area during the Depression, were found preparing several hundred acres of previously abandoned rice lands for coconuts in 1938. The area had been chosen by settlers after they had determined that the terrain was sufficiently elevated to prevent unwarranted tidal ingress, unlike those near the heavily eroded foreshores of Sri Menanti (Map 9).[57] To some extent then, West Johor's

[54] LSE: FIRTH 2/7/10, Raymond Firth and A. E. P. Collins, 'Malay Peasant Agriculture' (henceforth MPA), 208.
[55] ANM-JB: CL&M 955/38, Enc. 3; Ibid., Minute, General Adviser, 17.12.1938; Gray, 'Johore', 118-124.
[56] Gray, 'Johore', 101.
[57] ANM-JB: CL&M 202/39, Enc. 1C; CL&M 299/39, Encs. 1A, 4.

environmental decline was a patchwork phenomenon, vulnerable to contradictions and countervailing developments.



Map 9. Sri Menanti: preliminary plans for government bunding and drainage scheme, with lands recently cleared by Bugis settlers (bottom left area), circa 1938-1939. Source: ANM-JB: CL&M 202/39, Enc. 1D.

Nevertheless, there were crucial factors working against the fortunes of West Johor's worst-affected coastal farmlands. Progress with large-scale coastal engineering efforts was extremely slow in Johor, comparing to other major coconut-growing states like Selangor and Perak. In Selangor, extensive coastal bunding works had been undertaken by the Malayan authorities during the mid-1930s at Bernam Peninsula and Klang District, resulting in a 'striking improvement' of previously affected coconut farms. This flourishing in turn bred further success, as the bunds

encouraged smallholders to spend more time tending to palms by the late 1930s.[58] Nothing remotely similar happened in Johor's case.

Johor's problems with coastal engineering were manifold. First, there were serious disagreements within the highest levels of office on whether drainage schemes to protect coconut farms constituted the best use of public resources. Planter representatives drew on their growing influence within Johor's Council of State to criticise the government's ambitious drainage plans, arguing that coconuts were now little more than a 'glut on the market'.[59] Instead, money spent on such schemes would be better used to assist owners of debilitated coastland to move to better farmlands within the state.[60] Nevertheless, such views were ultimately overruled by Johor's administrators. As in the 1910s, when administrators balked at spending taxpayer's money to exclude Malays from coconut-related occupations, the idea of using public funds to 'evict' Malay communities from lands that might be subsequently occupied by Chinese and Indian intermediaries discomfited officials. As Muar's Collector of Land Revenue contended: 'The last Malay if he could be induced to leave would be ousted with Government money. This way madness lies'.[61] The more politically acceptable solution was to leave all growers in place, and find ways to arrest the deterioration of coastal soils.[62]

But this approach demanded levels of technical proficiency that the Johor authorities did not yet possess. In contrast to the Federated Malay States, the Johor government did not have its own Drainage Board, staffed by qualified civil engineers, until 1935.[63] This was a truly curious development, given the fact that state authorities had, until 1930, allocated roughly 40 per cent of annual budgetary expenditures towards the expansion of the Public Works Department and its activities.[64] Clearly exhibiting a bias towards road-building, the authorities had prioritised

[58] AR DAM 1937, 12; AR DAM 1938, 11.
[59] ANM-JB: CL&M 955/38, Enc. 1; Gray, 'Johore', 113-118.
[60] ANM-JB: CL&M 955/38, Enc. 1.
[61] Ibid., Enc. 6.
[62] Ibid.
[63] ANM-JB: CL&M 299/39, Enc. 1A.
[64] Sugimoto, *Johore's Finances*, 81.

large-scale infrastructural policies that overrode important drainage concerns, much to the chagrin of West Johor's copra producers. In one exemplary case, Johor's Public Works Department completed a 50-kilometre coastal road between Johor's northwest and southwest regions in 1935. In doing so, the Department had bisected a series of waterways used by local growers for drainage and goods transport. Inland growers and dealers were consequently forced to use costlier land transport. In order to reduce conveyance costs, coconut produce was reduced in bulk and weight through husking and splitting the previous day before being transported to the kiln, instead of processing everything at the kiln itself. This delay ultimately dragged down copra quality, since fresh coconut kernel decays within hours of exposure to fresh air.[65]

Even after its establishment, the Drainage Board's schemes encountered numerous hurdles. The Board was initially given little power, starting off as a subordinate branch of the Public Works Department.[66] Only in June 1938, with the effects of coastal flooding becoming increasingly apparent, was the Board reconstituted as a separate department, headed by Johor's powerful Commissioner of Lands and Mines.[67] $35,000 was finally ring-fenced in Johor's 1941 budget for a large-scale drainage scheme at Sri Menanti. But plans for other sites remained subject to further revision.[68] Unfortunately, the few remaining opportunities to undertake actual engineering work were postponed amidst the upheavals of the Japanese Occupation, followed by the chaos of peninsular-wide reconstruction under British colonial rule.[69] Consequently, the few existing drainage schemes being planned for West Johor during the late 1930s were not executed until the 1950s.

A third difficulty laid with coconut farmers themselves, and their often poor relationships with state authorities. The most ambitious

[65] SAOJ 1935, 19.
[66] ANM-JB: CL&M 299/39, Enc. 1A; Ibid., Circular No. 29 of 1935, 30.10.1935.
[67] Ibid., Enc. 1A.
[68] ANM-JB: CL&M 202/39, Minute, CL&M Johore, 9.11.1940.
[69] TNA: MAF 83/2912, 'Coconut Production: Malaya', enclosed in W. J. Thorogood, Colonial Office, to J. C. Gardiner, Ministry of Food, 7.9.1944; J. N. Wilson, "The Sri Menanti, Senggarang and Muar Drainage Schemes, Johore." *Malayan Agricultural Journal* 40, no. 4 (1957), 241-52.

private drainage initiatives appear to have originated from wealthier farmers and dealers in contact with Malaya's professional engineering community. The Johor authorities, however, were wary of supporting any private proposal that might have counterproductive effects on adjoining areas, since West Johor's interconnected drainage networks now extended across thousands of acres of occupied farmland. Thus, an application from a group of 11 Chinese and Chettiar landowners for permission to install a sluice gate with automatic valves at Parit Rabu, Sri Menanti, was made in early 1936, but was held in abeyance by district and state authorities until March 1939. This occurred despite the applicants' willingness to pay for the works, costing $2,500, themselves.[70] Revealingly, approval was finally granted on the understanding that the structure would be temporary, subject to removal without public compensation once the state scheme had been established.[71]

Where they could spare time and energy, poorer coconut cultivators continued to undertake minor bunding and drainage restoration works near their own farms. These alterations were of a rapidly degradable nature, usually drawing on soft mud and clay in the vicinity.[72] They were also probably inadequate to stem the increasing subsidence of the coastline, if official descriptions of widespread flooding during this period are to be believed. Unlike the initiatives launched by dealers, state authorities did little to impede the efforts of these farmers, and were probably unable to do so even if they tried, due to the widespread, sporadic character of such activities. To be sure, the Johor authorities were increasingly keen to stem the loss of forest rent along the western coastline, and this would become overwhelmingly apparent by the 1950s. But to the contemporary external observer, little appeared to have changed since coconut farming's early days.

[70] ANM-JB: CL&M 202/39, Encs. 1A, 1B, 1C.
[71] Ibid., Enc. 4.
[72] Ibid., Encs. 1B, 1C; SAOJ 1937, 15; SAOJ 1938, 19-20.

COCONUT SMALLHOLDER LIVELIHOOD STRATEGIES

Given these worrying conditions for coastal agriculture, it seems fair to ask why so many of Johor's households persisted with efforts to remain on their coconut farms. The answer, in short, is that households continued to diversify livelihoods, reducing the impact of coastal flooding on their main means of support. This meant engaging in a wide variety of farm and non-farm activities, which helped prop up ailing coconut farms. In any case, a significant number of coconut smallholdings were not as badly affected by flooding as officials sometimes feared, including those further away from the coastline. Here, many growers could still depend on coconuts for steady incomes, as markets for produce remained resilient.

In Johor, the rubber diversification option for coastal smallholders appears to have been limited during this period, and not just because of unsuitable soils. Across the state, many poorer rubber smallholders had to seek additional work to augment lower rubber earnings, due to the production restrictions of the International Rubber Regulation Agreement between 1934 and 1941. Nevertheless, as international prices rose sporadically, there were signs pointing to short-lived spurts of tapping in existing holdings.[73] Moreover, although Malayan smallholder rubber acreage records are imprecise, there appears to have been some new rubber planting, especially in 1934 and 1938, when land restrictions eased temporarily.[74] In the end, how much of this can be traced to the efforts of the West Coast growers is uncertain, but probably not a whole lot.

The picture is somewhat clearer, and more positive, for other crops. Growing numbers of food crops, including maize, cassava, sweet potato, chillies, and dry rice, appear to have been intercropped with coconut palms. This became especially apparent towards the end of the

[73] Appendix 4.1.
[74] Government of Johore, *Annual Reports of the Principal Agricultural Officer, Johore* (henceforth PAOJ), *1934* (Johore Bahru: Government Printer), 4-5; SAOJ 1935, 7; SAOJ 1938, 9; AR JOHORE 1939, 8-9.

1930s, when the importance of local food production was felt across Malaya as major wars broke out, first in China, and then Europe.[75]

Arecanut farming remained a popular activity in many parts of West Johor throughout the second half of the 1930s, partly because of the palm's tolerance for waterlogged soils, and also because of the crop's much more favourable prices than copra's. Average returns for Johor's arecanuts from 1935-1939 were 43 per cent higher than they had been in 1928, whereas average copra earnings from the second half of the 1930s were less than half of their real value in 1928.[76] In many cases, idle copra kilns were being used to dry out arecanuts.[77] Yet, despite a rise in arecanut exports that contributed to an all-time Malayan high of 43,915 tons net exports in 1940, most of which ended up going to British India, there did not appear to be any significant accompanying expansion in cultivation area in Johor.[78]

Bearing in mind the usual caveats about smallholding acreage estimates, these figures suggest that either the Johor arecanut palms had been underexploited to begin with, or that rising exports of Malayan arecanuts were actually a response to falling domestic consumption of betel quid. Tempting as it may be to infer the latter, there is still little known evidence to date the decline of betel-chewing in Malaya with any certainty. We still do not know the extent to which Western ideas of hygiene and beauty actually gained influence within different segments of Malayan society by the interwar years, denigrating arecanut consumption in the process.[79] And until we do, it is seems safer to assume that arecanut palms were being brought back into production, following an earlier hiatus.

[75] TNA: CO 852/95/6, Enc. 1, 11, 15-16; LSE: FIRTH MPA, 206-216; SAOJ 1937, 14.
[76] Appendix 4.1.
[77] Anon., "From the Districts: November, 1938." *Malayan Agricultural Journal* 26, no. 12 (1938), 538.
[78] Appendices 3.2, 3.10, 5.1.
[79] William Gervase Clarence-Smith, "Betel, Tobacco and Beverages in Southeast Asia: A Critique of the Reid Hypothesis." In *Art, Trade, and Cultural Mediation in Southeast Asia, 1500-1800*, ed. Raquel Reyes (Basingstoke: Palgrave Macmillan, forthcoming).

Participation in non-farm activities also seems to have increased. While precise estimates of smallholders involved in commercial fishing remain unknown, numbers may have risen during the period, given that state revenues from the issue of licenses grew significantly, from $8,590 in 1935 to $12,560 in 1939.[80] Thousands of Malays, many likely to have been from coastal households, also entered employment in Johor's iron and bauxite mines, on the back of rising mineral extraction (and mining wages) during the interval.[81] Perhaps in response to this growth in mining, and the accompanying demands made on firewood for ore smelting, mangrove firewood extraction in South Johor rose sharply. This pursuit, almost entirely financed and worked by Malays, expanded to the point where production fell sharply in 1938 due to overexploitation.[82] While necessarily speculative, the overall effect of these alternative sources of income for coastal households may have been to encourage the retention of some coconut holdings, while, in the case of mangrove harvesting, undermining the local environmental foundations of coastal agriculture in select venues.

Ongoing livelihood diversification should not obscure the fact that the decline of coconut farming in Johor remained gradual. Smallholders and dealers still found it worthwhile to vacillate between the market for copra, and those for non-copra products. This was underpinned by the sheer variety of local and regional outlets for coconut products during this period.

Although Johor's copra exports failed to return to their pre-Depression-era market values, and in fact plumbed even lower depths in 1937, interest in copra production remained firm.[83] Between 1935-1939, Johor exports were actually slightly higher than the interval between 1930-1934.[84] There were several reasons for this persistent trend. First, as seen in Chapter Four, a large number of palms planted at the inner edges of the

[80] AR JOHORE 1934, 19; AR JOHORE 1935, 21; AR JOHORE 1939, 16.
[81] AR JOHORE 1934, 12-13; AR JOHORE 1935, 12; AR JOHORE 1936, 12-14, 20; AR JOHORE 1937, 11-12, 16; AR JOHORE 1938, 12, 17; AR JOHORE 1939, 6, 10.
[82] AR JOHORE 1934, 21; AR JOHORE 1935, 23-24; AR JOHORE 1936, 26; AR JOHORE 1938, 24-25.
[83] Appendix 4.1.
[84] Appendix 4.1.

great coconut belt between Muar and Batu Pahat during the late 1920s were only beginning to reach maximum yields during the following decade, prompting affiliated smallholders to sell off growing volumes of nuts at low prices. This probably helped balance out falling yields from coconut palms closer to the foreshore, where environmental conditions were more hostile.

Second, as Europe lurched towards war, imports of industrial acid used to process the valuable latex harvested from rubber trees became scarce in Malaya. Substitutes had to be found, since external demand for rubber remained high during the late 1930s. One of these stand-ins was coconut water, which contains sugars that convert into acetic acid after several weeks' fermentation.[85] With some encouragement from rubber extension officials, smallholders and dealers began extracting water from split nuts at copra kiln sites.[86] Official statistics thus underestimated actual cash returns from copra production, as they did not account for by-products that could be sold even before kernels were smoked.

Most importantly, a massive swing in Malaya's copra trade helped stem further losses in copra value, thus preventing more growers from exiting the coconut industry altogether. This was initiated when Malaya's usual export markets for copra, virtually all in Europe, became more costly to penetrate during the early 1930s.[87] Because copra freight charges to European destinations had not fallen in proportion to copra price declines during the Depression, producer margins were effectively whittled away.[88] This was a serious setback, not least for Johor's coconut growers and dealers. These parties were especially reliant on sales to the Singapore market, where they were now competing even harder against a flood of cheap copra from the Dutch East Indies.[89]

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[85] I. H. Burkill, *A Dictionary of the Economic Products of the Malay Peninsula* (2nd ed.) (Kuala Lumpur: Ministry of Agriculture and Cooperatives, 1966), 612.
[86] AR JOHORE 1939, 9; Anon., "The Control and Distribution of Coagulants in Malaya." *Malayan Agricultural Journal* 28, no. 4 (1940), 192-193.
[87] Appendix 3.5.
[88] Straits Settlements Trade Commission. *Report of the Commission…on the Trade of the Colony, 1933-1934* (henceforth SSTC) (Singapore: Government Printing Office, 1934), 85.
[89] Appendix 3.6.

The Malayan coconut industry's response to this de facto hike in freight rates was to process more low-grade copra at home. Domestic copra crushers were at the forefront of this shift. Crude copra oil production expanded rapidly, and, aided by falling freight costs for copra oil, oil exports swelled from 25,484 tons in 1934 to 64,945 tons in 1941.[90] A rising proportion of this produce was delivered to British India, which by the end of the period accounted for 70 per cent of Malayan exports. Smaller quantities were sent to Burma, Britain, and Hong Kong, presumably for conversion into soap, refined cooking oil, and margarine.[91]

Colonial authorities in both London and Singapore generally condoned this rapid expansion of processed oil, with concerns about combating unemployment in Singapore apparently outweighing earlier misgivings concerning the development of industry within colonial territories.[92] Yet, the basis of this production surge, concentrated mostly in Singapore and Penang, stemmed from manufacturing plant that had been largely underused since the 1920s. In 1932, when copra oil production began to increase markedly, roughly only a fifth of Malaya's total copra crushing capacity was being tapped. This latent capacity, in addition to some newly-installed facilities in 1935, was what enabled Malaya's millers to escalate oil production in 1940 to seven times the output of 1931.[93]

Yet it would be premature to dismiss these production revivals as a mere return to the past. Indeed, Malaya's surge in copra oil production was met not just through increased exports of crude copra oil, but through unprecedentedly large transformations of copra oil into finished goods within Malaya itself. Two groups of commodities, semi-refined cooking oil and household soap, probably used up 35-40 per cent of all copra oil made in Malaya during the period, with the remaining copra oil sent abroad, mostly to Asian markets.[94]

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[90] Appendix 3.2; SSTC, *Report*, 85.
[91] Appendix 3.7.
[92] TNA: CO 323/1297/3, Enc. 10; Anon., "The Singapore Trade Exhibition", *The Straits Times*, 28.8.1931, 12; SSTC, *Report*, 161-162; Kevin Blackburn, *Education, Industrialization and the End of Empire in Singapore* (Abingdon: Routledge, 2017), 45.
[93] Appendix 6.3.
[94] Appendix 6.2.

Cooking oil products, already manufactured locally since the early twentieth century, began to expand in variety during the second half of the 1930s, thanks to the installation of refineries by several millers in Singapore and Penang. Among these pioneers was Ho Hong Oil Mills, whose Elephant/Palm Tree brand of cooking oil blended semi-refined copra oil with smaller amounts of groundnut oil, successfully catering to a growing Malayan Chinese consumer market. Larger oil millers also began producing another kind of semi-refined cooking oil, made from neutralised, non-deodorised copra oil, for sale to Malays and Indians who wanted a manufacture that retained home-made coconut oil's distinctive flavour.[95]

The domestic soap-making scene, already buoyant since the Depression, continued to expand in response to local demand for laundry cleansers, and, to a lesser extent, toilet soap. Between 1934 and 1940, the amount of soap sold in Malaya escalated from about 7,150 to 12,000 tons.[96] Some of this increase can be attributed to population growth in Malaya, rising from about 3.7 million to 4.6 million.[97] Rising incomes and changing notions of cleanliness probably accounted for the rest. Half of all soap consumed in Malaya in 1935 came from local Chinese-owned factories, a proportion which rose to two-thirds by 1940.[98] The Chinese-dominated soap industry also exported products to the surrounding region, which, while difficult to quantify, were probably significant.

As if these copra-related reorientations were not already enough, the Chinese entrepreneurial contribution also extended to a seemingly innocuous by-product that would eventually be responsible for keeping Malaya's coconut industry alive during the war-driven cataclysms of the

[95] UNI: GB1752.UNI/RM/OC/2/2/64/9, R. Heyworth to Overseas Committee London, 17.7.1941, 5; GB1752.UNI/RM/OC/2/2/64/12, A. Knox and J. Buxton, 'Malaya: Report on Soap & Edible Factory Proposition', 19.10.1946, 23.
[96] UNI: GB1752.UNI/RM/OC/2/2/64/1, J. Hansard, 'Malaya Visit Report', 6.3.1935, 1-2; GB1752.UNI/RM/OC/2/2/64/10, A. Hartog, J. Heyworth and A. Gourley, 'Report on Visit to Singapore', March 1941, 2-3.
[97] Nazrin Shah, "Mid-year population estimates and annual growth rates, Malaya, 1900-1956, Peninsular Malaysia, 1957-2015." (last accessed 1 June 2017, at http://bit.ly/2swj9f2).
[98] UNI: GB1752.UNI/RM/OC/2/2/64/1, J. Hansard, 'Malaya Visit Report', 6.3.1935, 1-2; GB1752.UNI/RM/OC/2/2/64/10, A. Hartog, J. Heyworth and A. Gourley, 'Report on Visit to Singapore', March 1941, 2-3.

1940s. This was copra cake, a carbohydrate-rich residue generated from copra crushing. Originally, most of these 'leftovers' were sold to Europe as cattle feed.[99] By the late 1930s, however, much larger amounts of copra cake were being retained within Malaya (Figure 3). While it is true that the surge of copra crushing during the 1930s generated an oversupply of cheap by-products in need of disposal, copra cake's local popularity would not have been possible without changing demand patterns within Malaya itself.

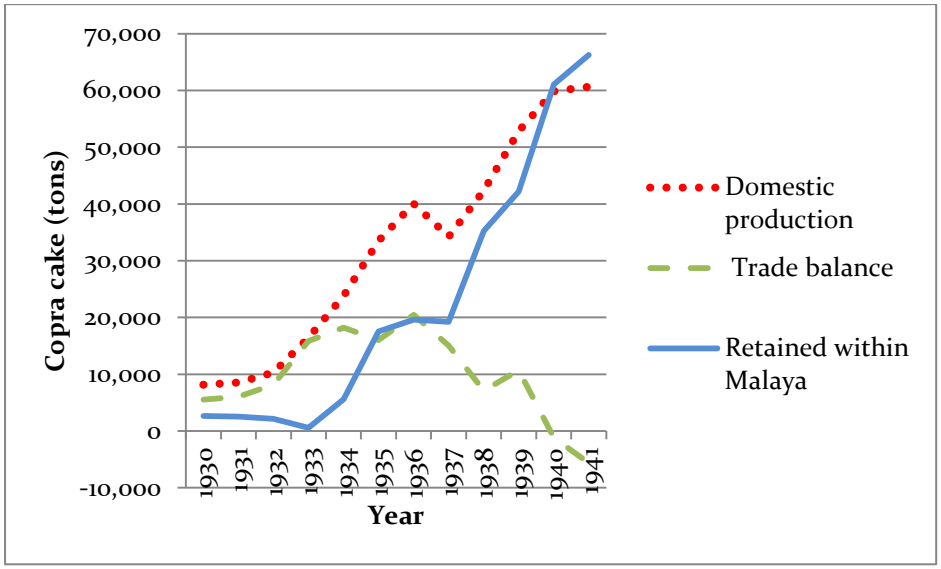

Figure 3. Malaya: copra cake trade, 1930-1941. Source: Appendix 6.2.

The rise of the domestic copra cake market was driven by two interrelated developments. One was the expansion of the local swine farming industry, which was dominated by Chinese smallholders from the outset (similar trends may have occurred with chicken and goat-rearing, but evidence for this is much more fragmented and vague). Pigs were usually farmed in conjunction with vegetables in market gardens and carp in ponds near ethnic Chinese settlements in mining areas.[100] Pig-rearing seems to have grown rapidly during the 1930s, thanks to human population growth in Johor and Singapore (particularly that of Chinese

[99] Appendix 3.8.
[100] D. H. Grist, *An Outline of Malayan Agriculture* (Kuala Lumpur: Department of Agriculture, Federated Malay States, 1936), 351-353; Lim Teck Ghee, *Peasants and Their Agricultural Economy in Colonial Malaya, 1874-1941* (Kuala Lumpur: Oxford University Press, 1977), 125, 202-203.

residents, the main consumers of pork). Rising unemployment during the Depression may have also boosted the numbers of individuals involved in pig farming as a livelihood. By 1930, Johor had swung from being a net importer to a net exporter of live pigs, sending 5,519 swine out of state that year, mostly to Singapore. Johor remained a net pig exporter every year thereafter.[101]

What really cemented copra cake's importance for Malaya was a growing tendency for local pig farmers to use the cake as a feed concentrate. Before the 1930s, farmers typically fed their pigs boiled vegetables and starches, including sweet potato stalks, *kangkong* (*Ipomoea aquatica*), and cassava refuse (*hampas*, by-products of Malaya's cassava starch processing industry). Indeed, cassava factory owners frequently kept swine themselves.[102] These diets produced pork of a particularly sweet and tender quality, purportedly catering to the tastes of the Chinese working classes. Concentrated foods did enter the picture, but these were mostly used to supplement any mineral and protein deficiencies in pig diets, and fatten pigs up for slaughter at about eight to ten months of age.[103] During the 1930s, however, Malayan demands for leaner kinds of pork began to increase, possibly due to the emulation of western-style consumption patterns, as well as rising demands for vegetables within Chinese diets.[104] Whatever the case, the proportion of concentrated feed relative to vegetables used in pig feed began to grow accordingly, since the former was a cheaper way of increasing pig weight. In the process, more costly forms of concentrates, such as rice bran, broken rice, and fish meal were increasingly displaced by copra cake.[105]

Malaya's burgeoning domestic markets for copra cake and copra oil had immense significance for the future of local coconut farming. By opening up more valuable avenues for the use of coconut material within Malaya itself, they helped consolidate the importance of coconut produce

[101] Appendix 4.2.
[102] T. D. Marsh, "Pig Keeping in Malaya." *Malayan Agricultural Journal* 28, no. 1 (1940), 11.
[103] H. A. Tempany, *Report on Agricultural Development in Johore (*Johore Bahru: Government Printing Office, 1934), 25; Grist, *Outline*, 169, 326; T. D. Marsh, "Pigs in Malaya." *Malayan Agricultural Journal* 20, no. 8 (1932), 393, 401-404.
[104] Marsh, *Pigs in Malaya*, 393.
[105] Ibid.; Marsh, *Pig Keeping*, 4.

within a wider range of vital economic activities than ever before, and amplified the influence of the Malayan copra crushers over Peninsular-affairs. But because the millers had staked their existence on vast quantities of cheap raw materials, of which only a part was supplied by Malaya's farms, they would end up using their growing influence to pressure domestic coconut farmers into producing more coconuts, when copra supplies from the Dutch East Indies became more difficult to obtain during the 1950s.

In the meantime, however, the millers' ascendance within Malaya's economy was paradoxically accompanied by a growing fragmentation of production during the late 1930s. In the past, crushing operations had been concentrated in Singapore and Penang. But the unprecedented growth of the local copra cake market now generated opportunities for entrepreneurs to establish mills on the mainland, close to both coconut-growing areas and pig farms. What they lacked in size, they made up for in lower transport costs for copra, copra oil, and copra cake.

To be sure, small mills catering to an internal trade in copra oil and cake had long existed within Malaya, including traditional wooden mortars of Indian origin (*ghani*), yoked to oxen.[106] However, with rising copra cake demand, downsized replicas of the mechanical crushing facilities found in Penang and Singapore began to appear on the mainland itself, a trend that would only accelerate when coconut product exports collapsed during the 1940s. These new mills were forged in local foundries which had accumulated decades of experience fabricating machinery for the tin industry.[107] By 1941, a mechanised mill was established in Batu Pahat, Johor, the first in nearly three decades, with the potential to turn out 1,200 tons of copra oil and 680 tons of copra cake a year.[108]

[106] ANM-KL: SEL.C.A 463/45, SAO Selangor, 'List of Coconut Oil Mills in Selangor,' 14.2.1946.
[107] S. Selvadurai, "A Survey of the Coconut Oil Milling Industry in Penang." (Graduation Exercise, BA (Hons) Economics. University of Malaya, 1957), 6.
[108] ANM-JB: SS 3066/25, Minute, Principal Agricultural Officer Johore, 30.11.1925; Anon., "From the Districts: September, 1941." *Malayan Agricultural Journal* 29, no. 10 (1941), 416.

The increasingly diffuse nature of the crushing sector ultimately meant greater competition for copra within Malaya. Smallholders and dealers benefited from this support for copra prices, especially in localities where a new mill had been set up. Just as importantly, it strengthened the coconut industry's general ability to withstand wild fluctuations in external demand for its products. These arrangements were not sufficient in themselves to lift copra values back to pre-Depression-era levels, but they were far better than nothing.[109]

In such a situation, it made perfect sense for most coconut smallholders to continue hedging between the markets for copra and non-copra based activities, depending on relative prices. Across Malaya, village oil production appears to have increased whenever prices for copra fell.[110] In Johor, an interstate nut trade centred on the Muar and Kota Tinggi districts continued to be 'considerable' throughout the entire period.[111] One particularly ominous sign of the times was a sharp rise in local palm sugar production. This was being spurred by shortages of imported cane sugar in selected areas across Malaya (like Eastern Pahang), in turn due to wartime shipping disruptions.[112] A laborious and highly-skilled process involving the tapping of sap from the unopened male inflorescence of the coconut palm, extraction could be carried out repeatedly on a single palm for up to a year, before a much-needed interval of recovery.[113] Like other forms of import substitution, this activity would be taken to new heights during the wartime traumas of the 1940s.

As seen in Chapter Four, initial estimates of Malayan consumption pegged the share of artisanal coconut produce (namely that produced outside the industrial manufacturing sector, including fresh nuts, village-pressed oil and coconut milk) at between 25 to 40 percent of the total harvested crop. These assessments, for reasons already given, probably underestimated the amount of coconut consumption occurring within

[109] Appendix 2.1.
[110] LSE: FIRTH MPA, 143, 211; AR DAM 1938, 12.
[111] SAOJ 1937, 14; SAOJ 1938, 19.
[112] Anon, *September*, 416.
[113] Mohamed Kassim bin Haji Ali, "Gula Melaka." *Federation Museums Journal* XV (1970), 39-42.

Malaya during the early 1930s. By the early 1940s, Raymond Firth, an economic anthropologist who had just undertaken a year of fieldwork in rural Kelantan with his colleague and partner Rosemary Firth (*née* Upcott), was claiming that domestic coconut-related consumption, excluding industrial manufactures, was probably hovering around one coconut per person per day. This astounding figure was three to six times higher than earlier official estimates.[114]

Firth's estimate seems excessive, but there is little reason to dismiss his claim completely. His impression was based on locally-grounded field studies of rural household consumption and production, conducted together with Rosemary Firth during the late 1930s. Firth actually considered his assessment fairly conservative, given the sheer amount of coconut material he and Rosemary had personally observed being consumed within households over the course of an entire year, in the form of coconut water, coconut milk, cooking oil, cakes, and snacks, all boosted by the occasional celebratory feast.[115]

At the same time, there is probably good reason to taper down Firth's claims to a certain degree. The underlying math makes such estimates improbable. One coconut per person per day, in a population of roughly 4.7 million in 1940, implies the equivalent of 290,000 tons of copra oil per year. To get a better understanding of this figure, Malaya's estimated industrial output of coconut products in 1940, purely through the copra crushing route, was around 103,000 tons copra oil equivalent.[116] Even taking into account the relatively low prices being offered for copra during the late 1930s, the possibility that domestic consumption of artisanal coconut produce could constitute almost 75 per cent of Malaya's total entire coconut output by 1940, with the rest going into copra and industrial copra oil, seems rather far-fetched.[117]

Moreover, the Firths' decision to conduct fieldwork in Kelantan probably introduced an upward bias into their estimates, given that this

[114] Appendix 6.5.
[115] LSE: FIRTH MPA, 391-408.
[116] Appendix 6.4.
[117] Appendix 6.5.

was a largely rural state with an extremely high proportion of Malays, as opposed to the more urbanised, multi-ethnic communities of the Western half of the Peninsula.[118] To make matters worse, in places where poverty was more prevalent, such as inland Kedah and littoral Selangor, health surveys conducted independently by medical officers during the second half of the 1930s showed that very little coconut oil consumption was taking place within Malay settlements.[119] And finally, regarding the oft-neglected issue of coconut water, general demand for uncontaminated drinking water from coconuts may have also been on the wane, compared to the nineteenth and early twentieth centuries, given that publicly-owned potable water infrastructure in states like Johor had expanded during the 1930s (itself a product of growing official concern for rural Malay welfare).[120]

Bearing these various caveats in mind, the overall share of village-scale coconut produce in Malaya's coconut sector seems closer to 50 per cent at the most during this period. But this still suggests that the consumption of artisanal coconut produce remained a major pillar supporting Malayan coconut farming during the late 1930s, in the face of flagging external demand and an expanding industrial sector. How long this complicated balancing act of supply and demand could continue on for was another question altogether. Indeed, by the 1950s, flagging internal demand for village coconut produce would contribute to the coconut's growing obsolescence among local farmers, and spur the popularity of other cash crops, including oil palms.

[118] Rosemary Firth, *Housekeeping among Malay Peasants* (2nd ed.) (London: Athlone Press, 1966), 4-5; Raymond Firth, *Malay Fishermen: Their Peasant Economy* (London: Routledge & Kegan Paul, 1966), 1-2.
[119] TNA: CO 852/60/9, R. Burgess, 'Appendix A: The Nutrition of the Kampong Malays in the Coast Districts'; W. J. Vickers and J. H. Strahan, *A Health Survey of the State of Kedah with Special Reference to Rice Field Malaria, Nutrition and Water Supply* (Kuala Lumpur: Kyle, Palmer & Co., 1937), 85-86.
[120] AR JOHORE 1930, 40; AR JOHORE 1934, 35; AR JOHORE 1935, 40-41; AR JOHORE 1936, 53; AR JOHORE 1937, 47-48; AR JOHORE 1938, 49-50; AR JOHORE 1939, 31-32.

LIMITS TO OIL PALM'S HOME MARKET

Meanwhile, efforts by Malayan authorities, chemists, and planters to increase the oil palm's share of the Malayan market were having little effect, let alone approximating anything akin to that of the coconut market. Local demand for palm kernels remained nascent. From the oil palm sector's beginnings until the 1960s, there was little domestic demand for either palm kernel cake, or the other product of kernel crushing, palm kernel oil. Kernel cake was less palatable, and lower in protein content than copra cake or fish meal, limiting its usefulness as a growth-boosting ration for pigs and other livestock.[121] Singapore's copra millers showed no interest in crushing such kernels, which is unsurprising given that copra supplies remained plentiful. Palm kernel prices in Europe made it more worthwhile to export them whole, for crushing into oil for confections, high-grade soap, and cake for cattle feeding.[122]

The only known exception to this general tendency was Socfin Co. Ltd.'s oil palm estate at Labis, Johor, which opened Malaya's first palm kernel oil extraction facility during the mid-1930s.[123] Some of this oil seems to have been used in local vegetable oil and soap manufacturers, while small amounts of palm kernel cake were also sold on a regular basis into the early 1950s.[124] As such, the oil palm industry remained heavily dependent on external demand for whole kernels. This would become a genuine problem during the first half of the 1940s, when the cessation of foreign demand for palm kernels meant that they were simply left to pile up unused in factories, or turned into burner fuel.[125]

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[121] C. D. V. Georgi, *Fodders and Feeding Stuffs in Malaya* (Kuala Lumpur: Kyle, Palmer & Co. Ltd.), 1934, 11, 17, 23; Gunn Lay Teik, *Fodders and Feeding Stuffs in Malaya* (Johore Bahru: Government Printing Department), 1951, 4-5, 32, 72-75.

[122] UNI: GB1752.UNI/RM/OC/2/2/64/9, R. Heyworth to Overseas Committee London, 17.7.1941, 6; B. Bunting, C. D. V. Georgi, and J. N. Milsum., *The Oil Palm in Malaya* (Kuala Lumpur: Department of Agriculture, Malaya, 1934), 240-242.

[123] William Gervase Clarence-Smith, "The Rivaud-Hallet Plantation Group in the Economic Crises of the Inter-War Years." In *Private Enterprises During Economic Crises: Tactics and Strategies*, eds. Pierre Lanthier and Hubert Wateler (Ottawa: Legas, 1997), 129.

[124] ANM-KL: AOJC 124/51, Enc. 7; G. C. Allen and A. G. Donnithorne, *Western Enterprise in Indonesia and Malaya: A Study in Economic Development* (London: Allen & Unwin, 1957), 144-145.

[125] D. H. Grist, "Malayan Agricultural Trade in 1940." *Malayan Agricultural Journal* 29, no. 6 (1941), 235.

Of much greater concern was the demand for palm oil itself, since palm oil constituted a much larger proportion of earnings for the industry, and plans to break into the more lucrative British and North American margarine markets had failed to materialise during the 1930s. Efforts to refine low-acid palm oil within Malaya, with a view towards increased sales in regional markets for soap and margarine, met with numerous problems. In 1934 and 1935, experiments by the Department of Agriculture to fractionate palm oil on a semi-commercial scale saw samples of both the liquid and solid portions sent to London to gauge market interest. Meanwhile, the Department managed to refine palm oil at a temperature of 250 ^{0}C, in a high vacuum with a hydrogen leak, reportedly yielding an oil that was 'pale yellow in colour, odourless and practically tasteless'.[126] Yet, neither lead appeared to generate any commercial interest at the time, and the chemists did not report on the matter any further. This bore some resemblance to the difficulties experienced by United Plantation's own chemists with marketing fractionated Malayan palm oil during the 1930s.[127]

The use of palm oil within local soap manufacturing appears to have expanded, but quantities are difficult to establish. Due to old concerns that a local market for inferior-quality palm oil might lead to the adulteration of low-acid palm oil for the export sector, there continued to be significant official reluctance in acknowledging the ongoing use of palm oil in this sector.[128] The quantities of palm oil entering the local soap industry were certainly smaller than those for copra oil, but they were not insignificant, judging by the fact that some smaller oil palm estates were dedicating most of their production to such purposes during the 1930s. For example, at Tampin, Negri Sembilan, a 500-acre Chinese-owned estate was known to be using a wooden press to grind out palm oil, well into the period of the Japanese Occupation. According to Datuk Boon Weng Siew, a planter who grew up on a rubber estate nearby, the oil itself was sold

[126] AR DAM 1934, 59; AR DAM 1935, 63
[127] Martin, *Saga*, 70.
[128] Straits Settlements Vegetable Oils Committee, *Report of a Committee…on the Present Economic Condition of the Coconut and Other Vegetable Oil Producing Industries in Malaya* (Kuala Lumpur: Government Press, 1934), 55.

primarily to make soap during the interwar years.[129] Presumably, the buyers of such oil were based in Singapore, Malacca, or other urban areas with a significant cluster of specialist soap-makers.

The most telling difference between local markets for coconut and oil palm products lay with dietary preferences. Following the Great Depression, increasing numbers of nutritionally-minded elites began championing the consumption of palm oil in its red, unrefined form. John Rosedale and Christopher Oliveiro, the Singapore-based biochemists who had established unrefined Malayan palm oil's qualities as a leading local source of vitamin A, continued to advocate its local usage, particularly among Indian children.[130] The Colonial Office's Labour Adviser, Major Orde Browne, built on this suggestion during a visit to Malaya in 1941, proposing that malnourishment among Indian labourers and their families could be partly overcome through the stocking of red palm oil in local estate shops. This was to be done through marketing cooperatives where necessary, since local shopkeepers were evidently uninterested in providing such supplies.[131]

Rural Malays also became targets of this emerging nutritional crusade, thanks in part to a growing official Malayan interest in health surveys of remote communities, backed by the Colonial Office. After one such field assessment, a team of medical officers proposed in 1937 that red palm oil should be provided to Malay households in localities where coconut oil was proving difficult to procure, such as inland Kedah.[132] Following his 1938 visit to Malaya, Frank Stockdale, the Colonial Office's Agricultural Adviser, took this idea even further. He advocated providing smallholders with the means to produce their own palm oil for home consumption, rather than become mere passive recipients of oil provisions from above. The incongruous strategy of promoting the consumption of

[129] Interview with Datuk Boon Weng Siew, Johor Baru, 16.14.2015; Tan Pek Leng, *Land to Till: The Chinese in the Agricultural Economy of Malaysia* (Kuala Lumpur: Centre for Malaysian Chinese Studies, 2008), 157.
[130] John Lewis Rosedale, "The Improvement of Local Dietaries." *Malayan Medical Journal* 11, no. 3 (1936), 151-53; Christopher Joseph Oliveiro, "A Survey of Singapore Children in Regard to Their Weight, Height and Nutrition." *Malayan Medical Journal* 12, no. 1 (1937), 9-17.
[131] TNA: CO 273/671/1, Enc. 1.
[132] Vickers et al., *Kedah*, 85-86.

an estate-manufactured product that could otherwise be produced using simple hand methods was finally being challenged, albeit from within official circles.

In reality, probably only a minority of Malayan inhabitants were physically exposed to unrefined palm oil before the onset of the Japanese Occupation. Most consumption appears to have been confined to two sets of institutional venues. The first of these, as mentioned in the previous chapter, were Child Welfare Centres, where mothers and children presented themselves for treatment by medical personnel. The second venue was the plantation. Although rubber estates partook in these activities, the immediate availability of palm oil from estates allowed plantations to play the dual role of nutritional custodian to their own labourers, as well as issuer of supplements to other venues.[133]

Responses from the new consumers of palm oil were unenthusiastic at best. Sometime around 1938, one unidentified oil palm estate in Johor was found to be pressuring its Indian labourers into accepting unrefined palm oil as a cod liver oil substitute, when in fact coconut oil had apparently long assumed this role in Indian medicinal practices.[134] This may have accounted for numerous complaints about unrefined palm oil's unattractiveness. Some workers even alleged that the oil was responsible for causing skin disease and stomach pains.[135] Such concerns were not rare, and may have been prompted by the fact that bottles of palm oil were being regularly distributed together with its solid fraction, the latter reportedly making the oil hard to digest on its own.[136] In other estates, labourers had to be paid to ingest palm oil, suggesting that most either refused palm oil outright, or else consumed it with great reluctance.[137] In response to complaints from labourers, one assistant estate manager had reportedly begun consuming the oil himself regularly,

[133] AR JOHORE 1938, 39.
[134] Frederick C. Colley, "Traditional Indian Medicine in Malaysia." *Journal of the Malaysian Branch of the Royal Asiatic Society* 51, no. 1 (233) (1978), 102.
[135] AR DAM 1940, 6.
[136] UNI: GB1752.UNI/RM/OC/2/2/64/12, A. Knox and J. Buxton, 'Malaya: Report on Soap & Edible Factory Proposition', 19.10.1946, 22; D. H. Grist, "Reviews. Supplementary Food on Estates." *Malayan Agricultural Journal* 29, no. 7 (1941), 287.
[137] ANM-KL: MALAYAN UNION 575/46, Enc. 10A.

in a bid to prove his workers wrong.[138] Given that estate managers otherwise had no interest in engaging in palm oil consumption themselves, palm oil provisioning was clearly part of a general tendency for food to be used 'as a vehicle of manipulation and the exercise of power' on Malayan plantations.[139]

Revealingly, labourers continued to demonstrate their own household methods of combating vitamin deficiencies, even if they were not acutely aware of doing so. Workers on some estates made regular voluntary contributions of 10 cents a month to fund a weekly communal feast where goats and other animals were eaten.[140] Consuming meat obtained from dealers helped labourers circumvent prohibitions against livestock rearing within estates, while providing them with valuable nutrition. In contrast to palm oil provisioning, these feasts were subsumed within broader social contexts of eating for pleasure and company. Here, food intake was probably limited only by cost and availability.

