KHAZANAH
RESEARCH
INSTITUTE

19 February 2018

Working Paper 1/18

A Monograph of a Malaysian Cocoa Smallholder:

Working Paper



This paper is the first of a series on agriculture smallholders focusing on some successful Malaysian farmers who have managed to triumph in the face of various challenges.

Khazanah Research Institute

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A Monograph of a Malaysian Cocoa Smallholder: Working Paper

This working paper was prepared by the following researcher(s) from the Khazanah Research Institute: Dr Sarena Che Omar, Yap Gin Bee and Nur Thuraya Sazali.

It was approved by the editorial committee namely, the Managing Director of KRI, Dato' Charon bin Mokhzani; Dr Suraya Ismail, Junaidi Mansor and Allen Ng.

It was authorized for publication by Dato' Charon bin Mokhzani.

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EXECUTIVE SUMMARY

This paper is the first of a series on agriculture smallholders focusing on some successful Malaysian farmers who have managed to triumph in the face of various challenges.

The objective is to gain personal insights into the farmers' success stories in different agriculture sub-sectors and to complement agri-related policy research at Khazanah Research Institute (KRI). It is to ensure that research at KRI is not restricted to the macro-level, but to include ground-level engagements and insights from industry players.

This paper summarises the available literature on factors which have contributed to the growth and decline of Malaysia's cocoa industry as well as some observed challenges. It then looks at the story of Mr Koh Ah Kau who is well-known in Malaysia as a good cocoa smallholder in Raub, Pahang. The interview describes some of his innovative techniques, his views on the cocoa industry and his advice to other cocoa farmers. Following are the key takeaways from Mr Koh Ah Kaw:

- A farmer must know his/her land thoroughly from weather patterns to disease movements and soil characteristics.
- The farming ecosystem is constantly changing; not just changes to the weather, but also changes to the plant varieties used, market conditions, labour quality and diseases. To succeed in the production sector, a farmer must therefore constantly innovate farming practices to keep up with these changes.
- In cocoa farming, the biggest threat to a farmers' profit is still pests and diseases. Price volatility, labour shortage and logistics are secondary.
- Smallholders in Malaysia suffer from low volume and inconsistent quality of cocoa beans. This makes them price takers when selling their produce to grinders who have access to cheap cocoa beans from Indonesia. Achieving the status/target of a premium single-origin, high-quality low-volume cocoa market is possible, but farmers in Raub will need to improve the quality of their beans.

ACKNOWLEDGEMENTS

The authors would like to express their sincerest gratitude to Mr Koh Ah Kau for the visit to his farm in Raub and the subsequent interview. The authors would also like to thank Dr Ng Keng Yap from University Putra Malaysia for introducing the authors to Mr Koh and his assistance in verbal translation during the interview, and Professor Datin Paduka Dr Fatimah Mohamed Arshad for joining the visit, and contributing questions and information. Lastly, the authors would like to thank Junaidi Mansor, Director of Research for overseeing this initiative, and providing his guidance and support.

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1. BACKGROUND

This paper is the first of a series of working papers on agriculture smallholders, focusing on some of the successful Malaysian smallholders who have managed to triumph in spite of facing various challenges.

Why smallholders?

We decided to focus on Malaysian smallholders given their important role in the agriculture sector as farmers of commodity crops, livestock and food crops. In the agro-food sub-sector alone, there were at least 500,000 farmers in 2013[1]. Nevertheless, as detailed in the Malaysia Productivity Blueprint[2], the productivity of farmers in the agro-food sector is plagued by issues such as: a) Insufficient focus on value-adding activities and disconnections along the value chain; b) Multiple small producers with low levels of productivity; c) Issues with quality and standards across the subsector; and d) Low adoption of technology and modern farming practices.

Given the importance of smallholders to the agriculture sector and the Malaysian economy in general, we believe that it is pertinent to address the challenges faced by our smallholders. It is not claimed that the learnings from a select few smallholder stories would be able to generate policy recommendations or address all the issues affecting the country's smallholders. However, it is believed that insights gained from these interviews will be useful to understand first-hand, the farmers' challenges and key success factors.

Objective and Paper Outline

Given the above observations, the main objectives of these smallholder visits are to gain personal insights into the farmers' success stories across the different agriculture sub-sectors and to complement other policy research in agriculture conducted at KRI. This is to have a better view and exposure to both the macro and micro levels of the agriculture sector.