The only cases where red palm oil appears to have been consumed without complaint were at the above-mentioned Welfare Centres, and on plantations where it was used as an ingredient in meals, rather than as a medicine. For several months in 1940, medical officers provided daily courses of fortified cake and pudding to malnourished Tamil children on several large estates in Selangor and Perak. The cake consisted of soybeans, skimmed milk, powder, dhal, and under-milled rice flour, fried in unrefined palm oil. The pudding was somewhat similar, except that the palm oil was added directly together with some sugar. In the same year, some Malayan Indian children were also put on trials of skimmed milk filled with palm oil. Judging by the fact that all children subjected to these various rations gained significant weight, and recovered from previous

[138] AR JOHORE 1938, 39.
[139] Lenore Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940* (Cambridge: Cambridge University Press, 1996), 157.
[140] AR JOHORE 1938, 39.

vitamin deficiency disorders, the foods must have been generally accepted by their recipients. [141]

Willingness, however, did not necessarily equate to awareness of red palm oil as a food ingredient, let alone its enjoyment. Palm oil was evidently incorporated into these preparations through specific methods that anthropologist Richard Wilk has termed 'submersion' and 'substitution'.[142] Such techniques caused palm oil's identity to effectively disappear within the final blend. The fact that preparations seemed to have been concocted by the medical officers themselves, rather than within the consuming household, adds another layer to this invisibility of ingredients and lack of consumer knowledge regarding food preparation. Finally, in all of these scenarios involving children, the relative powerlessness of recipients may have been critical for prolonging palm oil consumption.

On the whole then, there was little demonstrated consumer desire for unrefined palm oil as an edible substance, and considerable aversion to palm oil as a medicinal supplement. From the perspective of growers themselves, continued local disinterest in palm oil as a dietary fat made the opportunity costs of diversifying into oil palm cultivation relatively high during the period. Yet these nutritional schemes had a much greater significance than local reactions at the time would suggest. By establishing paternalistic food provisioning programs for deprived social classes in the name of nutrition, Malayan elites inadvertently paved the way for a much harsher, wider-ranging set of food supply programmes during the Japanese Occupation of Malaya. Red palm oil consumption would become inextricably linked with oppression, provoking equally extreme responses from those at palm oil's receiving end.

[141] Paul Fasal, "Clinical Manifestations of Vitamin Deficiencies as Observed in the Federated Malay States." *Archives of Dermatology* 50, no. 3 (1944), 163-165.
[142] Richard Wilk, *Home Cooking in the Global Village: Caribbean Food from Buccaneers to Ecotourists* (Oxford: Berg, 2006), 115.

CONCLUSION

The evidence from this chapter provides a strong corrective to scholars and officials who assume superior knowledge regarding the crops suitable for smallholder cultivation. The shifting vagaries of soil conditions, social contexts, and market demand ensure that there are usually exceptions to any supposed general rule. Because official preferences for smallholder coconut farming did not take underlying local environmental conditions into account, many smallholders were encouraged to stay in the coconut sector for longer than necessary. Oil palms may have been still out of the reach for most smallholders and dealers, but circumstances were arguably less forbidding by the late 1930s, given the renewed availability of efficient small-scale presses. Land tenure arrangements in Johor continued to discriminate against smallholders interested in oil palms, but what was especially damaging to smallholder prospects was the persistent tendency of the entire Malayan state to conceal and ignore evidence of smallholder involvement in oil palms within the official record. This burying of evidence, apparent since the late 1920s, would make it much more difficult to promote alternatives to large-scale oil palm farming arrangements when colonial authorities grew more open to smallholder involvement in oil palms during the 1950s, since there were no readily known operational precedents to build on, unlike those set by highly-publicised European-owned estates.

One implicit question within this chapter, and indeed this entire thesis, is what made for a satisfactory livelihood in colonial Malaya, and whether such a livelihood could include farming, and in what form. Given Johor's recent history of large-scale migration and land abandonment, one can legitimately wonder if permanent agricultural settlement was part of this satisfactory standard of living, even with a long-term crop like coconuts. However, relying on colonial records for answers creates another set of problems. Official correspondence on such matters is heavily skewed by the notion that secure land ownership was the foundation of Malay economic satisfaction and social belonging, thus

viewing any perceived neglect of holdings, including drainage maintenance, as aberrant and undesirable activity.[143]

Yet, historical evidence to the contrary repeatedly surfaces during the 1930s, especially in the second half of the decade. Many growers were recent migrants themselves, gradually relinquishing coconut lands so as to avoid further indebtedness, recolonizing available coastal lands elsewhere in Johor, and turning towards casual labour in the non-farm sector. Moreover, unofficials argued fiercely against heavy public expenditures on coastal drainage. All of these actions seem to point to the equally valid idea that so-called Malay identity and welfare were not necessarily tied to permanent coastal farmland ownership. By highlighting the more dynamic aspects of West Johor's coconut farming sector, namely how a decline in coconut farming was accompanied by the growth of other perennial cultivars better adapted to Johor's changing economic and environmental circumstances, this thesis has tried to take a middle path that acknowledges some continuity amidst change. However, it is hard to escape the sense that there was something rather pathological about this shift towards other crops, rather than something more cyclical in character.

Strongly connected to this debate is the problem of recovering nuanced histories of drainage engineering in tropical agriculture. In relying on official colonial records for details of smallholder drainage creation, expansion, and maintenance, the researcher risks taking on biases from the creators of these records themselves. Much official correspondence from Malaya is infused with the notion that smallholders lacked the 'mental capacity' to be able to conceive of large-scale drainage schemes.[144] From this perspective, West Johor's smallholders could not sustain the basis of their agricultural frontier because they had neither the ability nor knowledge to surmount the long-term difficulties of farming in coastal clay and organic soil ecologies. But this assumes that smallholders

[143] Paul H. Kratoska, "The Peripatetic Peasant and Land Tenure in British Malaya." *Journal of Southeast Asian Studies* 16, no. 1 (1985), 16-45.
[144] ANM-KL, File No. 2006/0009846, 'Third Inter-Departmental Agricultural Conference Held at Kuala Lumpur. Report of Proceedings, 2-6 August 1932', 9.

had a long-term interest in farming such soils, something which the records do not conclusively demonstrate.

Such biases meant that officials seldom paid attention to the details and underlying social rationales behind the design and construction of non-European drainage systems in Malaya. An alternative explanation for the drainage degradation observed in this chapter (and others) might begin with the premise that such drainage systems were not meant to be permanent constructions to begin with, and were built according to the exigencies of available land and labour at certain points in time. Rather than attempt to establish a rigid and permanent demarcation between land and sea, as the state would tend to do, smallholder-led constructions were meant to maximise the output of land with minimum input, and would be abandoned once the land's forest rent had declined to a level which made it impractical to farm. To substantiate such an argument would require a much more focused research approach to this topic. But in doing so, new light may be shed on alternative ways of rural living, and contribute to a long-standing historical debate regarding the extent to which small farmers have found it more useful to be itinerant than settled.[145]

[145] For instance, see Polly Hill, *The Migrant Cocoa Farmers of Southern Ghana* (Cambridge: Cambridge University Press, 1963); Michael R. Dove, *The Banana Tree at the Gate: A History of Marginal Peoples and Global Markets in Borneo* (New Haven: Yale University Press, 2011), Ch. 6.

Chapter 6

OIL AND COCONUT PALMS DURING WARTIME AND RECONSTRUCTION, 1942-1948.

Unlike the 1930s and 1950s in Malaya, the 1940s does not lend itself to easy periodisation. Historical narratives of 1940s Malaya often assign primacy to the Japanese Occupation, a relatively brief but traumatic interval for many residents between 1942 and 1945. Discussions have tended to dwell on the extent to which these four years constituted a 'major watershed' in the history of Malaya, chiefly in terms of the territory's economic, political and social trajectory.[1] Accordingly, many accounts of the interval end in 1945, effectively replicating the handover of political power that took place between the Japanese and returning British colonial forces.[2] Studies re-tracing the origins of modern Malaysia sometimes adopt this perspective in a converse manner, launching their narratives from the time that the Japanese ceased to occupy Malaya in 1945.[3]

Historians more focused on the social and economic aspects of Malaya's history have occasionally chosen to downplay this chronological juncture, instead preferring to analyse a series of events that traversed the intervals before and after 1945.[4] There are sound reasons for doing so. For

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[1] Paul H. Kratoska, *The Japanese Occupation of Malaya 1941-1945: A Social and Economic History* (London: Hurst, 1998), 1.

[2] Chin Kee Onn, *Malaya Upside Down* (3rd ed.) (Singapore: Federal Publications, 1976); Christopher Bayly and Tim Harper, *Forgotten Armies: Britain's Asian Empire & the War with Japan* (London: Penguin, 2005); Kevin Blackburn and Karl Hack, *War Memory and the Making of Modern Malaysia and Singapore* (Singapore: NUS Press, 2012).

[3] Cheah Boon Kheng, *Malaysia: The Making of a Nation* (Singapore: ISEAS, 2002); Khong Kim Hoong, *Merdeka! British Rule and the Struggle for Independence in Malaysia, 1945-1957* (Petaling Jaya: Strategic Information & Research Development Centre, 2003); Nicholas J. White, "The State and Economic Development in Twentieth Century Malaya." In *Reflections on Southeast Asian History since 1945*, eds. Richard Mason and Abu Talib Ahmad (Pulau Pinang: Penerbit Universiti Sains Malaysia, 2006), 77-93.

[4] Nicholas J. White, *Business, Government and the End of Empire: Malaya, 1942-1957* (New York: Oxford University Press, 1996); Kratoska, *Occupation,* passim, esp. Ch. 11; T. N. Harper, *The End of Empire and the Making of Malaya* (Cambridge: Cambridge University Press, 1999); John H. Drabble, *An Economic History of Malaysia, c. 1800-1990: The Transition to Modern Economic Growth* (Basingstoke: Macmillan, 2000), Ch. 9; Wong Hong Suen, *Wartime Kitchen: Food and Eating in Singapore, 1942-1950* (Singapore: Editions Didier Millet, 2009).

many residents, daily life between 1945 and 1948 was in some ways more similar to the years before 1945 than the period after 1948. During the years of reconstruction following the flight of the Japanese forces, the overwhelming priority of most locals, in Mary Turnbull's own words, was 'to find work, decent accommodation, schooling, and enough to eat'.[5] Yet, in the years before 1949, these objectives were not easily met, leaving locals wondering how much had truly changed since the departure of their Japanese overseers.

Two overriding features give the period between 1942 and 1948 a coherence not shared by other periods of Malayan history. One was a widespread shortage of basic goods. For Malaya, an open economy heavily reliant on international trade for most of its consumer essentials and cash earnings, restrictions on shipping and overseas markets throughout the period were an economic catastrophe. Scarcities of consumer essentials became more pronounced from 1943 onwards, persisting all the way until 1948. The growing dearth of rice, a consumer staple which had to be mostly imported before the Japanese Occupation, was a classic example of this slide towards material deprivation.[6] Faced with growing scarcities of consumer essentials, unfamiliar substitutes had to be used by many locals in order to survive. Doing so sent shockwaves rippling through the Malayan economy, as patterns of commodity production, consumption and trade were twisted to meet conditions of economic autarky.

The second feature, which in some ways exacerbated the first, was the persistent tendency of successive military administrations, first Japanese and then British, to try to interfere with almost every aspect of daily economic life. This did not merely consist of the rationing of basic consumer goods, but also meant crimping internal trade, restricting commodity production, and replacing everyday consumer items with unfamiliar substitutes. The substance and routine of daily diets, normally undeserving of comment due to their mundane nature, became especially

[5] Constance Mary Turnbull, *A History of Modern Singapore 1819-2005* (Singapore: NUS Press, 2009), 225.
[6] Paul H. Kratoska, "The Post-1945 Food Shortage in British Malaya." *Journal of Southeast Asian Studies* 19, no. 01 (1988), 27-47.

salient. Scarcity breathed life into what had previously been taken for granted. Accordingly, historical sources for the period, especially oral testimonies, took an unprecedented interest in the sensual qualities of food.

Yet these developments did not occur in a vacuum. Patterns of economic life during wartime were often shaped by the circumstances of preceding decades. Malaya's oil and coconut palm industries provide exemplary illustrations of these continuities amidst change. These complexities come packaged within several smaller conundrums. First, we need to understand why there was a widespread shortage of coconuts for Malayan consumers for much of the 1940s, despite a concurrent glut of copra and copra oil, the industry's main exports. Second, as growing coconut shortages created new openings for oil palm products to fill gaps in consumer needs, the reasons why palm oil became increasingly detested the more it was used need to be addressed. Finally, it is imperative to appreciate why, despite persistent interest in Malayan coconut produce from local and foreign markets, it was the Malayan oil palm sector which recovered more quickly than the coconut industry, in terms of output, and perhaps profitability as well. In addressing these interconnected questions, the continuation of a longer-term trajectory in smallholder cash cropping patterns also becomes more visible: one in which coconuts were increasingly farmed by smallholders for local markets, precipitating a gradual contraction of the sector, and where oil palms were increasingly farmed by smallholders, but for foreign markets.

Between 1942 and 1948, unprecedented levels of surplus and scarcity in all manner of produce were underwritten by massive breakdowns in Peninsula-wide trade networks. Older patterns of commodity distribution were replaced by draconian procurement policies which prioritised the requirements of imperial powers over Malaya's own needs. Partly in reaction to these changes, black markets exploded across Malaya, but remained mostly inaccessible to the Peninsula's poorer social classes. Severe rice shortages aggravated coconut trade imbalances

further, since they prompted many smallholders to shift labour from coconuts to rice production.

Although Malayan authorities, both Japanese and British, made great efforts to regulate the coconut trade, the oil palm industry proved easier to control in the end, not least because the oil product trade was restricted to a handful of large-scale businesses, making them easier to monitor and supervise. Paradoxically, this concentration of ownership and management undermined the ability of Malayan authorities to promote palm oil as a more nutritious substitute for coconut oil, since the vast majority of Malaya's residents were neither familiar with cooking methods using red palm oil, nor the cultivation of the tree itself. The Japanese authorities, however, were willing to use violence to enforce consumption. As a result, palm oil, a substance already associated by local consumers with oppression, unwanted medical interventions, and impoverished communities, became loathed with even greater intensity. Red palm oil quickly assumed the status of a food item of last resort for many Malayans, sometimes even failing to meet this criterion. This widespread, lingering disdain for red palm oil dealt a mortal blow to the oil palm's long-term prospects for widespread adoption by Malayan smallholders.

Paradoxically, the 'foreign' character of the oil palm in Malaya became its greatest strength after 1945. The oil palm industry's pre-war dependence on a handful of Western markets harmonized with the requirements of the British economy in a post-war, fat-scarce era. The ability of the Malayan oil palm industry's largest producers to adopt a common front in post-war trade negotiations allowed producers to obtain attractive prices for palm oil and palm kernels in Europe.[7] These dynamics eventually persuaded more smallholders to take a chance with oil palms during the late 1940s and early 1950s, primarily along the lines of fruit sales to already existing estate factories, for which business was booming.

[7] Susan M. Martin. *The UP Saga* (Copenhagen: NIAS Press, 2003), 68, 229.

In contrast, the Malayan coconut industry's experience with post-war export controls was a prolonged fiasco. Asian markets competed with British demand for Malayan copra and copra oil exports, but the restoration of copra production was stymied by forceful measures designed to supply British processors with cheap fat supplies. These trade restrictions became counter-productive, damaging not only the interests of Malayan sellers and British buyers, but also depriving other Asian markets of much needed oil crop material, and ultimately stalling the Malayan coconut sector's recovery through copra production. For smallholders, the coconut palm's multiplicity of markets, a source of commercial strength during the 1930s, had now become a liability. In a time of global fat scarcity, reviving European consumer demand, and heavy-handed British colonial intervention, the Malayan oil palm industry's predominant Western orientation gave Malayan oil palm estates a leading edge over the smallholder-dominated coconut sector.

COCONUTS AND OIL PALMS UNDER JAPANESE RULE

The Japanese invasion of Malaya began in December 1941, and by 15 February 1942, the British Malayan authorities had formally surrendered all claims to their territories.[8] In many ways, the Japanese Occupation's main impact on oil crop production was to accelerate trends already underway, especially the localisation of economic activity since the Great Depression. Under Japanese rule, many of Malaya's previous largest customers were now considered part of enemy territory, and denying them Malaya's exports presented producers with a fundamental problem. Japanese demand for products such as copra oil, palm oil, rubber and tin, already relatively minor before the 1940s, could only meet a fraction of Malaya's previous worldwide export volumes.[9] Essential supplies, particularly staple cereals, became hard to obtain, not least because the export earnings needed to purchase such imports, especially those from rubber and tin, had tailed off dramatically. Shortages of international

[8] Kratoska, *Occupation*, 36-41.
[9] Ibid., 4.

shipping and local storage facilities compounded Malaya's difficulties with international trade.[10]

Malaya's coconut and oil palm sectors were crippled by these problems. To be sure, and contrary to what at least one scholar has suggested, the Japanese (and German) authorities had a strategic interest in securing Malayan copra oil for military and industrial uses.[11] In Japan's case, some 8,300 tons of the Malayan product were exported home during the entire Occupation.[12] But this paled in comparison to the 65,000 tons exported in 1941, mostly to other British Asian colonies.[13] Similarly, although a total of 32,000 tons of Malayan palm oil was apparently shipped to Japan during the Occupation, this did little for an industry that had been exporting almost 60,000 tons per year by the late 1930s.[14]

For the coconut industry, this glowing glut of copra and copra oil, already a disaster in the making, was buttressed by Japanese strictures on internal goods movement. For instance, by September 1942, sales of copra from Johor, Selangor and other major producer regions were formally confined to the Japanese administration's designated purchasing agents, who were to deliver all consignments at fixed prices to the Japanese conglomerate, Mitsui Bussan Kaisha Ltd., in Singapore. No stranger to business in Malaya, Mitsui had purchased considerable quantities of coconut oil from Malayan millers in previous decades. This included one consignment from Singapore Oil Mills during the First World War, eventually confiscated by the British Colonial Secretary owing to its then-German-owned manufacturer's origins.[15] Now, ironically, the tables had been turned. As a result of Japanese regulations, 12 dealers of Chinese and Malay ethnicities in Johor were compelled to pay $100 each for copra

[10] Mako Yoshimura, "Japan's Economic Policy for Occupied Malaya." In *New Perspectives on the Japanese Occupation in Malaya and Singapore, 1941-1945*, eds. Yoji Akashi and Mako Yoshimura (Singapore: NUS Press, 2008), 113-38; Gregg Huff and Shinobu Majima, *World War II Singapore: The Chōsabu Reports on Syonan* (Singapore: NUS Press, forthcoming), Ch. 6.
[11] TNA: MAF 83/2912, Enc. 2; Martin, *Saga*, 93.
[12] Yoshimura, 'Malaya', 120.
[13] Appendix 3.7.
[14] Appendix 3.3; Yoshimura, 'Malaya', 120.
[15] Anon., 'A Coconut Oil Matter.' *The Singapore Free Press and Mercantile Advertiser,* 26.4.1918, 10.

purchasing licences.[16] Most copra supplies mobilised in this manner (at least from Malaya's southern half) then remained idle in Singapore, or were otherwise converted into a growing deluge of copra oil.[17]

In turn, Singapore's rising stockpile created significant copra shortages for mainland Malayan millers. For example, in January 1943, 21 registered Selangor crushers were allocated less than 30 per cent of the total copra that they had originally requested, for processing into copra oil and cake.[18] The local market for pork still drove a strong demand for pig feed during the Occupation, even though Malaya's pig population declined drastically owing to Japanese market controls. More than ever, copra cake was needed to replace shortages of other pig food staples, including sweet potatoes and cassava.[19] With growing rice shortages, Malayan residents were now consuming higher levels of starchy root vegetables, making it more economical for pig farmers to acquire copra cake instead.[20] In practice, however, difficulties with obtaining copra cake and other copra derivatives were watered down by black markets, which, according to historian Paul Kratoska, operated 'more or less openly' in Japanese-occupied Malaya.[21] Licensed dealers sometimes diverted copra supplies to the black market in order to earn more cash. For instance, unofficial copra prices in Selangor reached $7 per *picul* by the end of 1942, while the proposed official price for copra was $4.[22] Such circumstances created a fertile terrain for small-scale copra millers – already on the ascent since the late 1930s – to continue proliferating.

Black markets also benefitted many coconut smallholders who could sell their crops to unlicensed dealers on a regular basis, for presumably higher prices than those permitted under Japanese regulations. Although official penalties for smuggling were ostensibly

[16] ANM-JB: CL&M 245/2602, Enc. 1A.
[17] NAS-OHC: Soon Kim Seng, Transcript No. 000543/7, 69, 72-73.
[18] ANM-KL: AD.SEL EST 85/2602, Encs. 98, 169A.
[19] NAS-OHC: Ang Keong Lan, Transcript No. 000042/2, 22-23; Soon Kim Seng, Transcript No. 000543/5, 44-50; Id., Transcript No. 000543/8, 75-78; Lee Tian Soo, Transcript No. 000265/3, 31; TNA: MAF 83/2186, Enc. 1, 54-57; UNI: GB1752.UNI/RM/OC/2/2/64/14, N. Nicholson, 'Malayan Factory', 13.6.1947, 11;
[20] ANM-KL: AD.SEL EST 125/2602, Enc. 32; Kratoska, *Occupation*, 262-263.
[21] Kratoska, *Occupation*, 167.
[22] ANM-KL: AD.SEL EST 85/2602, Enc. 169.

harsh, the Japanese authorities had little capacity to suppress the lively nature of the coconut trade, because of the trade's piecemeal, widespread character. Throughout 1942, village-manufactured coconut oil and palm sugar became increasingly common sights in Malayan rural markets wherever coconuts were cultivated. Whole nuts were also sold to dealers for consumption by local households elsewhere on the Peninsula.[23] Acknowledging difficulties with controlling the illicit trade, the Perak authorities promulgated new regulations in February 1944 to try and halt unauthorised movements of copra, while requiring households to obtain a written permit before they could make their own coconut oil. The oil was to be intended for home use only, and was subject to a production limit of one *kati* (1 1/3 pounds) per person per month.[24] As was usual practice at the time, the Japanese were forced to rely on local informants to monitor most illicit activity.

In contrast to the domestic coconut trade, which was driven by innumerable small producers and dealers, efforts to find local uses for oil palm produce were driven mostly by the Japanese authorities. Officials found it relatively easy to oversee the takeover of a relatively small handful of oil palm estates and large-scale processing facilities. Government chemists strove to transform palm oil's solid fraction into candles and machinery lubricants for railways, mining operations and rubber goods manufacturers.[25] Ho Hong Oil Mills, now under the control of the Japanese organisation Nippon Chiso Butai, also produced small amounts of glycerine (a raw material for making explosives), which may or may not have been derived from palm oil-based soap manufacture (but certainly from copra oil-related activities).[26] Faced with a glut of palm kernels, the Japanese authorities also tried developing new sources of lubricants from palm kernel oil. But widespread damage to palm kernel crushing

[23] ANM-KL: SEL.SEC 111/2603, 'Annual Report of the Agricultural Department, Selangor, for the Year 2602', 5; Kratoska, *Occupation*, 235-236.
[24] Kratoska, *Occupation*, 236.
[25] NAS-OHC: K. Nadarajah, Reel No. 003378/2; ANM-KL: SEL.SEC 86/2603, Enc. 2; Kratoska, *Occupation*, 240; Huff et al., *Syonan*, Ch. 6.
[26] UNI: GB1752.UNI/RM/OC/2/2/64/5, C. Barnish, 'Report on Visit to Malaya', 25.3.1939, 12; Huff et al., *Syonan*, Ch. 6.

machinery forced them to use Penang's copra oil factories for this project.[27]

One coconut-based commodity became especially important to Malayan consumers during wartime and its aftermath: laundry soap. Already popular before the Japanese Occupation, laundry soap became even more desirable once wartime shortages of imported clothing grew acute: without soap, items like shirts would degrade beyond repair within a year of vigorous washing.[28] However, soap supplies from Malaya's established Chinese-owned brands were now increasingly hard to come by, not least because of shortages of imported caustic soda (sodium hydroxide, an alkaline reagent was typically used to transform liquid fat into solid soap).[29] Cognizant of the growing problem, the Japanese authorities tried assisting with local efforts to produce soap from early 1943 onwards, publicising soap-making recipes using wood ashes (the ashes contained potassium hydroxide, another alkali).[30]

Soap production did become more diffuse and widespread during the Occupation, but this owed less to Japanese efforts than local initiative. Crude, small-scale soap-making was a relatively accessible activity, requiring little more than a vegetable fat, an alkaline reagent, and a repurposed cigarette tin to hold the mixture. Knowledge of how to do so was already widespread within rural areas during the interwar years.[31] Japanese prompting mainly encouraged new centres of small-scale production to spring up across Malaya.[32] To be sure, product standards were extremely varied. Many formulas using coconut oil and wood ash turned out a jelly-like substance that was only deemed fit for laundry

[27] UNI: GB1752.UNI/RM/OC/2/2/64/11, A. Knox and J. Buxton, 'Malaya: Notes on General Situation', 25.9.1946, 15; S. Selvadurai, "A Survey of the Coconut Oil Milling Industry in Penang." (Graduation Exercise, BA (Hons) Economics. University of Malaya, 1957), 2.
[28] Huff et al., *Syonan*, Ch. 12.
[29] Kratoska, *Occupation*, 179-180.
[30] Ibid.; Wong, *Kitchen*, 53-54.
[31] ANM-KL: R.C.SEL. 1207/47, Enc. 7; Straits Settlements Vegetable Oils Committee. *Report of a Committee…on the Present Economic Condition of the Coconut and Other Vegetable Oil Producing Industries in Malaya* (Kuala Lumpur: Government Press, 1934), 25.
[32] Layton Horner, "Japanese Military Administration in Malaya and the Philippines." (PhD Thesis, University of Arizona, 1973), 207; Kratoska, *Occupation*, 179-180; Wong, *Kitchen*, 53-54.

purposes, but this temporarily sufficed, given ongoing shortages.[33] Some enterprising urbanites made more elaborate soap varieties from palm oil and carbolic acid, catering to wealthier consumers looking for antiseptic bathing soap.[34]

In this atmosphere of entrepreneurial fervour, increasing numbers of individuals were capitalising on the fragmentation of Malaya's trade networks to make and sell small quantities of goods like soap, copra oil, and copra cake to local markets. The ground was gradually being laid for post-war explosion in domestic manufacturing, led by a large numbers of small producers scattered across Malaya, as opposed to the large-scale, port-centric firms of the past. By the 1950s, these increasingly competitive conditions were to add fuel to an industrial crisis that would have far-reaching implications for Malaya's coconut farmers.

In the meantime, however, the most immediate problem facing coconut smallholders was the very same one encouraging the mushrooming of entrepreneurial activity, namely the uneven reach of markets within Malaya. The chief underlying problem was the tightening of state controls on the internal trade of consumer goods, in turn exacerbated by the deterioration and destruction of local transport networks, a process which had been dramatically set in motion during initial skirmishes with British forces in Malaya at the end of 1941.[35] As coconut-deficit areas became increasingly unable to transmit their demands to surplus areas accurately, the commercial attractiveness of coconut harvesting for smallholders grew more dependent on local circumstance, such as whether growers had contact with black market dealers interested in their crops.

Coconut market disruptions were aggravated by the fact that poorer consumers had little leverage on black markets. Indeed, their situation was aggravated by a depreciating Japanese-issued currency in the

[33] NAS-OHC: K. Nadarajah, Reel No. 003378/2.
[34] NAS-OHC: Lim Pin, Transcript No. 001817/2, 21-23.
[35] Kratoska, *Occupation*, 49.

later stages of the Occupation.[36] In Kedah's Kota Star District, for instance, the price of a fresh coconut rose from 2 cents before the Occupation to 45 cents in August 1944, reaching $2.30 in February 1945.[37] In general, the most deprived households appeared to be those of Tamils living on rubber estates, and villages in remote areas.[38] But even in an urban area like Singapore, unrefined palm oil had begun to replace coconut oil in cooking oil rations by 1944.[39]

It is thus worth asking why such wartime scarcities did not push rural communities into farming oil palms, both for their household consumption needs, and for sale to nearby urban centres like Singapore. One obvious problem with this strategy was that oil palm trees took at least four years to bear fruit from the time of planting, making other strategies involving existing coconut palms or faster-growing cultivars more sensible. The more urgent food shortages lay with starchy staples, which had directly negative impacts on both oil and coconut palm cultivation. In Penang, Perak, Selangor and other coconut-growing areas, swathes of coconut palms were felled, and replaced with starchy staples like rice and cassava.[40] At Elmina Estate in Selangor, Indian labourers actually cut down oil palms in order to plant finger millet (*ragi*) and other preferred foodstuffs.[41]

In places like West Johor, labour shortages conspired with deteriorating soil conditions to make all kinds of crop farming more

[36] Wong, *Kitchen*, 53-54.
[37] Kratoska, *Occupation,* 200-201.
[38] Ibid., 319.
[39] NAS-OHC: Lee Onn Pong, Reel No. 002510/2; Tan Cheng Hwee, Transcript No. 000416/11, 140; Kratoska, *Occupation*, 204.
[40] Department of Agriculture, Malaya, *Annual Report* (henceforth AR DAM) *for the year 1946* (Kuala Lumpur: Government Printer, 1947), 9; Miskon @ Miskam Bin Sutero, "Pengaruh Sosio Ekonomi Dan Politik Terhadap Pertanian Di Bukit Talang (*Socio-economic and Political Influences on Agriculture at Bukit Talang*)." In *Penghijrah Dan Penghijrahan: Kumpulan Esei Sejarah Malaysia Oleh Pelajar-Pelajar University Sains Malaysia (Migrants and Migration: A Collection of Essays on Malaysian History by Students at University Sains Malaysia),* ed. Paul H. Kratoska (Pulau Pinang: Universiti Sains Malaysia, 1982), 80-81; Gumbang Pura, "Masalah Inflasi Di Pulau Pinang Di Masa Peremintahan Jepun 1941-1945 *(Inflation Problems in Penang during the Japanese Occupation 1941-1945*)." In *Pendudukan Jepun Di Tanah Melayu, 1942-1945: Kumpulan Esei Sejarah Malaysia Oleh Pelajar-Pelajar Universiti Sains Malaysia (The Japanese Occupation in Malaya, 1942-1945: A Collection of Essays on Malaysian History by Students of Universiti Sains Malaya)*, eds. Paul H. Kratoska and Abu Talib Ahmad (Pulau Pinang: Universiti Sains Malaysia, 1989), 82
[41] ANM-KL: AD.SEL EST 9/2602, Encs. 6-7, 54.

difficult. Little assistance, if any, was provided by the Japanese authorities to mitigate the worsening effects of tidal inundations along Malaya's western coastline, as state-mobilised labour was instead directed towards infrastructural projects seen as more strategic to Japan's war effort.[42] In Pontian District, southwest Johor, the resident Javanese population declined by 50 per cent between 1931 and 1947, virtually all due to harsh conditions under Japanese rule. Several hundred residents were recruited to work on the Death Railway in Thailand and Burma, most of whom died of illness during forced labour. Partly in response to these demands, many residents abandoned their farms and fled to other areas within Malaya, or returned to Indonesia during the latter's transition to political independence in 1945.[43]

Just how much Malayan smallholding oil crop acreage was lost through such neglect and destruction is unclear. For oil palms, the lack of any systematic recordkeeping for smallholdings, unlike for estates, makes it impossible to produce any useful figures. Even the fate of the oil palm cluster at Ayer Hitam in Johor, 120 acres in total before the Occupation, is mostly still unknown. For coconuts, decline in general acreage was probably significant, but existing statistical records cannot be taken at face value. Published records claim an overall decrease from over 614,000 to 512,000 acres after the Japanese Occupation.[44] However, this fall mostly reflected the results of different methodologies used by land officials to estimate coconut holdings before and after the Second World War.[45] Earlier acreage figures were almost certainly overestimates of major coconut areas, and decline during wartime probably totalled several thousand acres at the most.

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[42] TNA: MAF 83/2912, Enc. 4; Paul H. Kratoska, "Labor in the Malay Peninsula and Singapore under Japanese Occupation." In *Asian Labor in the Wartime Japanese Empire: Unknown Histories*, ed. Paul H. Kratoska (Armonk, N.Y.: M.E. Sharpe, 2005), 237-248.

[43] Sukiman B. Bohari, "Orang-Orang Jawa Di Pontian 1884-1957: Peranan Di Bidang Ekonomi, Politik Dan Sosial. (Javanese in Pontian 1884-1957: Their Economic, Political and Social Roles.)" (BA (Hons) Thesis, Universiti Kebangsaan Malaysia, 1981), 29-30.

[44] Appendix 5.1.

[45] T. B. Wilson, *The West Johore Coconut Production Survey* (Malaysia: Division of Agriculture, 1958), 5; Paul H. Kratoska, *Food Supplies and the Japanese Occupation in South-East Asia* (Basingstoke: Macmillan, 1998), 107.

Given the numerous challenges facing smallholders under Japanese rule, it made obvious sense for dealers and processors to meet any local demands for palm oil from existing estates, whose crops were badly in need of outlets in any case. Ho Hong Oil Mills continued to source palm oil from Johor estates throughout the Occupation, processing the oil's solid and liquid fractions into soap and edible uses respectively.[46] A small-scale internal trade in palm oil also seems to have spontaneously developed within various parts of Malaya, between oil palm estates and areas short of cooking oil. There is no known written documentation of such activity, and it only came to light when I interviewed a former oil palm estate manager, now retired in Johor. Datuk Boon Weng Siew, whose father was a tapping contractor at Tebolang Estate in Malacca prior to the Japanese Occupation, helped run a sundry goods shop within the estate. During the Occupation, Datuk Boon made forays to a 500-acre Chinese-owned oil palm estate in Tampin, Negri Sembilan. Datuk Boon brought his own four-gallon kerosene tins, filled them up with estate oil, and paid for the lot in Japanese currency, before returning to his family's plantation shop to sell the unrefined oil as a cooking ingredient.[47] Whether Datuk's Boon's activities were an example of something more typical across Malaya during the Occupation is impossible to say. But like coconut dealers catering to the local trade, Boon's purchases helped producers maintain some semblance of production during difficult times.

THE MAKING OF A DETESTED WAR FOOD

Indeed, for Malaya's oil crops, perhaps the most lasting legacy of Japanese rule lay not in the neglect and destruction of oil and coconut palms, but at the other end of the commodity chain, in the realm of consumption. During the interwar years, the British Malayan authorities had already taken measures to encourage the use of edible red palm oil among Malaya's most impoverished populations, including Tamil estate

[46] NAS-OHC: Tan Cheng Hwee, Transcript No. 000416/11, 14; Lee Tian Soo, Transcript No. 000265/5, 70-72.
[47] Interview with Datuk Boon Weng Siew, Johor Baru, 16.4.2015.

labourers and their families, and malnourished children in urban areas. When the Japanese forces invaded Malaya, extant knowledge of knowledge of red palm oil's uses was accordingly already concentrated in various institutions, foremost of which was the Department of Agriculture's Research Branch, home to experiments with fractionated palm oil since the mid-1930s.

The Japanese Occupation inaugurated a transfer of agricultural knowledge and staff to the Japanese Malayan authorities, but the process was anything but straightforward. Control over the Agricultural Department was ceded to the Japanese in January 1942, a month before Singapore's surrender, with considerable loss of staff and expertise. Many British nationals who had joined local combat units to resist the Japanese advance were eventually interred in Singapore gaols, taking with them their specialist agricultural and nutritional knowledge.[48] Meanwhile, at Kuala Lumpur, the remaining Asian staff within the Research Branch were not reorganised until March or April 1942, under the direction of T. Mitani, the new Chief Officer of the Agricultural Department.[49] Upon the Branch's restoration, research staff were directed to resume producing red palm oil for nutritional purposes (as well as processing palm oil into soap and industrial lubricants).[50] The new military administration's interest in red palm oil appears to have been linked to one of their core objectives while governing Malaya: to maintain local public order by preventing widespread starvation and malnutrition, which would otherwise sow unrest and fuel local resistance to Japanese rule.[51]

In actual fact, the Japanese authorities' zeal for red palm oil as a silver bullet to counter vitamin A deficiencies was out of sync with the most recent research findings of British Malayan nutritionists before the Occupation. Amongst these findings were those of Professor John Rosedale, the Singapore-based biochemist largely responsible for bringing

[48] TNA: MAF 83/2186, Enc. 1, 27; V. Dawson, "Departmental Notes: Retirement of Mr. J. N. Milsum, O.B.E., F.L.S.". *Malayan Agricultural Journal* 31, no. 1 (1948), 85-86.
[49] ANM-KL: SEL.SEC 83/2603, Enc. 1A.
[50] Ibid.; ANM-KL: SEL.SEC 111/2603, 'Annual Report of the Agricultural Department, Selangor, for the Year 2602', 9-10; Kratoska, *Occupation*, 235, 240.
[51] Huff et al., *Syonan*, Ch. 12.

Malayan palm oil's nutritional benefits to the initial attention of British colonial authorities during the 1930s. Two years before the Japanese invasion, Rosedale, assisted by John Milsum, a senior agricultural officer stationed in Perak, conducted a path-breaking field survey of cultivated and wild vegetables being consumed in rural Malaya.[52] Their research had been spurred by anxieties regarding wartime scarcities of imported vegetables.[53] During their fieldwork, Rosedale and Milsum managed to compile a list of 62 previously undocumented vegetables, the ways in which Malays and Indian prepared them for cooking, as well as their nutritional composition.[54] The results were electrifying. Of the 62, at least 44 were typically cooked with a coconut oil base, usually in the form of a savoury, spicy gravy containing coconut milk (*gulai lemak*). Most of these plant foods were dark green leafy vegetables, high in carotenoids. Three quarters of the vegetables used with coconut kernel easily met, if not exceeded international guidelines for vitamin A requirements, provided 100 grams was consumed daily (slightly over a cup equivalent).[55]

In commending these vegetables as 'excellent supplements' to rice-based diets, Rosedale implicitly refuted his own designation of coconut oil as a nutritionally inferior substance, an allegation made during the early 1930s (Chapter Four). The new field data, coupled with a path-breaking ethnography of rural Malay consumption patterns published by Rosemary Firth in 1943, lent strength to the view that coconut oil was the most commonly used relish accompanying large amounts of green leafy vegetables prepared by most Malayans, effectively increasing the palatability of vitamin-bearing foods.[56] Such findings constituted a small pushback against the dominant tendency for biomedical scientists to view the nutritional merits of food ingredients in isolation from one another.[57] They also reinforced a growing sense that economic deprivation, as

[52] Dawson, *Retirement*, 85-86.
[53] Anon., "Editorial. Locally-Grown Vegetables." *Malayan Agricultural Journal* 28, no. 9 (1940), 390-91.
[54] John Lewis Rosedale and John Noel Milsum, *Malay Leaf and Other Vegetables and Their Analyses* (Kuala Lumpur: Government Printer, 1940).
[55] Rosedale et al., *Vegetables,* passim.
[56] Rosemary Firth, *Housekeeping among Malay Peasants* (2nd ed.) (London: Athlone Press, 1966), passim.
[57] Gyorgy Scrinis, *Nutritionism: The Science and Politics of Dietary Advice* (New York: Columbia University Press, 2013), 67.

opposed to dietary ignorance, was more responsible for malnourishment among Malayans.[58]

Yet, despite the study's focus on the vitamin-bearing properties of Malay plants and vegetables, Rosedale and Milsum had omitted betel leaf from the list. Typically chewed together with arecanuts and lime as a masticatory, Rosedale had previously shown that betel leaf contained higher levels of carotene than most local vegetables familiar to chemists at the time (Chapter Three).[59] In comparison to other consumables, not least red palm oil, Rosedale had done nothing to promote betel leaf's domestic use since its nutritional properties had been published in 1935, possibly because of the betel quid's associations with oral cancer since the 1930s, and probably because of the quid's negative connections with addictiveness and blackened teeth.[60] Rosedale's latest publication on popular plants consumed by rural Malays only confirmed these biases further.

Assuming they were even aware of such findings, Japanese authorities were unable to rescind the mass distribution of red palm oil in favour of coconut-vegetable pairings, let alone betel-chewing. Wartime exigencies made such shifts impractical. The initial Japanese attack on Malaya had left the Agricultural Department in a state of chaos. Within the Research Branch, almost all scientific instruments and chemical reagents had gone missing. Pre-Occupation staffing had consisted of eighteen specialist researchers, but following the reorganisation of the Branch under Japanese rule, only one leading graduate member was left, assisted by a handful of Malay support staff.[61] In such circumstances, things could only proceed on a 'care and maintenance basis' at best.[62] Moreover, the sole remaining research staff member with graduate

[58] W. J. Vickers and J. H. Strahan, *A Health Survey of the State of Kedah with Special Reference to Rice Field Malaria, Nutrition and Water Supply* (Kuala Lumpur: Kyle, Palmer & Co., 1937), 85-86.
[59] Rosedale et al., *Vegetables,* 4-5; J. L. Rosedale, *Chemical Analyses of Malayan Foods* (Singapore: W.T. Cherry, 1935), 13-16.
[60] William Gervase Clarence-Smith, "Betel, Tobacco and Beverages in Southeast Asia: A Critique of the Reid Hypothesis." In *Art, Trade, and Cultural Mediation in Southeast Asia, 1500-1800*, ed. Raquel Reyes (Basingstoke: Palgrave Macmillan, forthcoming).
[61] ANM-KL: SEL.SEC 83/2603, Enc. 1A.
[62] Ibid.

qualifications, Gunn Lay Teik, already had a background in palm oil chemistry.[63]

To be sure, the Japanese authorities did eventually conduct a highly public campaign to encourage residents to plant more vegetables (as well as tubers and dry rice).[64] But harvested vegetables (including betel leaf) perished quickly, and could not be easily hoarded for controlled distribution, unlike palm oil. Furthermore, Malayan palm oil, now cut off from its usual British imperial markets, was a plentiful substance in need of a use. Malaya's inhabitants, now faced with the imminent threat of widespread malnourishment, represented the perfect target population for the propagation of red palm oil, by an administration willing to exercise coercive measures in order to ensure public compliance with regulations.

Although red palm oil production by the Department of Agriculture appears to have begun as early as March or April 1942, versions branded as 'Refined Medicinal Red Palm Oil', were placed on the market by August, if not earlier.[65] Under Gunn's instructions, Malayan oil palm estates also began producing their own supplies of palm oil for medicinal purposes. Estate supplies were delivered either in their crude form, for further processing in Kuala Lumpur and Singapore, or in their liquid fraction, already stripped of semi-solid components, where estate facilities permitted.[66]

From the outset, palm oil's vitamin-bearing properties were emphasised to consumers. The language used by a Singapore dispensary in one such newspaper advertisement in August 1942 was typically technical: 'In these times when the choice of diets is limited, it is especially important to supplement one's food with Vitamin concentrates. REFINED RED PALM OIL (Sincere Brand) is guaranteed to contain 1000 International Units of Vitamin A per cc'.[67] No information was provided

[63] C. D. V. Georgi. and Gunn Lay Teik, "Bleaching of Palm Oil." *Malayan Agricultural Journal* 21, no. 1 (1933), 23-32; Dawson, *Retirement*, 85-86.
[64] Kratoska, *Occupation*, 259.
[65] ANM-KL: SEL.SEC 83/2603, Enc. 1A; Wong, *Kitchen*, 97.
[66] ANM-KL: AD.SEL EST 5/2602, Encs. 35, 42, 47-48; AD.SEL EST 9/2602, Enc. 63; AD.SEL EST 10/2602, Encs. 25, 67, 76.
[67] Wong, *Kitchen*, 97.

regarding red palm oil's taste, or the manner in which it was supposed to be used, whether as a cooking oil, condiment, or directly by the spoonful.

In contrast, Malayan recipes issued by the Japanese authorities from 1943 onwards appear to have stressed the many ways of preparing coconut kernels for home cooking, with comparatively little space to given to red palm oil. Published in books and newspaper articles, these campaigns were explicitly focused on helping households stretch and replace their dwindling rice rations with substitute starchy staples.[68] To make all of these starches more palatable, coconut oil was typically recommended as an accompanying relish. Many of the recipes, in fact, may have drawn inspiration from publications launched under previous British rule, namely two editions of a locally-produced cookbook entitled 'Coconut Recipes'. Both were published after the Depression, as part of British efforts to cushion the impact of falling copra exports from Malaya by promoting local uses for coconuts.[69]

Regardless of whether such efforts actually boosted local coconut consumption during the Occupation, the fact remains that the fruit was widely eaten. Locally-grown coconuts were portable, widely available (at least during the first couple of years of the Occupation), and could be used to replace other scarce ingredients in home cooking and street snacks. In the absence of salt, coconut milk was used to flavour vegetables and meat. Through necessity, if nothing else, many families ended up consuming masses of leafy green vegetables cooked in coconut milk, in order to add more body to dishes suffering from dwindling meat provisions.[70] Coconut milk was also used as a condensed milk substitute and thickener in soups and caffeinated beverages, providing a much-needed sense of satiation. Where people could make and afford them, sweetened coconut cakes remained popular.[71] Even Japanese officials

[68] Kratoska, *Occupation*, 263-64; Wong, *Kitchen*, 62-63.
[69] Mrs Marcus Dukes, *Coconut Recipes* (Kuala Lumpur: The Malayan Agri-Horticultural Association, 1935); Mrs Marcus Dukes and H. L. Barnett, *Coconut Recipes* (2nd ed.) (Kuala Lumpur: The Malayan Agri-Horticultural Association, 1941).
[70] Wong, *Kitchen*, 73-76, 95-96.
[71] NAS-OHC: Bala Subramanion, Reel No. 003340/4; Aloysius Leo de Conceicao, Transcript No. 002057/13, 141; Wong, *Kitchen*, 65-68.

reportedly acquired a taste for coconut-based dishes, including coconut rice (*nasi lemak*), and grated cassava with coconut milk.[72]

Yet there were also implicit limits as to how much coconut produce Malayans were willing to ingest during the Occupation and its aftermath. Following the departure of the Japanese, British nutritionists tried promoting coconuts to Malayans as a calorie-rich substitute for still-scarce rice in mid-1946. Their efforts were swiftly met with animosity and ridicule by members of the Malayan public.[73] As one contributor to a prominent local broadsheet grumbled,

> [in] the Jap period practically everything centred around the coconut – coconut food, coconut cakes, coconut oil for cooking, and yes, even sugar was obtained from the coconut. Judging by the amount of coconuts the people consumed in those days, I should think that everybody [has] had enough calories – whatever they are – to last them for a long while to come.[74]

Promoting coconut-based diets may have been part of a belated attempt by British experts to rehabilitate the coconut through nutritional policies. But many Malayan consumers, including those from urban, literate classes, were clearly exasperated by these state-driven efforts to increase coconut consumption, not to mention the narrow scientific principles used to justify such actions.

Red palm oil underwent an even more dramatic spike in consumption during the Japanese Occupation. While precise figures are unknown, uptake was certainly much larger than at any point before or after the Occupation. For instance, in Kuala Lumpur, a post-war survey of 369 households found that over half had knowingly consumed red palm oil in one form or another during the Occupation. Only the wealthiest families managed to exempt themselves from red palm oil consumption, as they could usually afford to purchase more familiar vegetable oils – like

[72] Wong, *Kitchen*, 69.
[73] Ibid., 68.
[74] 'Coconut-Shy', "They've Had It!", *The Straits Times*, 10.6.1946, 4.

coconut oil and groundnut oil – on a regular basis.[75] Moreover, the oral history records of the National Archives of Singapore are replete with accounts from Malayans who harboured vivid memories of red palm oil consumption under Japanese rule. Thanks in large part to these testimonies, we can now map out the channels through red palm oil was disseminated, as well as the reasons for the almost unanimous sense of loathing expressed by its consumers.

Under Japanese rule, red palm oil was disseminated through three primary avenues. The first avenue was through retail markets, or at least what passed for them during the Japanese Occupation. To this end, official sale prices were manipulated by the Japanese authorities by 1944, if not earlier, so as to make red palm oil cheaper than coconut oil.[76] Beyond official reach, however, lay pockets of mini-markets in rural areas, where, as in the case of Datuk Boon, estates sold surplus palm oil to dealers, who then sold it to retail customers.

The second avenue for red palm oil consumption was through state-controlled cooking ration issues to households, alongside essential goods like rice, salt, soap and kerosene. Malayans working for Japanese organisations during the war were sometimes given palm oil in lieu of wages.[77] When red palm oil became part of general rationing remains unclear, but fragmentary evidence suggests that palm oil became a common sight from around 1943 onwards, roughly at same time that coconut oil supplies were growing scarce in some parts of Malaya.[78]

Consumer reactions to red palm oil rations were uniformly negative. Some families appear to have shunned palm oil's use in meals, using their provisions as lighting fuel or soap feedstock instead.[79] For households who lacked access to any alternative cooking oil, some tried

[75] G. H. Bourne, "Nutrition Work in Malaya under the British Military Administration." *International Review of Vitamin Research* 21, no. 2-3 (1949), 271-272.
[76] TNA: MAF 83/2192, Enc. 2.
[77] NAS-OHC: Eric Paglar, Transcript No. 000299/6, 78.
[78] NAS-OHC: Lee Onn Pong, Reel No. 002510/2; Tan Cheng Hwee, Transcript No. 000416/11, 140; Kratoska, *Occupation*, 204.
[79] NAS-OHC: Letchumanan Masillamani Mani, Reel No. 003509/6; Lee Onn Pong, Reel No. 002510/2; Kratoska, *Occupation*, 179.

removing what they felt to be an objectionable smell through various means, including boiling palm oil with baking soda.[80] Many others reported great discomfort with palm oil's intense colour, which lent an unmistakable orange-red tinge to everything it was cooked with.[81] For one such recipient, interviewed 40 years later, the very memory of palm oil's hue implicitly brought back the horrors of Japanese rule:

> ...the only oil, what we can get from *teng kee* [personal food ration cards], is this palm oil, red palm oil [exhales loudly]....It was not processed, simply red and raw. Like red tomato. So what can you do? We look at it only, cannot eat. I understand from many people, they say this is very nutritious. Good. But by the look of it we got so frightened already.[82]

Palm oil distribution in schools, the third major site for oil provisioning, led to even more unpleasant encounters. Here, state paternalism (or maternalism, given a significant number of female teachers involved) was taken to a new level. Without the presence of intervening family members, the Malayan students were left at the mercy of Japanese and Malayan school teachers. Like Malaya's Indian plantation labourers of the late 1930s, school-going youth were given daily doses of red palm oil straight from the bottle, cod liver oil-style. One interviewee recalled being told by his Japanese teachers that palm oil was being provided because of milk shortages.[83] Such justifications were of little comfort to students, who often had to consume the oil with the threat of caning, or slaps, hanging over their heads.[84]

Many interviewees had trouble describing, if not recalling medicinal palm oil's taste. One interviewee likened it to castor oil, which draws parallels with situations where servants were force-fed castor oil in British India, or, more famously, force-feeding humiliations meted out by

[80] Wong, *Kitchen*, 69.
[81] Mark Wong, "Oil Palm: The Imported Wonder." 25 December 2012 (last accessed 18 February 2016, at http://bit.ly/1Lwbhov).
[82] NAS-OHC: Soh Wah Seng, Reel No. 000311/53.
[83] NAS-OHC: Victor Tan Teck Chye, Reel No. 000483/2.
[84] NAS-OHC: Letchumanan Masillamani Mani, Reel No. 003509/6-7.

Italian Fascists to political dissidents.[85] Another labelled palm oil's taste as 'horrible', but claimed that palm oil tasted nothing like castor oil – which was 'horribly bitter and so awful' – and instead more like 'coconut oil, but with a slightly different taste'.[86] Others focused on what they felt to be medicinal palm oil's indescribably unpleasant smell.[87] In some school classes, more fortunate children were given a sweet or a peanut to assist with ingestion. The remainder ended up holding their noses while a spoon brimming with oil was shoved into their mouths each day.[88] Even with variations in taste perceptions between interviewees, and the tendency for time to distort memories, the fact remains that bottled palm oil consumption in schools was a unanimously disagreeable experience for all concerned.

Other school-based methods of disseminating red palm oil, as either a grease to be slathered on bread, or as a frying oil for bread, seem to have been even more distasteful for students. It did not help that the loaves, either made from cassava, millet, or maize flour, were often lamentably rubbery. One respondent, about 10 years old at the time of the Occupation, recalled with Proustian intensity that despite experiencing unremitting hunger, her maize bread

> …was definitely not palatable. It was thickish, oily, and the corn could not absorb the [palm] oil, so it was a bit softish….[W]e were so frightened, we refused to say no….[I]magine a loaf of bread which is soaked with milk….We were not able to cut it into slices…Because of the grease, the oily part of it, it was not palatable. But then it was food.[89]

Compounding these problems of palatability was the fact that oil rations themselves were generally poorly prepared. Malaya had yet to host any hydrogenation facilities that could be used to manufacture palm oil-

[85] NAS-OHC: Gay Wan Leong, Reel No. 000535/2; Cecelia Leong-Salobir, *Food Culture in Colonial Asia: A Taste of Empire* (Abingdon: Routledge, 2011), 66.
[86] NAS-OHC: Letchumanan Masillamani Mani, Reel No. 003509/6.
[87] NAS-OHC: Lee Seng Giap, Reel No. 002531/1; Chek Kok Leong, Reel No. 003531/1.
[88] NAS-OHC: Lee Seng Giap, Reel No. 002531/1; Chek Kok Leong, Reel No. 003531/1; Letchumanan Masillamani Mani, Reel No. 003509/6-7.
[89] NAS-OHC: Bala Subramanion, Reel No. 003340/3.

based margarine.[90] Consequently, the semi-solid fraction of palm oil served with bread made for a very poor butter substitute. As a cod liver oil substitute, the liquid fraction of palm oil also tended to vary in quality. Some bottles still contained large amounts of the solid fraction (tripalmitine), which was tedious to remove in full using available filtering techniques at the time.[91] Like the Chinese miners who had been provided with unfiltered palm oil in lieu of groundnut oil during the late 1920s, children tended to find the taste of such poorly filtered samples especially objectionable.[92] Problems were heightened by rancid oil stocks, as well as contamination from leftover kerosene in unwashed containers.[93]

Besides bad chemistry, the stressful psychological effects of wartime deprivation intensified the significance and meaning that locals ascribed to food and meals. Many residents, worn down by the dreariness of everyday life and uncertainty regarding the future, felt a growing sense of aimlessness.[94] There was widespread nostalgia for the period preceding the Japanese Occupation. In one historian's words, 'food and eating became a way of returning to a sense of familiarity and normalcy in a time of upheaval'.[95] To Malayans, who were more used to pale-coloured oils infused with the gratifying aromas of coconuts, sesame seeds, and groundnuts, there was nothing at all familiar about red palm oil, whether as a medicinal supplement, a cooking oil, or when combined with an equally alien food such as bread made from cassava, millet, or maize flour. And, as we have seen, even with familiar foods like the coconut, locals were only willing to increase their intake within certain limits.

The longing for familiarity continued with the return of British rule. In early 1946, the British Military Administration managed to requisition about 2,000 tons of local palm oil for domestic use. Malaya's Resident Commissioners (successors to the British Residents of each

[90] UNI: GB1752.UNI/RM/OC/2/2/64/12, A. Knox and J. Buxton, 'Malaya: Report on Soap & Edible Factory Proposition', 19.10.1946, 22.
[91] NAS-OHC: Lee Tian Soo, Transcript No. 000265/5, 69-73; T. A. Buckley, "The Solid and Liquid Components of Palm Oil." *Malayan Agricultural Journal* 23, no. 7 (1935), 315-20.
[92] NAS-OHC, Earnest Lau, Reel No. 001421/13.
[93] TNA: MAF 83/2186, Enc. 1; Wong, *Oil Palm*.
[94] Kratoska, *Occupation, 347.*
[95] Wong, *Kitchen*, 69.

Malay state), hospitals, welfare officers, estates, mining firms and industrial enterprises were given the right of first refusal before palm oil was placed on the market.[96] However, popular memories of the Occupation remained fresh, and expressions of interest were subdued, despite signs of severe malnourishment among estate labourers.[97] When supplies were put on sale at a fixed price of $0.35 per *kati*, public response was reportedly even worse. 'The people', lamented Malaya's new Director of Public Relations, 'will not buy it…as Coconut Oil is just as cheap and is less unpalatable'.[98] All in all, only about 100 tons of red palm oil was taken up in the end, and the rest was eventually exported to Liverpool for soap-making the following year.[99] Despite official efforts to continue red palm oil's dissemination into the early 1950s, actual uptake remained poor. There was little enthusiasm shown for government-sponsored recipes containing numerous uses for red palm oil (Illustration 5), let alone bottled palm oil rations that were circulated by healthcare practitioners within malnourished rural communities.[100]

Illustration 5. Front cover of a recipe booklet endorsing the use of red palm oil in homemade meals, 1947. Source: ANM-KL: PR 389/46, Encs. 1, 44.

[96] ANM-JB: RCJ 165/46, Enc. 1.
[97] ANM-KL: MALAYAN UNION NO 2090/1947, Minute, Deputy Controller of Supplies, 8 March 1947; White, *End of Empire*, 81-82.
[98] ANM-KL: PR 72/46, Enc. 21.
[99] ANM-KL: SEL.C.A 252/1946, Enc. 8.
[100] ANM-KL: PR 389/46, Acting Director, Department of Public Relations, Malay Peninsula to Director, Division of Nutrition, Institute for Medical Research, 25.5.1947; F. Adam Thomson, 'Eye Signs of Vitamin A Deficiency in the Ipoh District of Perak, Malaya.' *Transactions of the Royal Society of Tropical Medicine and Hygiene* 47, no. 2 (1953), 159.

There is probably no definitive answer as to whether the events of the Japanese Occupation and its aftermath instilled a permanent sense of revulsion in Malayans towards lightly refined red palm oil. On the one hand, some allowance should be given for a degree of exaggeration in the disgust expressed by interviewees, as many testimonies were collected as part of a larger project stressing the trials suffered by locals under Japanese rule. On the other hand, the series of events recounted here provide an outstanding illustration of Bee Wilson's contention that 'if a food is repeatedly tasted under conditions of coercion or stress, the exposure may have the effect of reinforcing rather than reversing an aversion'.[101] Indeed, as late as 1964, a team of visiting nutritionists reported that red palm oil was still strongly associated by Malayans with the events of the Japanese Occupation. Based on this finding, the nutritionists concluded that red palm oil was generally unacceptable as a local dietary supplement.[102]

Although coconut oil ingestion during the Japanese Occupation had also provoked moderate amounts of domestic revulsion, Malaya's coconut industry had more pressing problems to deal with by 1946. Following the termination of hostilities between the Allied and Axis Powers, and the halting restoration of international trade, the coconut sector found itself facing demands for its produce from local, Asian, and British markets. The British segment, finding itself alarmingly short of raw materials, sought to reassert itself through coercive measures, at the expense of other competing consumer markets. In contrast, the oil palm industry, having previously aligned itself with British buyers, benefitted immensely from the opportunity to renew contact with the United Kingdom. These were, in short, the telling features of a new colonial occupation, driven by an old set of foreign interests.

[101] Bee Wilson. *First Bite: How We Learn to Eat* (London: Fourth Estate, 2015), 110.
[102] United States Interdepartmental Committee on Nutrition for National Defense, *Federation of Malaya: Nutrition Survey, Sept.-Oct. 1962: A Report* (Bethesda: National Institutes of Health, 1964), 15.

THE RESTORATION OF MALAYA'S OIL CROP EXPORTS UNDER BRITISH RULE

The international fats situation after the Second World War was virtually the opposite of its pre-war stance. Between 1935 and 1939, annual world production of oils and fats had reached almost 20 million tons, of which about 5.8 million tons was in international circulation, creating a generous supply buffer.[103] By the end of 1946, surplus had turned into scarcity. Wartime devastation of existing producer networks, worldwide population growth and changing consumption patterns meant that the world supply of fats was in deficit to the tune of between two-and-a-half to four million tons, with dire consequences for the security of supplies in Europe and North America.[104] Britain, whose domestic producers only met a tenth of annual fat consumption in 1938, was extremely reliant on imports even before the Second World War.[105] Yet, by 1947, severe shortages of animal feed meant that British tallow and butter production were now just a third and sixth of their respective 1938 levels.[106]

Despite these shortages, neither the Malayan oil palm nor coconut sectors were able to restore domestic production and exports to pre-war levels until the 1950s. Recovery was initially stymied by widespread damage to dock facilities, railways, roads and bridges, as well as the loss of vehicles and animals used to ply these routes. Agricultural labour was also in short supply, not least due to continued scarcities of consumer essentials. This situation was aggravated by the British Military Administration's decision to restrict trade between each of the nine geographic subdivisions it had imposed on Malaya, as part of initial attempts to control and restore the distribution of essential goods to pre-war levels.[107] Severe shortages of clothing and rice persisted because of these internal trade strictures, in turn impeding efforts to attract and revitalise labour needed for agriculture. Pre-war rice consumption levels

[103] Lever Brothers & Unilever Limited, *Rebuilding Europe's Fat Supplies: The Problem and How to Meet It* (London: Unilever, 1947), 4, 17-18.
[104] Ibid., 7.
[105] Ibid., 20.
[106] TNA: MAF 83/2195, Enc. 24.
[107] Christopher Bayly and Tim Harper, *Forgotten Wars: The End of Britain's Asian Empire (*London: Penguin, 2007), 102.

had yet to be attained by 1949, due to post-war scarcities of rice imports, and shortfalls in domestic cultivation.[108]

Notwithstanding these general difficulties, the Malayan oil palm industry had its own specific barriers to reconstruction. Looted and defective estate machinery, labour shortages (including white-collar workers), and general field neglect ensured that only 31 out of 46 plantations across Malaya were somewhat operational by the end of 1946.[109] The oil palm industry nevertheless soon found startlingly effective ways to restore production. The sector's recovery was aided in large part by subsidies from both the Malayan government and British taxpayer. The prime beneficiaries of this assistance were oil palm estates directly represented by a Malayan Palm Oil Committee, led by the agency house of Guthrie & Co. Ltd. Committee members claimed to account for 67,000 acres of oil palms, which amounted to 86 per cent of all recorded Malayan oil palm lands in 1947.[110] Aid was eventually delivered in two forms. First, relatively cheap credit for reconstruction was disbursed by commercial banks, underwritten by the Malayan government, at three per cent interest per annum.[111] The agreement was modelled on a previous credit arrangement with the Malayan tin mining industry, and justified on similar grounds: that the oil palm industry's factories, railways, and bulk storage facilities were as capital-intensive as the tin mining sector's dredges.[112] The Palm Oil Committee's mechanist rationale, coupled with its argument stressing the 'importance of this comparatively new industry to Malayan economy [sic]', may have helped it to gain access to credit facilities otherwise denied to the Malayan rubber and coconut sectors, which Whitehall viewed as less capital-intensive in comparison.[113]

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[108] Kratoska, *Food Shortage*, 35-47.
[109] ANM-KL: DA.NO. 787/46, Enc. 10; SEL.C.A 463/45, Enc. 8; BMA/ADM 1/21/U, Enc. 19A; *AR DAM 1947,* 10; Department of Agriculture, Federation of Malaya, *Malayan Agricultural Statistics 1949* (Kuala Lumpur: Caxton Press, 1950), Table 41.
[110] TNA: CO 852/603/8, Enc. 9; MAF 83/2178, 'Memorandum: Palm Oil Industry – Financial Assistance', 20.9.1946, in Enc. 41B; Department of Agriculture, Federation of Malaya, *Malayan Agricultural Statistics 1947* (Kuala Lumpur: Caxton Press, 1948), Table 30.
[111] White, *End of Empire*, 72.
[112] TNA: MAF 83/2178, Enc. 13; Ibid., 'Memorandum: Palm Oil Industry – Financial Assistance', 20.9.1946, in Enc. 41B.
[113] TNA: CO 852/603/8, Encs. 1, 4.

Second, the Ministry of Food decided to purchase the entire supply of low-acid Malayan palm oil from July 1946 onwards. This arrangement initially carried on for two years, at a nominal price of $400/ton ex-factory, a rate that Palm Oil Committee representatives claimed covered their current costs of production, 'plus reasonable profit'.[114] The Ministry soon extended the offer to smaller Malayan producers putting out about 80-100 tons of palm oil a month in drums, provided their supplies could meet the Ministry's stipulated five per cent limit on free fatty acid content. The Malayan government, worried about criticisms of the arrangement from the local rubber industry, protested that the long-term contract was unnecessary for the oil palm industry's rehabilitation and in fact 'very generous'.[115] Nevertheless, the contract was updated in consultation with the Committee, and extended until December 1952. Ministry payouts accordingly ascended from a nominal average of $600/ton in 1947 to $1,020/ton by 1952 for palm oil alone, even before profits from kernels (sold mostly to other European markets) were factored in.[116]

Judging by the swift rise in recorded exports to the United Kingdom, most Malayan producers had taken advantage of the Ministry of Food's market guarantee by 1947 (see Table 3). For some large estates, the ensuing windfall was evidently more than reasonable: Guthrie's Oil Palms of Malaya in Johor was able to offer shareholder dividends of 7.5 per cent in 1947, rising to 12.5 per cent in 1948.[117] In Perak, United Plantations' two oil palm estates were able to achieve average gross profit margins of 73 per cent between 1946 and 1949, 16 percent more than that obtained during the post-Depression years of 1936-1939.[118] Smaller producers packing oil in drums, whose higher transport costs would normally have confined their sales to Asia, apparently found the Ministry's price quotes lucrative

[114] TNA: MAF 83/2178, Cable to Malayan Rubber and Produce Buying Unit Singapore, X47, 20.3.1946.
[115] Ibid., Encs. 13, 28.
[116]ANM-KL: AOJC 180/51, Enc. 4; TNA: MAF 97/42, 'Ministry of Food: Revised Summary of Long Term Contracts', 21.10.1948; MAF 83/2178, Charles Mann, Guthrie & Co. Ltd. to Jasper Knight, Ministry of Food, 24.10.1946, in Enc. 41B; Martin, *Saga*, 102.
[117] SOAS: MS 380647, Cyril Northcore Parkinson, "United Sua Betong: The History of the United Sua Betong Estates in Malaya 1909-1959", 133.
[118]; Martin, *Saga*, 102.

enough to join the rush. Guthrie & Co., keen to preserve the workings of the system, lobbied the Ministry to have the fixed contract reinstated after 1952, but without success. By then, the Ministry was already hard pressed to meet prior contractual obligations to purchase unexpectedly large quantities of low-acid palm oil from British West Africa.[119] Without the market guarantee, prices for Malayan palm oil fell by one-third in 1953, prompting sellers of Malayan palm oil (but not kernels) to focus their efforts outside Britain.[120]

Year	Shipments to Britain	Exports to Other Destinations (tons)	Total Exports (tons)	Proportion of Total Exports Sent to Britain (%)
1947	44,432	899	45,331	98.0
1948	46,688	2,121	48,811	95.7
1949	54,085	1,167	55,252	97.9
1950	49,029	2,176	51,205	95.8
1951	44,170	2,378	46,548	94.9
1952	45,659	492	46,151	98.9
1953	25,572	22,790	48,362	52.9
1954	16,940	32,359	49,299	34.4

Table 3. Malaya: palm oil exports, 1947-1954. Source: Appendix 3.3.

Ironically, the financial support responsible for renewed confidence in the industry's future also helped delay output recovery in the short term. The fact that Malayan palm oil production only surpassed the previous high set in 1940 by 1957 was less a sign of the sector's weakness than the renewed confidence of growers in its future.[121] Renewed cash flows enabled reinvestment in plantation factories, fields, and internal transport networks in the years following the Japanese departure.[122] Many of the oldest estates planted up during the 1920s seized the chance to replace ageing palms with higher-yielding varieties during the late 1940s and early 1950s, which in turn helped reduce harvesting labour costs associated with tall palms. Just as significantly,

[119] TNA: MAF 83/2178, Charles Mann, Guthrie & Co. Ltd, 'Notes on the Sale of Malayan Palm Oil to the Ministry of Food,' 19.11.1953.
[120] Appendices 3.3 and 3.4; Martin, *Saga*, 176.
[121] Lim Chong Yah, *Economic Development of Modern Malaya* (Kuala Lumpur: Oxford University Press, 1967), 141-142.
[122] Martin, *Saga*, 102-103, 175-176.

smallholders located near estates throughout Malaya also became increasingly interested in oil palms, and some would go on to develop palm fruit sales arrangements with estate mills by the early 1950s. As yields from recently replanted oil palms entered the picture, Malayan exports eventually exceeded previous records set in 1939. Palm kernel exports were double their 1939 levels by 1958, and palm oil exports were 71 per cent higher than 1939 volumes by 1962.[123]

In contrast, the Malayan coconut industry's post-war recovery was far more tortuous than the oil palm sector's. There were three critical factors behind this divergence. First, as returning British authorities soon learnt, many smallholders continued to view sales of surplus coconut fruit as less remunerative than competing coconut-related activities that they had taken up before and during the Japanese Occupation. This was especially so for palm sugar production. During 1946 and 1947, large quantities of palm sugar were still being made and sold through the black market to households lacking access to imported refined sugar.[124] By the end of 1947, as imported sugar became more widely available, demand for palm sugar was reported to be declining rapidly. Selling whole nuts for direct local consumption and copra-making became more remunerative once more, although there continued to be a vigorous market for palm sugar in states like Malacca.[125]

With rice shortages ravaging Malaya until 1948, rice cultivation sometimes offered a more economically sensible alternative to coconut harvesting. Smallholders could be found diverting their efforts from coconuts to rice harvesting in places like Sabak Bernam in 1946, despite the locality's status as one of the largest coconut-producing areas in Malaya at the time.[126] This was all in fact part of a momentary global phenomenon, affecting swathes of Asia, the Pacific, Latin America, and

[123] Appendices 3.3 and 3.4.
[124] TNA: CO 537/1398, Enc. 8.
[125] AR DAM 1947, 5.
[126] ANM-KL: SEL.C.A 463/45, Enc. 15B.

the Middle East, wherein oil crop cultivation by small farmers was being neglected in favour of starchy staple production.[127]

Yet many areas within Malaya continued to be desperately short of coconut supplies, underlying the extent to which coconut-deficit areas were unable to convey their demands to surplus regions.[128] In early 1946, for instance, no quantity of edible oil above one *picul* was permitted transfer between the British Military Administration's nine sub-regions, which meant that areas such as Pahang remained heavily deprived of supplies.[129] Even within each sub-region, trade imbalances were commonplace. Within a major coconut-growing region like Selangor, inland districts reported heavy shortages of coconut oil, while coastal districts lacked sufficient price incentives to harvest nuts beyond household requirements.[130] European estates themselves were prohibited from selling any nuts until European managers could be reinstated, a situation which provoked substantial nut theft in the meantime.[131] Thanks to transport and labour shortages, nut prices fluctuated wildly depending on distance from producing areas.[132]

To make matters worse, the British Military Administration did not appear capable of effectively requisitioning stocks of copra oil for local redistribution. Initially this was blamed on the fact that there was no centralised supply consortium with which the Administration's officials could negotiate, unlike that of the Palm Oil Committee. Instead, the Administration's Food Control Department approached millers and copra oil merchants individually. In January 1946, a Singapore-based merchant reportedly offered the Department 200 tons of copra oil at a not unreasonable nominal rate of 50 cents a *kati* ($847/ton). But officials were reluctant to purchase such a small quantity for what they claimed to be an

[127] TNA: MAF 83/2178, Enc. 64, MAF 83/2195, Encs. 13, 25; Ibid., 'British Guiana: Cocoanut Industry', 3.7.1946.
[128] ANM-KL: SEL.C.A 463/45, Enc. 15B.
[129] Ibid., Encs. 10, 21.
[130] Ibid., Encs. 5, 15A.
[131] Ibid., Enc. 14A.
[132] AR DAM 1946, 10.

overly inflated price, perhaps hoping to obtain cheaper quotations from other merchants.[133]

These two broad factors underpinning the contradiction - smallholder disinterest in coconut production, and the fragmentation of the Malayan domestic market - were underwritten by the most critical issue of all: the continued curtailment of coconut product exports from Malaya. As with palm oil and palm kernels, local setbacks for coconut production could have been alleviated through an emphasis on external markets, where demand was now extremely high. The primary difficulty for coconut producers lay with Britain's intentions to corral Malayan copra and copra oil supplies for its own domestic requirements between 1946 and 1948, at prices that proved deeply unsatisfactory to exporters, who could obtain much higher prices elsewhere in Asia.

In anticipation of purchases from the British government, a virtually complete ban on copra and copra oil exports from Malaya was established by January 1946. Haggling between the Malayan authorities and Britain's Ministry of Food meant another six months were to pass before an official contractual arrangement could be reached, albeit one with terms that proved so detestable to exporters that the deal was revised six months later, in January 1947.[134] Even then, the modified nominal prices offered by the Ministry of Food for Malayan copra oil (£70/ton) were still only half of those prevailing on the world market, and failed to meet even current Malayan ex-factory prices.[135] Despite repeated complaints from Malayan officials that export controls were retarding the coconut sector's recovery, Malayan exporters were only permitted to sell coconut products freely on the world market from September 1948 onwards.[136]

[133] ANM-KL: SEL.C.A 463/45, Enc. 8.
[134] TNA: MAF 83/2195, Enc. 24.
[135] ANM-KL: SEL.C.A 463/45, Enc 19; TNA: CO 852/628/8, Appendix D, 'Report by Colonial A.G. Liddle, on Visit to South East Asia, 25th June – 5th August 1946: Singapore', 5.
[136] TNA: CO 852/628/8, Appendix D, 'Report by Colonial A.G. Liddle, on Visit to South East Asia, 25th June – 5th August 1946: Singapore', 1-3; MAF 83/2178, Enc. 64.

The Ministry of Food's decision to keep its coconut produce quotations low seems to have been motivated more by longer-term goals. Especially disconcerting for the Ministry was post-war British India's demand for coconut products. British India, the Ministry claimed, was offering such high prices for coconut produce that any attempt by Britain to lift export controls from Malaya would cause British India to absorb all forthcoming supplies. The Ministry thus justified the imposition of Malayan export controls on the grounds that British India needed to be pressured into increasing domestic production of oil crops, and thus contribute to fat supplies at a global level, even if this effectively meant discouraging copra oil output from other territories in the meantime, including Malaya.[137]

Local Malayan responses to British government trade strictures were vigorous, and ultimately benefited coconut growers to some extent. Malayan millers and coconut merchants quickly made numerous representations to the local authorities, backing their complaints by withholding stocks for sale to the Ministry of Food.[138] News that Philippine copra oil exporters were stepping into the space that Malayans had been forced to vacate in newly-independent India became grist for the mill of the Malayan press.[139] Both these petitions and negative publicity helped to overturn some of the more controversial features of initial trade restrictions, including export controls on copra of non-Malayan origin, and sales prohibitions to India's food and chemical industries.

Besides legal approaches, international smuggling also became commonplace as a way to challenge trade strictures, if it was not already prevalent during Japanese rule. By 1947, it was an open secret among British authorities in Malaya and London that merchants were regularly moving coconut produce out of Malaya to unauthorised destinations,

[137] TNA: MAF 83/2195, British Embassy, Washington D.C., to Acting Secretary of State, US State Department, 24.3.1947; MAF 83/2178, Enc. 64; Ibid., Burma Office, Westminster to Import Plans Division, Ministry of Food, 3.10.1946; MAF 97/42, J. Knight, Ministry of Food, to S. Knowles, British Food Mission, 14.2.1947.
[138] TNA: MAF 83/2195, British Embassy, Washington D.C., to Acting Secretary of State, US State Department, 24.3.1947.
[139] Ibid., Enc. 13; CO 537/2993, Enc. 22; Ong Poh Kee, "The Coconut Industry in Malaya." (Academic Exercise, Raffles College, 1948), 46.

including Siam, Indochina, and India.[140] This may have begun as early as the onset of controls in 1946. As a result, significant quantities of copra appear to have been transferred from Malaya's hinterlands to Singapore, Klang and Penang, from where they were then exported illicitly. Not unlike during the Japanese Occupation, this port-centric supply movement left some mainland millers short of supplies.[141] By the end of 1947, smuggling via Singapore became especially commonplace. The island's status had been recently altered to that of a Crown Colony, administered separately from the rest of Malaya. This, coupled with Singapore's longstanding position as a staples port, enabled Singapore merchants and millers to pass off large quantities of copra derived from the Malayan mainland as copra of Indonesian origin. By September 1948, the remaining prohibitions on the Malayan Federation's coconut product exports were lifted, hastened by official awareness of their ineffectiveness.[142]

In the meantime, mainland coconut processors used their proximity to local markets to try and make ends meet. If anything, the demand for copra cake had become even more pronounced after the Japanese Occupation, owing to the release of pent-up demand for pork in daily dishes, as well as a continued shortage of cereal imports, including rice bran, another pig feed staple before the 1940s.[143] In September 1946, a Malaya-wide survey by visiting senior Unilever executives noted that

> [p]rices of Copra in Malaya…vary from place to place….Local demand is the ruling factor and oil mills have sprung up all over the country. It would appear also that it is local demand for cake as pig food which is the dominating influence. Cake is selling at even higher prices than copra itself. Moreover oil is selling in certain

[140] TNA: MAF 83/2195, 'Correction of Draft Notes of the Meeting Held on the 3rd of February 1947,' enclosed in Managing Director, J.H. Vavasseur & Co. Ltd, to Supply Secretariat, Ministry of Food, London, 18.2.1947.
[141] ANM-KL: SEL.C.A 463/45, Encs. 10-11, 14A.
[142] ANM-KL: PR 803/47, Enc. 3; TNA: MAF 97/42, Amaze X9186, 27.10.1948; Selvadurai, 'Penang', 46.
[143] UNI: GB1752.UNI/RM/OC/2/2/64/11, A. Knox and J. Buxton, 'Malaya: Notes on General Situation', 25.9.1946, 9; GB1752.UNI/RM/OC/2/2/64/14, N. Nicholson, 'Malayan Factory', 13.6.1947, 10.

> places below what was in Malaya over many years prewar, the approximate parity with copra i.e. double.[144]

Thus, for a brief time, copra cake became the main manufacture, and copra oil the by-product. In 1947, many Selangor and Johor millers found it worthwhile to produce a particularly oil-rich copra cake, made from a single (rather than double, or triple) squeeze in a hydraulic press. Although this meant less copra oil could be sold, high copra cake prices covered the costs of raw materials from both estates and smallholdings.[145]

At the same time, copra oil's low domestic market value both propelled, and was cushioned by, another legacy of the Japanese Occupation: the booming interest in soap-making. Renewed imports of caustic soda from Britain and other sources aided this expansion.[146] In 1946, an estimated 18,050 tons of soap was being manufactured locally; more than twice the estimate for 1940.[147] The increase was largely driven by newcomers to the soap business, rather than established players. By 1946, one such upstart, Lam Soon, a Singapore-based food manufacturer before the war, was believed to be turning out as much soap as the twenty-year-old Ho Hong Soap Factory, using a simple corrugated iron shed as its main production facility.[148] Despite this mounting competition, many Chinese-owned businesses across Malaya – including two Johor-based factories in 1947 – continued producing soap for smaller towns and rural areas.[149]

Moreover, because Britain's demand for Malayan fats extended mainly to unfinished rather than finished goods, Malayan soap exports

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[144] UNI: GB1752.UNI/RM/OC/2/2/64/11, A. Knox and J. Buxton, 'Malaya: Notes on General Situation', 25.9.1946, 11.
[145] ANM-KL: SEL.C.A 463/45, Enc 19; 2006/0009406, Malayan Union Department of Agriculture Monthly Reports, March 1947; Gunn Lay Teik, *Fodders and Feeding Stuffs in Malaya* (Johore Bahru: Government Printing Department, 1951), 30.
[146] ANM-KL: R.C.SEL. 1207/47, Enc. 7.
[147] UNI: GB1752.UNI/RM/OC/2/2/64/12, A. Knox and J. Buxton, 'Malaya: Report on Soap & Edible Factory Proposition', 19.10.1946, 17.
[148] Ibid., 18, 26.
[149] ANM-JB: RCJ 341/47, 'List of Soap Factories in Johore State Town Board Areas', Acting Officer-in-Charge, Town Boards, Johore, 29.3.1947.

were less subject to stringent imperial controls.[150] In 1946 and 1947, both Singapore and Penang resumed their respective soap trades with a vengeance, with about 1,200 tons of soap produced each month for local consumption. Supplies were also exported to Hong Kong, Indonesia, Burma, Borneo, and Sarawak. Malaya's regional soap exports in 1946, mainly from Singapore to Hong Kong and Indonesia, were roughly 10 times higher than 1939's, suggesting a massive clearance of inventories.[151] Despite these disposals, local and regional demand remained so high that Singapore's ongoing production of low-grade soap in early 1947 was double that of the pre-war period.[152]

Notwithstanding the diversity of markets for coconut produce during and after the Japanese Occupation, smallholder interest in coconut farming remained significantly dampened by export controls on copra and copra oil. From the beginning of the Japanese Occupation until the termination of British export restrictions in 1948, the production of palm sugar, household coconut oil, and fresh nuts are arguably best understood as the actions of households trying to stem a significant loss of income from coconut-based exports. Only by the end of 1947, as export restrictions selectively eased, did growers see a notable increase in prices for copra and copra oil across Malaya.[153] Officials commented that smallholders in central and northern Johor had begun spending more time tending their coconut holdings, in response to these rising prices.[154] Superficially at least, things were finally returning to normal.

CONCLUSION

At least one historian has noted that any scholar who still treats the years of Japanese rule in Malaya as 'an aberration or, worse still, of no

[150] UNI: GB1752.UNI/RM/OC/2/2/64/11, A. Knox and J. Buxton, 'Malaya: Notes on General Situation', 25.9.1946, 9.
[151] Ibid., 17.
[152] TNA: MAF 83/2178, Enc. 64; ANM-KL: BMA/DEPT 18/26, Enc 7.
[153] *AR DAM 1947*, 5.
[154] ANM-KL: 2006/0009406, Malayan Union Department of Agriculture Monthly Reports, December 1947, 7-8.

consequential meaning to the history of Malaya' will risk leaving many important historical questions unsatisfactorily answered.[155] This observation can be usefully extended to the entire period between 1942 and 1948. Amidst many undeniably traumatic changes within Malaya's politics, society and economy during this period, the overall impression gleaned from the evidence shown in this chapter is one of the period's strong connection with preceding decades, and, as we shall see in the penultimate chapter, major continuities with the years to come.

Neither the expansion of red palm oil provisioning policies during wartime, nor the resultant widespread consumer aversion to palm oil, could have been possible without a prior Western fascination with nutritional chemistry's potential to address colonial welfare concerns. Thus, despite a government-supported abundance of unrefined palm oil, the years between 1942 and 1948 saw Malayan households distance themselves from palm oil provisions as far as possible. With the domestic market for unrefined palm oil in tatters, the Malayan oil palm industry was able to consolidate its export-oriented character, and even take advantage of international fat scarcities that had arisen during the period. In the years following 1948, this resurgence in production for overseas industrial markets would lead to renewed interest in Malayan oil palm planting among growers of varying levels of capitalisation, including smallholders.

The Malayan coconut industry, in contrast, continued to be hamstrung by environmental difficulties that only worsened due to labour shortages between 1942 and 1948. These deteriorating conditions were compounded by the continued retreat of the coconut sector into a focus on local markets. Yet, the domestic scene was now weakened and fragmented by wartime events. Home demand for coconut produce, while useful in providing marginal incomes for producers, could hardly cope with the glut of copra produce that arose from the industry's devastating loss of external markets during the entire period. Moreover, as will be

[155] Kobkua Suwannathat-Pian, "British Colonial Rule, Japanese Occupation, and the Transformation of Malay Kingship 1930s-1957." *New Zealand Journal of Asian Studies* 11, no. 1 (2009), 106-131.

seen this study's penultimate chapter, wartime advances in refining technologies ended up making palm oil more suitable for edible purposes than ever before. As a result, the Malayan coconut industry would find it difficult to re-establish its foothold in traditional overseas markets during the 1950s, even after export restrictions had been lifted.

It is ironical that one of the most *dirigiste* periods in Malaya's history has left comparatively little by way of reliable official records.[156] Discussions on many aspects of Malaya's oil and coconut palm trades are unavoidably impressionistic as a result, particularly for the years between 1942 and 1945. Fortunately, vivid oral testimonies have helped address knowledge gaps regarding everyday realities for many of Malaya's residents, as well as the central features of the black market trade. The author's serendipitous encounter with a former palm oil dealer is yet another instance of how interviews can supplement official documents to a degree. At the same time, the author's language limitations prevented him from using existing Chinese-language literature and oral testimonies to help refine the analysis. More oral interviews with those who have had first-hand experience living under Japanese rule would also almost certainly address further knowledge gaps, but time to do so is running out.

[156] Kratoska, *Occupation*, 6-9.

Chapter 7

THE SECOND NARROWING OF THE PARTICIPATION GAP, 1948-1963.

Having emerged from the morass of acute food shortages, Malaya's smallholders now had to confront cumulative developments brewing since the late 1920s. Thanks to roaring demand for oils and fats after the Second World War, the Malayan oil palm industry was now at its strongest position to date. Meanwhile, coconut farming was receding in many localities. International markets for copra oil, already under threat for decades, now faced stiff competition from palm oil in the post-war period. The domestic market for coconut produce, a crucial buffer against export fluctuations, was also waning. Soil conditions on Johor's western coast were continuing to deteriorate, and worse still, agriculturalists were beginning to realise that their environmental problems were not simply hydrological, but chemical as well.

There is no shortage of questions that can be asked of this crucial period in Malaya's history. However, those pertaining to the smallholder participation gap between oil palms and other tree crops are of special importance, not least because this period marked a major turning point in Malaya's economic history, one where smallholders began to dominate the farming of virtually every major crop in local agriculture, except for the oil palm. The underlying condition that made this general shift towards smallholder farming possible was the ageing of Malaya's major tree crops, many of which were now in urgent need of replacement by newer, more productive cultivars. This situation created an unprecedented opportunity to alter Malaya's agricultural trajectory for the longer term.

The chief paradox of coconut farming after 1948 was that many farmers did not want to commit to the crop any longer, and yet Malayan authorities felt obliged to keep the sector propped up. Old colonial stereotypes about the centrality of the coconut palm to Malay culture

played a small but significant role in state responses. To this flawed ideology were added a number of developments, some newer than others: compulsions to diversify away from natural rubber cultivation, the politicisation of rural poverty, and pressures to industrialise. With its long history of cultivation by Malay growers, and its affiliation with a well-established manufacturing sector, the coconut sector appeared to be the perfect candidate for official support. Unfortunately, this was not something many growers themselves agreed with.

A similar conundrum occurred as oil palm cultivation expanded rapidly across Malaya during the 1950s and 1960s. Here, smallholder interest in oil palms grew markedly, but did not translate into corresponding cultivation. Past studies have usually dwelled on the impact that Malaya's highly-publicised land settlement schemes have had on redirecting smallholder interest in oil palms into government-managed large-scale programmes. Such studies, however, ignore other important smallholder-government dynamics, the records for which lie buried and scattered in the Malaysian public archives.

These sources tell us a complex, yet ultimately unflattering story about government interactions with smallholders, both before and after Malaya's independence. Following the Second World War, British colonial officials were even more conflicted in their views regarding smallholder involvement with oil palms than they had been during the second half of the 1930s. The Colonial Office was now making it clear that it preferred oil palms in Malaya to become a peasant food crop worthy of home consumption. Malayan administrators, in contrast, proved implacable in their belief that large-scale mechanised processing was critical to commercial success. Malayan rubber estates were accordingly given ample support to switch over to oil palms, while support for smallholder oil palm cultivation remained grudging for the most part, and premised on the ability to organise production for centralised processing. Yet, without the benefit of an internal market for the crop, smallholder responses to state overtures were muted. Growers often remained reluctant to take up the

opportunities presented, given the heavier presence of dealers in rubber and food crop marketing networks.

All of these matters came to a head by the late 1950s, when the Federal Malayan authorities began to establish a national-level programme aimed at regenerating Malaya's coconut smallholdings. The circumstances surrounding the launch of the first of these schemes at Minyak Beku (a particularly deprived area in West Johor) were emblematic of the economic difficulties facing many smallholders. The Scheme was promoted to growers on the grounds that it would improve economic and environmental conditions for coconut farming, but was starved of the funding and expertise needed to accomplish these objectives. The Scheme also exacerbated the oil palm conundrum for smallholders by refusing to permit the use of replanting funds for any tree crops other than coconut palms. In doing so, it revealed its bias towards meeting the needs of industrialists for cheap raw materials, rather than assuaging the demands of smallholders for stable incomes. Smallholders, in turn, remained a difficult resource for authorities to control and manage, cooperating only when government priorities suited their own specific circumstances, or when they had little choice left in the matter.

THE REPLANTING IMPERATIVE

During the 1950s and 1960s, Malaya's major tree crops all came under increasing pressure to be destroyed and replaced. The commercial lifespans of the first generation of tree crops planted to meet global industrial demands – rubber, oil palms, and to some extent, coconut palms - were finally coming to an end. Many of the original farmers of these crops were themselves now entering old age. Moreover, public and privately-funded research conducted during the interwar years had produced a stable of higher-yielding tree varieties (and bud-grafted clones, for rubber) that were ready to take the place of ageing cultivars

after the Second World War.[1] Estates and smallholders with more lands and cash in hand were capable of undertaking such reforms without government financial assistance. However, most smallholders, working on plots of five acres or less, found it difficult to do so unless they had government backing.[2]

Underlining this push for replanting were a number of crucial developments affecting Malaya's political economy. First, the 1950s saw mounting pressures to intensify agricultural land use. This was partly due to population growth, but more importantly, the reluctance of individual Malay States to use their prerogatives over land policy to alienate parcels for agricultural purposes (other than rice planting).[3] Second, post-war British administrators had become increasingly aware of the economic value of the Asian smallholder contribution to the entire Malayan rubber industry.[4] Authorities in both London and Malaya now sought to yoke smallholder production to Britain's goal of increasing its United States dollar-denominated foreign exchange earnings through a more interventionist Malayan development strategy.[5] Both the Colonial Office and the newly-restructured Federal Malayan government were also keen to support efforts to raise the productivity and prosperity of growers in general, if only to pre-empt economic nationalism, as well as stifle more radical demands for political change.[6]

Finally, the wartime traumas of the 1940s had reawakened fears among British and nationalist elites that Malaya's economy, long reliant on a handful of export mainstays, was vulnerable to hardship and ruin. In

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[1] Colin Barlow and S. K. Jayasuriya, "Stages of Development in Smallholder Tree Crop Agriculture." *Development and Change* 17, no. 4 (1986), 641-644.
[2] P. T. Bauer, *The Rubber Industry*: *A Study in Competition and Monopoly* (London: Longmans, 1948), 173-175.
[3] Martin Rudner, "A Reply to P.T. Bauer's Comment on Post-War Malayan Rubber Policy." *Journal of Southeast Asian Studies* 4, no. 2 (1973), 302; Nicholas J. White, *Business, Government and the End of Empire: Malaya, 1942-1957* (New York: Oxford University Press, 1996), 200.
[4] White, *End of Empire,* 197-198.
[5] White, *End of Empire*, 10-12, 44-45, 106, 204-206; Id., "The State and Economic Development in Twentieth Century Malaya." In *Reflections on Southeast Asian History since 1945*, eds. Richard Mason and Abu Talib Ahmad (Pulau Pinang: Penerbit Universiti Sains Malaysia, 2006), 80-84.
[6] John M. Lee, *Colonial Development and Good Government* (Oxford: Clarendon Press, 1967), 203-204, 236-240, 284; White, *End of Empire*, 150, 204.

a world where natural rubber's resource monopoly was being progressively eroded by the post-war rise of synthetic substitutes from the United States, policymakers became convinced that Malaya's agricultural base needed to shift away from over-reliance on rubber, and focus more on crops like oil and coconut palms, while finding ways to increase all of their respective yields. Yet all this came at the same moment as Malaya's coconut farms were experiencing their worst conditions to date.

RETREAT OF THE COCONUT PALM

The economic outlook for the coconut palm during the 1950s was far graver than that of the 1930s. Copra oil faced altogether new competition for use in detergents, due to inroads made by synthetic substitutes in Western markets.[7] Following the Second World War, international advances in edible oil refining and transport techniques increased the substitutability of different oils and fats in margarine-making. Margarine, in turn, was under pressure from a resurgence of Western butter production.[8] Palm oil, which had previously been limited in the industrial world to mostly inedible uses, could now firmly join the ranks of coconuts and other oil crops in the margarine sector. For instance, by 1957, the proportion of palm oil used in Netherlands margarine was almost a quarter of all fats and oils used, virtually equal to copra oil's share. In Britain, palm oil had already surpassed copra oil as a margarine-making ingredient.[9] Palm oil's increased use in Western markets thus boosted its popularity among Malayan growers in the 1950s. But this came at the expense of copra oil's market share, pushing prices for coconut produce downwards.[10]

[7] ANM-KL: C&I/E 1015/VOL.1, Enc. 71A; Molly Goh, "The Possibilities for Expansion in the Coconut Oil Industry in Singapore." (Academic Exercise, BA (Hons) Economics, University of Singapore, 1963), 65-66.
[8] ANM-KL: C&I/E 1015/VOL.1, Enc. 71A; KPDANSK 1083/58, Enc. 160B; Goh, 'Singapore', 65-66.
[9] Goh, 'Singapore', 66.
[10] Appendix 2.1; ANM-KL: KPDANSK 1083/58, Enc 160B; TNA: DO 35/9995, D. Mellor, Office of the High Commissioner for the United Kingdom, Malaya, to R. Dorman,

There were nevertheless signs that the home market for artisanal coconut produce could still be a promising alternative for coconut farmers. Coconut milk, the basic ingredient of domestic curries and snacks, remained an important substance typically produced within the household (or the local corner shop) during the 1950s and 1960s. It had yet to become the pre-packaged, pasteurised item seen on supermarket shelves around the world today. Where large quantities of coconut milk were needed for village celebrations, a small motorised kernel grater could now be hired to save labour and time.[11] A stock of unopened coconuts in one's backyard, ready for splitting, scraping and pressing, remained key to generating a 'continuous supply of coconut milk for daily cooking'.[12]

Yet, such anecdotal evidence is readily contradicted by other vignettes, as well as broader surveys of Malayan society. A 1960 estimate of consumption of artisanal coconut produce claimed that the average Malayan was now only using the equivalent of 19 coconuts per year, which equated to just one-fifth of the entire Malayan coconut crop. Derived from Malaya's first national-level household budget survey conducted two years earlier, this per capita estimate was far lower than estimates made during the 1930s.[13] The 1960 figure probably underestimated coconut consumption to some extent, given that the household survey massively under-assessed the amount of foodstuffs that were being consumed through concealed channels, such as sugar hidden in food and beverages.[14] It nevertheless seems likely that a shift towards the consumption of industrially manufactured goods had already begun to take place across Malaya during this period, if not earlier. In rural Johor, potable drinking supplies were now commonplace, with a common public tap within

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Commonwealth Relations Office, 14.8.1959; S. Martin, *The UP Saga* (Copenhagen: NIAS Press, 2003), 101-102.

[11] Rosemary Firth, *Housekeeping among Malay Peasants (Second Edition)* (London: Athlone Press, 1966), 200.

[12] United States Interdepartmental Committee on Nutrition for National Defense, *Federation of Malaya: Nutrition Survey, Sept.-Oct. 1962: A Report* (Bethesda: National Institutes of Health, 1964), 149.

[13] Appendix 6.5.

[14] A. Sedky, *The Situation of Food Production and Consumption in Malaya: A Preliminary Study* (Kuala Lumpur: Ministry of Agriculture and Cooperatives, 1962), 25-26.

walking distance of most households.[15] Coconut water had thus become more of a recreational luxury than an essential item.

In addition, artisanal coconut oil appears to have declined significantly in domestic popularity by the mid-twentieth century. One well-known source on Malaya suggests a significant decline in the local use of coconut oil as a skin emollient during the first half of the twentieth century, partly because more people had begun covering greater portions of their bodies with clothing.[16] In rural Kelantan during the early 1960s, households were found using commercially manufactured soap powder where none had previously been used, as well as a widening variety of industrially manufactured cosmetics.[17] Moreover, village production of coconut sweetcakes was being gradually supplanted by the local consumption of factory-made biscuits and ice cream.[18]

Falling domestic demand for artisanal coconut produce was not necessarily a death knell for an industry whose external markets were under threat, if home demand was shifting to coconut-based industrial manufactures, like refined cooking oil, packaged soap, margarine, and vegetable shortening. But national statistics show that this was not the case. During the 1950s, the amount of copra oil channelled into products for the Malayan domestic market did not expand to a level that could match the estimated fall in consumption of artisanal produce, suggesting instead a broad-based consumer shift towards more prestigious products that were not made from coconut ingredients.[19] This general stagnation in local demand for coconut produce may have even reflected lingering disdain for coconuts, following the overconsumption of coconuts in home cooking during the Japanese Occupation. The shrinkage of domestic demand for coconut products thus limited the ability of the Malayan consumer to act as a buffer for flagging international demand. The

[15] David W. Brown, *A Visit with Rajab Bin Harun: A Malay Coconut Producer and Fisherman* (New York: Council on Economic and Cultural Affairs, 1963), 8.
[16] I. H. Burkill, *A Dictionary of the Economic Products of the Malay Peninsula* (2nd ed.) (Kuala Lumpur: Ministry of Agriculture and Cooperatives, 1966), 615.
[17] Firth, *Housekeeping*, 178-179, 186.
[18] Ibid., 82-83, 182-183.
[19] Appendix 6.2.

approaches used to combat the coconut trade crisis of the 1930s could not be repeated with the same effectiveness as before.

Coconut farming's troubles were magnified by new environmental problems. By the 1950s, both coastal growers and federal officials were aware that a factor previously overlooked – the acidification of heavy clay and organic Malayan soils – was compounding pre-existing problems of ineffective drainage, namely by stunting palm development in less water-logged coastal areas. At the time, however, the process of acid soil formation was only understood as a static phenomenon, wherein previously buried soils would acidify when dug up and exposed to air.[20] In response, growers and officials permitted incursions of sea water through drainage systems, in the belief that such movements would wash coastal soils free of excess acid.[21]

Only in the 1970s was acid formation in these coastal soils better understood by Malaysian agricultural scientists. This discovery upended previous understandings of the phenomenon. Essentially, the Peninsula's acid sulphate soils were not timeless geological fixtures waiting to be uncovered, but were instead a historically fluid process. They were the result of the repeated inundation of Malaya's low-lying clay and organic soils with sulphur-bearing sea water. In West Johor, the key factor enabling the accumulation of acid in soils was the presence of large amounts of decaying organic material, surrounded by an anaerobic, brackish environment, typically found around tidal rivers such as the Batu Pahat River. Aggressive drainage techniques could avoid the problem, provided they kept sea water out. Otherwise, such drains would inevitably cause agricultural soils within their reach to acidify over time. By the 1970s, scientists believed that over half of all alluvial clays along West

[20] ANM-KL: MA 251/56, 'First Draft of the Report of the Working Committee on Coconut and Coconut Products. Part One: A Survey of the Coconut Industry in the Federation of Malaya', 28, in Enc. 11.
[21] R. G. H. Wilshaw, "Note on the Development of High Acidity in Certain Coastal Clay Soils of Malaya." *Malayan Agricultural Journal* 28, no. 8 (1940), 352-57.

Johor's coastline had become acid sulphate soils, in part owing to earlier misguided attempts to address the problem through seawater flushing.[22]

These challenging economic and environmental conditions were matched only by the growing ambitions of Malayan colonial authorities to prop up the coconut sector, and stem an accompanying exodus of smallholders from coconut farming. Older official beliefs in the centrality of coconuts to Malay identity, rural income generation, and domestic food security, were now bolstered by an ethnicised electoral system. By the mid-1950s, the parlous state of coconut smallholdings along Malaya's western coastline had become sufficiently well-known in the popular press and halls of legislature to push the federal authorities into taking more focused action to rehabilitate coconut farmland. The Alliance Front, a Malayan coalition of race-based political parties, had made the revival of the coconut industry one of its campaign promises during the inaugural hustings of 1955, with the bulk of political pressure being filtered through the United Malays National Organisation, the Alliance's Malay-based party.[23]

The popularity of the Alliance Front's platform put immense pressure on colonial authorities to be seen delivering more progressive results quickly. In the words of Thomas Wilson, the federal government's chief agricultural economist, the protection of coastal agricultural lands from salt or fresh water flooding was now 'a social function properly the responsibility of Government'.[24] But this newfound willingness to tackle West Johor's environmental challenges continued to be confounded by the technical complexities of large-scale coastal engineering. Besides the poorly understood problem of soil acidification, the completion of bunding works in some Johor schemes during the mid-1950s was causing adjoining areas of coconut farmland to be subjected to chronic flooding.[25] In one area of Batu Pahat District, the situation had become so dire that

[22] K. Kanapathy, *Acid Sulphate Soils. Soils and Analytical Services Bulletin No. 6* (Kuala Lumpur: Division of Agriculture, Ministry of Agriculture), 1976.
[23] ANM-KL: MA 251/56, Encs. 2, 3; Ibid., Chief Secretary United Malays National Organisation, to Minister of Agriculture, Kuala Lumpur, 10.8.1957.
[24] T. B. Wilson, *The West Johore Coconut Production Survey* (Malaysia: Division of Agriculture, 1958), 42.
[25] Federal Legislative Council, Federation of Malaya, *Proceedings*, 764.

local Legislative Council representative S. Chelvasingam-MacIntyre had personally approached the Johor State Government for funding to build temporary bunds to prevent further floods, only for negotiations to break down due to disagreements between smallholders and the drainage authorities over the number of tidal gates necessary to manage water flows.[26]

In the face of these seemingly intractable challenges, short-term measures had to be taken. Malayan authorities thus increased their support for coconut producer cooperatives throughout the 1950s. Although state-supported marketing initiatives had shown very mixed results during the 1930s, Malay ethno-nationalism had become much more politically salient by the 1950s.[27] Both federal and state authorities felt compelled to act on popular arguments that rural Malay poverty was due to exploitation by Chinese-dominated trading networks, even though contemporary surveys of coconut grower indebtedness suggested few grounds for this belief.[28] Essentially a form of political posturing, colonial authorities supported coconut cooperatives so as to address Malay ethno-nationalist concerns without expropriating Chinese operators.

The main novelty of such interventions lay in their financial scale, in line with the ambitions of the late colonial state in Malaya. By the early 1950s, federal support encompassed not just co-operative Malay manufacture of copra, but copra milling. Copra crushing machinery was now relatively more affordable than in the past. Groups of Malay growers and traders claiming entrepreneurial aspirations took advantage of such opportunities to claim public funding from the federal authorities, but often without any accompanying experience in the basics of large-scale factory process management.

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[26] Ibid., 765.

[27] ANM-KL: SAO.PK 93/54, 'Final Report on the Economic Survey among Coconut Smallholders of Bagan Datoh', in Enc. 27; CO-OP 1136/56, Enc. 1A; T. N. Harper, *The End of Empire and the Making of Malaya* (Cambridge: Cambridge University Press, 1999), Ch. 6, passim.

[28] L. J. Fredericks, *The Co-operative Movement in West Malaysia: Policy, Structure, and Institutional Growth* (Kuala Lumpur: Dept. of Publications, University of Malaya, 1986), 125.

Attempts to establish Malay-owned cooperative copra mills during the period were thus either abject failures or remained in their infancy. For example, the first attempt at launching a cooperatively-owned copra oil mill began in the late 1940s, under the joint Malay proprietorship of the Kanchong Darat Cooperative Oil Mill Society in Selangor. Upon beginning operations in June 1949, the factory reportedly ran into serious problems immediately. Insufficient capital and poor strategic planning meant that emplaced machinery was either inappropriate or too small to run the mill efficiently. Meanwhile, working capital had been misallocated. Wages paid to factory labour and management were far in excess of the mill's actual output. There was purportedly 'a lot of backbiting' in the Society, including individual appeals to Selangor's Chief Minister for financial aid without the consent of other society representatives.[29] At the end of 1950, the factory had racked up a loss of $1,280. Existing shareholders, many of whom were coconut smallholders, were reluctant to make any further financial contributions, having realised the greater attraction of incumbent Chinese marketing networks. Instead, the Rural and Industrial Development Authority, a body officially established in 1950 to accelerate agrarian economic development (but essentially a heavily politicised vehicle used to disburse cheap credit to Malay small producers) granted a loan of $28,100 to rectify technical problems with the mill in 1952. Yet, the factory swiftly closed the following year, suggesting that underlying managerial problems were never resolved.[30]

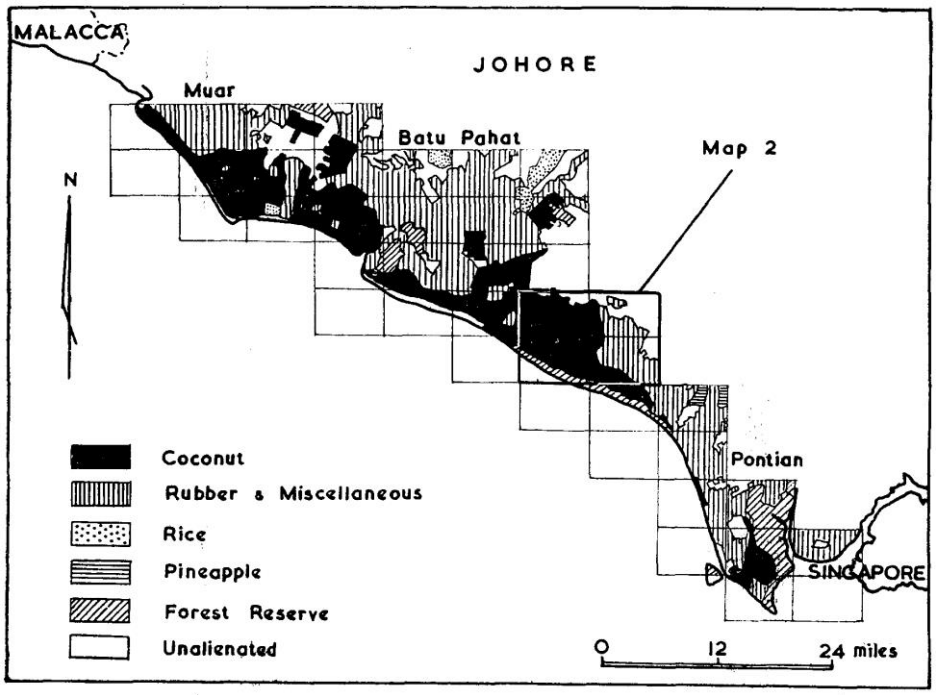
Troubled by poor coconut prices, inferior soils, and incompetent state support, many households continued to channel their time and resources into more remunerative activities. During a brief boom in rubber and copra prices during the Korean War in the early 1950s, many smallholders in coastal Selangor invested their temporarily swollen

[29] ANM-KL: SEL.SEC 1401/1949, Minute, DO Kuala Langat, 2.9.1949.
[30] ANM-KL: SAO.SEL.NO EA/3/3/2, Enc. 4A; Ibid., SAO Selangor to Chairman State Development Board, Selangor, 10.1.1951; Ibid., Memorandum by Chairman State Development Board, Selangor, 31.1.1951; Rural Industrial Development Authority, Federation of Malaya, *Annual Report* (henceforth AR RIDA) *for 1951* (Kuala Lumpur: Government Printer, 1952), 14; AR RIDA 1952, 14; AR RIDA 1953, passim; Harper, *Malaya*, 249-252.

earnings in non-farm expenditures, especially motorcycles. These acted as powerful instruments to widen the number of livelihood options that smallholders could access within a daily commute, including the transport of goods and people, without having to disrupt family ties in the process.[31] As in the 1930s, fishing was also pursued, both for home consumption and commercial sales. It was not unusual to find cases where an elderly smallholder delegated the relatively more strenuous tasks of coconut harvesting and copra preparation to his adult children, while spending most of his own nights at sea.[32] In some cases nearly two-fifths of household income came from fishing alone.[33]

On the whole, Malaya's coconut smallholding sector was now undeniably moribund, not least in Johor (Map 10). During Malaya's inaugural large-scale field survey of coconut smallholdings in 1956, one in every 10 acres of West Johor's coconut lands were found to be devoid of palms.[34] Extensive flooding had killed off whatever remained of nuts left to germinate on the ground, leaving over half the entire area without any juvenile saplings.[35] A quarter of the area lacked any internal drainage, and two-thirds of existing drains were 'completely choked'.[36] At the same time, many smallholders were loath to cut down degenerate palms because many still bore small numbers of miserable-looking fruits fairly regularly.[37]

[31] ANM-KL: SEL.SEC 1977/50, Enc. 1; SAO.PK 93/54, 'Final Report on the Economic Survey among Coconut Smallholders of Bagan Datoh', in Enc. 27; LSE: FIRTH 2/7/10, Raymond Firth and A. E. P. Collins, 'Malay Peasant Agriculture', 257, 326; Firth, *Housekeeping*, 183-184.
[32] Brown, *Visit*, 1963.
[33] Lee Kok-Yan, "Some Facts and Problems of the Coconut Industry in Malaya." (Graduation Exercise, BA (Hons) Economics, University of Malaya, 1965), 46.
[34] Wilson, *Johore*, 10, 28, 31.
[35] Ibid., 16, 20.
[36] Ibid., 46.
[37] Ibid., 17-19, 39.



Map 10. West Johor: coconut areas surveyed, 1956. Source: Wilson, *Johore*, 3.

The survey also indicated extensive crop diversification away from coconuts. Two-thirds of the main coconut area was found to be inter-planted with other cash crops, chiefly bananas, coffee, nipah palms, pineapples, and a variety of other fruit trees, all providing varying amounts of supplementary income to growers. Some smallholders in the surveyed area had recently begun replanting less waterlogged coconut lands with rubber trees, often in violation of land title conditions.[38]

Interplanted among some 47,000 acres of coconut lands, areca palms had developed into the second most widely cultivated tree crop within the surveyed area by 1956. Unfortunately, international demand for arecanuts had fallen sharply after the Second World War, even more drastically than coconuts. While in 1938, net exports of arecanuts from Malaya were 33,769 tons (three-fifths of which came from Johor), the figure had plummeted to 2,074 tons by 1960, largely due to the sharp decline of exports to India.[39] This was probably less about falling consumption in India than the Indian government's efforts to increase

[38] Ibid., 39, 45.
[39] Appendices 3.2, 3.10.

domestic production, after the bulk of arecanut lands went to Pakistan following British India's Partition in 1947.[40] Across Malaya, thousands of acres of areca palms were either being cut down or left idle, though continued demand for arecanuts from Burma, China, and rural Malaya itself helped stem the decline somewhat.[41]

Coconut estates on Malaya's West Coast faced similar economic and environmental difficulties during the 1950s. Already aware of the risks of planting new trees on potentially acidic soils, some estates took a cautious approach when replacing their old coconut stands with non-coconut crops. For instance, in Perak, Straits Plantations Ltd. (for whom Harrisons & Crosfield were agents) had begun replacing small blocks of coconut lands with oil palms, to see if local coastal soils were suitable for the new crop.[42] But labour shortages may have also been responsible for holding back the rate of replanting, as was the case for many other Malayan coconut and rubber estates which were replacing old trees with oil palms during early 1950s.[43]

Well aware of ongoing widespread diversification away from coconut palms, Thomas Wilson, chief agricultural economist to the Federal Government and architect of the West Johor coconut survey, made a number of policy recommendations that went sharply against the prevailing official consensus. Wilson essentially tried to see things from the point of view of coconut smallholders themselves, rather than national perspectives prizing food security and an imagined Malay identity. He argued that the present dereliction of smallholder coconut farms was a blessing in disguise, creating opportunities to rehabilitate affected lands, and plant them with more remunerative crops. Wilson suggested two possible approaches. One was to rejuvenate the most productive coconut

[40] V. Raghavan and H. K. Baruah, "Arecanut: India's Popular Masticatory: History, Chemistry and Utilization." *Economic Botany* 12, no. 4 (1958), 315.
[41] Appendices 3.10, 5.1; William Gervase Clarence-Smith, "Betel, Tobacco and Beverages in Southeast Asia: A Critique of the Reid Hypothesis." In *Art, Trade, and Cultural Mediation in Southeast Asia, 1500-1800*, ed. Raquel Reyes (Basingstoke: Palgrave Macmillan, forthcoming).
[42] ANM-KL: SAO.PK 93/54, Manager, Straits Plantations Limited, Perak, to DA, Federation of Malaya, 28.7.1954.
[43] O. J. Voelcker, *Report of the Department of Agriculture for the years 1950 and 1951* (Kuala Lumpur: Government Printer, 1953), 8.

stands and integrate them into a more intensive intercropping system. In other words, the loss of West Johor's forest rent could be mitigated through the publicly-funded addition of new catch crops and increased labour inputs. The other option, which Wilson preferred on the grounds of its lower costs, was to dispense with coconut palms altogether and replace them with more remunerative tree crops like rubber. Wilson also considered oil palms in this regard, but was hesitant to recommend their state-sponsored introduction because he believed they had not 'been proved satisfactory for smallholders'.[44] This was a typical example of how previous official decisions to play down the existence of actual oil palm smallholdings, like the 120-acre cluster at Ayer Hitam, were continuing to hinder subsequent attempts at promoting smallholder oil palm cultivation in Malaya.

Wilson's report received enthusiastic responses from both government officials and private manufacturers, but neither group chose to engage with his recommendations to abolish coconut farming. In fact, as will be shown later, industrialists used the Report's findings to argue for the opposite, namely the publicly-funded retention of coconut farming, despite Wilson's warning about the higher costs involved.[45] In the meantime, officials tasked with carrying out Wilson's recommendations chose to ignore the progress being made by estates, including those growing coconuts, in switching to oil palms. Worse still, much of this ongoing diversification within estates was being directly funded by the federal authorities themselves.

THE OIL PALM QUESTION

In 1952, federal Malayan authorities launched the first-ever series of schemes providing long-term financial incentives to growers to replace old tree crops. Intended to encourage the removal of old, unproductive rubber stands, the schemes created an unequal dynamic for diversification

[44] Wilson, *Johore*, 39.
[45] Ibid., 39-41.

into oil palms. Just a year after the termination of the British Ministry of Food's guaranteed market for Malayan oil palm produce, rubber estates were permitted to use their new replanting subsidies to plant oil palms from 1954 onwards. In contrast, rubber smallholdings were only permitted to do the same from 1963.[46] In response to this new scheme and earlier public support for reconstruction, Malayan estate lands devoted to oil palms doubled from 78,200 acres in 1947 to 153,400 acres in 1962, most of this farmland European-owned.[47] Smallholder oil palm acreage also almost certainly rose, but was relatively minute, and went unrecorded in official publications until smallholders actually began to qualify for oil palm planting subsidies.

Clearly such a policy was discriminatory, but whether it was intentionally so is another question altogether. It is certainly possible to argue that federal officials were merely following what made common sense at the time. Malayan estates already had a long history of successful oil palm cash cropping, making it easy for officials to visualise a further expansion of cultivation along existing lines. In contrast, the lack of historical precedent for oil palm smallholder cultivation posed a problem for officials needing to justify the use of public funds for such purposes. The non-rubber crops that rubber smallholders were permitted to use their replanting grants for – coffee, pineapples, coconuts, rice, sago, and fruit trees (excluding oil palms) – were all crops with a prominent record of smallholder involvement in Malaya.[48]

Furthermore, rubber smallholders themselves were generally disinterested in oil palms during the 1950s. Many of the non-rubber crops that qualified for replanting subsidies were only added to replanting schemes after smallholders themselves had lobbied for their inclusion. In 1953, for example, coffee and sago were both offered federal support only after repeated representations by smallholders from Klang and other

[46] Basri Abdul Talib, "Supply Response Analysis of Palm Oil in Malaysia 1961-1985." *Jurnal Ekonomi Malaysia* 18 (1988), 45; G. C. Allen and A. G. Donnithorne, *Western Enterprise in Indonesia and Malaya: A Study in Economic Development* (London: Allen & Unwin, 1957), 144-145.
[47] Appendices 5.1, 5.4.
[48] Appendix 5.2.

areas.[49] In such circumstances, the posture of replanting authorities was reactive, rather than anticipatory. Moreover, replanting statistics themselves convey a strong impression of the enduring popularity of rubber among smallholders. By 1963, a total of 603,000 acres of rubber smallholdings had been replanted with none other than new rubber stands. In a distant second place was Malaya's most popular tree crop of times past, coconut palms, having replaced 8,536 acres of rubber smallholdings.[50]

Yet, the numbers also paint a deceptively simplistic picture. Smallholder replanting figures during this interval were artificially inflated by estates who took advantage of regulatory loopholes to sub-divide their rubber properties in order to qualify for more generous smallholding grants.[51] Worse still, until 1962, smallholders wishing to plant fresh lands with their grants were only typically permitted to adopt rubber as the expansionary cultivar, which put those interested in other crops at a severe disadvantage.[52] Many households could not afford to forego income from existing holdings if their stands had to be cut down in preparation for new plantings.[53] Finally, while the first published figures for oil palm smallholdings only appear in 1963, in conjunction with the Rubber Industry (Replanting) Board's corresponding annual report, many smallholders, as will be seen, were already known to be replanting and new planting lands with oil palms before this date. The growth of smallholder oil palm cultivation was just not on the same level as that of estates, and certainly did not occur with the same level of official support.

What undoubtedly exacerbated matters for smallholders interested in oil palms was the prevailing Malayan official preference for a particularly inaccessible farming arrangement during the 1950s. It was not simply that oil palm growers had to form collectives, something that had

[49] ANM-KL: RISDA/CRO 90, Encs. 3, 5, 8.
[50] Appendix 5.2.
[51] Martin Rudner, "Malayan Rubber Policy: Development and Anti-Development During the 1950s." *Journal of Southeast Asian Studies* 7, no. 2 (1976), 256-259; Colin Barlow, *The Natural Rubber Industry* (Kuala Lumpur: Oxford University Press, 1978), 91; Harper, *Malaya*, 244.
[52] Rubber Industry (Replanting) Board, *Report*, 5-11.
[53] Bauer, *Industry*, 175; Harper, *Malaya*, 251.

been accomplished during the interwar years, albeit with considerable difficulty. Now, mimicking the official consensus regarding coconut marketing arrangements, growers were expected to divorce themselves from interactions with existing privately-owned fruit mills, in favour of sales through government-sponsored channels. This was a complete turnaround from previous guidelines advocating oil palm clustering strategies during the late 1920s, which, although not often followed in practice, at least gave lip service to the notion that smallholders and estates might have a common interest in working together. Again, the exclusion of estate mills from smallholder marketing arrangements might have been overcome through recourse to the small-scale hand-operated presses so enthusiastically touted by federal Malayan officials during the 1930s. Instead, this possibility, if officials were even still aware of it, was excluded, in favour of much larger milling configurations that overwhelmingly exceeded the capabilities of smallholders and petty dealers to own and manage themselves. These exclusions effectively transferred control over marketing and processing to the authorities instead. Given such official preferences, the notion of allowing smallholder rubber replanting subsidies to be used for oil palms, as discussed earlier, was clearly untenable for most officials during the 1950s.

The new enthusiasm for state capitalism was problematic for smallholders already doing business with estate mills. In Selangor, an Indian grower with a small area of productive oil palms was found to be successfully selling his fruit to the nearby factory of Highlands Estate sometime before the mid-1950s. This arrangement, once known to the local authorities, came in for strong disapproval, and possible prohibition.[54] Worse still, for many who were not yet in the business, but were considering it, the Selangor authorities' responses had a distinct chilling effect. Around 1952, a large group of Malay smallholders at Kuala Langat voiced a joint interest in oil palms, informing the local district officer of their plans to plant up their lands and sell the resulting harvest to the local mill already present in their area.[55] E. J. H. Berwick, Selangor's

[54] ANM-KL: SAO.SEL.NO EA/4/16, Encs. 6, 16.
[55] Ibid.

State Agricultural Officer, denied the Malay smallholder collective permission to proceed with proposed plans, and informed them that they needed to work with a large-scale publicly-owned mill instead.[56]

Yet, at the same time, Selangor agricultural officials were unable to make this mill a reality. Their dependence on the Federal Malayan authorities for funding for such a capital-intensive project left them vulnerable to the federal government's own shifting political priorities. Partly in response to the collective Malay smallholder appeal, Berwick spearheaded proposals in 1952 to establish a 2,000 acre oil palm 'settler' scheme, all materials, including a factory costing $500,000, to be funded by the cash-rich Rural Industrial Development Authority. These plans, however, had to be abandoned the following year when the area set aside for the scheme was used to resettle ex-Special Constable Malay personnel, as a reward for their service against Malayan Communist Party forces. The ex-personnel, in contrast to the Kuala Langat growers, expressly wished to grow crops other than oil palms on their newly acquired lands.[57]

THE KULAI SCHEME

After several such fiascos, the Malayan authorities were only able to realise the vision of marrying smallholder oil palm farming arrangements with large-scale publicly-owned mills at the end of the 1950s, through Malaya's inaugural oil palm settler scheme at Kulai, Johor. However, the prime beneficiaries of the Kulai Oil Palm Scheme, and the many subsequent oil palm schemes that Kulai helped catalyse, were not existing smallholders, but mostly land-starved Malay households, pre-selected on the basis of age, economic need, agricultural background, and political loyalty.[58] Such projects paved the way for a loss of power over decisions regarding labour allocation, one of the central distinguishing

[56] Ibid., Enc. 16.
[57] Ibid., Encs. 6, 14.
[58] TNA: DO 35/9995, Johor Government, 'Press Statement: The Oil Palm Smallholders' Scheme', 3.8.1959; Tunku Shamsul Bahrin, and Lee Boon Thong, *FELDA: Three Decades of Evolution* (Kuala Lumpur: FELDA, 1988), 74-85; James Pletcher, "Regulation with Growth: The Political Economy of Palm Oil in Malaysia." *World Development* 19, no. 6 (1991), 628.

features of smallholder households. Growers under Federal Land Development Authority schemes found themselves relinquishing their ability to choose what to farm, and when to harvest, to a professional managerial class, in settings more akin to the hierarchy of a 'modern plantation'.[59]

The Kulai Scheme, however, had a much less well-known smallholder dimension to it. During initial planning, Kulai was conceived as a union of two distinctly different farming arrangements, each favoured by a different set of interests. The first group of backers comprised the majority of senior agricultural officials in Malaya, who, in stressing the oil palm's main value as an export-oriented cash crop, inherited the long-held assumption that oil palms were a crop commercially unsuitable for peasant growers, owing to cost economies at the processing stage.[60] Their belief was now reinforced by clear evidence that, unlike West Africans, Malayans 'regarded palm oil as unpalatable', a phenomenon consolidated by the events of the previous three decades.[61]

The interests of the second group of supporters, an assortment of metropolitan agricultural officials and federal Malayan specialists, lay primarily in grower self-sufficiency, namely seeing the oil palm as part of village culture. This view echoed the Colonial Office's support for intensive small-scale food crop farming during the 1930s, conveyed through the recommendations of the Agricultural Adviser at the time, Frank Stockdale. Following the Japanese Occupation, the thread was picked up by Geoffrey Clay, the Colonial Office's new Agricultural Adviser, when visiting Malaya in 1948. Like his predecessor, Clay noted the incongruity of oil palms being solely cultivated by plantations, and recommended that Malaya's Department of Agriculture take steps to help rural dwellers incorporate oil palms into village settings, alongside rice and cocoa (the latter crop was unpopular with smallholders in Malaya at the time, due to its higher labour requirements and lower returns relative

[59] A. F. Robertson, *People and the State* (Cambridge: Cambridge University Press, 1984), 263-269; Edgar Graham and Ingrid Floering, *The Modern Plantation in the Third World* (Sydney: Croon Helm, 1984), 56-58, 91, 98-102, 105-114.
[60] Anon., "Editorial." *Malayan Agricultural Journal* 42, no. 3 (1959), 123.
[61] Voelcker, *Report*, 8.

to rubber).[62] Clearly taken with the notion that oil palms could replace coconut palms in village life, he recommended that the Federal Experiment Station at Serdang make its dwarf oil palm varieties, with their relatively light harvesting labour demands, easily available to smallholders. Meanwhile, the accompanying oil extraction challenge could be overcome with 'small processing plants…on the lines of the Pioneer Mills being used in Nigeria'.[63]

Yet, seven years after Clay's report, Malaya's Department of Agriculture was upbraided by G. Nye, the Colonial Office's visiting Deputy Agricultural Adviser, for having apparently done 'nothing…towards encouraging oil palm production amongst…small farmers'.[64] Nye essentially repeated Clay's earlier recommendations, insisting that pioneer mills and smallholder-friendly oil palm varieties be promoted to smallholders.[65]

Nye's criticisms, however, were not entirely fair, for they did not take into account ongoing developments within the Kulai Scheme. Since the beginning of the 1950s, the recently-formed Colonial Development Corporation, blessed with the authority to borrow up to £100 million, had sought to influence the shape of the Malaya's export sector. The Corporation found in oil palms an opportunity to link rural welfare with Britain's own industrial needs, not to mention reaffirm the political legitimacy of British colonial rule.[66] With no known precedents to draw on in Malaya, the Corporation attempted to reconcile the two conflicting perspectives regarding the appropriate scale of oil palm farming with a concept largely imported from West Africa: the nucleus estate.[67] In Malaya, the nucleus was to consist of a central mill linked directly to a

[62] E. E. Cheesman, "Abstracts: Report on Potentialities for the Cultivation of Cocoa in Malaya, Sarawak, and North Borneo." *Malayan Agricultural Journal* 31, no. 3 (1948), 223-236; Amarjit Kaur, "The Origins of Cocoa Cultivation in Malaysia." *Journal of the Malaysian Branch of the Royal Asiatic Society* 68, no. 1 (268) (1995), 75.
[63] ANM-KL: TREASURY 2051/48-K7, Enc. 16A, 16-17.
[64] ANM-KL: MA 533/54, Enc. 23.
[65] Ibid.
[66] Joseph Morgan Hodge, *Triumph of the Expert: Agrarian Doctrines of Development and the Legacies of British Colonialism* (Athens: Ohio University Press, 2007), 207-209.
[67] Jonathan E. Robins, "Capitalists, Smallholders, and States and the Oil Palm Frontier, 1900-2000." Global Commodity Frontiers in Comparative Historical Context. International Workshop, London, 9-10 December 2016, 11.

core area of oil palms farmed by heavily supervised settlers, thus guaranteeing the initial investment.

To start the project, the Corporation looked to Johor, where several Chinese-owned oil palm estates had been put up for sale by their owners after the ravages of the Japanese Occupation. One of these, a 1,722 acre plantation owned by Lee Quee Choo at Kulai, was purchased by the Corporation, which then delegated the tasks of rehabilitation and field operations to Managing Agent Guthrie & Co. Ltd in 1950.[68] Within this farmed core, private middlemen could be excluded from oil palm marketing activities, thereby assuaging official anxieties regarding peasant indebtedness and sales of lands to non-Malay dealers.[69]

The second half of the nucleus concept proved much harder to operationalise, and helped delay the scheme's opening until 1959. Planners had initially intended for existing smallholders within 16 kilometres of the nucleus to show interest in the Scheme, turn over a part of their village lands to oil palms, and eventually sell palm fruit to the Scheme's new factory. The chief proponents of this vision were D. E. M. Fiennes, the Corporation's then-Regional Controller, and Guthrie's very own managing director of Malayan operations at the time, Charles Thornton. Indeed, new factory capacity was planned with this goal in mind. Processing facilities would initially cater to 5,000 acres of oil palms, with room for further expansion when needed.[70] However, neither Thornton nor Fiennes appeared to have seriously considered how smallholders outside the nucleus were to market their produce.

The central problem facing these planners was how to foster outgrower participation without the involvement of private trader intermediaries. Kulai, home to a Chinese agricultural population during the interwar period, had seen its numbers swell during the Malayan Communist insurgency when numerous Chinese community resettlement projects were established in the locality. The Corporation saw in these

[68] ANM-JB: CL&M 340/50, Enc. 4.
[69] Ibid., Director, CDC (Far East) Ltd, to Commissioner of Lands, Johor, 4.5.1950.
[70] ANM-JB: ADO.KULAI (L) 115/55, Director, Malaya Developments Ltd (CDC), to SAO Johore, 7.3.1956.

rapidly expanding settlements the opportunity to court substantial smallholder interest in the Kulai Scheme, and made enquiries during the mid-1950s at two recently settled areas to gauge interest: Kelapa Sawit New Village, and Bukit Batu New Village. The latter settlement lay in the vicinity of 2,000 acres of land whose soils were believed to be especially suitable for oil palms.[71]

The Corporation's enquiries, however, were met with overwhelmingly negative responses. Growers at Kelapa Sawit were already aware of the oil palm's economic possibilities, having contributed years of part-time labour to Kulai Estate's rehabilitation during the early 1950s.[72] But in both villages, growers preferred retaining their current mixed farming systems, consisting of pineapples, tubers, vegetables, rice, pigs, and poultry, all mostly for sale to Johor and Singapore. Pig sales were the principal source of income for growers, and copra cake feed was in high demand.[73] All this commercial activity had been made possible through a network of private dealers, with the encouragement of the local authorities themselves, as part of efforts to address a mounting food supply deficit in Singapore and Johor since the 1940s, if not earlier.[74] The fact that residents already had familiar ties with a number of competing dealers was not lost on Johor's State Agricultural Officer, who commented after a visit in late 1955 that growers would 'be very conscious of the fact that there would be only one potential purchaser for their [oil palm] produce'.[75]

Undeterred, Fiennes and Thornton considered sweetening their offer with the prospect of oil palm replanting subsidies. But this notion met with even less success, as the powers to permit such an arrangement lay not with the Federal Land Development Authority, but with the Johor authorities and the Rubber Industry Replanting Board. Fiennes confessed

[71] ANM-KL: MA 158/55, Enc. 5.
[72] ANM-JB: SAOJ 60/N, Agricultural Officer Johore South, to State Agricultural Officer Johore, 29.10.1953; ADO.KULAI (L) 115/55, Enc. 1.
[73] ANM-JB: SAOJ 60/N PT.1, Chinese Agricultural Assistant JB, to State Agricultural Officer Johore, 30.4.1951.
[74] Local Produce Working Committee, *Food Supplies for Singapore* (Singapore: Government Printing Office, 1951); Gregg Huff and Gillian Huff, "Urban Growth and Change in 1940s Southeast Asia." *The Economic History Review* 68, no. 2 (2015), 522-47.
[75] ANM-KL: MA 158/55, Enc. 5.

to being stymied by both the marketing and planting challenges, writing in 1956 that 'I can do nothing but put the [replanting subsidy] suggestion forward with an offer of processing in Kulai factory…the price paid for fruit will be fair to all concerned, perhaps something on the same lines as…smallholders' pineapples'.[76]

The Kulai conundrum was an inversion of the early 1930s, when migrant smallholders from the Dutch East Indies had been keen to join the outgrower scheme proposed by Socfin at Johor Labis Estate, but had been discouraged from doing so by the Johor authorities. Then, as now, growers had been approached by a single large buyer for their produce, without any private intermediaries. In both cases, officials assumed, and not without good reason, that smallholders would be exploited by a monopsonistic private miller. And yet, when the state finally assumed the role of central processor, officials saw no irony in that fact that growers were still reluctant to participate, despite evidence of the superior marketing arrangements offered by private dealers.

Thus, instead of bringing about a revolution in smallholder oil palm farming, planners resigned themselves to making the nucleus the sole feature of the Kulai Scheme, setting a precedent for government-organised oil palm farming projects that has continued until today. At the time, however, the nucleus-only arrangement was a politically tricky to sell to the public. Without the involvement of existing smallholders, Malayan authorities were left with the problem of presenting the Scheme as a socially progressive project, especially since many Malayans already felt that oil palms could only be commercially farmed as part of a corporate, hierarchically-managed labour regime.

Yet, even in its compromised format, the Kulai Scheme came with a number of powerful benefits. The Scheme had a significant level of external financial backing from the Corporation ($2 million for land development alone). As a massive settler project, it offered thousands of acres of fertile soil to Malay households, at a time of pronounced land

[76] ANM-JB: ADO.KULAI (L) 115/55, Director, Malaya Developments Ltd (CDC), to State Agricultural Officer Johore, 7.3.1956.

hunger.[77] The Scheme also attracted support for demographic reasons. For instance, Johor's Executive Council saw the Scheme as a way of encouraging Malay population growth in an area dominated by Chinese pig farmers, whose activities made it otherwise difficult for Malay-Muslims to live nearby.[78] Such were the Scheme's attractions that, under the watchful eyes of FELDA's new chairman Taib Andak, the first 100 Malay settlers had arrived at Kulai by 1961. And by 1965, 3,000 acres of oil palms were being farmed by 250 Malay households, with more settlers on the way.[79]

The Kulai Scheme's launch as a large-scale enterprise nevertheless did create openings for independent smallholders to sink their teeth into oil palms. In focussing on the crop, the Scheme helped reform the existing rubber smallholders' replanting programme. In September 1960, C. Whitehead, the Acting Assistant Director for Agriculture, circulated a memorandum informing all State Agricultural Officers that oil palms would soon be considered a smallholder crop eligible for financial support. Under pressure to accelerate smallholder crop diversification away from rubber, he was now able to use favourable income figures from oil palm cash cropping to make his case, figures that had actually been derived from the Federal Land Development Authority's own calculations for the Kulai Scheme four years earlier.[80]

By June 1963, rubber replanting authorities were acquiring dozens of copies of the Federal Land Development Authority's policy brochure, *No Need to be Poor*, for dissemination to extension officers.[81] The pamphlet contained the same numbers used by Whitehead three years earlier to press the case for oil palms over rubber. With this material in hand, replanting officers now hoped they could persuade more rubber

[77] ANM-KL: SA 28/6, Enc. 45; TNA: DO 35/9995, Johor Government, 'Press Statement: The Oil Palm Smallholders' Scheme', 3.8.1959.
[78] ANM-JB: ADO.KULAI (L) 2/15/57, Minute, ACLR Kulai, 12.11.1958.
[79] Willard A. Hanna, *The Kulai Oil Palm Scheme* (New York: American Universities Field Staff Reports Service, 1965), 3.
[80] ANM-KL: SA 407, Enc. 1.
[81] Federal Land Development Authority, *No Need to Be Poor: A Policy Statement* (Kuala Lumpur: Federal Land Development Authority, 1956).

smallholders to adopt the oil palm.[82] But this would prove to be an uphill task. Such figures did not take into account the high opportunity costs associated with palm fruit harvesting and handling, costs that would make many rubber smallholders reluctant to diversify into oil palms for decades to come.

THE MILLERS' DILEMMA

The Kulai story also makes it necessary to ask why Asian commercial networks, especially those of Chinese copra millers, were not more involved in the domestic oil palm product trade by the 1950s. If they had been more involved, they would probably have encouraged more smallholder participation in the crop. After all, during the interwar years, Asian dealers and processors had sought to create their own streams of oil palm and coconut products, either through purchases from smallholders, or by direct investments in cultivation, together with smaller growers. At a stretch, copra mills could even be temporarily reconfigured to crush palm kernels, as was done during the Japanese Occupation.

The reluctance of most Malayan copra millers to move into palm fruit milling is even more puzzling when we consider what is now known about the increasingly desperate commercial situation millers faced by the late 1950s. Between 1956 and 1959, the Malayan crushing industry's oil output fell from an estimated 62 to 38 per cent of combined maximum capacity.[83] Millers blamed their woes on shortages of local copra supplies from the dilapidated Malayan farm sector, and more critically, Indonesia's nationalistic copra trade policies, which were only somewhat mitigated by copra smuggling between Indonesia and Singapore. The situation was especially bad in 1959, due to recent rebellions in North Sulawesi and

[82] ANM-KL: KPTS 149, Encs. 3-4.
[83] ANM-KL: C&I/E 1015/VOL.1, Enc. 19A; C&I/E 1180/1 VOL. 1, Enc. 43.

Sumatra, both major copra producing areas.[84] Why did the millers not try to make up for the copra shortfall with palm fruit supplies instead?

It is certainly true that the Malayan crushing sector was no stranger to under-capacity. The millers had lived with far worse underuse of plant during the 1920s and early 1930s.[85] However, during this earlier interval, milling capacity was concentrated within a handful of large enterprises located mostly in Singapore and Penang. By the 1950s, this structure had changed beyond recognition. Industry incumbents had been forced to accommodate a rapid influx of millers since the late 1930s. Most of the new entrants were not the lumpy port-centric investments of previous decades; instead, they operated small-scale establishments on the mainland, catering to a geographically circumspect trade in copra cake and oil.[86] Under such circumstances, domestic competition for copra supplies was much more intense. Worse still, all millers were now also facing competition on their own turf from Indonesia. Exports of copra cake from Indonesia, especially Java, were beginning to flood the Malayan market, putting downward pressure on Malayan cake prices.[87]

An unfavourable shipping situation compounded the woes of the millers. In a reversal of the 1930s situation, shipping rates charged by the Far East Conference on coconut products to European countries became far higher for copra oil than for copra from the late 1950s onwards, despite repeated Malayan government representations to the Conference. Worse still, unlike Ceylon and India, Malaya was unable to avoid a 15 per cent import duty on copra oil sold to the United Kingdom, one of its major markets, because Malayan-made copra oil was disqualified from Commonwealth Preference. Still heavily reliant on Indonesian supplies, millers in Singapore and Penang could not satisfy the United Kingdom's certification criteria for exports to have at least 25 per cent of value, ex-

[84] ANM-KL: C&I/E 1180, Enc. 1B; Ung Gim-Sei, "An Analysis of Singapore's Trade on Copra-Group Commodities, 1954-1963." (Graduation Exercise, BA (Hons) Economics, University of Singapore, 1965), 46-47; W. G. Huff, *The Economic Growth of Singapore: Trade and Development in the Twentieth Century* (Cambridge: Cambridge University Press, 1994), 279-281; M. C. Ricklefs, *A History of Modern Indonesia since c. 1200* (4th ed.) (Basingstoke: Palgrave Macmillan, 2008), 299-300.
[85] Appendix 6.3.
[86] Appendix 6.1.
[87] Appendix 3.9.

mill, of Commonwealth origin.[88] Although copra oil was still being sold in large amounts to Asian destinations such as India, China, Burma, and Hong Kong, these trades were disadvantaged by the continued use of expensive oil drums, rather than bulk tankers. The main problem was not with the Malayan side – which had erected bulk transport facilities for copra oil as early as the 1930s – but with overseas Asian buyers, whose ports still lacked the ability to receive tanker shipments.[89] Caught in a squeeze between supply and demand, the millers were unable to offer more competitive prices for copra. All this made it more profitable for wholesale copra merchants in Malaya to sell copra abroad, rather than to allocate it to domestic crushers.

Despite these increasingly grave circumstances for the millers, they were neither willing nor able to move into oil palm fruit processing. The dearth of local and regional marketing opportunities for oil palm products remained a serious impediment to Asian commercial interests. In its unrefined form, palm oil as an edible fat still had few Asian takers: a situation which had only worsened as a result of wartime feeding experiences during 1940s. Palm kernels continued to be a poor economic proposition for Malayan copra millers, especially when compared to oilcakes from coconut, sesame, soy and groundnut sources.[90] Even into the 1970s, palm kernel cake remained lowly valued in Malaya and the surrounding region. Palm kernel oil exports also made little sense before the late 1960s, weighed down by tariff barriers from traditional kernel buying markets in Great Britain and Japan.[91]

It is certainly true that Malaya's domestic soap industry remained interested in locally-made palm oil and palm kernel oil. But the presence of cheaper local substitutes often hampered uptake. During the early

[88] Appendix 3.6; ANM-KL: C&I/E 1180, Enc. 1B; Ung, 'Commodities', 43-45.
[89] Appendix 3.7; ANM-KL: C&I/E 1015 Vol. 1, Enc. 38; C&I/E 1022, Enc. 20B; Straits Settlements Vegetable Oils Committee, *Report of a Committee…on the Present Economic Condition of the Coconut and Other Vegetable Oil Producing Industries in Malaya* (Kuala Lumpur: Government Press, 1934), 39.
[90] UNI: GB1752.UNI/RM/OC/2/2/64/14, N. Nicholson, 'Malayan Factory', 13.6.1947, 18; Tan, *Chinese*, 189; Gunn Lay Teik, *Fodders and Feeding Stuffs in Malaya* (Johore Bahru: Government Printing Department, 1951), 30-33.
[91] Tan Pek Leng, *Land to Till: The Chinese in the Agricultural Economy of Malaysia* (Kuala Lumpur: Centre for Malaysian Chinese Studies, 2008), 189.

1950s, tallow obtained from local meat renderings cost a nominal $463 per ton, at a time when world market prices for tallow were quadruple of the local Malayan variety, and international palm oil prices even higher. Unsurprisingly, a number of local soap-makers preferred using local tallow, blending it with copra oil to achieve creamier-textured soaps.[92]

A more serious problem faced by copra millers seeking to elbow their way into the post-1945 Malayan oil palm sector was that of internal capabilities. Many lacked the managerial expertise, technical ability and capital now needed to make the shift. Many of Malaya's oldest, and largest millers were saddled with 'obsolete and worn out' crushing equipment, and lacked the resources needed to augment, let alone replace them.[93] In a sense, their situation mirrored that of smallholders who were concurrently struggling to replant tree crops without significant external financial support.

Even relatively recent large-scale entrants to oil crop processing were racked by elementary teething concerns. Lam Soon Oil and Soap Manufacturing, a rapidly growing enterprise after the Second World War, sought to establish a modern soap and cooking oil factory in Singapore to complement its copra crushing business in the early 1950s. But its efforts were hampered by shortages of skilled manpower. Despite having already become one of Malaya's biggest soap manufacturers, the firm did not employ a single professionally-trained engineer until the mid-1950s. When Samuel Kam, a Berkeley-trained chemical engineer, was finally hired, he allegedly found the Singapore factory site devoid of basic American industrial management principles. State-of-the-art oil processing machinery purchased from North America and England had, according to him, been incoherently arranged and misused.[94]

[92] UNI: GB1752.UNI/RM/OC/2/2/64/20, P. Rykens and S. Van Den Bergh, 'Notes on Visit to Malaya', 21.3.1952, 8.
[93] Goh, 'Singapore', 8-12.
[94] Gan Shangwu, *Through Wars and Peace: From the Gunfire of the Sino-Japanese War to the Golden Oil of Malaya: A Memoir by Samuel S.W. Kam at 96* (Hong Kong: Peace Book Co. Ltd., 2011), 199-202.

Having rectified these problems, Kam was then tasked with leading the expansion of Lam Soon's soap and edible oils manufacturing subsidiary in Malaya. There, he found his efforts stymied by credit shortages and continued manpower deficits. As a result, Kam was forced to deal personally with menial business matters on a daily basis, leaving no time to expand the firm's technical acumen to include palm kernel crushing. Consequently, Lam Soon's diversification into palm oil and palm kernel feedstocks only began in the mid-1960s, once marketing, administrative and quality issues with existing soap and margarine products were ironed out.[95]

Malaya's copra millers were thus largely followers, and not initiators, of smallholder diversification into oil palms. In fact, their prevailing response to the copra shortages of the 1950s and early 1960s was to entrench themselves further in the copra crushing business. To this end, a number of the industry's leading millers began to lobby the Malayan authorities, suggesting measures to cheapen the price of copra, their main raw material. In March 1959, Lam Soon's Malayan subsidiary became one of the leading representatives of a joint petition to the federal government. The letter, citing findings from the Wilson report on West Johor coconut farms, made extensive reference to the parlous situation facing Malaya's coconut smallholdings.[96] In doing so, the appeal spurred the federal authorities into embarking on their most ambitious plans for coconut farming to date.

MALAYA'S FIRST COCONUT SCHEME

The route to Malaya's first Coconut Rehabilitation and Replanting Scheme was beset by a paradox. The Scheme was fiendishly complex in its technical and agricultural requirements. There were simpler ways to enlarge the supply of copra, ways that the copra millers themselves had been willing to consider. Considerable numbers of growers and

[95] Gan Shangwu, *Wars and Peace*, 210-217, 242-243.
[96] ANM-KL: C&I/E 1180, Enc. 1B.

agricultural officials were opposed to the Scheme, both in principle and in its execution. Despite all this, the Scheme was eventually launched in 1963 at the economically depressed locality of Minyak Beku, Johor, setting a controversial precedent that would be followed by similar coconut projects across Peninsular Malaysia.[97]

The roots of the contradiction lay in Malaya's dysfunctional political economy. As seen earlier, it had become almost impossible by the 1950s to separate the economic arguments regarding coconut cultivation from ethno-nationalist support for Malay nationals, particularly when rubber smallholdings had already begun receiving their own federal replanting subsidies. By 1955, the Department of Agriculture had embarked on coconut rehabilitation and replanting experiments at a field station in Johor.[98] Three years later, a high-level report containing a summary list of policy recommendations, including measures to rehabilitate coconut soils, was submitted to the Cabinet's Economic Committee for final approval.[99]

These recommendations would have been passed swiftly, if not for what seems to have been the Economic Committee's preoccupation with the rubber industry's own problems.[100] However, in early 1959, a large group of mainland copra millers, responsible for about 55-60 per cent of the Malayan Federation's total copra oil production, brought the rehabilitation issue back to the Cabinet's attention with a carefully worded petition to the Minister for Commerce and Industry, Tan Siew Sin, outlining their urgent need for copra supplies.[101] The Economic Committee then quickly gave the green light for the Scheme, beginning with northwest Johor, an area whose problems were now particularly well-known, thanks to Thomas Wilson's coconut farm survey, published in

[97] Kenelm O. L. Burridge, *A Report on Fieldwork in Batu Pahat, Johore* (Singapore: Social Research Unit, University of Malaya, 1956), 121-122, 125-126.
[98] ANM-KL: DA GEN/100, Permanent Secretary, Ministry of Agriculture & Co-operatives, 'National Development Planning Committee: Coconut Replanting/Rehabilitation Scheme: Hd 130, SubHd 43', n.d, 1, in Enc. 27.
[99] ANM-KL: C&I/E 1180, 'Draft Joint Memorandum from the Ministry of Commerce & Industry and the Minister of Agriculture', n.d., in Enc. 8; C&I/E 1022/A, Enc 1A, 61; Anon., 'Committee studies coconut industry', *The Malay Mail*, 5.7.1957.
[100] ANM-KL: C&I/E 1180, Enc. 5.
[101] Ibid., Enc. 1A.

1958. Various working committees were then established to hammer out detailed plans for the Scheme.

Yet, even in 1959, copra crushers had been willing to countenance alternatives to grower-level interventions, if the latter proved too difficult to plan and execute at short notice. In their petition, the mainland millers advocated increasing the export duty on copra from the existing five to 30 per cent, as an 'emergency stop-gap aid'.[102] This would, in theory, allow for more local copra stocks to be retained within the mainland.[103] However, this suggestion was firmly opposed by the millers of Penang Island, who still accounted for about 40-45 per cent of the Malayan Federation's copra oil output at the time (Singapore was not part of the Federation). The Penang millers had long relied on their island's status as a duty-free port for their commercial success, meaning that they would not agree to the proposal unless they were exempted from its terms.

Eventually, both groups of millers agreed on an alternative proposal, namely to enact import duties on copra cake from Indonesia. This would presumably help shift the centre of the copra cake trade back to Malaya, triggering a flood of raw copra imports. This time, the new suggestion was rejected by a federal-level committee chaired by Abdul Ghani bin Mohd. Noor, Controller of the Trade Division at the Ministry of Commerce and Industry, on the grounds that such a policy would raise the operating costs of Malaya's domestic livestock industry, a sector whose development the federal authorities had recently accorded priority in the interests of food self-sufficiency.[104] Relatively simple administrative measures thus faltered because they pitted one valued economic segment against another. Ministry of Commerce and Industry officials also doubted that any gains by the millers from such reforms would be passed on to growers and copra producers themselves.[105] This left the Federal authorities with only one main option: to increase Malaya's own coconut harvest as quickly as possible.

[102] Ibid.
[103] Ibid., Encs. 1A-1B.
[104] Ibid., Enc. 2; FS 4620 PT. 1, Enc. 187A.
[105] ANM-KL: C&I/E 1180/1 VOL. 1, Enc. 43.

Even then, officials frequently expressed reservations amongst themselves about this production-centric approach. Many agricultural officials already viewed coconut farming as a sunset occupation, and wanted to see alternative crops planted. One prominent advocate, as seen earlier, was Thomas Wilson himself. At the Department of Agriculture's annual conference of 1960, Wilson warned colleagues that coconut smallholders who could afford to do so were already replanting their stands with oil palms and rubber, developments which he personally welcomed.[106] Similarly, D. E. M. Fiennes, who was directing the Kulai Oil Palm Scheme's launch at the time, was strongly in favour of getting Malaya's existing coconut farmers to switch to oil palms, arguing that the latter crop would now produce twice as much income per acre as the former.[107] Indeed, all the way up to the Scheme's official launch, federal and state officials, including Selangor State Agricultural Officer G. F. Darnell and Agriculture Publications Officer J. Wilson, were cautioning Scheme planners that they 'should not be concerned with rehabilitating the coconut industry but [with] rehabilitating the coconut farmer'.[108]

Even the very officials tasked with planning the Scheme were themselves pessimistic about its prospects. Some administrators openly agreed with their agricultural colleagues that the international market outlook for copra and copra oil was unappealing.[109] Moreover, with the bulk of federal attention focused on rubber smallholdings, Scheme planners knew that their own efforts were severely underfunded by comparison. With $15 million allocated for the Scheme under the Second Malayan Five Year Plan, only 25,000 acres of coconut could be conceivably rehabilitated between 1961 and 1965. This was a fraction of the 238,700 acres of Malayan coconut farmland identified to be in need of either partial rehabilitation or complete replanting.[110] Such funding constraints meant that coconut estates were excluded from Scheme subsidies, although this did not prevent plantation executives from taking

[106] ANM-KL: SA 28/7, Enc. 29, 56; Anon., 'Hope for Copra', *The Straits Times*, 17.5.1960.
[107] ANM-KL: C&I/E 1022, Enc. 20B, 2-3; ANM-JB: SAOJ 204/A/PT. 1, Enc. 1.
[108] ANM-KL: SA 28/7, Enc. 29, 56.
[109] Ibid., Enc. 29.
[110] ANM-KL: DA GEN/100, Enc. 8A, 23; KPDANSK 1083/58, Enc. 160A.

permanent seats within the Scheme's working committees, and subsequently influencing the conduct of the Scheme for smallholders. More cash could have been raised for the Scheme through a high export cess on copra and copra oil, but millers were unwilling to shoulder the greater part of a tax whose purported direct beneficiaries would be smallholders.[111] Confronted with such constraints, Lew Sip Hon, chairman of one working committee and Controller at the Ministry of Commerce and Industry, privately lamented the piecemeal nature of the Scheme's plans: they were a recipe for a 'bad start' and 'would never become popular'.[112] Officials like J. S. Ure, the Acting Director of Agriculture in 1960, generally excused themselves from this predicament by arguing that the coconut working committee's terms of reference did not permit the consideration of tree crops other than coconut palms.[113]

Not mentioned by any of these parties, but just as questionable, were the economic and environmental trade-offs arising from large-scale coastal engineering work. Permanent bunds and drainage work would essentially require the destruction of much of Johor's remaining coastal mangrove forest. A lack of coordination between agricultural and forestry officials meant that the new bunding projects did not take into account their likely detrimental effects on Johor's lucrative fisheries, firewood, and timber production industries, all of which depended on the mangroves for sustenance.[114] Many smallholders relied on these non-farm activities to supplement their incomes.

A more radical alternative to coconut-centric coastal landscaping would have been to allow local mangrove ecologies to regenerate, and offer all interested cash croppers the opportunity to settle elsewhere and grow more remunerative crops. This had indeed been proposed to the Johor authorities during the late 1930s in a different context, but the main concern precluding such an approach – official fears of widespread Malay landlessness – was even more prevalent in the period after the Second

[111] ANM-KL: DA GEN/100, Enc. 8A.
[112] ANM-KL: C&I/E 1180/4, Enc. 3.
[113] Ibid., Enc. 29.
[114] Jeyamalar Kathirithamby-Wells, *Nature and Nation: Forests and Development in Peninsular Malaysia* (Copenhagen: NIAS Press, 2005), 270.

World War. Moreover, as seen in the case of Kulai, large-scale settlement schemes for the landless were still in their infancy at the time.

Finally, for all the official rhetoric promising coconut smallholders aid from the state, the harsh truth was that federal authorities had consistently placed the needs of industry above those of growers since the early 1950s. Despite genuinely-felt contempt towards Chinese coconut processors and their agents, officials still valued their economic contributions, in terms of forward linkages generated, export revenues earned, and their infusions of technical and commercial expertise. These qualities had put the aspirations of Malay-owned cooperatives to shame. The fact that many Chinese millers were struggling to overcome equipment shortages and poor cash-flows only seemed to make their case for support even worthier of consideration. In lobbying the federal authorities in 1959, copra millers positioned themselves 'one of the few major branches of industries' in Malaya at the time.[115] And given this head start, they argued, the Malayan government needed to begin thinking of the coconut as raw material for value-added industrial manufactures, and support the industry accordingly.[116] Such rationales may account for why plans to rehabilitate coconut farms were resumed in mid-1959, after being delayed for almost two years at the Cabinet level.

Official disregard for grower views made it even easier to proceed with the Scheme. In this, senior federal officials demonstrated that they had thoroughly absorbed previous colonial stereotypes of rural Malayan society. Coconut growers, simplistically ascribed with Malay ancestry, were frequently characterised as backward, lazy, fractious, and in need of tutelage from better educated parties. Within several months of the Scheme's launch at Minyak Beku, Othman bin Mohd Lela, the Acting Chief Coconut Replanting Officer, declared that his role was to be one of

[115] ANM-KL: C&I/E 1180, Enc. 1A.
[116] Anon., 'Probe Urged for Coconut Industry', *Singapore Standard*, 23.5.1959.

an educator, teaching smallholders how 'to make the best use of the available land in proper farm management'.[117]

Part of the gulf between the federal authorities and small producers came from the latter's disinterest in forming coconut-based associations at the state level, which was out of line with the government's corporatist preferences.[118] In the absence of such participation, the authorities recruited Malay delegates on an ad-hoc basis, including those who already had close personal ties with various branches of government. This sometimes led to advice that went directly against the interests of local farmers, such as the recommendations of one Senator Raja Rastam Sharome, well-known to senior officials in the Ministry of Commerce and Industry. In the interests of fiscal parsimony, the Senator advocated reducing the proposed coconut replanting grant from $655 to $500 per individual, without consulting his Selangor constituents. This suggestion was subsequently approved by the federal authorities.[119]

Likewise, the views of crop buyers, invariably construed to be those of exploitative Chinese monopsonists, were officially treated with intense distrust and kept at arms' length. While smallholders, estates and copra millers were all allocated seats on the working committees of the Scheme, no spaces were reserved for the representatives of rural coconut traders.[120] Feedback from these intermediates was instead received at arm's length, through individual petitions, market surveys and field interviews, where they could then be discounted within the relative privacy of internal committee discussions.[121]

Differences in working languages compounded the federal government's disregard for the views of smallholders and petty traders. The officials, estate managers, and millers convened to plan and implement the coconut schemes were predominantly Anglophone in

[117] ANM-KL: DA GEN/100, Enc. 12; Ibid., 'National Development Planning Committee: Coconut Replanting/Rehabilitation Scheme: Hd 130, SubHd 43', in Enc. 26; SA 28/1, Enc. 43K.
[118] ANM-KL: KPDANSK 1083/58, Enc. 29.
[119] ANM-KL: C&I/E 1180/4, Enc. 9A.
[120] ANM-KL: C&I/E 1022/A, 59-60, in Enc. 1A.
[121] ANM-KL: C&I/E 1180/1 VOL. 1, Encs. 8, 13.

outlook, whereas many smallholder representatives were Malay speakers, deeply uncomfortable with the use of spoken and written English. Between 1960 and 1962, one such grower representative, Encik Kamsan bin Anuar, a smallholder and chairperson of a copra marketing society in Batu Pahat, found his concerns repeatedly ignored by the working sub-committee he had been nominated to join. Official invitation letters, lengthy background papers, and meeting minutes were sent to all committee members in English, often without any accompanying Malay translations, making it difficult for Kamsan to follow the proceedings.[122] When Kamsan finally received the translated minutes of one such meeting in 1961, he took immediate issue with the committee's blatant presumption that smallholders were being exploited by Chinese middlemen through indebtedness. Kamsan, drawing on his own personal experience and knowledge, contended that most growers he knew of found it useful to work with Chinese crop buyers, so as to free up their time for more remunerative pursuits.[123] There is no record of Kamsan's views, expressed in Romanised Malay, being acknowledged by the working sub-committee's chair, Mohd. Hussein bin Ibrahim, then Deputy Commissioner for Co-operative Development. In fact, Kamsan found himself frequently shut out of the sub-committee's activities after this, and other similar exchanges.[124]

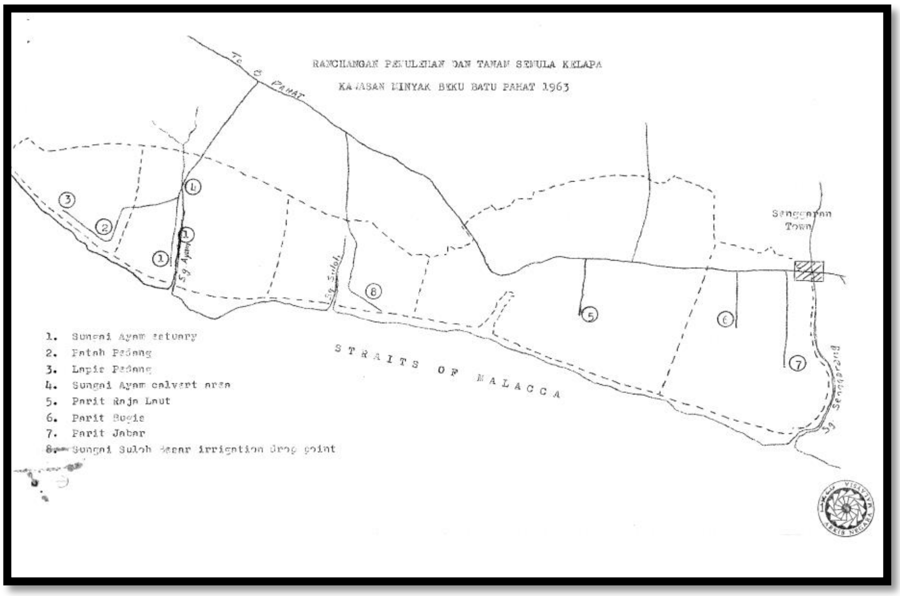
As it stood, federal agricultural officials, under the influence of copra millers and estates, remained in charge of the most important decisions of the Scheme. These included questions regarding the order in which each coconut area would qualify for a rehabilitation project, when exactly subsidies would be allocated to growers, what crops were considered suitable for replanting, planting densities, and overall drainage management. Yet, like Johor's drainage policy fiasco during the 1930s, the agricultural officials tasked with designing the Scheme often confessed that they lacked sufficient experience with the various environmental,

[122] ANM-KL: C&I/E 1180, Enc. 52; C&I/E 1180/1 VOL. 1, 60-61, in Enc. 21; KPDANSK 1083/58, Enc. 46.
[123] ANM-KL: MA/P&R 1083/58, VOL. 1, Encs. 26, 36.
[124] ANM-KL: MA/P&R 1083/58, VOL. 1, Enc. 59; Ibid., Minutes, Lim Peng Kin, Ministry of Commerce & Industry, 13.3.1962 and 18.4.1962.

economic, and arboreal challenges presented by such a concerted programme of coconut palm rejuvenation and replanting, even one on the limited scale envisaged.[125]

This combination of official paternalism and ignorance began to bear fruit in June 1963, upon the onset of Scheme operations at Minyak Beku (Map 11). Wealthier smallholders, whose holdings reached densities of over 100 palms per acre, were extremely reluctant to participate in the scheme as advertised, due to conditionalities bringing the number of palms down to 65 per acre, akin to estate averages. Not only did many growers object to cutting down what they saw as healthy, productive palms, but they also balked at initial specifications stating that only pineapples, a notoriously labour-intensive crop, could be planted under young coconut palms.[126] Marketing was also a potential problem for pineapples. Unlike southwest Johor, where most pineapple cultivation was taking place, Minyak Beku was in northwest Johor, placing it far away from Johor's canneries in the south.[127] Cocoa, a more popular intercrop during the 1970s boom in cocoa prices, had yet to make a significant appearance in government schemes, due to recent crop failures in field trials.[128] The Scheme's soil rehabilitation measures also proved contentious, with smallholders in the Parit Jabar locality refusing to participate, ostensibly because they had little faith in official drainage interventions.[129]

[125] ANM-KL: DA GEN/100, Enc. 8A.
[126] ANM-KL: SA 28/1, Enc. 18I; MA 1338/5, Encs. 2A-3A, 18.
[127] Y. C. Wee, "The Development of Pineapple Cultivation in West Malaysia." *Journal of Tropical Geography* 30 (1970), 70.
[128] Kaur, *Cocoa*, 75.
[129] ANM-KL: SA 28/1, Enc. 18I.



Map 11. Minyak Beku: areas identified for initial replanting and rehabilitation work, 1963. Source: ANM-KL: KPDANSK 1338, Enc. 86A.

Many such concerns were vindicated by subsequent developments. A new committee convened to review the Scheme in 1964 found that the previously recommended palm planting density was unnecessarily low, endorsing a much higher 90-palm standard instead.[130] Officials also belatedly realised that local opportunities to market pineapples were crimped by an absence of metalled roads that could accommodate lorries. For a crop like the pineapple, which degraded significantly within hours of harvesting, a sparse road network was highly detrimental to the fruit's commercial prospects.[131] Furthermore, pineapples were discovered to be incompatible with many coconut holdings because goats were already being reared, often feasting on freshly planted pineapple suckers during their roamings.[132] In the meantime, internal drainage systems and coastal bunds continued to deteriorate, due to a lack of care by smallholders themselves, disillusioned with the general incompetent conduct of the scheme, and its refusal to countenance alternatives to coconut farming.

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[130] ANM-KL: SA 28/1, Enc. 43-K.
[131] ANM-KL: KPDANSK 1338/3, Encs. 6, 16A, 44; NAS-OHC: *Lim Kay Hua, Reel No. 003364/6*.
[132] ANM-KL: KPDANSK 1338, G. C. McCulloch, Member, Sub-Technical Committee, to DA, Department of Agriculture, Kuala Lumpur, 31.1.1965, 2-4.

Despite these problems, many coconut growers, in all likelihood those who were older and poorer, had little choice but to eke out financial and technical support from the authorities. In 1964, a second scheme was launched at Bagan Datoh, Perak, followed by others involving the participation of thousands of smallholders, with varying degrees of commercial success (Photograph 15). While some smallholders did complete the entire course of rehabilitation, many others discontinued involvement early on. At Minyak Beku, nearly half of all smallholders who signed up for the Scheme in 1965 neglected their holdings once the first grant instalment was paid out.[133]

Photograph 15. Tuan Haji Johari bin Tok Puteh (foreground, right), a coconut smallholder, receiving a cheque of RM$1,800 from the Minister of Agriculture and Co-operatives, 17 October 1964. Tn. Hj. Johari, aged 70 at the time, was among the first to finish rehabilitation work on his smallholding at Matang Kunda, Bagan Datoh, Perak. Photograph reproduced with permission from Arkib Negara Malaysia, Kuala Lumpur.

[133] ANM-KL: C&I/E 1180/5 VOL. 2, Enc. 18.

Ironically, it was only through all these problems encountered in the field that many of the schemes' operational flaws finally attracted wider attention. In April 1972, an internal review by the Ministry of Primary Industries found that the rehabilitation schemes had been unable to reverse the general trend of declining yields across Malaya's coconut smallholdings. The schemes in their current format were subsequently prevented from expanding until further notice.[134]

CONCLUSION

The economic resilience of smallholders in Johor was severely tested during the 1950s and 1960s. Structural changes in international markets weighed against coconuts and rubber, while forest rents continued to decline in many areas along Malaya's West Coast. British and Malayan authorities contributed to this muddle, chiefly by trying to confine the range of crops open to smallholder cultivation, and channelling public support accordingly.

Smallholders sought to mitigate these problems through various means. They engaged in alternative livelihood strategies, and sought the ear of the authorities where possible. Given the evidence at hand, one cannot help but wonder whether smallholders would have benefitted much more from state support if Malayan authorities had simply acted more as economic facilitators, as they had usually done for the plantation sector, rather than as authoritarian paternalists presuming to know what was best for their subjects.

For this period, the study would have profited from better historical coverage of a number of topics. Unlike for the interwar years, it is difficult to reconstruct the role that the Johor state government played in local agricultural development. This is partly because the Federal government assumed a larger role in the economy than before the Second World War. But the more important problem is one of sources. Many of

[134] ANM-KL: BPE 15/115/5, Enc. 2.

the usual archival series dealing with the decisions of senior Johor authorities are not available for the period, including those of Johor's Resident Commissioner (previously General Adviser), and the Commissioner of Lands and Mines. Many files on the period also remain inaccessible to the external researcher, despite their listing in catalogues. Political sensitivities surrounding the circumstances of the Malayan Emergency are probably causing a large number of official records to be held back, including those of Johor's, since the state was extensively involved in the conflict with Malayan Communist Party insurgents during the 1950s.

More critically, there is the matter of smallholders themselves. For a study of this scope, the brush used to illustrate historical change within the farm sector has been unavoidably broad most of the time. Smallholders certainly do not form homogeneous communities. As this thesis has sought to suggest repeatedly, differences in local-level leadership, wealth, age, and gender may play important roles in conditioning smallholder decisions regarding the timing and choice of crop to diversify into. But substantiating these dynamics in any significant detail would almost certainly involve collecting historical evidence from a much smaller locality (assuming such evidence exists). This thesis should thus be seen as an attempt to re-trace the roots of agricultural development in a former colonial territory, whose past remains surprisingly underappreciated, six decades after independence.

Chapter 8

CONCLUSION

This study has examined the history of smallholder involvement in tree crops in Malaya between 1862 and 1963. Particular emphasis was placed on grower interest in oil and coconut palms, tracing the intimate links between the two cultivars, as well as their products. While it is important not to exaggerate what can be distilled from the period studied, the overall findings of the study are fairly clear-cut.

THE PERSISTENCE OF SMALLHOLDER DIVERSIFICATION STRATEGIES

The historical record of the oil palm in Malaya demonstrates that weak local demand for oil palm products, combined with the tiresome and hazardous labour needed to harvest and handle its fruits, ensured that the crop remained one that most smallholders avoided, in favour of agricultural alternatives. State antipathy towards smallholder involvement aggravated matters further, but it was not the key cause of crop aversion. Oil palms thus became, in the words of John McCarthy, a 'rich farmer's crop'.[1] However, this was not due primarily to the oil palm's apparent need for costly inputs and capital investments, but rather because of more general marketing coordination challenges, which placed the heavy burden of crop pioneering on skilled intermediaries.

In pre-1960s Malaya, palm fruit intermediaries were either dealers or smallholder representatives, and often both. Their roles in organising the pooling, processing, and timely transport of smallholder produce, were of utmost importance. This was not merely because there were so few smallholders willing to grow the crop to begin with, but also because palm fruit processing, like copra manufacture, demanded a certain

[1] John F. McCarthy, "Processes of Inclusion and Adverse Incorporation: Oil Palm and Agrarian Change in Sumatra, Indonesia." *Journal of Peasant Studies* 37, no. 4 (2010), 826.

amount of labour specialisation that lay beyond the preferences of most households at the time. Although access to roads was helpful, particularly if fruit deliveries were intended for inland factories, such access was not the sole prerogative of estates. The settlement of migrant smallholders at Labis during the early 1930s makes this absolutely clear.

The enduring importance of the pioneering intermediary is borne out in subsequent studies of smallholder oil palm involvement in Peninsular Malaysia. In Perak, groups of Chinese smallholders were persuaded to switch over from rubber to oil palms during the late 1960s, primarily because of the lead taken by fellow clansmen, who doubled up as crop dealers and oil mill owners.[2] As dealer involvement in the crop grew across Malaya, so did competition for fruit supplies, sparking more interest from smallholders.[3]

Nevertheless, the proportion of actual smallholder involvement in the crop has remained minuscule. By the early 1980s, most smallholders across Malaya, including those farming oil palms, were still heavily involved in rubber, coconut and rice cultivation, despite evidence of increasingly unremunerative returns in these latter sectors.[4] Only about 25,000 out of 963,000 Malayan households grew oil palms as their main crop, most using family labour and some hired help to do so.[5] Of these growers, the majority farmed the crop on less than six acres of land, mainly former rubber holdings. Low-cost, low-yield strategies were widespread. Malay oil palm smallholders tended to be more diversified in their farming activities, devoting less land and time to the oil palm than their Chinese counterparts. Growers more specialised in the crop tended to achieve higher crop yields and incomes that approximated those

[2] Tan Pek Leng, *Land to Till: The Chinese in the Agricultural Economy of Malaysia* (Kuala Lumpur: Centre for Malaysian Chinese Studies, 2008), 175.
[3] Universiti Pertanian Malaysia, *Oil Palm Smallholders Survey in Peninsular Malaysia* (henceforth UPM) (Bangi: Universiti Pertanian Malaysia/Palm Oil Research Institute of Malaysia, 1988), viii, 2, 65, 105-106, 159, 164-165; Ayat K Ab Rahman, Ramli Abdullah, Mohd Arif Simeh, and Faizah Mohd Shariff, "Management of the Malaysian Oil Palm Supply Chain: The Role of FFB Dealers." *Oil Palm Industry Economic Journal* 9, no. 1 (2009), 20-28.
[4] UPM, *Survey*, 84, 206-211; Kwame Sundaram Jomo, *Growth and Structural Change in the Malaysian Economy* (Hampshire: MacMillan, 1990), 124.
[5] UPM, *Survey*, 84; Jomo, *Growth*, 124.

settlers from government-sponsored oil palm schemes. Most households also relied on non-farm sources of employment to a large extent. [6]

A Peninsula-wide survey of Malaysian oil palm smallholders in 1986 revealed widespread grower ambivalence towards the crop. On the one hand, growers typically reported feeling satisfied with their earnings and production strategies. On the other hand, nine out of ten said that they would prefer to move away from oil palms when the time came for replanting, with most expressing a predilection for rubber or fruit trees. Even oil palm scheme settlers themselves expressed similar views.[7] No explicit reasons were given for these preferences. But the mixed feelings expressed hint at palm oil's price volatility (the survey was conducted during an international commodities slump), the hazardous nature of work with the oil palm, as well as unwanted pressures to specialise in the tree, given the complete dominance of large-scale mills over crop processing arrangements.

In contrast, control over basic rubber and coconut crop processing has remained firmly in the hands of smallholders and dealers, allowing for more diverse farming arrangements. Both crops remain free of the serious physical dangers associated with oil palm harvesting, hazards which were becoming more widely publicised once increasing numbers of estate labourers found themselves having to work with oil palms during the 1960s and 1970s.[8] Although frequently touted as a more remunerative and supposedly less labour-intensive crop, in many ways the oil palm continues to be a poisoned chalice for growers.

The crucial point is that even with increased state support from the 1960s onwards, many smallholders did not want to become oil palm specialists in the longer term. Crop specialisation clashed with ongoing preferences for enhancing household resilience to economic shocks by

[6] UPM, *Survey*, 84. Jomo, *Growth*, 30-31, 37-39, 40-48, 119; Malek bin Mansoor and Colin Barlow, *The Production Structure of the Malaysian Oil Palm Industry with Special Reference to the Smallholder Subsector* (Kuala Lumpur: Palm Oil Research Institute of Malaysia, 1988), 24.
[7] UPM, *Survey*, 146.
[8] Joseph Wolf, *Injuries and Health Hazards Associated with Malaysia's Oil Palm Industry* (Kuala Lumpur: The Incorporated Society of Planters, 1983).

spreading risks among different forms of economic activity. Large-scale milling arrangements were a deterrent to smallholder oil palm uptake, because their projected hunger for fruit supplies demanded an excessively heavy upfront commitment from growers in terms of their land and labour, and not because they demanded capital which growers did not possess. Rubber and coconut processing, though often beyond the ken of smallholders themselves, had far lower cost economies. In short, it was far easier for intermediaries to open and shut a copra processing facility than an oil palm factory. This flexibility made it more attractive for smallholders to work with the former than the latter, thus reducing the risks of 'inclusion on disadvantageous terms'.[9]

The contemporary Malaysian coconut farming sector suffers from a different challenge, namely that of long-term attrition. Relative prices for coconut produce have continued to deteriorate, primarily due to competition from other fats, including palm oil and palm kernel oil. As a result, coconut acreage has been on a steady decline since the 1980s, despite the launch of numerous replanting and rehabilitation schemes over the past few decades, and a brief boom in cocoa intercropping during the 1980s and 1990s.[10] By 2010, coconut palms occupied just over 260,000 acres of land across Malaysia, including Sabah and Sarawak: a far cry from the 500,000 acres estimated for the Malay Peninsula during the 1950s.[11] Coconut cultivation, already led by smallholders during the 1960s, has become even further dominated by smallholdings. In 2010, smallholdings were responsible for 93 per cent of all coconuts harvested in Malaysia.[12]

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[9] Andries du Toit, "Adverse Incorporation and Agrarian Policy in South Africa. Or, How Not to Connect the Rural Poor to Growth." University of the Western Cape., 2007, 2, quoted in McCarthy, *Adverse Incorporation*, 825.

[10] Ismail Abd Latiff. "Cocoa Industry of Malaysia." In *50 Years of Malaysian Agriculture: Transformational Issues, Challenges and Direction*, ed. Fatimah Mohamed Arshad (Serdang: University Putra Malaysia, 2007), 434-436; Pierre Dupraz and Murielle Morisson, "The Place of Cocoa and Coconut Cultivation in Family Plantations in Peninsular Malaysia." In *Economics and Ecology of Diversification: The Case of Tropical Tree Crops*, eds. François Ruf and Götz Schroth (Dordrecht: Springer, 2015), 297-322.

[11] Appendix 5.1; Asian and Pacific Coconut Community (APCC), "Statistics: Area of Coconut, 2010-2014." APCC Secretariat website (last accessed 13 July 2017, at http://bit.ly/2t6ktKR).

[12] R. Bourdeix, P. Batugal, J. T. Oliver, and M. L. C. George, eds., *Catalogue of Conserved Coconut Germplasm* (Serdang: Regional Office for Asia, the Pacific and Oceania, International Coconut Genetic Resources Network, Biodiversity International, 2010), 149.

Coconut growers, and their supporting officials, face a fundamental dilemma: is it worth remaining invested in coconut farming, when neighbouring economies, with lower business costs, have already acquired much larger shares of the coconut cultivation and processing chains? Malaysia has not been self-sufficient in coconuts for the past decade. In 2007, domestic production of nuts was only able to meet two-thirds of local consumption levels. This shortfall was met by imports, mostly from Thailand and Indonesia.[13] The main consumers of these supplies, in the form of fresh nuts, coconut oil, or processed cream powders, were Malaysian households. The remaining 37 per cent of imported coconut produce was upgraded within Malaysia before being re-exported, typically in the form of industrial manufactures such as coconut cream powder, desiccated coconut, detergent feedstocks, activated carbon, coir, and copra oil.[14] Yet the majority of the Malaysian companies dealing with the production of these goods were also facing heavy competition from abroad, and were only running at around half their potential capacity.[15]

At the same time, Malaysian authorities have been confronted by numerous calls from the public to alleviate nut shortages for households, especially during various annual religious festivals, when large numbers of nuts are consumed.[16] Thus, despite changing consumption patterns in favour of industrial produce, coconuts remain a highly politicised concern, as they were in times past.

There are no easy answers to this quandary. Like rice, coconuts are still seen as an essential consumer staple, giving coconuts a social significance disproportionate to their marginal contribution to Malaysia's current gross domestic product. There are also public concerns about the supposedly inferior quality of nuts imported from Thailand and Indonesia,

[13] A. Sivapragasam, "Coconut in Malaysia - Current Developments and Potential for Re-Vitalization." Second International Plantation Industry Conference and Exhibition. Shah Alam, Malaysia, 18-21 November 2008, 5.
[14] Sivapragasam, 'Malaysia', 2-3, 8.
[15] Ibid., 5.
[16] Anon., "Penang FAMA Denies Coconut Price Increase." *Bernama News Agency*, 29.5.2017.

as well as the reliability of supplies from these two economies.[17] Food security concerns thus make it hard not to channel public funding into the Malaysian coconut smallholding sector, even if this means competing with neighbouring economies, whose farmers are already suffering from low incomes to begin with.

Nevertheless, successive government rehabilitation and replanting schemes have been unable to stem the loss of grower interest in the sector, due to competition for labour and investment from other sectors, including more remunerative employment on oil palm estates.[18] Unless demand for coconut produce on the world market translates into sufficiently high farmgate prices, interest will continue to wither. Once the leading cash crop for smallholders looking to maximise cash returns, coconut palms have now become a minor element in a portfolio approach to agriculture and income generation. They are now trees typically retained by elderly Malaysian landowners seeking to preserve their retirement capital through small but stable incomes.[19] However, this situation is not necessarily a bad thing. A crop with modest earnings encourages mixed farming strategies that help to combat the loss of forest rent and income, at least until such farms are handed over to a new generation of owners.

Environmental Aspects of Smallholder Tree Crop Farming

This study has repeatedly shown that no crop has a monopoly on environmental degradation. Rather, it is the way in which crops are cultivated that is the problem. François Ruf and his colleagues have contended that diversified smallholder cropping arrangements often only occur long after earlier household decisions to specialise in a single tree

[17] Yee Xiang Yun, "Go for canned santan to avoid paying more." *The Star*, 21.12.2016; Anon., "FAMA explains almost 90% hike in price of coconuts." *Free Malaysia Today*, 31.1.2017.
[18] Dupraz et al., 'Malaysia', 320-321.
[19] Ibid.

crop, in the apparent interests of income maximisation.[20] This study finds much support for this argument. In the case of Johor, coconut palms were planted in dense, monotonous blocks along the West Coast even before the copra boom began in the late nineteenth century. These early plantings bore little resemblance to the complex coconut palm-based agroforests being promoted a century later in the Pacific Region.[21] Efforts to clear land for Malaya's pioneer coconut farms involved felling coastal forests and excavating canals; these actions, in turn, led to a gradual decline in forest rent, prompting coconut growers to diversify further into crops like areca palms and bananas by the 1930s, if not earlier.

The oil palm situation is less clear-cut, given the piecemeal nature of known historical evidence. But in all cases documented for the interwar years, the general trend was for growers to opt for fresh, recently cleared lands, on which dense stands of oil palms could be grown. Other cultivars like sago, fruit trees, and food crops were considered peripheral to the main oil palm venture. Even for rubber, which some scholars consider an environmentally benign crop under smallholder farming arrangements, many peasant holdings during the colonial era were at best simple agroforests, consisting of one dominant tree species.[22]

In truth, both the specialised and diversified crop farming strategies practised by smallholders were on opposite ends of a continuum grounded in historically specific circumstances. Contrary to what some scholars have suggested as a general rule, both farming strategies in

[20] François Ruf and Frederic Lançon, *From Slash-and-Burn to Replanting: Green Revolutions in the Indonesian Uplands?* (Washington: World Bank, 2004); Götz Schroth and François Ruf, "Farmer Strategies for Tree Crop Diversification in the Humid Tropics: A Review." *Agronomy for Sustainable Development* 34, no. 1 (2014), 141.
[21] W. Clarke and R. Thaman, "Incremental Agroforestry: Enriching Pacific Landscapes." *The Contemporary Pacific* 9, no. 1 (1997), 121-48; N. Lamanda, E. Malézieux, and P. Martin, "Structure and Dynamics of Coconut-Based Agroforestry Systems in Melanesia: A Case Study from the Vanuatu Archipelago." In *Tropical Homegardens: A Time-Tested Example of Sustainable Agroforestry*, eds. B. M. Kumar and P. K. R. Nair (Dordrecht: Springer, 2006), 105-121.
[22] P. T. Bauer, *The Rubber Industry*: *A Study in Competition and Monopoly* (London: Longmans, 1948), 6; Jeyamalar Kathirithamby-Wells, "The Implications of Plantation Agriculture for Biodiversity in Peninsular Malaysia: A Historical Analysis." In *Beyond the Sacred Forest: Complicating Conservation in Southeast Asia*, eds. Michael R. Dove, Percy E. Sajise and Amity A. Doolittle (Durham: Duke University Press, 2011), 68.

Malaya were 'traditional'.[23] Tree crop monocultures made sense for smallholders when they perceived that there was an outstanding tree crop which could fetch high prices all year round, and could be easily marketed, making annual crop rotations unnecessary. During the second half of the nineteenth century, pride of place was awarded to the coconut palm in Malaya. Rubber then took on this role for the first half of the twentieth century. But in coastal areas, where rubber did poorly, coconuts remained a more viable commercial option. Indeed, a significant number of smallholder coconut and oil palm plantings in Johor during the interwar years should be seen as attempts to diversify away from rubber when international prices plunged during the early 1920s and early 1930s.

Unfortunately, the coconut palm was subjected to even greater commercial insecurity than rubber by the 1930s, due to a difficult international market situation, as well as site-specific environmental challenges. Diversification into other cultivars alongside the palm thus made complete sense by the 1930s. In such situations, income stabilisation strategies were not so much about being risk-averse, as simply pursuing the most informed course of action amidst overwhelming economic uncertainty. Smallholders would almost certainly have diversified even more rapidly away from coconut farming, if not for supportive government policies, and, more importantly, the pervasive presence of local markets for coconut produce.

The Johor smallholders who attempted to farm oil palms during the 1930s had very specific reasons for pursuing monocultures. In all cases, the lack of precedent meant that sowing a critical mass of palms was necessary to achieve a successful bulk fruit sale to external parties. Crop specialisation was also something being actively encouraged by processors, as the case of the Socfin outgrower proposal demonstrated,

[23] Colin Barlow and S. K. Jayasuriya, "Stages of Development in Smallholder Tree Crop Agriculture." *Development and Change* 17, no. 4 (1986), 635-58; Yujiro Hayami, "The Peasant in Economic Modernization." *American Journal of Agricultural Economics* 78, no. 5 (1996), 1161; Emmanuelle Cheyns and Sylvain Rafflegeau, "Family Agriculture and the Sustainable Development Issue: Possible Approaches from the African Oil Palm Sector. The Example of Ivory Coast and Cameroon." *Oilseeds & Fats, Crops and Lipids* 12, no. 2 (2005), 111-20.

and possibly that of the Ayer Hitam cluster as well. In the case of Frank Tan's bid for oil palm land near Labis during the late 1920s, the situation was different. Tan's economic specialisation in oil palms was largely illusory, as he was already involved in a large number of other economic activities. The same may have applied to Hj. Omar, who spearheaded the Ayer Hitam oil palm cluster with his own private resources. All of these dynamics are consistent with the more recent spate of smallholder involvement with oil palms in Peninsular Malaysia.

POLICY IMPLICATIONS

Following on from these findings are recommendations intended to encourage greater smallholder oil palm participation in Southeast Asia. They are relatively straightforward, but may still prove controversial in today's political climate. Some scholars have posited that smallholder participation in oil palms should involve a choice between that of bringing yields and cultivation conditions in line with estates, and that of farming oil palms in a more diverse cropping arrangement, with a view to selling a very different palm product, as in West Africa.[24] Such choices are not novel, and have existed in the distant past with other popular 'dual-use' crops, not least coconuts.[25] At present, however, this choice is simply not available to Southeast Asian growers. Fostering a choice will involve transforming the commodity form of oil palm fruit and other parts of the palm in Southeast Asia, and breaking the grip of large-scale oil palm factories on the market for palm fruit. The opportunity costs of engaging with oil palms need to be reduced to levels that make the crop more attractive to less prosperous farmers.

First, governments must resist the temptation to determine what smallholders choose to grow. The problems that stem from policies based

[24] Cheyns, *Family Agriculture*, 111-20; Lesley M. Potter, "Alternative Pathways for Smallholder Oil Palm in Indonesia: International Comparisons." In *The Oil Palm Complex: Smallholders, Agribusiness and the State in Indonesia and Malaysia*, eds. Rob A. Cramb and John F. McCarthy (Singapore: NUS Press, 2016), 166.
[25] Jeroen Touwen. *Extremes in the Archipelago: Trade and Economic Development in the Outer Islands of Indonesia, 1900-1942* (Leiden: KITLV Press, 2001), 163.

on assumptions that some crops are more suited for smallholder arrangements than others have been made clear throughout this thesis. Relinquishing control is particularly crucial in the case of replanting grants for oil palms, since current smallholder subsidies in Malaysia encourage growers to specialise in oil palms, in order to match the yields of estates. If anything, the conditions attached to such subsidies should increase grower crop choice, rather than diminish it. Failing this, dealers can take the lead in supplying credit and planting materials, since these can be tailored to individual grower circumstances, and will cost less than a full-scale public subsidy premised on input maximisation. Non-government organisations can help to accelerate the diffusion of knowledge regarding agro-diverse oil palm farming arrangements by playing the role of matchmaker, facilitating knowledge exchanges between growers and dealers from different regions.

Second, the hazards associated with oil palm fruit collection and handling need to be substantially reduced. Emphasis needs to shift from the provision of high oil-yielding planting materials, such as the *tenera* variety, to that of more 'rustic' palm breeds.[26] The latter include dwarf palms, as well as lesser-known strains of thornless palms, such as the *idolatrica* variety (*Elaies guineensis* var *idolatrica [Chevalier]*). Thornless specimens are rarely found outside of West Africa, but there is evidence of some hybrid stock being currently held at gene banks in Andhra Pradesh.[27] All of these different palm varieties need to be reviewed for further cross-breeding and widespread dissemination. These efforts could be spearheaded by the Malaysian Palm Oil Board, which currently houses the world's largest collection of palm germplasm, including stocks specifically intended for diversification, agroforestry and intercropping purposes.[28] Governments, plantation firms and smallholders all have a

[26] T. Durand-Gasselin, H. de Franqueville, F. Breton, P. Amblard, J. Jacquemard, I. Syaputra, B. Cochard, C. Louise, and B. Nouy, "Breeding for Sustainable Palm Oil." International Seminar on Breeding for Sustainability in Oil Palm, November 18. KLCC Kuala Lumpur, Malaysia, 2011, 155-170.
[27] Charles William Stewart Hartley, *The Oil Palm* (3rd ed.) (Harlow: Longman Scientific and Technical, 1988), 65-66; P. Murugesan, "Prospects. Enriching Oil Palm Industry." *Indian Horticulture* 55, no. 1 (2010), 16.
[28] Ntsomboh-Ntsefong Godswill, Ngando-Ebongue Frank, Ajambang-Nchu Walter, Maho-Yalen Edson, Tabi-Mbi Kingsley, Vincent Arondel, Bell Martin, and Youmbi Emmanuel,

common interest in finding ways to alleviate the intense physical suffering involved in oil palm work, if only to improve the productivity of labour involved in palm harvesting and bunch handling.

Third, local and regional cultural connotations associated with tangy, unrefined palm oil need to be upgraded into something that approximates the high esteem with which coconut milk is still held in Southeast Asia. In doing so, it will become more feasible to create an initial local market for 'boutique' oil palm products that need not rely on existing large-scale mills.[29] Such efforts can be the thin end of a wedge, opening the way for wider changes in local consumption patterns, to the point where cooking recipes involving 'oil palm butter' become common knowledge for a significant proportion of Southeast Asians. Only by doing so can the high-yield, high-input oil palm cropping model, linked to social and environmental upheaval in Malaysia and Indonesia, cede ground to something that resembles a complex agroforestry system, or at least one where oil palms become a common village crop like coconut palms in Southeast Asia, amenable to autoconsumption.[30]

These recommendations might seem far-fetched, given the considerable powers held by vested interests keen to see existing plantation-dominated systems continue in Malaysia and Indonesia, and perpetuated elsewhere outside of these two territories. But pressures can be brought to bear on governments by appealing to those tasked with rehabilitating the oil palm's public profile among international consumers. The Malaysian Palm Oil Council has already been leading such efforts through campaigns highlighting the financial gains that oil palms have brought to certain smallholders working with large-scale mills.[31] The rise of artisanal production arrangements in Malaysia and Indonesia would provide a further boost in this direction. In addition, the

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"Oil Palm." In *Breeding Oilseed Crops for Sustainable Production: Opportunities and Constraints*, ed. Surinder Kulmar Gupta (London: Elsevier, 2016), 235-236.

[29] Potter, 'Alternative Pathways', 155.

[30] Ben Phalan, E. B. Fitzherbert, Sylvain Rafflegeau, Matthew J. Struebig, and A. Verwilghen, "Conservation in Oil-Palm Landscapes." *Conservation Biology* 23, no. 2 (2009), 244-45.

[31] Human Faces of Palm Oil, "Human Faces of Palm Oil." Human Faces of Palm Oil website (last accessed 24 May 2017, at http://bit.ly/2qifPmR).

developing local and regional markets for unrefined palm oil can arguably offer an additional safety net for an industry which has been vulnerable to violent fluctuations in international commodity prices since inception. The resilience of Malaya's coconut industry during the 1930s may provide useful lessons in this regard.

Changes in fat consumption patterns need not rely on the hypothetical emergence of a West African diaspora within Southeast Asia. In Singapore, there has already been a recent turn towards more positive views of unrefined palm oil, as part of a broader groundswell of interest in local history and heritage recovery. In 2009, a monograph entitled *Wartime Kitchen: Food and Eating in Singapore, 1942-1950*, was published as part of wider efforts to harness popular interest in Singapore's heritage.[32] In *Wartime Kitchen*'s concluding chapter, a selection of 'original wartime recipes' were reproduced, replete with lush, full-colour photographs of each dish.[33] The recipes, however, had been altered by a local 'food consultant' to make them 'easier to follow and more appealing to the 21st-century palate', and thus included a wider variety of ingredients than would have been available during the 1940s.[34]

Incredibly, *Wartime Kitchen*'s selection featured a sumptuous stew containing red palm oil, chicken, oysters, prawns, okra and chillies.[35] This was effectively a variant of 'palm oil chop', a West African dish whose earlier recipe had been circulated around the Malayan establishment with little enthusiasm during the 1920s. However, *Wartime Kitchen*'s formulation was derived from the scribblings of a prisoner of war of British Sarawakian origin, incarcerated in Singapore during the Japanese Occupation. Although the prisoner never actually had the opportunity to prepare and consume the dish during the Occupation, the very act of imagining such a dish helped him and fellow prisoners stave off physical

[32] Institute of Historical Research, "Opening Roundtable Discussion: Public History in Asia." *Comparative Histories of Asia Seminar Series,* London, 10 October 2013 (last accessed 19 April 2017, at http://bit.ly/20O3pUy).
[33] Wong Hong Suen, *Wartime Kitchen: Food and Eating in Singapore, 1942-1950* (Singapore: Editions Didier Millet, 2009), 99-135.
[34] Ibid., 5, 94, 98.
[35] Ibid., 110.

and mental collapse.[36] *Wartime Kitchen*'s attempt to kindle popular interest in the dish thus involved a double act of food nostalgia, since it involved re-imagining red palm oil as an essential ingredient once in 2009, and once during the Japanese Occupation.

The cultural appropriation of palm oil chop by Singaporean culinarians demonstrates how food items can leap upwards in status, chiefly through nostalgia, nationalism, and sufficient distance from wartime trauma.[37] Moreover, if the experiences of the 1930s and 1940s have anything positive to impart, it is that consumers will only desire food items if these can be imbued with qualities that appeal to a broader sense of pleasure and wellness, rather than a narrow emphasis on nutritional chemistry. Taste workshops involving members of the public would be the next logical step forward.[38] Given current consumer interest in organic, fair trade foods in Southeast Asian urban centres, the greater challenge, in fact, may be of securing supplies of unprocessed 'palm butter' in local retail markets, since these are not readily available at present, unlike organic coconut milk and coconut oil.

Bridging the gap between supply and demand brings us to one final recommendation. Rural intermediaries need to be seen as part of the solution to encouraging smallholder oil palm uptake. Peddlers, crop dealers, and small-scale processors all play vital roles in linking rural producers with markets, credit, inputs and consumer goods, particularly growers in remote areas. Unlike in the past, there is now a large population of oil palm smallholders in East Malaysia and Indonesia with whom intermediaries can work, making it potentially far easier to quickly acquire a critical mass of fruit supplies for small-scale processing.

Governments in Malaysia and Indonesia can support this dynamic in several ways. First, they can encourage competition between dealers, so as to allow more product value to accrue to growers. Lowering barriers to entry to new intermediaries can be partly achieved by public investments

[36] Ibid., 94-95.
[37] Richard Wilk, *Home Cooking in the Global Village: Caribbean Food from Buccaneers to Ecotourists* (Oxford: Berg, 2006), 7, 124.
[38] Bee Wilson. *First Bite: How We Learn to Eat* (London: Fourth Estate, 2015), 344.

in transport and communications, so as to reduce trade risks and transaction costs for traders. These should also be backed by measures to disseminate more accurate market information regularly, and safeguard property rights and contracts.[39] Second, governments can facilitate product quality standards for new variants of red palm oil by enforcing accurate labelling (the same applies to high-value coconut produce, such as organic virgin coconut oil). Third, any regulations specifying a lower floor on mill size, and measures tying mills to estates, should be repealed. These need to be replaced with licenses holding crop buyers and processors accountable for the sources of their palm fruit, so as to discourage oil palm farming within existing conservation areas. If such policies can be enacted and enforced, they would go a long way towards bringing artisanal production methods closer to the growers who would stand to benefit the most from them, in an environmentally sustainable manner.

The long history of the oil palm in Malaya shows how dramatically the character of a commodity can be altered, given the right circumstances. There is nothing either inevitable or permanent about such a shift. With time, the oil palm's trajectory can hopefully be altered again, for the sake of the people and biomes that continue bearing the heavy costs of the oil palm's industrial march across the tropical world.

[39] Hayami, *Peasant*, 1162-1163; Id., "Family Farms and Plantations in Tropical Development." *Asian Development Review* 19, no. 2 (2002), 81-82.

APPENDICES

APPENDIX 1. MALAY VERNACULAR NAMES, AND KNOWN USES OF THE COCONUT AT VARIOUS STAGES OF RIPENESS.

Sequence Number	Name	Description	Age of nut (months)	Known uses
1	*Bungsil / Mumbang*	When nut becomes recognisable, after the end of the flowering stage	0 to 4	Water used as an astringent for dysentery and other illnesses.
2	*Nyiur kelongkong*	When the kernel shell first appears, and is very soft	4 to 5.5	Immature kernel flesh is served to new mothers as part of a postpartum diet.
3	*Nyiur ingusan*	When the kernel shell begins to harden, and the flesh within remains soft		
4	*Nyiur telinga kambing*	Further hardening of the kernel shell, and kernel flesh thickens		
5	*Nyiur chungkilan / nyiur sungkuran*	When the kernel shell becomes firm, kernel flesh solidifies further		Used in ceremonies with new-born children.
6	*Nyiur tahan kukur*	When the kernel meat is hard enough to be scraped with a rasp	5.5 to 8	Kernel scrapings as a remedy for cholera.
7	*Nyiur gigi belalang*	When the husk darkens on the exposed side. Nut is now at full size.	8	Coconut milk can be made from grated and pressed kernel flesh at this stage, for cooking and medication.
8	*Nyiur semantan*	When the nut has developed an air cavity within, allowing for the sound of water splashing inside to be heard when the nut is shaken	9 to 10	Coconut water no longer astringent, suitable for casual drinking. Kernel flesh eaten as a delicacy, but can be made into coconut milk as well.
9	*Nyiur tuba / nyiur masak*	When the nut is fully ripe, with maximum oil content	11 to 12	Coconut milk and coconut oil, mostly for cooking, and to a lesser extent, medicines, ointments. Also optimal for copra manufacture. Husk and kernel shells usually used as fuel for copra drying. Husk occasionally used as construction fibre, while shell ash often used in traditional medicines.
10	*Kelapa / kerambil*	When the husk has dried up, nut ready to fall on its own.	12	Similar to *nyiur tuba.*

Sources: I. H. Burkill. *A Dictionary of the Economic Products of the Malay Peninsula* (2nd ed.) (Kuala Lumpur: Ministry of Agriculture and Cooperatives, 1966), 607-13, 616-618, 623; Rosemary Firth. *Housekeeping among Malay Peasants* (2nd ed.) (London: Athlone Press, 1966), 219; Reginald Child. *Coconuts* (2nd ed.) (London: Longman, 1974), 45-47.

APPENDIX 2.1. ANNUAL AVERAGE WHOLESALE PRICES, SINGAPORE, IN STRAITS/MALAYAN DOLLARS PER TON, DEFLATED BY THE SUGIMOTO CONSUMER PRICE INDEX, 1923-1962.

*Year	**Palm Oil		***Palm Kernels		****Copra, fair merchantable sundried		Copra Oil		Arecanuts		Rubber, Ribbed Smoked Sheet		Singapore: Sugimoto Consumer Price Index (1928=100)
	Price	($/ton index 1928 = 100)	Price	($/ton index 1928 = 100)	Price	($/ton index 1928 = 100)	Price	($/ton index 1928 = 100)	Price	($/ton index 1928 = 100)	Price	($/ton index 1928 = 100)	
1923	-	-	-	-	195	107	354	112	161	112	1199	144	97.1
1924	-	-	-	-	212	116	384	122	242	168	1097	132	96.7
1925	-	-	-	-	207	113	376	119	272	189	2339	280	99.0
1926	-	-	-	-	189	103	350	111	239	166	1812	217	102.4
1927	316	119	175	127	186	102	328	104	149	103	1452	174	100.9
1928	265	100	138	100	183	100	316	100	144	100	834	100	100.0
1929	279	105	148	107	162	89	287	91	156	108	796	95	97.8
1930	299	113	163	118	141	77	259	82	162	113	474	57	93.0
1931	278	105	153	111	108	59	205	65	143	99	287	34	79.5
1932	206	78	130	94	138	75	241	76	135	94	189	23	69.9
1933	173	65	76	55	101	55	199	63	168	117	437	52	65.0
1934	129	49	56	41	74	40	150	47	164	114	709	85	66.7
1935	193	73	76	55	110	60	221	70	158	110	651	78	69.3
1936	198	75	101	73	143	78	295	93	168	117	889	107	68.1
1937	210	79	132	96	150	82	259	82	174	121	990	119	72.2
1938	164	62	85	62	85	46	181	57	176	122	768	92	69.9
1939	141	53	73	53	86	47	214	68	133	92	993	119	70.3
1947	215	81	70	51	133	73	241	76	97	67	189	23	270.2
1948	348	131	113	82	284	155	510	161	105	73	275	33	227.4
1949	329	124	130	94	232	127	409	129	104	72	254	30	223.5
1950	364	137	165	120	288	157	513	162	174	121	1064	128	229.2
1951	433	163	161	117	256	140	458	145	191	133	1327	159	288.3
1952	303	114	204	148	163	89	268	85	187	130	720	86	299.9
1953	198	75	146	106	216	118	341	108	174	121	513	62	292.6
1954	221	83	168	122	196	107	331	105	141	98	537	64	278.9
1955	238	90	141	102	172	94	274	87	206	143	943	113	272.7
1956	260	98	132	96	167	91	271	86	291	202	789	95	275.6
1957	254	96	135	98	162	89	275	87	177	123	698	84	283.6
1958	224	85	142	103	202	110	321	102	106	74	634	76	282.1
1959	237	89	141	102	247	135	392	124	130	90	824	99	278.9
1960	223	84	175	127	199	109	317	100	124	86	878	105	279.0
1961	228	86	160	116	158	86	248	78	82	57	673	81	279.4
1962	212	80	124	90	167	91	252	80	85	59	631	76	280.2

Note: All listed price averages are 'free on board', which usually includes all costs of transporting the goods to the customs frontier of the exporting country, export duties, and the cost of loading the goods onto the international carrier.

* The years between 1940 and 1946 are not covered, owing to a lack of statistical data needed to generate the Consumer Price Index during this period.
**For years between 1927 and 1939, unit values of net Malayan palm oil exports are used. No values are available for the years before 1927.
***Unit values of net Malayan exports. No values are available for the years before 1927.
****'Fair merchantable sundried' is an imprecise grading label applied to copra uncontaminated by smoke and rain, and includes top-quality kiln-dried copra.

APPENDIX 2.2. ANNUAL AVERAGE WHOLESALE PRICES OF COPRA, SINGAPORE, IN STRAITS/MALAYAN DOLLARS PER TON, DEFLATED BY THE SUGIMOTO CONSUMER PRICE INDEX, 1923-1962.

Year	*Copra, fair merchantable sundried	*Copra, fair merchantable	Premium, Sundried vs. Mixed (%)	Singapore: Sugimoto Consumer Price Index (1928=100)
1923	195	188	3.7	97.1
1924	212	206	2.9	96.7
1925	207	201	3.0	99.0
1926	189	185	2.2	102.4
1927	186	177	5.1	100.9
1928	183	180	1.7	100.0
1929	162	155	4.5	97.8
1930	141	136	3.7	93.0
1931	108	99	9.1	79.5
1932	138	127	8.7	69.9
1933	101	88	14.8	65.0
1934	74	62	19.4	66.7
1935	110	101	8.9	69.3
1936	143	134	6.7	68.1
1937	150	143	4.9	72.2
1938	85	77	10.4	69.9
1939	86	78	10.3	70.3
1947	133	126	5.6	270.2
1948	284	280	1.4	227.4
1949	232	228	1.8	223.5
1950	288	284	1.4	229.2
1951	256	253	1.2	288.3
1952	163	160	1.9	299.9
1953	216	213	1.4	292.6
1954	196	193	1.6	278.9
1955	172	169	1.8	272.7
1956	167	164	1.8	275.6
1957	162	159	1.9	283.6
1958	202	199	1.5	282.1
1959	247	244	1.2	278.9
1960	199	196	1.5	279.0
1961	158	155	1.9	279.4
1962	167	-	-	280.2

Note: All listed price averages are 'free on board', which usually includes all costs of transporting the goods to the customs frontier of the exporting country, export duties, and the cost of loading the goods onto the international carrier.
*'Fair merchantable sundried' is an imprecise grading label applied to copra uncontaminated by smoke and rain, and includes top-quality kiln-dried copra. 'Fair merchantable' applies to copra of lesser quality.

Sources for Appendices 2.1 and 2.2:
Arecanut prices, 1923-1931, and rubber prices, 1923-1939: Department of Agriculture, FMS and SS, *Malayan Agricultural Statistics 1931* (Kuala Lumpur: Caxton Press, 1932), Table 63.
Copra and copra oil prices, 1923-1939: Department of Agriculture, Federation of Malaya, *Malayan Agricultural Statistics* 1947 (Kuala Lumpur: Caxton Press, 1948), Table 95.
Palm oil prices, 1927-1939: Department of Statistics of Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1927-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. Malayan Statistics. External Trade*, 1938-1939* (Singapore: Government Printing Office).
Arecanut prices, 1932-1962, and prices of rubber, palm oil, and copra, 1947-1962: Pee Tew Teck. *A Statistical Source Book on Malayan Agriculture: Selected by Time-Series and by State (In Two Volumes). Volume 2. Miscellaneous Crops* (Kuala Lumpur: University of Malaya, 1967), Tables V.1.16, V.1.18. Price deflator:
Copra oil prices, 1947-1962: Department of Statistics, Federation of Malaya. *Monthly Statistical Bulletin of the Federation of Malaya* (Kuala Lumpur: Department of Statistics, Federation of Malaysia, 1951-1963).
Price deflator: Ichirō Sugimoto. *Economic Growth of Singapore in the Twentieth Century: Historical GDP Estimates and Empirical Investigations* (Singapore: World Scientific, 2011), p. 61, Table 2.23.

APPENDIX 3.1. NET EXPORTS OF COPRA, BY TERRITORIES OF ORIGIN, ANNUAL AVERAGES (LONG TONS), 1909-1924.

Exporting Countries		**1909-1913**		**1914-18**		**1919-24**	
Dutch East Indies		243,963		148,839		297,245	
Philippine Islands		117,450		87,782		121,086	
Ceylon		41,721		62,814		74,634	
British India		30,635		(1,429)		(623)	
Federated Malay States	Total, British Malaya	7,748	16,269	17,961	31,691	38,437	87,908
Johor		Unknown		14,631		23,458	
Straits Settlements		3,035		(5,598)		18,538	
Kelantan		4,028		3,683		5,790	
Trengganu		1,458		1,013		1,686	
Rest of World		95,269		101,049		163,712	
Total		545,306		430,787		743,962	

Sources: H. W. Jack. "Selection of Coconuts." *Malayan Agricultural Journal* 10, no. 5 (1922), 122-127; Katherine Snodgrass. *Copra and Coconut Oil* (Palo Alto: Food Research Institute, Stanford University, 1928), 127.

APPENDIX 3.2. MALAYA'S TRADE BALANCE OF OIL PALM PRODUCE, COCONUT PRODUCE, AND ARECANUTS, TONS PER ANNUM, 1921-1962.

Year	Palm Oil		Palm Kernels		Copra		Copra Oil		Copra Cake*		Arecanuts	
	Net Exports	Export volumes (index 1928 = 100)	Net Exports	Export volumes (index 1928 = 100)	Net Exports	Export volumes (index 1928 = 100)	Net Exports	Export volumes (index 1928 = 100)	Net Exports	Export volumes (index 1928 = 100)	Net Exports	Export volumes (index 1928 = 100)
1921	n.a.	n.a	n.a	n.a.	68,435	72	7,884	79	2,670	33	20,932	87
1922	n.a.	n.a	n.a.	n.a.	104,496	109	6,333	64	1,422	18	20,639	86
1923	195	15	50	20	90,570	95	6,026	61	2,078	26	23,453	97
1924	286	21	81	32	91,734	96	6,084	62	2,910	36	22,174	92
1925	536	40	110	43	86,421	90	7,672	78	6,463	80	18,931	79
1926	751	56	168	66	104,394	109	8,504	86	4,311	53	22,496	94
1927	768	58	175	69	86,504	90	10,275	104	5,396	67	17,747	74
1928	1,334	100	255	100	95,628	100	9,884	100	8,071	100	24,057	100
1929	1,831	137	263	103	112,429	118	8,725	88	7,667	95	24,470	102
1930	3,211	241	485	190	102,014	107	9,473	96	5,497	68	23,248	97
1931	4,575	343	727	285	100,568	105	9,928	100	6,034	75	19,260	80
1932	7,892	592	1,248	489	97,277	102	11,949	121	8,145	101	20,288	84
1933	12,100	907	2,019	792	110,298	115	17,582	178	15,850	196	20,742	86
1934	15,851	1,188	3,195	1,253	95,599	100	25,484	258	18,217	226	27,336	114
1935	24,597	1,844	3,892	1,526	111,752	117	35,910	363	15,992	198	22,885	95
1936	29,295	2,196	4,965	1,947	76,680	80	46,504	470	20,438	253	26,548	110
1937	42,787	3,207	7,312	2,867	75,592	79	39,762	402	15,026	186	30,084	125
1938	54,377	4,076	9,359	3,670	68,754	72	49,140	497	7,112	88	33,769	140
1939	59,717	4,477	10,774	4,225	34,420	36	61,360	621	10,707	133	38,489	160
1940	55,990	4,197	9,219	3,615	(9,904)	(10)	69,446	703	(1,215)	(15)	43,915	183
1941	44,406	3,329	1,984	778	(32,682)	(34)	64,945	657	(5,659)	(70)	22,993	96
1946	8,179	613	153	60	(34,213)	(36)	8,008	81	(2,226)	(28)	9,000	37
1947	43,325	3,248	5,245	2,057	(45,339)	(47)	41,112	416	(5,260)	(65)	12,506	52
1948	47,259	3,543	6,461	2,534	(28,624)	(30)	45,245	458	(12,176)	(151)	6,043	25
1949	55,211	4,139	8,744	3,429	(24,424)	(26)	60,504	612	(28,003)	(347)	5,607	23
1950	50,368	3,776	9,070	3,557	4,778	5	56,046	567	(31,104)	(385)	14,867	62
1951	45,022	3,375	11,809	4,631	(10,878)	(11)	68,139	689	(37,891)	(469)	13,547	56
1952	46,008	3,449	10,869	4,262	(27,821)	(29)	65,113	659	(60,287)	(747)	10,467	44
1953	47,579	3,567	12,884	5,053	(9,751)	(10)	60,779	615	(59,129)	(733)	11,580	48
1954	48,908	3,666	14,029	5,501	(67,472)	(71)	78,507	794	(40,520)	(502)	5,511	23
1955	52,832	3,960	12,004	4,707	(75,076)	(79)	91,176	922	(56,404)	(699)	13,679	57
1956	55,252	4,142	13,028	5,109	(82,549)	(86)	103,132	1,043	(66,174)	(820)	11,288	47
1957	56,728	4,252	15,265	5,986	(71,718)	(75)	100,031	1,012	(73,209)	(907)	9,625	40
1958	67,818	5,084	18,807	7,375	(55,906)	(58)	67,485	683	(72,453)	(898)	4,938	21
1959	69,097	5,180	17,793	6,977	(27,012)	(28)	37,379	378	(69,153)	(857)	6,899	29
1960	90,073	6,752	22,028	8,638	(5,519)	(6)	37,754	382	(60,976)	(755)	2,074	9
1961	87,827	6,584	19,136	7,504	(17,791)	(19)	54,211	548	(75,712)	(938)	6,076	25
1962	97,022	7,273	14,115	5,535	(44,211)	(46)	39,751	402	(57,445)	(712)	2,650	11
Total	1,329,007		266,720		1,047,454		1,527,241		(722,590)		670,813	

*Gross export figures for all oil cakes used to represent net copra cake exports for the years 1923-1937, in keeping with Department of Agriculture, Federation of Malaya, *Malayan Agricultural Statistics 1949* (Kuala Lumpur: Caxton Press, 1950), Table 23.

Sources:
Department of Agriculture, Federation of Malaya, *Malayan Agricultural Statistics 1949* (Kuala Lumpur: Caxton Press, 1950), Tables 23 and 41; Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.3. MALAYA'S GROSS EXPORTS OF CRUDE PALM OIL BY DESTINATION, TONS PER ANNUM, 1927-1962.

*Year	Total	United Kingdom	Canada	(British) India	Iraq	Japan	USA	Netherlands	Australia	Jordan	**Germany	Others
1927	854	228	-	-	-	-	246	-	-	-	-	380
1928	1,463	420	-	2	-	-	737	20	23	-	-	261
1929	1,889	605	-	1	-	2	1,019	21	-	-	-	241
1930	3,253	1,964	-	-	-	4	772	153	2	-	95	263
1931	4,664	2,373	-	-	-	48	1,267	222	6	-	61	687
1932	7,906	3,526	-	25	-	9	925	447	7	-	464	2,503
1933	12,381	3,506	2,826	4	-	77	2,991	33	-	-	-	2,944
1934	15,979	7,641	5,000	143	-	891	50	-	5	-	-	2,249
1935	24,746	9,200	10,198	2,582	-	1,654	-	22	35	-	-	1,055
1936	29,437	13,571	10,491	2,983	-	1,591	-	-	18	-	-	783
1937	42,928	18,225	16,715	2,520	-	840	2,717	-	56	-	-	1,855
1938	54,540	31,087	18,748	2,606	-	30	-	-	72	-	-	1,978
1939	59,779	31,799	24,100	1,448	-	-	-	-	129	-	-	2,303
1940	56,091	44,020	7,116	1,855	-	-	-	-	152	-	-	2,948
1941	44,524	41,655	-	508	-	-	174	-	144	-	-	2,043
1946	8,314	8,275	-	-	-	-	-	-	-	-	-	39
1947	45,331	44,432	-	-	-	-	-	-	-	-	-	899
1948	48,811	46,688	-	15	-	-	-	210	-	-	-	1,899
1949	55,252	54,085	-	405	23	-	-	-	1	-	-	739
1950	51,205	49,029	-	386	247	-	264	260	48	-	24	948
1951	46,548	44,170	-	249	398	-	34	428	3	-	75	1,190
1952	46,151	45,659	-	234	161	-	-	-	2	-	-	94
1953	48,362	25,572	2,836	14,064	-	-	-	1,328	12	-	3,422	1,127
1954	49,299	16,940	11,645	12,691	25	-	-	4,437	-	-	1,163	2,398
1955	54,704	43,773	5,929	4,759	-	-	-	-	21	-	-	220
1956	58,584	30,506	11,282	16,554	100	-	-	-	14	-	-	128
1957	60,272	28,917	10,066	20,566	101	-	-	-	1	-	-	620
1958	79,575	42,093	16,820	15,324	2,800	1,326	-	-	2	-	-	1,209
1959	77,369	32,312	9,905	24,351	8,750	1,215	-	5	2	-	-	828
1960	95,439	37,653	9,040	28,069	15,703	300	-	505	768	1,207	-	2,193
1961	94,156	34,837	17,978	18,995	14,681	40	300	657	2,425	2,105	-	2,136
1962	102,474	32,922	12,690	28,477	16,800	4,034	-	-	2,985	2,498	-	2,068
Total	1,382,280	827,683	203,385	199,818	59,789	12,061	11,496	8,748	6,933	5,811	5,304	41,247

*Figures prior to 1927 unavailable.
**Figures are for West Germany after 1953.

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.4. MALAYA'S GROSS EXPORTS OF PALM KERNELS BY DESTINATION, TONS PER ANNUM, 1927-1962.

*Year	Total	Japan	Netherlands	United Kingdom	**Germany	Denmark	France	United States of America	Others
1927	179	-	16	158	-	-	-	-	5
1928	260	-	-	260	-	-	-	-	-
1929	283	-	9	264	-	-	-	-	1
1930	486	-	174	232	35	-	-	-	45
1931	727	-	100	527	100	-	-	-	-
1932	1,248	20	205	493	518	-	-	-	12
1933	2,019	-	896	387	481	255	-	-	-
1934	3,199	-	260	1,023	455	1,251	-	-	210
1935	3,896	-	200	2,321	670	705	-	-	-
1936	4,965	2	568	821	3,123	420	-	-	31
1937	7,312	5	550	140	5,571	1,046	-	-	-
1938	9,359	-	2,975	2,457	3,117	410	-	200	200
1939	10,774	-	2,843	3,702	3,179	600	-	-	450
1940	9,219	-	-	5,599	-	-	-	3,560	60
1941	1,984	-	-	-	-	-	-	1,899	85
1946	153	-	-	153	-	-	-	-	-
1947	5,245	-	-	5,245	-	-	-	-	-
1948	6,472	-	719	4,434	-	-	1,319	-	-
1949	8,744	-	2,045	4,071	-	1,086	1,541	-	-
1950	9,079	-	3,721	274	1,173	1,149	-	-	2,762
1951	11,809	-	5,897	800	1,791	1,636	200	-	1,485
1952	10,869	-	4,574	1,351	3,051	1,893	-	-	-
1953	12,884	-	5,668	220	2,817	2,818	1,361	-	-
1954	14,029	15	7,011	50	1,590	1,818	2,920	-	625
1955	12,140	-	4,304	3,010	2,630	100	1,825	-	271
1956	13,820	-	8,699	640	690	3,116	-	-	675
1957	16,243	8,721	3,536	1,855	50	650	510	-	921
1958	21,969	16,180	50	1,915	665	1,280	150	-	1,729
1959	20,882	11,712	3,362	5,025	354	225	200	-	5
1960	24,637	12,066	2,790	5,227	1,950	900	-	-	1,704
1961	21,246	11,715	1,428	3,328	1,898	1,837	-	-	1,040
1962	17,407	9,749	838	4,440	109	1,410	-	-	861
Total	283,540	70,184	63,436	60,423	36,017	24,605	10,026	5,659	13,186

*Figures prior to 1927 unavailable.
**Figures are for West Germany after 1953.

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.5. MALAYA'S GROSS EXPORTS OF COPRA BY DESTINATION, TONS PER ANNUM, 1921-1962.

Year	Total	Netherlands	United Kingdom	Germany*	France	(British) India**	Denmark	United States of America	Spain	Others
1921	138,200	44,775	18,202	31,906	21,345	16	6,311	-	12,452	3,194
1922	170,486	39,301	28,825	47,825	27,198	-	6,198	-	16,382	4,756
1923	153,721	36,612	30,324	20,468	23,418	40	19,758	-	12,708	10,392
1924	159,048	51,580	25,181	16,793	24,924	2	10,986	3,453	16,565	9,567
1925	153,236	53,369	23,934	13,640	21,235	-	5,873	12,945	14,258	7,973
1926	185,404	50,679	17,065	30,376	3,985	-	7,898	46,992	14,688	13,721
1927	143,042	45,839	12,078	27,133	10,679	-	10,029	22,120	7,181	7,983
1928	182,858	56,327	10,557	45,680	20,827	-	13,250	16,859	10,832	8,526
1929	198,638	60,920	7,851	45,080	17,518	-	11,726	39,703	8,644	7,196
1930	191,703	62,188	7,610	31,168	23,103	-	15,956	27,579	7,211	16,888
1931	187,836	51,453	20,221	36,900	23,566	-	10,525	23,350	9,002	12,819
1932	197,420	30,104	47,885	29,753	28,038	1	16,805	10,579	4,860	29,395
1933	210,588	32,834	49,632	37,346	14,707	5	8,900	17,618	2,177	47,369
1934	190,233	30,271	52,386	47,721	9,931	-	5,775	2,506	5,818	35,825
1935	217,330	16,987	91,313	22,409	21,575	9,768	3,726	-	3,545	48,007
1936	196,434	32,320	49,376	58,429	17,607	4,462	300	1,001	-	32,939
1937	200,989	40,707	42,642	63,868	14,619	44	600	800	-	37,708
1938	186,271	35,532	41,205	60,078	12,081	-	1,800	-	-	35,575
1939	157,430	22,381	64,214	32,690	5,076	535	2,300	-	-	30,233
1940	93,142	-	59,068	-	17,711	1,753	-	-	-	14,540
1941	49,906	-	46,256	-	-	1,729	-	300	-	1,621
1946	1,797	-	1,566	-	-	-	-	-	-	231
1947	7,166	-	6,119	-	-	48	-	-	-	998
1948	59,041	11,323	2,081	-	2,196	-	7,453	-	-	35,989
1949	89,325	16,454	5,095	3,030	3,490	679	15,495	-	-	45,082
1950	124,763	18,013	13,504	18,653	4,600	4	23,599	-	-	46,391
1951	90,021	8,435	20,310	8,240	2,727	1,155	13,630	-	353	35,172
1952	61,493	6,650	16,168	4,650	8,080	1,325	2,200	-	5,074	17,346
1953	67,953	11,394	7,440	11,306	300	2,802	6,870	-	3,639	24,204
1954	64,898	10,337	100	6,623	4,100	13,166	4,350	-	561	25,661
1955	42,419	12,695	-	3,898	1,948	1,247	2,600	-	9,917	10,113
1956	39,333	4,100	-	1,450	680	18,210	1,645	-	4,200	9,048
1957	116,628	11,678	-	-	-	68,320	1,000	-	200	35,429
1958	88,685	2,950	50	1,050	-	42,845	1,363	-	1,213	39,214
1959	65,685	7,045	392	7,743	-	26,569	488	-	2,098	21,350
1960	112,998	6,568	650	2,175	738	63,701	200	-	7,356	31,609
1961	107,492	7,384	1,506	1,921	493	37,724	590	-	2,082	55,792
1962	38,307	300	200	298	-	20,304	-	-	496	16,708
Total	4,741,917	929,505	821,006	770,299	388,496	316,452	240,197	225,805	183,512	866,635

*Figures are for West Germany after 1953.
**Figures include both British Burma and India together before 1931.

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.6. MALAYA'S GROSS IMPORTS OF COPRA BY PREVIOUS PLACE OF ORIGIN, TONS PER ANNUM, 1921-1962.

Year	Total	Sumatra	Other Dutch/Indonesian Islands, including Riau and Lingga	(Dutch) Borneo	Celebes and Moluccas	(British) North Borneo	Siam/Thailand	Sarawak	Banka and Billiton	Others
1921	70,849	15,713	13,906	32,752	13	1,832	1,715	463	-	4,454
1922	65,991	20,131	15,330	20,215	-	2,909	3,631	905	-	2,870
1923	63,151	21,346	15,552	14,403	14	2,992	4,904	777	-	3,163
1924	67,314	24,332	12,711	17,654	1	3,333	4,483	770	2,090	1,951
1925	66,815	23,791	13,302	18,015	1	3,192	4,363	781	1,796	1,574
1926	81,010	30,804	15,724	19,236	7	4,477	5,846	1,266	2,631	1,019
1927	56,538	28,257	10,239	10,942	-	3,034	1,140	1,179	744	1,003
1928	87,230	38,241	14,289	17,553	12	5,676	6,470	1,640	2,487	862
1929	86,209	43,991	12,800	13,657	-	5,206	4,570	2,059	2,593	1,333
1930	89,689	48,168	12,268	16,435	20	5,288	2,831	2,406	1,134	1,139
1931	87,268	53,031	13,252	10,710	-	4,127	1,646	2,510	1,003	989
1932	100,143	60,255	13,509	11,285	-	6,697	1,747	2,910	3,362	378
1933	100,290	56,841	17,398	11,536	30	7,446	1,634	2,474	2,732	199
1934	94,634	56,252	12,385	15,691	-	5,430	806	2,653	804	613
1935	105,578	63,681	13,687	14,613	-	5,827	2,217	3,022	1,973	377
1936	119,754	70,702	15,677	17,550	-	6,866	3,304	3,448	1,402	805
1937	125,397	74,475	13,789	21,129	-	6,761	3,638	3,294	1,429.30	882
1938	117,517	74,166	14,891	15,939	4	7,027	465	3,807	791	427
1939	123,009	77,773	12,649	20,890	-	6,636	541	3,986	78	456
1940	103,047	67,629	11,883	14,464	-	5,508	461	2,402	304	396
1941	82,588	59,549	9,789	9,420	-	2,379	-	609	590	251
1946	36,010	26,468	3,126	5,934	16	363	66	36	1	-
1947	52,605	39,355	9,391	3,069	15	371	146	212	40	6
1948	87,666	62,840	10,107	6,399	1,211	3,622	797	1,832	61	798
1949	113,749	38,392	34,165	3,328	11,313	17,927	836	3,152	809	3,828
1950	119,985	65,748	23,911	418	140	21,458	746	4,115	201	3,248
1951	100,898	64,458	18,727	2,513	164	8,860	648	4,164	2	1,361
1952	89,314	57,573	19,052	-	1,955	6,793	223	3,077	62	579
1953	77,704	54,746	14,127	-	-	1,918	334	3,313	-	3,267
1954	132,369	97,385	20,266	-	-	1,488	4989	2,908	-	5,514
1955	117,495	95,769	17,758	-	46	222	260	1744	-	1,695
1956	121,881	95,797	17,816	-	2,976	3,381	46	541	285	1,039
1957	188,346	85,337	17,154	-	75,837	8,412	9	-	148	1,449
1958	144,590	52,028	18,149	-	69,897	940	1744	82	-	1,750
1959	92,697	45,643	16,265	-	24,449	2,195	58	118	253	3,715
1960	118,517	77,199	23,872	92	11,660	655	3231	-	-	1,808
1961	125,283	97,661	17,989	-	6,682	508	347	-	-	2,095
1962	82,517	61,045	16,594	295	-	2,767	10	-	-	1,806
Total	3,695,648	2,126,572	583,497	366,139	206,461	184,512	70,903	68,655	29,805	59,096

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.7. MALAYA'S GROSS EXPORTS OF COPRA OIL BY DESTINATION, TONS PER ANNUM, 1921-1962.

Year	Total	(British) India	Burma*	United Kingdom	Netherlands	Italy	Dutch East Indies/ Indonesia	China	Germany**	Hong Kong	Egypt	Siam/ Thailand	Others
1921	8,175	105	-	-	-	-	3,806	405	-	551	-	2,403	905
1922	6,335	3	-	14	-	-	3,426	401	-	309	-	2,073	109
1923	6,025	5	-	20	-	-	3,489	513	-	-	-	1,520	477
1924	6,093	22	-	-	-	-	2,757	855	12	658	-	1,664	124
1925	7,685	5	-	-	-	-	4,184	1,268	-	328	-	1,749	152
1926	8,586	1	-	-	-	-	4,576	1,728	-	339	-	1,729	213
1927	10,300	3	-	5	-	-	5,834	1,495	-	408	-	2,416	139
1928	9,890	3	-	121	-	-	3,774	2,238	125	454	-	2,571	604
1929	8,731	3	-	-	-	-	4,074	2,093	70	367	-	1,647	477
1930	9,503	-	-	-	-	-	4,856	2,313	-	495	-	1,608	231
1931	10,178	1	1	18	3	-	4,694	3,389	-	872	1	1,058	141
1932	12,404	906	1,522	110	-	100	3,865	3,100	-	484	499	1,426	392
1933	18,654	4,390	1,989	598	-	70	3,309	3,977	-	866	1,585	1,360	510
1934	25,798	4,672	2,338	3,759	610	460	5,349	2,942	140	990	2,465	775	1,298
1935	36,836	15,064	2,752	3,235	525	160	4,530	1,227	350	865	4,808	677	2,193
1936	47,256	22,200	4,086	5,399	100	-	4,273	230	515	271	3,810	491	5,881
1937	40,508	12,972	2,635	10,419	250	60	4,059	159	1,023	210	2,589	329	5,804
1938	49,502	18,625	3,268	12,899	1,200	20	2,742	2,417	100	755	3,419	859	3,199
1939	61,898	26,476	4,547	12,336	445	-	3,523	1,638	-	2,027	5,790	243	4,872
1940	70,027	43,795	5,913	243	-	-	3,529	557	-	4,121	7,085	327	4,457
1941	65,033	45,691	6,094	-	-	-	1,981	284	-	4,683	1255	1,734	3,312
1946	9,130	-	1,449	1,124	-	-	4,306	27	-	1,819	-	347	59
1947	43,257	-	6,674	27,239	-	43	2,499	5.48	-	5,763	27	16	991
1948	48,276	299	3,829	3,334	3,488	8,198	374	78	-	8,031	3,821	2	16,823
1949	61,226	24,606	3,877	-	5,574	4,065	939	192	758	4,471	4,070	4	12,670
1950	57,032	13,435	3,804	-	7,709	8,191	813	240	7,608	4,340	1,523	63	9,309
1951	68,335	12,708	13,738	8,277	6,732	2,034	596	-	6,997	2,717	3,659	414	10,463
1952	66,212	11,380	22,318	1,657	9,605	5,382	371	-	2,361	3,155	3,551	613	5,821
1953	61,411	13,180	9,700	291	9,392	6,407	229	5,781	7,492	1,160	653	475	6,651
1954	79,226	11,847	26,029	2,506	2,403	6,253	170	19,757	2,952	890	813	-	5,609
1955	91,826	11,559	6,481	15,344	10,663	10,049	231	14,974	8,971	1,434	926	4	11,191
1956	104,284	10,090	4,946	14,907	24,146	9,567	238	500	11,388	1,425	1,815	51	25,211
1957	101,177	6,660	19,952	3,933	5,001	14,756	240	6,484	8,013	3,068	257	6	32,807
1958	68,481	4,899	4,993	1,759	5,011	12,773	488	959	11,127	1,522	857	301	23,792
1959	39,246	1,055	4,779	1,248	4,666	5,256	185	2,905	1,536	460	267	1,330	15,558
1960	40,642	-	1,717	4,802	3,258	5,283	160	3,750	174	480	1,749	240	19,029
1961	57,143	54	34	11,239	8,418	6,091	213	2,700	4,483	1,153	1,256	74	21,428
1962	41,514	45	1,849	1,773	685	2,594	699	600	-	388	1,035	776	31,070
Total	1,557,835	316,759	171,314	148,609	148,608	107,812	95,380	92,180	76,195	62,330	59,584	33,372	280,280

*Figures include both British Burma and India together before 1931.
**Figures are for West Germany after 1953.

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.8. MALAYA'S GROSS EXPORTS OF COPRA CAKE BY DESTINATION, TONS PER ANNUM, 1921-1962.

Year*	Total	Denmark	Germany**	United Kingdom	Dutch East Indies / Indonesia	Belgium	Netherlands	French Indochina	Sarawak	Others
1921	3,623	-	-	1,053	350	1,053	50	900	37	179
1922	3,408	50	-	1,116	263	1,203	446	125	21	183
1923	2,078	-	-	1,101	189	202	150	258	50	127
1924	2,910	-	229	896	325	750	100	475	13	122
1925	6,463	-	3,525	197	505	1,119	348	688	31	49
1926	4,322	-	2,148	-	569	100	50	1,306	22	127
1927	5,396	447	2,496	50	1,222	97	1	855	40	188
1928	8,071	2,044	2,057	1	2,140	75	100	1,433	122	99
1929	7,667	1,196	1,532	50	3,054	-	150	1,185	435	65
1930	5,497	1,247	1,596	-	1,260	-	-	981	361	52
1931	6,034	1,297	1,247	-	1,678	730	100	786	166	30
1932	8,145	996	2,961	-	1,209	1,050	-	1,540	114	275
1933	15,850	1,700	3,798	2,223	1,715	1,401	4,377	244	334	58
1934	18,217	552	500	6,911	3,791	1,926	2,755	633	648	501
1935	15,992	1,601	3,349	3,521	783	2,000	2,425	166	366	1781
1936	20,438	800	-	4,877	718	4,901	1,505	551	256	6830
1937	15,026	10,712	-	2,830	576	40	50	77	195	187
1938	7,894	7,250	50	50	-	250	-	-	49	245
1939	12,076	10,000	50	560	-	1,200	50	-	66	150
1940	6,710	1,585	-	4,102	46	300	-	-	385	292
1941	1,277	-	-	-	191	-	-	-	1024	61
1946	21	-	-	-	2	-	-	-	19	-
1947	10	-	-	-	-	-	-	-	9	1
1948	16	-	-	-	13	-	-	-	3	-
1949	400	-	-	-	-	-	-	-	350	49
1950	696	-	-	-	43	-	-	-	545	109
1951	732	-	-	-	78	-	-	-	545	109
1952	1,083	-	-	-	134	-	-	-	768	180
1953	1,052	-	-	-	126	-	200	-	661	64
1954	5,461	1,770	1,600	595	91	700	-	-	479	226
1955	2,173	300	-	1,040	64	-	-	-	603	165
1956	2,427	845	-	400	63	-	-	-	726	393
1957	5,893	1,600	2,320	250	114	-	-	-	943	666
1958	3,004	500	1,375	-	68	-	-	-	820	241
1959	1,784	400	667	330	38	-	100	-	228	21
1960	254	-	84	-	26	-	-	-	124	21
1961	177	-	-	-	21	-	-	-	75	81
1962	2,372	200	1,899	-	14	-	-	-	110	149
1963	724	269	387	-	12	-	-	-	28	23
Total	205,370	47,362	33,869	32,154	21,493	19,456	12,958	12,202	11,771	14,097

*Gross export figures for all oil cakes used for years 1921-1937. It is assumed that copra cake constitutes the overwhelming majority of exports (based on figures for 1939).
**Figures are for West Germany after 1953.

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.9. MALAYA'S GROSS IMPORTS OF COPRA CAKE, BY PREVIOUS PLACE OF ORIGIN, TONS PER ANNUM, 1938-1962.

Year	Total	Java	Thailand/ Siam	Sumatra	Celebes and Moluccas	Bali and Lombok	French Indochina/ States Indo China	Borneo	Burma	Banka and Billiton	Others
1938	782	-	109	433	-	-	-	240	-	-	-
1939	1,369	4	-	926	-	-	-	440	-	-	-
1940	7,925	5,383	89	1,873	-	12	-	567	-	-	-
1941	6,935	5,735	-	1,060	-	106	-	-	-	-	35
1946	2,247	-	605	600	-	-	75	924	-	-	43
1947	5,270	200	3,666	686	49	5	-	615	-	-	49
1948	12,191	5,832	3,905	398	1,492	100	234	40	-	-	190
1949	28,403	13,694	6,835	245	1,932	100	3,975	85	-	1,166	11
1950	31,801	21,478	6,127	953	1,681	287	951	25	8	100	191
1951	38,623	30,210	5,515	-	1,228	969	700	-	-	-	1
1952	61,369	46,690	5,016	1,679	3,518	882	2,165	49	8	54	1,308
1953	60,181	48,757	3,097	1,812	2,277	2,706	725	679	-	-	128
1954	45,981	38,541	3,235	775	295	2,137	469	148	-	177	204
1955	58,577	50,148	4,024	599	175	2,131	465	394	120	59	463
1956	68,600	59,755	3,964	1,644	1,808	1,228	-	-	40	-	161
1957	79,101	66,547	3,401	5,645	1,487	1,562	-	-	210	-	248
1958	75,457	67,520	1,992	4,087	566	587	-	-	578	-	127
1959	70,936	64,826	1,361	3,415	-	492	-	-	254	-	589
1960	61,231	52,809	3,663	3,050	779	246	-	-	217	-	467
1961	75,889	65,422	4,088	2,634	1,432	2,095	-	-	177	-	40
1962	59,816	43,203	5,557	3,862	4,636	1,192	-	-	73	-	1,294
Total	852,686	686,755	66,249	36,375	23,355	16,834	9,759	4,205	1,684	1,557	5,548

Sources:

Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.10. MALAYA'S GROSS EXPORTS OF ARECANUTS BY DESTINATION, TONS PER ANNUM, 1921-1962.

Year	Total	(British) India	Burma*	French Indochina / States Indo China	French India	Siam/Thailand	Hong Kong	China	Others
1921	49,141	38,235	-	3,510	1,831	2,959	2,585	7	14
1922	51,697	40,533	-	2,712	2,845	2,826	2,761	-	19
1923	63,792	51,889	-	3,176	4,059	3,306	1,293	23	46
1924	62,196	51,506	-	3,214	3,534	1,903	1,871	57	110
1925	58,908	50,545	-	2,591	2,772	2,134	703	18	145
1926	63,021	51,490	-	2,926	2,927	2,976	2,417	204	81
1927	49,879	37,349	-	3,536	2,938	4,041	1,871	80	64
1928	69,259	59,484	-	3,005	2,928	2,116	1,623	33	70
1929	72,127	62,447	-	2,993	4,054	1,721	720	136	56
1930	65,803	58,125	-	2,944	2,680	989	1,017	2	46
1931	58,054	42,674	4,754	3,161	2,903	1,514	2,756	13	279
1932	57,593	43,647	4,717	2,649	3,159	2,504	835	22	60
1933	55,298	45,026	3,740	533	2,722	2,100	1,140	-	37
1934	65,899	53,974	4,790	2,512	2,521	956	1,479	7	20
1935	64,784	51,311	5,049	2,434	2,540	2,125	1,196	97	32
1936	71,729	58,631	4,858	27,04	1,795	2,696	990	37	18
1937	83,156	71,459	5,737	2,367	2,044	1,096	357	40	56
1938	89,189	76,497	-	2,369	1,710	1,257	479	34	6,843
1939	91,139	80,355	5,362	2,054	1,528	348	1,218	228	46
1940	94,328	82,568	6,514	2.225	928	331	1,540	214	8
1941	75,806	64,382	7,613	1,807	545	1364	64	-	32
1946	24,468	23,184	834	-	-	36	332	65	17
1947	46,075	42,367	3,382	-	-	156	39	-	131
1948	32,785	24,462	4,176	4	-	105	157	-	3,881
1949	43,782	34,072	3,913	160	304	1016	97	-	4,221
1950	42,623	37,597	1,451	1,436	888	636	91	-	524
1951	43,322	38,355	2,386	1,891	218	315	45	-	112
1952	40,119	32,516	4,204	2,172	312	798	-	-	117
1953	36,699	28,674	3,933	2,809	672	432	21	-	159
1954	37,913	27,090	5,661	3,959	1037	-	-	-	165
1955	41,060	35,360	2,495	2,980	-	-	5	-	219
1956	42,793	37,126	1,635	-	-	-	1	1,285	2,745
1957	37,807	30,515	2,315	-	12	50	51	1,672	3,192
1958	26,098	18,021	3,352	-	-	169	7	1,719	2,830
1959	20,718	13,283	2,754	-	-	391	620	824	2,845
1960	16,444	11,681	3,600	-	-	2	26	698	436
1961	13,683	9,226	3,640	-	-	-	2	450	365
1962	14,736	9,473	4,325	-	-	-	16	346	575
Total	1,973,918	1,625,127	107,188	70,836	56,404	45,366	30,424	8,311	30,614

*All figures before 1931 are amalgamated with British India's.

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 3.11. MALAYA'S GROSS IMPORTS OF ARECANUTS BY PREVIOUS PLACE OF ORIGIN, TONS PER ANNUM, 1921-1962

Year	Total Imports per Annum	Sumatra	Java	Siam / Thailand	Dutch East Indies Borneo	Riau and Lingga	Other Dutch Indies Islands (including Bali and Lombok)	Celebes and Moluccas	Others
1921	28,209	20,021	6,514	178	1,149	-	75	-	271
1922	31,058	20,713	7,871	553	1,434	-	38	-	449
1923	40,339	27,787	8,168	1,896	1,862	-	281	47	298
1924	40,021	27,374	7,311	2,870	1,548	-	567	2	348
1925	39,977	28,379	5,777	2,533	1,984	-	634	276	392
1926	40,525	27,709	6,501	2,785	2,120	-	243	560	607
1927	32,132	22,933	6,931	539	1,048	-	272	212	197
1928	45,202	33,699	7,081	1,878	1,278	-	809	198	259
1929	47,657	32,831	8,960	2,871	1,556	-	725	417	297
1930	42,555	30,286	7,107	3,015	1,471	-	218	251	207
1931	38,794	29,245	6,192	1,946	857	-	270	36	248
1932	37,305	27,062	7,005	1,596	353	-	1,149	-	140
1933	34,556	26,977	5,280	1,977	71	-	130	35	86
1934	38,563	30,802	4,731	2,722	8	-	253	26	21
1935	41,899	33,773	4,345	2,419	618	-	529	51	154
1936	45,181	35,959	4,778	2,217	1,571	-	416	133	107
1937	53,071	38,549	5,926	5,584	1,390	-	656	900	66
1938	55,420	42,872	6,234	2,965	1,736	-	984	447	181
1939	52,650	40,728	6,874	3,458	638	-	143	691	118
1940	50,413	35,855	6,935	6,644	251	-	511	169	48
1941	51,173	42,360	6,192	723	353	849	491	180	24
1946	15,468	11,649	636	1,960	34	1,132	3	2	52
1947	33,568	22,584	3126	6,632	86	796	19	275	50
1948	26,743	20,567	1,353	3,272	-	1,347	9	122	71
1949	38,175	26,335	2,768	6,105	-	1,329	25	440	1,173
1950	27,756	20,580	2,908	2,092	-	1,683	10	155	329
1951	29,775	21,588	2,718	3,837	-	1,334	1	201	94
1952	29,652	21,219	2,012	4,615	-	1,181	60	468	98
1953	25,119	17,859	1,796	4,169	-	1,016	30	150	99
1954	32,402	21,023	2,047	7,600	5	1,057	4	170	497
1955	27,381	19,114	983	5,805	-	861	23	514	81
1956	31,505	23,676	1,627	3,998	-	765	37	588	815
1957	28,182	23,212	1,650	2,368	-	652	8	105	186
1958	21,160	17,059	1,280	2,112	-	389	-	151	169
1959	13,818	10,679	1,437	1,071	-	263	-	238	129
1960	14,370	11,839	692	1,471	-	131	-	140	98
1961	7,608	7,169	46	209	-	73	-	25	86
1962	12,086	11,657	175	109	-	5	-	47	93
Total	1,301,466	963,721	163,967	108,792	23,422	14,865	9,624	8,420	8,640

Sources:
Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1921-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1962 (Singapore: Government Printing Office).

APPENDIX 4.1. JOHOR'S EXPORT VOLUMES AND UNIT VALUES OF COPRA, ARECANUTS AND RUBBER, TONS PER ANNUM, VALUED IN STRAITS DOLLARS PER TON, 1928-1939, DEFLATED BY THE SUGIMOTO CONSUMER PRICE INDEX (1928=100).

Year	Copra			Arecanuts			Rubber			Singapore: Sugimoto Consumer Price Index (1928=100)
	Exports	Unit Value	$/ton index 1928 = 100	Exports	Unit Value	$/ton index 1928 = 100	Exports	Unit Value	$/ton index 1928 = 100	
1928	34,345	181	100	10,946	102	100	62,738	705	100	100.0
1929	35,349	161	89	13,527	124	122	96,480	792	112	97.8
1930	38,711	155	85	12,910	111	108	90,643	466	66	93.0
1931	38,428	109	60	13,744	73	72	90,780	282	40	79.5
1932	41,817	131	72	14,359	84	83	86,685	229	33	69.9
1933	48,398	102	56	14,765	57	55	97,797	356	50	65.0
1934	41,735	68	38	16,280	57	56	103,994	686	97	66.7
1935	39,171	98	54	14,686	155	151	83,358	571	81	69.3
1936	40,613	104	58	15,538	147	144	89,019	979	139	68.1
1937	44,170	52	29	17,060	145	142	123,045	972	138	72.2
1938	45,640	77	42	20,899	144	141	89,128	713	101	69.9
1939	40,257	82	45	18,011	143	140	91,149	937	133	70.3

Sources:
Government of Johore, *Annual Reports of the Principal Agricultural Officer, Johore, 1932* (Johore Bahru: Government Printer), 46-47; Government of Johore, *Annual Report of the State Agricultural Officer, Johore* (henceforth SAOJ), *1935* (Johore Bahru: Government Printer), Appendix C; SAOJ 1937, Appendix E, vi; SAOJ 1938, Appendix E, vi; Government of Johore, *Annual Report on the Social and Economic Progress of the People of Johore* (henceforth AR JOHORE) *for 1936* (Johore Bahru: Government Printer), 30; AR JOHORE 1939, 19.

APPENDIX 4.2. JOHOR'S BALANCE OF TRADE IN PIGS, AND ESTIMATED CHINESE POPULATIONS IN JOHOR AND SINGAPORE, 1928-1939.

Year	Current Stocks (000 pigs)	Number Slaughtered (000 pigs)	Net Trade Balance (000 pigs)	Estimated Chinese Population in Johor (000 persons)	Estimated Chinese Labourer Population in Singapore (000 persons)
1928	-	-	-12.9	-	339.7
1929	-	-	-13.4	-	352.4
1930	-	-	5.2	-	348.1
1931	-	23.2	3.9	214.4	354.6
1932	-	31.0	4.7	-	344.0
1933	-	19.7	8.3	-	324.1
1934	-	38.6	7.8	-	330.9
1935	202.3	43.9	1.8	218.0	360.5
1936	210.6	46.1	2.1	274.4	380.0
1937	169.5	45.0	4.4	268.3	410.4
1938	163.3	37.5	9.0	311.6	447.3
1939	100.7	42.1	12.9	366.0	458.4

Sources:
Government of Johore, *Annual Report on the Social and Economic Progress of the People of Johore* for *1928-1939* (Johore Bahru: Government Printer); Ichirō Sugimoto. *Economic Growth of Singapore in the Twentieth Century: Historical GDP Estimates and Empirical Investigations* (Singapore: World Scientific, 2011), 51.

APPENDIX 5.1. TOTAL PLANTED ACREAGE IN JOHOR AND MALAYA: OIL PALMS, COCONUT PALMS, ARECA PALMS, AND RUBBER.

Year	Oil Palms		Coconut Palms*		Areca Palms*		Rubber		
	Johor	Malaya	Johor	Malaya	Johor	Malaya	Johor		Malaya
							Smallholdings*	Estates	
1922	-	2,199	-	-	-	-	218,033	297,924	2,328,537
1923	-	3,369	-	-	-	-	222,007	303,730	-
1924	-	5,930	92,500	492,495	-	-	225,223	307,830	-
1925	1,034	8,368	-	-	7,500	-	226,192	308,579	-
1926	2,294	12,327	-	-	-	-	226,192	313,348	-
1927	4,828	18,205	-	-	-	-	226,192	340,862	-
1928	6,228	22,715	-	-	-	-	238,565	340,862	-
1929	9,020	31,605	-	-	-	-	288,025	417,273	-
1930	17,845	49,007	165,050	587,200	-	-	324,333	440,949	3,079,899
1931	23,443	55,801	165,050	-	9,550	16,022	341,613	459,142	3,151,799
1932	26,086	59,098	198,000	587,700	10,000	22,005	396,725	459,142	3,214,868
1933	28,549	61,929	169,367	623,600	39,225	54,106	392,589	459,874	3,208,295
1934	29,278	62,908	170,085	597,500	36,958	52,982	392,589	507,768	3,284,216
1935	30,066	63,928	170,085	595,100	31,318	47,905	322,225	517,125	3,194,856
1936	30,573	65,608	170,085	595,600	34,793	50,546	359,007	516,176	3,236,644
1937	33,106	69,681	170,085	604,600	38,402	61,658	360,759	523,145	3,302,170
1938	34,956	72,720	170,452	597,900	37,079	61,872	365,996	525,155	3,296,647
1939	36,591	75,825	171,752	599,100	37,567	63,524	384,533	556,596	3,442,649
1940	37,514	77,700	172,447	600,900	32,232	58,619	394,766	559,712	3,472,691
1946	-	77,500	-	-	-	-	392,599	483,976	3,248,642
1947	39,160	78,200	113,898	512,100	25,139	50,983	384,412	501,565	3,344,252
1948	41,078	83,300	117,037	510,800	24,030	49,394	405,643	504,899	3,389,566
1949	41,078	90,500	117,965	499,600	23,439	48,957	411,145	508,871	3,395,224
1950	41,218	96,000	118,041	485,000	23,395	48,392	411,145	509,802	3,378,976
1951	42,990	97,400	117,714	484,000	23,267	47,659	534,729	507,868	3,535,221
1952	44,226	100,200	118,046	485,300	21,151	44,862	541,240	526,658	3,632,574
1953	46,555	108,300	117,752	485,000	22,925	46,300	-	-	3,636,000
1954	46,651	109,300	118,305	494,000	22,144	45,417	-	-	3,647,000
1955	-	111,400	141,463	495,000	22,166	40,303	-	-	3,665,000
1956	-	115,200	141,781	521,300	20,862	42,974	-	-	3,694,000
1957	-	115,900	-	517,000	20,650	40,993	-	-	3,721,000
1958	53,945	119,800	141,550	518,300	20,701	40,524	-	-	3,747,000
1959	57,347	126,200	142,295	520,200	17,736	36,600	-	-	3,783,000
1960	60,885	135,000	143,465	520,200	17,823	36,741	-	-	3,840,000
1961	61,527	141,200	143,491	519,600	17,699	35,395	-	-	3,923,000
1962	63,606	153,400	134,378	509,800	15,493	32,794	-	-	3,987,000

*Figures for coconut and areca palms are mostly those of smallholdings. All smallholding figures are approximate estimates.

Sources:
Oil palms 1922-1939: Department of Agriculture, FMS and SS, *Malayan Agricultural Statistics 1939* (Kuala Lumpur: Caxton Press, 1940), Table 32.
Coconut palms 1924: D. H. Grist. "The Malayan Coconut Census, 1930." *Malayan Agricultural Journal* 19 (1931), p. 60.
Areca palms 1925: D. H. Grist. "The Betel-Nut Industry." *Malayan Agricultural Journal* 14, no. 7 (1926), p. 220.
Rubber 1922-1940: Department of Statistics, SS and FMS, *Malaya. Rubber Statistics Handbook* (henceforth RSH) *1940* (Singapore: Government Printing Office, 1940), 15; John H. Drabble. *Malayan Rubber: The Interwar Years* (Basingstoke: Macmillan, 1991), 308.
Rubber 1946-1952: RSH 1946-1952, Table 2.
Oil palms 1940-1962, coconut palms 1930-1962, areca palms 1931-1962, rubber 1953-1962: Pee Yew Teck. *A Statistical Source Book on Malayan Agriculture: Selected by Time-Series and by State (In Two Volumes). Volume 1. Acreage and Production of Main Crops* (Kuala Lumpur: University of Malaya, 1967), Tables I.1(a), I.3, I.4, II.3, II.4; Idem., *A Statistical Source Book on Malayan Agriculture: Selected by Time-Series and by State (In Two Volumes). Volume 2. Miscellaneous Crops* (Kuala Lumpur: University of Malaya, 1967), Tables IV.1.14(a).

APPENDIX 5.2. MALAYA: RUBBER SMALLHOLDINGS REPLANTED UNDER FUND 'B' GRANT, LISTED BY REPLACEMENT CROP, ACRES PER ANNUM, 1953-1963.

Year	Rubber	Coconuts	Non-Citrus Fruits	Pine apples	Coffee	Rice	Sago	Citrus Fruits	Oil Palm	Nutmeg	Cloves	Total
1953	26,689	343	121	49	314	39	22	36	-	-	-	27,612
1954	21,417	778	623	102	866	567	51	135	-	-	-	24,539
1955	24,622	887	767	699	413	422	130	208	-	-	-	28,149
1956	45,447	843	757	730	293	318	156	163	-	-	-	48,707
1957	49,078	788	650	881	137	360	142	172	-	-	-	52,208
1958	58,650	770	749	447	305	296	242	118	-	-	9	61,584
1959	72,484	1,093	556	369	296	184	228	152	-	-	1	75,363
1960	74,680	777	432	123	95	95	160	22	-	-	-	76,383
1961	64,466	799	437	195	22	88	104	17	-	-	2	66,130
1962	74,355	543	519	934	30	85	140	17	-	20	4	76,646
1963	91,270	915	965	1,519	43	103	263	118	271	96	24	95,586
Total	603,156	8,536	6,575	6,047	2,814	2,556	1,638	1,159	271	116	40	632,905

Source: Rubber Industry (Replanting) Board. *Rubber Industry (Replanting) Board, Fund "B": Report on Operations* (Kuala Lumpur: Rubber Industry (Replanting) Board, 1972), Table 21.

APPENDIX 5.3. LIST OF OIL PALM ESTATES IN JOHOR, END-1929.

Estate	Area granted (acres)	Locality	Planted prior to 1929 (acres)	Planted during 1929 (acres)
Elaeis	2,380	Mengkibol	2,100.47	200
Ulu Remis	5,000	Layang Layang	4,356.53	627
Malacca Rubber Plantations	5,200	Layang Layang	NIL	978
United Sua Betong	5,000	Layang Layang	NIL	NIL
Namazie Esq.	3,000	Renggam (east of Layang Layang)	NIL	NIL
Lee Quee Choo	1,700	Kulai	NIL	350
Oil Palm Plantations, Ltd.	10,000	Kluang	NIL	480
Kuah Hong Choo	1,000	Kluang	NIL	NIL
Johore Labis (under Malayan Cultures Co. Ltd.)	25,000	Labis	NIL	NIL
Total	58,280		6,457	2,635

Sources: ANM-JB: CL&M 260/30, 'List of Oil Palm Estates and details of planting', n.d.; Government of Johore, *Annual Reports of the Principal Agricultural Officer,* Johore, 1929 (Johore Bahru: Government Printer), 19.

APPENDIX 5.4. FEDERATION OF MALAYA: LIST OF OIL PALM ESTATES REGISTERED IN THE DEPARTMENT OF STATISTICS, INCLUDING LOCATIONS AND PLANTED ACREAGE AS OF 31ST DECEMBER 1958.

No.	Name of Estate	Location	European, Asian, or Government-owned	Planted Acreage as of 31 Dec 1958
1	Oil Palms of Malaya Ltd.	Johor	European	16,702
2	Johore Labis Estate	Johor	European	15,751
3	Ulu Bernam Estate	Perak	European	8,277
4	Pamol Estate	Johor	European	7,924
5	Lima Balas Estate	Perak	European	5,952
6	Kulai Oil Palm Estate	Johor	European	4,864
7	Jendarata Estate	Perak	European	4,768
8	Sungei Samak Estate	Perak	European	4,586
9	Kelapa Bali Estate	Perak	European	3,826
10	Elaies Estate	Johor	European	3,035
11	Teluk Merbau Plantations Ltd	Selangor	European	2,950
12	Highlands Estate	Selangor	European	2,694
13	Minyak Estate	Selangor	European	2,212
14	Elmina Estate	Selangor	European	2,100
15	Pakloh Oil Palm Plantation	Johor	Asian	1,897
16	Lanadron Estate	Johor	European	1,859
17	Selaba Estate	Perak	European	1,579
18	Bukit Jelutong Estate	Selangor	European	1,533
19	Senama Estate	Negri Sembilan	European	1,414
20	Riverside Estate	Selangor	European	1,373
21	Hopeful Estate	Selangor	European	1,334
22	Raja Musa Estate	Selangor	European	1,292
23	Tumbuk Estate	Selangor	European	1,258
24	Sungei Tekal Estate	Pahang	European	1,246
25	Bukit Berutong Estate	Selangor	European	1,235
26	Tennamaram Estate	Selangor	European	1,194
27	Fermanagh Estate	Selangor	Asian	1,182
28	Klanang Bahru Estate	Selangor	European	1,147
29	Bukit Cheraka Estate	Selangor	European	1,080
30	Nordanal Estate	Johor	European	1,080
31	Dusun Durian Estate	Selangor	European	1,056
32	Jugra Estate	Selangor	European	1,016
33	Ng Teong Kiat Plantations	Pahang	Asian	1,010
34	Golden Hope Estate	Selangor	European	978
35	Sungei Buaya Estate (Lunderston Division)	Selangor	European	912
36	Koh Foh Estate	Negri Sembilan	Asian	900
37	Byram Oil Palm Estate	Province Wellesley	Asian	728
38	Ichamaram Estate	Selangor	European	711
39	Hong Huat Oil Palm Estate	Pahang	Asian	700
40	Bukit Munchong Estate	Selangor	European	632
41	Mentara Estate	Kelantan	Asian	630
42	Gim Tien Estate	Johor	Asian	600
43	Dingkil Palm Oil Plantations	Selangor	Asian	560
44	Sungei Rawang Estate	Selangor	European	502
45	Gadong Estate	Selangor	European	467
46	Poh Aun Estate	Selangor	Asian	445
47	Dura Oil Palm Estate	Pahang	European	430

48	Keru Oil Palm Estate	Negri Sembilan	Asian	416
49	Sungei Gappin Estate	Selangor	European	408
50	Midlands Estate	Selangor	European	347
51	His Highness' Oil Palm Estate	Negri Sembilan	Government	257
52	Chinniah Estate	Selangor	Asian	230
53	Bukit Minyak Estate	Selangor	Asian	164
54	Thailamal Estate	Selangor	Asian	150
55	Bukit Blembing Estate	Selangor	European	149
56	Dennistown Estate	Perak	European	142
57	Federal Experiment Station	Selangor	Government	51
58	T.S. Chinniah's Kampong Estate	Selangor	Asian	38
59	Carey Island Estate	Selangor	European	20
60	Cheam Tow Fong Estate	Kelantan	Asian	20
61	Gula Estate	Perak	Asian	11
Total				122,024

Source: ANM-KL: RSFM 5/13, Enc. 31.

APPENDIX 6.1. CUMULATIVE LIST OF OPERATIONAL COPRA OIL MILLS IN MALAYA, AND KNOWN OIL PRODUCTION CAPACITY, UP UNTIL END-1957.

No.	Name of Oil Mill	Location	Year Started Operation	Daily Production Capacity (tons)
1	Singapore Oil Mills (facilities merged with Bintang Oil Mills in 1899, and taken over by Ho Hong Oil Mills in 1917)	Singapore	1882	40.00
2	Ban Teik Bee	Penang	1901	50.00
3	Khie Heng Bee Mills	Penang	1902	6.00
4	Federal Oil Mills @ Selangor Oil Mills	Selangor	1903	3.00
5	Ho Hong Oil Mills	Singapore	1904	20.00
6	Sun Wo Loong	Penang	1911	70.00
7	Ban Hin Bee Oil Mill	Penang	1926	40.00
8	Ho Hong Oil Mills (expansion)	Singapore	1931	40.00
9	Kian Hin Guan	Singapore	1933	30.00
10	Ban Hin Leong	Singapore	1935	27.00
11	Ban Hin Lee	Penang	1935	Unknown
12	Chuan Lee Oil Mill	Kedah	1938	0.18
13	Unknown	Perak	1941	0.33
14	Unknown	Johor	1941	3.33
15	Joo Seng Oil Mill	Malacca	1942	1.98
16	Chin Thong Oil Mill	Kelantan	1942	5.70
17	Kien Huat Oil Mill	Selangor	1946	3.47
18	Chung Hwa Oil Factory	Negri Sembilan	1946	4.76
19	Nam Hoe Oil Mill	Johor	1946	1.79
20	Sin Ee Heng Oil Mill	Johor	1946	1.78
21	Eng Seng Oil Mill	Johor	1946	1.38
22	Nam Heng Oil Mill	Johor	1946	14.95
23	Eng Nam Heng Oil Mill	Johor	1946	2.98
24	Guan Seng Oil Mill	Province Wellesley	1946	1.15
25	Heap Lee Oil Mill	Perak	1947	2.44
26	Beng Kee Oil Mill	Selangor	1947	2.95
27	Lean Huat Oil Mill	Province Wellesley	1947	1.43
28	Eng Huat Oil Mill	Province Wellesley	1947	11.90
29	Hock Chuan Lee	Province Wellesley	1947	1.71
30	Lian Heng Oil Mill	Johor	1947	1.78
31	Hup Joo Oil Mill	Johor	1947	2.68
32	Hup Seng Oil Mill	Johor	1947	5.95
33	Chop Hiap Seng Leong	Johor	1947	14.28
34	Hock Hoe Mill Co.	Pahang	1947	0.90
35	Chop Hong Thye	Trengganu	1947	0.45
36	Lam Soon Cannery	Singapore	1948	45.00
37	Hock Wah Oil Mill	Perak	1948	5.95
38	Tai Lee Oil Mill	Perak	1948	6.33
39	Chuan Kee Oil Mill	Perak	1948	7.93
40	Mun Hing Loong	Perak	1948	8.33
41	Sun Hup Fatt Oil Mill	Selangor	1948	2.30
42	Sin Guan Hup	Province Wellesley	1948	0.45
43	Ban Chin Hong	Province Wellesley	1948	0.36
44	Ng Tong Leong	Johor	1948	0.36
45	Eng Tong Joo	Johor	1948	1.49
46	Kwong Fatt Hing Kee	Selangor	1949	2.81
47	Seng Lean Hong	Province Wellesley	1949	1.39
48	Hong Leong Oil Mill Co.	Johor	1949	1.79

49	Hoe Heng Oil Mill	Johor	1949	1.34
50	Kim Leong Huat Hup Kee	Johor	1949	3.45
51	Guan Hap Oil Mill	Kelantan	1949	2.97
52	Hock Hoe Hin	Trengganu	1949	0.40
53	Tong Huat Oil Mill	Perak	1950	3.74
54	Lee Oil Mills Ltd.	Selangor	1950	60.00
55	Hock Chuang Hong Co. Oil & Rice Mill	Province Wellesley	1950	7.14
56	Lam Hin Lee	Singapore	1951	24.00
57	Synn Heng Oil Mill	Perak	1951	10.00
58	Leong Huat Oil Mill	Province Wellesley	1951	0.89
59	Lee Seng Oil Mill	Province Wellesley	1951	1.63
60	Sin Hock Aun	Province Wellesley	1951	2.14
61	Lee Huat Oil Mill	Province Wellesley	1951	4.96
62	Ban Hong Oil Mill	Perak	1952	4.17
63	Poh Ann Oil Mill & Co.	Selangor	1952	8.91
64	Tee Tng Oil Mill	Johor	1952	0.65
65	Hoe Seng Oil Mill	Selangor	1953	5.76
66	Tong Hin Oil Mill Co. Ltd	Kelantan	1953	3.33
67	Kin San Coconut Oil Factory	Malacca	1953	0.60
68	Perak Oil Mill	Perak	1954	25.00
69	Sin Chip Seng Oil Mill	Province Wellesley	1954	2.14
70	Sin Long Geoh Oil Mill	Johor	1954	3.57
71	Sun Weng Woh Oil Mill	Selangor	1955	1.25
72	Seng Aun Oil Mill	Province Wellesley	1955	2.78
73	Choo Chin Hin Oil Mill	Kelantan	1955	0.32
74	Yeo Khee Lin	Pahang	1955	0.64
75	Malayan Oil Mill Co.	Province Wellesley	1957	20.00
Total				702.52

*This listing excludes approximately 30-40 mills for whom production capacity figures are unknown, but probably very small at an individual level. See ANM-KL: C&I/E 1015 Vol. 1, Enc. 31 for a list of 102 known mills in the Federation of Malaya (Singapore excluded). The author has also excluded mills known to have opened and shut down permanently within the period.

Sources:
ANM-KL: C&I/E 1015 Vol. 1, Enc. 45; ANM-KL: HCO NO JOHORE 1164/1916, Acting General Adviser to Secretary to the High Commissioner for the Malay States, 25.6.1916, p. 3; TNA: CO 852/292/6, Enc. No. 1 to Straits Despatch of 20th March 1940; Molly Goh. "The Possibilities for Expansion in the Coconut Oil Industry in Singapore." (Academic Exercise, BA (Hons) Economics, University of Singapore, 1963), 10; Ung Gim-Sei. "An Analysis of Singapore's Trade on Copra-Group Commodities, 1954-1963." (Graduation Exercise, BA (Hons) Economics, University of Singapore, 1965), 42; Wong Yee Tuan, "The Rise and Fall of the Big Five of Penang and Their Regional Networks, 1800s-1900s." (PhD Thesis. The Australian National University, 2007), 114; Anon., "Singapore Oil Mills", *The Singapore Free Press and Mercantile Advertiser*, 18.10.1917, 244; Anon. "From the Districts: September, 1941." *Malayan Agricultural Journal* 29, no. 10 (1941), 416; Arnold Wright, ed. *Twentieth Century Impressions of British Malaya: Its History, People, Commerce, Industries and Resources* (London: Lloyd's Greater Britain Publishing Company Ltd, 1908), 647-650, 652, 824, 828, 907-908; William Tai Yuen, *Chinese Capitalism in Colonial Malaya, 1900-1941* (Bangi: Penerbit Universiti Kebangsaan Malaysia, 2013), 192-193; Wu Xiao An, "Rice Trade and Chinese Rice Millers in the Late-Nineteenth and Early-Twentieth Centuries: The Case of British Malaya." In *Chinese Circulations: Capital, Commodities and Networks in Southeast Asia*, eds. Eric Tagliacozzo and Chang Wen-chin (Durham: Duke University Press, 2011), 338.

APPENDIX 6.2. MALAYA'S ESTIMATED TOTAL COPRA OIL PRODUCTION AND CONSUMPTION, COPRA CAKE GENERATED AND RETAINED, TONS PER ANNUM, 1921-1960.

Year	Copra Oil Produced^*	Net Exports of Copra Oil	Domestic Consumption of Copra Oil*	Proportion of Copra Oil Retained for Domestic Purposes (%)*	Copra Used**	Copra Cake Produced**	Net Exports of Copra Cake***	Copra Cake Retained within Malaya
1921	10,512	7,884	2,628	25	16,819	5,887	2,670	3,217
1922	8,444	6,333	2,111	25	13,510	4,729	1,422	3,307
1923	8,035	6,026	2,009	25	12,855	4,499	2,078	2,421
1924	8,112	6,084	2,028	25	12,979	4,543	2,910	1,633
1925	10,229	7,672	2,557	25	16,337	5,728	6,463	(735)
1926	12,149	8,504	3,645	30	19,438	6,803	4,311	2,492
1927	14,679	10,275	4,404	30	23,486	8,220	5,396	2,824
1928	15,206	9,884	5,322	35	24,329	8,515	8,071	444
1929	13,423	8,725	4,698	35	21,477	7,517	7,667	(150)
1930	14,574	9,473	5,101	35	23,318	8,161	5,497	2,664
1931	15,274	9,928	5,346	35	24,438	8,553	6,034	2,519
1932	18,383	11,949	6,434	35	29,413	10,295	8,145	2,150
1933	29,303	17,582	11,721	40	46,885	16,410	15,830	580
1934	42,473	25,484	16,989	40	67,957	23,785	18,217	5,568
1935	59,850	35,910	23,940	40	95,760	33,516	15,992	17,524
1936	71,544	46,504	25,041	35	114,471	40,065	20,438	19,627
1937	61,172	39,762	21,410	35	97,876	34,256	15,046	19,210
1938	75,600	49,140	26,460	35	120,960	42,336	7,112	35,224
1939	94,400	61,360	33,040	35	151,040	52,864	10,707	42,157
1940	106,840	69,446	37,394	35	170,944	59,830	-1,215	61,045
1941	108,242	64,945	43,297	40	173,187	60,616	-5,659	66,275
1946	16,016	8,008	8,008	50	25,626	8,969	-2,226	11,195
1947	96,243	41,112	55,131	57	153,989	53,896	-5,260	59,156
1948	93,085	45,245	47,840	51	148,936	52,128	-12,176	64,304
1949	90,962	60,504	30,458	33	145,539	50,939	-28,003	78,942
1950	90,469	56,046	34,423	38	144,750	50,663	-31,104	81,767
1951	106,072	68,139	37,933	36	169,715	59,400	-37,891	97,291
1952	106,805	65,113	41,692	39	170,888	59,811	-60,287	120,098
1953	95,922	60,779	35,143	37	153,475	53,716	-59,129	112,845
1954	134,545	78,507	56,038	42	215,272	75,345	-40,520	115,865
1955	128,613	91,176	37,437	29	205,781	72,023	-56,404	128,427
1956	148,171	103,132	45,039	30	237,074	82,976	-66,174	149,150
1957	145,209	100,031	45,178	31	232,334	81,317	-73,209	154,526
1958	108,778	67,485	41,293	38	174,045	60,916	-72,453	133,369
1959	87,742	37,379	50,363	57	140,387	49,135	-69,153	118,288
1960	98,152	37,754	60,398	62	157,043	54,965	-60,976	115,941

^Estimated oil production from coconut mills only. Excludes production from smallholdings and estates.
*Author's own estimates for years 1921-1946.
**Author's own estimates. See 'Note on currencies, weights, and measures' (page 13) for coconut conversion assumptions.
***Gross export figures for all oil cakes used for years 1921-1937, in keeping with Department of Agriculture, Federation of Malaya, *Malayan Agricultural Statistics 1949* (Kuala Lumpur: Caxton Press, 1950), Table 23.

Sources:
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Copra oil production, 1953-1956: MSMD December 1957, Table 7.1, p. 18
Copra oil production, 1957-1960: MSMD December 1961, Table 7.1, p. 24.

APPENDIX 6.3. MALAYA'S ESTIMATED COPRA OIL OUTPUT FROM INDUSTRIAL MILLS, AS A PROPORTION OF TOTAL ESTIMATED MAXIMUM PRODUCTION CAPACITY, 1921-1957.

Year	Total Maximum Production Capacity for Copra Oil per Day	Total Maximum Production Capacity for Copra Oil per Annum*	Copra Oil Produced Per Annum	Average Proportion of Total Production Capacity (%)
1921	189.00	63,236	10,512	16.6
1922	189.00	63,236	8,444	13.4
1923	189.00	63,236	8,035	12.7
1924	189.00	63,236	8,112	12.8
1925	189.00	63,236	10,229	16.2
1926	229.00	76,620	12,149	15.9
1927	229.00	76,620	14,679	19.2
1928	229.00	76,620	15,206	19.8
1929	229.00	76,620	13,423	17.5
1930	229.00	76,620	14,574	19.0
1931	269.00	90,003	15,274	17.0
1932	269.00	90,003	18,383	20.4
1933	299.00	100,040	29,303	29.3
1934	299.00	100,040	42,473	42.5
1935	326.00	109,074	59,850	54.9
1936	326.00	109,074	71,544	65.6
1937	326.00	109,074	61,172	56.1
1938	326.18	109,134	75,600	69.3
1939	326.18	109,134	94,400	86.5
1940	326.18	109,134	106,840	97.9
1941	329.84	110,359	108,242	98.1
1946	369.78	123,772	16,016	12.9
1947	416.25	139,270	96,243	69.1
1948	494.75	165,535	93,085	56.2
1949	508.90	170,269	90,962	53.4
1950	579.78	193,985	90,469	46.6
1951	623.40	208,579	106,072	50.9
1952	637.13	213,173	106,805	50.1
1953	646.82	216,415	95,922	44.3
1954	677.53	226,690	134,545	59.4
1955	682.52	228,360	128,613	56.3
1956	682.52	228,360	148,171	64.9
1957	702.52	235,051	145,209	61.8

*Calculated on assumed basis of one month's stoppage of machinery operations per year for scheduled maintenance.

Sources:
Total maximum production capacity for copra oil per day, 1921-1957: Appendix 6.1.
Copra oil produced per annum, 1921-1957: Appendix 6.2.

APPENDIX 6.4. MALAYA'S ESTIMATED TOTAL PRODUCTION OF FRESH NUTS AND COPRA FOR EXPORT PURPOSES, AND DOMESTIC COPRA OIL PRODUCTION, TONS PER ANNUM, 1924-1960.

Year	Fresh Nuts, Net Exports		Copra, Net Exports		Copra Oil Production (Tons)	Total Copra Oil Production Equivalent
	Tons	Copra Oil Equivalent*	Tons	Copra Oil Equivalent*		
1924	13,035	3,086	91,734	57,334	8,112	68,532
1925	13,190	3,123	86,421	54,013	10,229	67,365
1926	10,032	2,375	104,394	65,246	12,149	79,770
1927	15,988	3,785	86,504	54,065	14,679	72,529
1928	13,479	3,191	95,628	59,768	15,206	78,165
1929	11,239	2,661	112,429	70,268	13,423	86,352
1930	10,477	2,481	102,014	63,759	14,574	80,814
1931	10,511	2,489	100,568	62,855	15,274	80,618
1932	7,824	1,852	97,277	60,798	18,383	81,033
1933	7,408	1,754	110,298	68,936	29,303	99,993
1934	7,201	1,705	95,599	59,749	42,473	103,927
1935	7,591	1,797	111,752	69,845	59,850	131,492
1936	8,165	1,933	76,680	47,925	71,544	121,402
1937	6,802	1,610	75,592	47,245	61,172	110,027
1938	8,339	1,974	68,754	42,971	75,600	120,545
1939	6,948	1,645	34,420	21,513	94,400	117,558
1940	9,391	2,223	(9,904)	(6,190)	106,840	102,873
1941	12,486	2,956	(32,682)	(20,426)	108,242	90,772
1946	298	70	(34,213)	(21,383)	16,016	(5,297)
1947	4,491	1,063	(45,339)	(28,337)	96,243	68,969
1948	3,206	759	(28,624)	(17,890)	93,085	75,954
1949	1,569	372	(24,424)	(15,265)	90,962	76,069
1950	2,637	624	4,778	2,986	90,469	94,079
1951	2,326	551	(10,878)	(6,799)	106,072	99,824
1952	6,716	1,590	(27,821)	(17,388)	106,805	91,007
1953	6,308	1,494	(9,751)	(6,094)	95,922	91,322
1954	6,745	1,597	(67,472)	(42,170)	134,545	93,972
1955	5,153	1,220	(75,076)	(46,923)	128,613	82,911
1956	2,484	588	(82,549)	(51,593)	148,171	97,166
1957	2,676	634	(71,718)	(44,824)	145,209	101,019
1958	3,739	885	(55,906)	(34,941)	108,778	74,722
1959	6,924	1,639	(27,012)	(16,883)	87,742	72,499
1960	2,615	619	(5,519)	(3,449)	98,152	95,322

*Author's own estimates. See 'Note on currencies, weights, and measures' (page 13) for coconut conversion assumptions.

Sources:
Fresh nuts, net exports, 1924-1960: Department of Statistics, Malaya. *British Malaya: Return of Foreign Imports and Exports*, 1924-1937 (Singapore: Methodist Publishing House); Department of Statistics, Singapore. *Malayan Statistics. External Trade,* 1938-1960 (Singapore: Government Printing Office).
Copra, net exports, 1924-1960: Appendix 3.2.
Copra oil production, 1924-1960: Appendix 6.2.

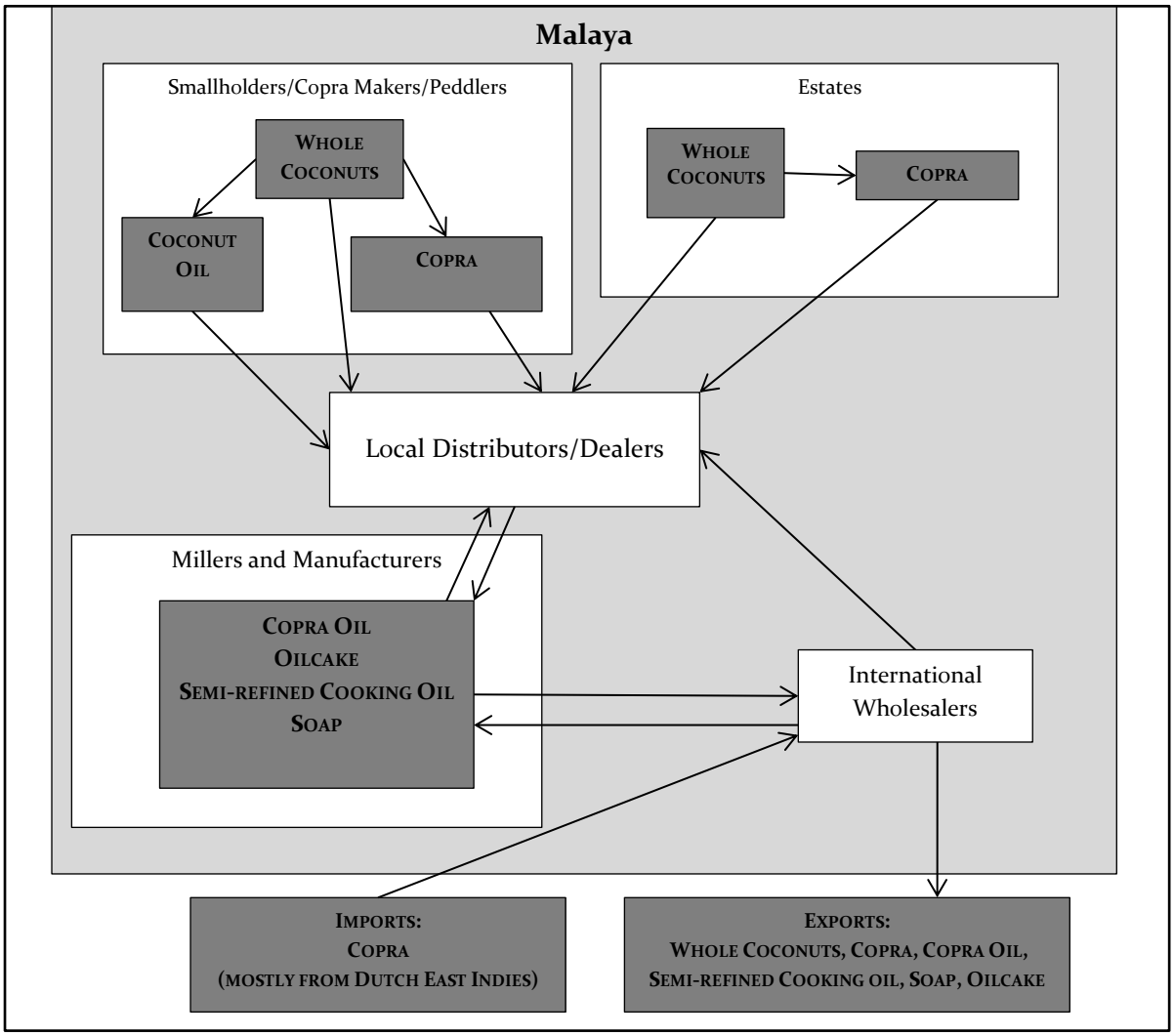
APPENDIX 6.5. KNOWN ESTIMATES OF MALAYA'S TOTAL DOMESTIC CONSUMPTION OF NON-INDUSTRIAL COCONUT PRODUCTS, TONS PER ANNUM EQUIVALENT.

Year	Estimated Population in Malaya	Estimated Per Capita Domestic Consumption of Non-industrial Coconut Products*	Estimated Total Domestic Consumption of Non-industrial Coconut Products, Tons of Copra oil Equivalent (as a percentage of Malaya's total coconut product output, copra oil equivalent)	Estimated Total Production of Fresh Nuts and Copra For Export Purposes, and Domestic Copra Oil Production	Estimated Total Coconut Product Output, Copra Oil Equivalent	Main Source
1930	4,000,000	50 nuts equivalent per person per year	27,350 (25%)	80,814	109,401**	F. C. Cooke. "The World's Coconut Crop." *Malayan Agricultural Journal* 18, no. 7 (1930), 344.
1933	4,000,000	Roughly 95 nuts equivalent per person per year	64,265 (39%)	99,993	164,258	Straits Settlements Vegetable Oils Committee (SSVOC). *Report of a Committee...on the Present Economic Condition of the Coconut and Other Vegetable Oil Producing Industries in Malaya* (Kuala Lumpur: Government Press, 1934), 22, 86.
1940	4,692,700	365 nuts equivalent per person per year	289,673 (74%)	102,873	392,546	LSE: FIRTH 2/7/10, Raymond Firth and A. E. P. Collins, 'Malay Peasant Agriculture', 391-392.
1960	7,022,000	19 nuts equivalent per person per year	23,508 (20%)	95,322	118,830	A. Sedky. *The Situation of Food Production and Consumption in Malaya: A Preliminary Study* (Kuala Lumpur: Ministry of Agriculture and Cooperatives, 1962), 29.

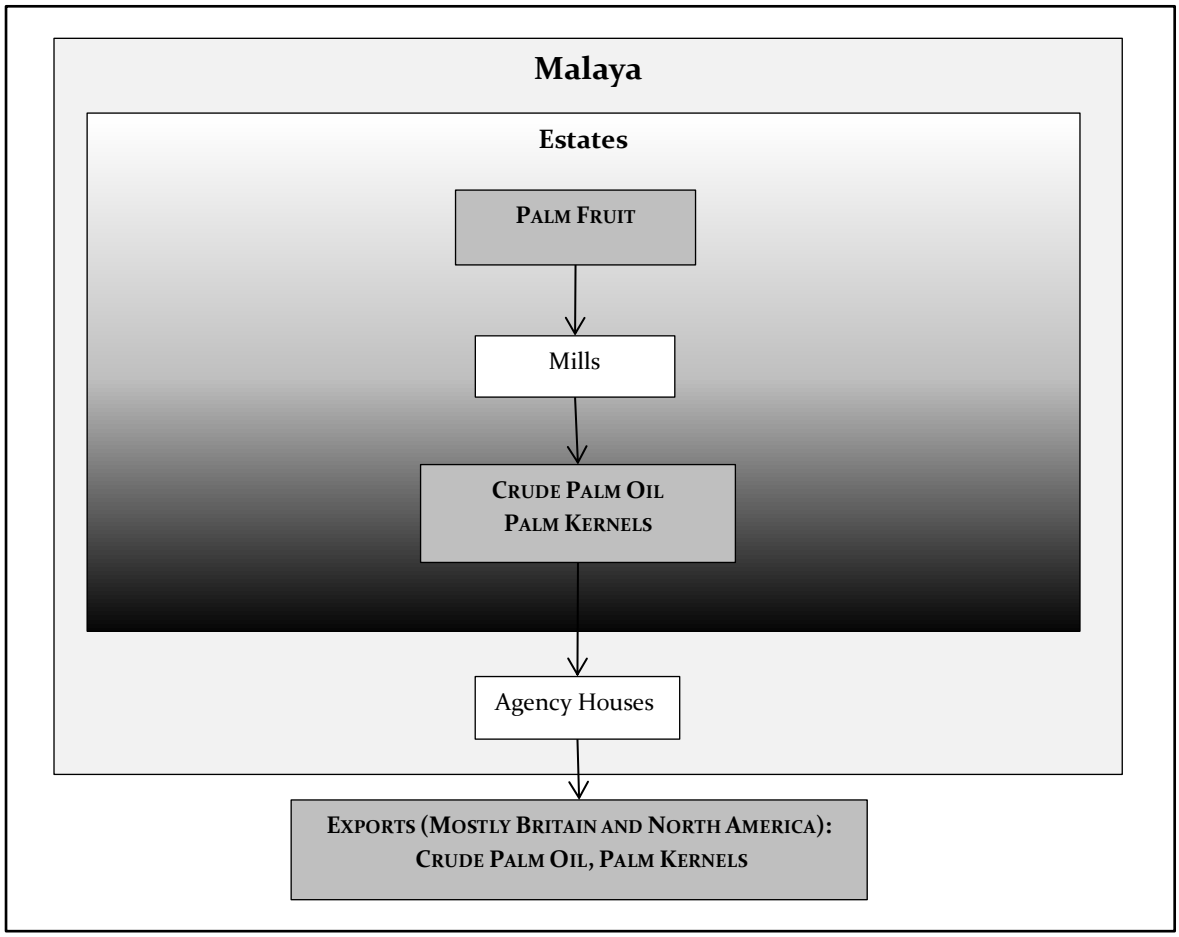
*See Appendix 1 for a list of such village coconut produce, excluding copra.
**Calculations based on Cooke, *Coconut Crop*, p. 344.

Sources:
Population estimate for 1930: Cooke, *Coconut Crop*, 344.
Population estimate for 1933: SSVOC, *Report*, 20.
Population estimate for 1940: Nazrin Shah, "Mid-year population estimates and annual growth rates, Malaya, 1900-1956, Peninsular Malaysia, 1957-2015." Economic History Malaya website (last accessed 1 June 2017, at http://bit.ly/2swj9f2).
Population estimate for 1960: Sedky, *Malaya,* 19.
Estimated total production of fresh nuts and copra for export purposes, and domestic copra oil production for 1933, 1940 and 1960: Appendix 6.4.

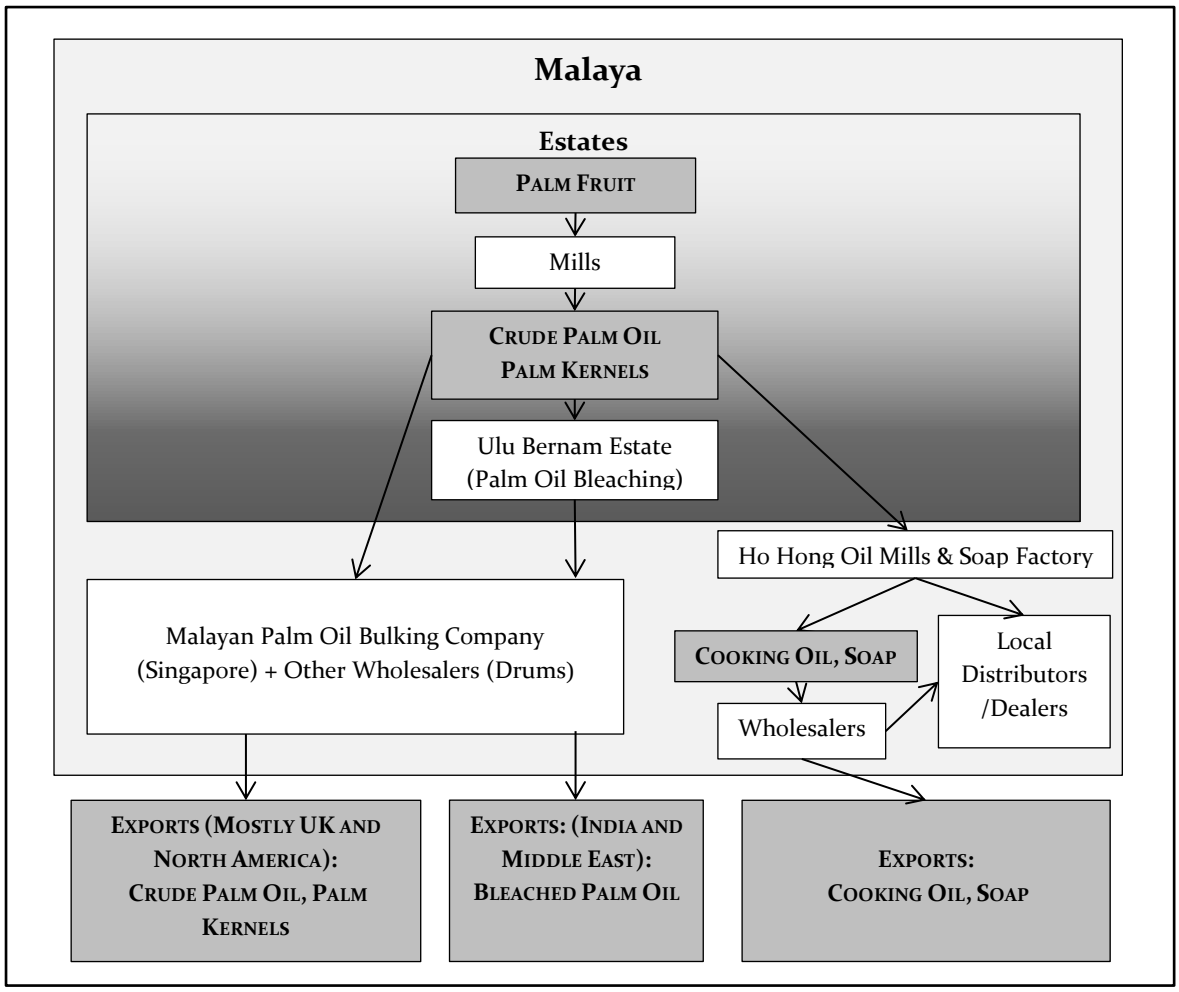
APPENDIX 7.1. FLOWCHART OF ROUTES FOR COCONUT PRODUCE IN MALAYA, CIRCA EARLY 1900S-1950S.



APPENDIX 7.2. FLOWCHART OF ROUTES FOR MALAYAN OIL PALM FRUIT PRODUCE, CIRCA MID-TO-LATE 1920S.



APPENDIX 7.3. FLOWCHART OF ROUTES FOR MALAYAN OIL PALM FRUIT PRODUCE, 1933.



APPENDIX 8.1. HAROLD TEMPANY'S MEMORANDUM REGARDING THE ALIENATION OF SMALL PLOTS OF LAND FOR OIL PALMS (VERSION SENT TO JOHOR AUTHORITIES).

MEMORANDUM

To,

The Principal Agricultural Officer, Johore. 12th September 1929.

In view of the probability of the demands arising for the alienation of small plots of land for cultivation in Oil Palms, the following statement has been prepared concerning policy which it is desirable to adopt in this connection. It is considered that it would be unwise to alienate small areas of land for oil palm cultivation unless the applicant is either prepared to erect a factory for the preparation of the products, or it is possible for the applicant to dispose of his fruit to an adjoining estate on which a factory is already working.

2. Except under such conditions the Department of Agriculture is not in favour of the general alienation of small areas for this form of cultivation, principally because palm oil is not the oil of the country and Malaya is trying to specialise in the production of a high grade oil for export.

3. Further, the employment of hand methods, such as those used for example in the West Coast of Africa, for the preparation of the product would be unremunerative in Malaya since under this mode of extraction the yields of the products are low, more especially that of the oil, which is the most important constituent of the fruit. Also there is the danger that if hand methods of extraction become at all generalised small parcels of low grade oil might find their way on the market. This would have a most detrimental effect on the industry as a whole and might severely prejudice large scale developments.

Sd. H. Tempany

Director of Agriculture, S.S. & F.M.S.

Source: ANM-JB: CLR BP 264/29, Enc. 2.

APPENDIX 8.2. DRAFT AGREEMENT BETWEEN SOCFIN COMPANY LTD. AND SMALLHOLDINGS IN THE VICINITY OF JOHORE LABIS ESTATES, 1931.

AGREEMENT.

(a) An agreement between Socfin Company, Ltd., through Malayan Cultures Company and small holdings in the vicinity of Johore Labis Estates.

(b) Socfin Company, Ltd., agree to give Oilpalm Seeds free, but charge for transport of Seeds from head-quarters to the Estate, to Malay small holders only in the vicinity of Johore Labis Estates.

(c) The Seeds are given on the distinct understanding that they are for the cultivation of Oilpalms on the holder's property.

(d) Any infringement of para 3 re the sale of Oilpalm Seeds to other small holders or outsiders renders this contract liable to cancellation and Socfin Company, Ltd., will refuse to issue further supplies of Oilpalm Seeds.

(e) The Staff of Johore Labis Estates will, as far as time is available, assist small holders and inspect their holdings.

(f) It will be necessary that the minimum of 1,000 acres be planted in the vicinity of the Estates.

(g) Socfin Company, Ltd., through their representatives in Johore, agree [sic] to buy first class fruit from the small holders at the current market rate.

(h) The Company reserve [sic] the right to refuse to buy fruit in an unripe or decomposed state which would affect their percentage of F.F.A. [free fatty acids] in their own oil.

(i) Small Holders must combine to arrange transport for the delivery of the fruit to the Main Factory on the dates specified by the Manager of Johore Labis Estates.

(j) Small Holders must arrange a representative or representatives through whom all correspondence, sales, and payments will be conducted.

(k) It is understood that the minimum quantity of fruit which will be accepted at the Factory is 2,000 lbs.

(l) The Company request that the Assistant Adviser, Batu Pahat, instructs small holders on the urgent necessity for co-operation and organisation.

(m) The decision of the Director, Socfin Company, Ltd. or through his representative in Johore shall be final in all matters.

[Sd. Sydney Rhodes.]

Source: ANM-JB: CLR BP 374/31, Enc. 5.

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BMA/ADM	British Military Administration Administrative
BMA/DEPT	British Military Administration Departmental
BPE	Socio-Economic Research Unit, Prime Minister's Department
C&I/E	Ministry of Commerce and Industry
CO-OP	Department of Co-operative Development
DA	Department of Agriculture
FS	Federal Secretariat
HCO	High Commissioner's Office
KPDANSK	Ministry of Agriculture (and Cooperatives)
KPTS	Rubber Industry (Replanting) Board
MA	Ministry of Agriculture (and Cooperatives)
MALAYAN UNION	Malayan Union
PR	Department of Public Relations
RISDA/CRO	Chief Replanting Officer, Rubber Industry Smallholders Development Authority
RSFM	Department of Statistics, Federation of Malaya
SA	Commodity Development Branch, Department of Agriculture
TREASURY	Treasury, Malayan Union Secretariat

State Records

Selangor

AD.SEL	Agriculture Department, Selangor

SAO.SEL.NO	Selangor Agriculture Office
SEL.C.A	Selangor Civil Affairs
SEL.SEC	Selangor Secretariat
SEL.SEC.G	Selangor Secretariat, General

Perak

SAO.PK	State Agricultural Officer, Perak

Kelantan

KELANTAN	British Adviser's Office, Kelantan

Arkib Negara Malaysia, Johor Baru (ANM-JB)

ADO.KULAI (L)	Sub-District and Land Office, Kulai
AOJC	Agricultural Officer, Johore Central (Pejabat Pertanian Negeri Johor)
CL&M	Commissioner of Lands and Mines, Johore
CLR BP	Collector of Land Revenue, Batu Pahat
GA	General Adviser, Johore
RCJ	Resident Commissioner, Johore
SAOJ	State Agricultural Officer, Johore
SSC	State Secretary, Johore

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