The focus of this first mini paper is Malaysia's cocoa industry for which, Mr Koh Ah Kau was chosen due to his successful and award-winning status as a cocoa smallholder in Raub, Pahang.

The structure of this paper is as follows:

Section 2 – INDUSTRY PERFORMANCE

Reviews cocoa industry performance using available official/government and international data.

Section 3 – CHALLENGES FACING COCOA SMALLHOLDERS

A discussion on challenges faced by cocoa smallholders in Malaysia according to the literature.

Section 4 – SMALLHOLDER: THE STORY OF MR KOH AH KAU

Field trip to a cocoa farm in Tok Machang near Raub, Pahang to meet Mr Koh Ah Kau.

Section 5 – CONCLUDING REMARKS

It is hoped that the lessons from this first smallholder story will be inspiring and insightful to existing cocoa farmers, future agropreneurs as well as the public in general. Future work will unveil more compelling and inspiring smallholder stories in other agricultural sub-sectors.

[1] DOS (n.d.-b)
[2] EPU (2017)

2. INDUSTRY PERFORMANCE

The cocoa industry in Malaysia has had a rather flavourful history over the past several decades. The industry performed spectacularly in the 1980s and early 1990s, only to suffer a reversal of fortune post-1990s, from which the cocoa industry had not recovered until today. As illustrated in Figure 1. the Malaysian cocoa industry's collapse was almost as rapid as its meteoric rise – reflecting a typical "boom and bust" behaviour in which expansion in the growth of an industry is followed by contraction.

This section discusses the Malaysian cocoa industry's evolution over time with a focus on production and trade.

2.1. Cocoa Production: From Boom …

In the 1970s and 1980s, the cocoa industry underwent rapid development, with the area under cultivation expanding significantly from 123,855 hectares in 1980 to a peak of 414,236 hectares in 1989 – a three-fold increase in less than 10 years[3]. This translated into an average annual growth rate of about 15% in cocoa cultivated area.

The rapid expansion in cocoa cultivation was spurred by the surge in international cocoa prices to unprecedented heights in the 1970s, which saw prices increasing almost six-fold from USD675/MT in 1970 to about USD3,800/MT in 1977 (Figure 2). In Malaysia, the export price of dry cocoa beans (FOB) increased from RM3,010/MT in 1975 to RM4,310/MT in 1976 before doubling to RM8,320/MT a year later[4]. Given such strong cocoa prices, coupled with low production costs in Malaysia, the estate[5] sector was soon attracted to invest in cocoa plantations[6].

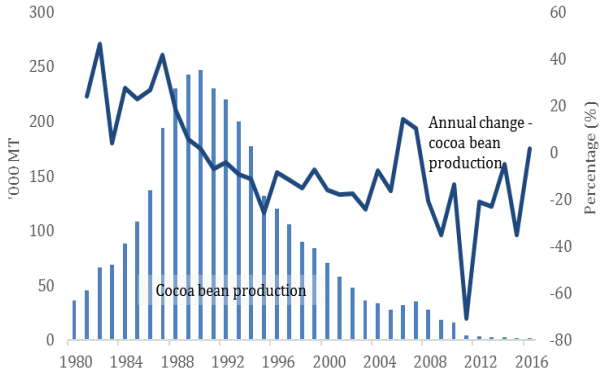
At the height of cocoa cultivation in 1989, the estate sector accounted for almost half, or 48.7% of total cultivated area at 201,615 hectares, while the smallholders constituted the remaining 51.3%, or 212,621 hectares (Figure 3). Sabah's cocoa industry, in particular, was dominated by the estate sector, which accounted for more than 70% of the state's total cultivated area. Conversely, in Sarawak, cocoa farming remained largely the domain of smallholders who accounted for more than 90% of the cultivated area.

During the peak (1980s), Sabah led in terms of cultivated area, accounting for almost half at 205,260 hectares, followed by Peninsular Malaysia, 33.5% (138,773 hectares) and Sarawak, 16.9% (70,12345 hectares) (Figure 4).

In tandem with the rapid expansion of cultivated area, Malaysia's cocoa bean production rose to new heights. Between 1980 and 1990, production expanded at an average rate of about 22% per annum (Figure 4). This was almost four times the country's economic growth during the same period[7]. In 1990, Malaysia produced 247,000 MT of cocoa beans, of which Sabah accounted for almost 60%, or 145,000 MT (Figure 5). The industry's robust production also placed Malaysia as the world's largest exporter of cocoa beans for the year.

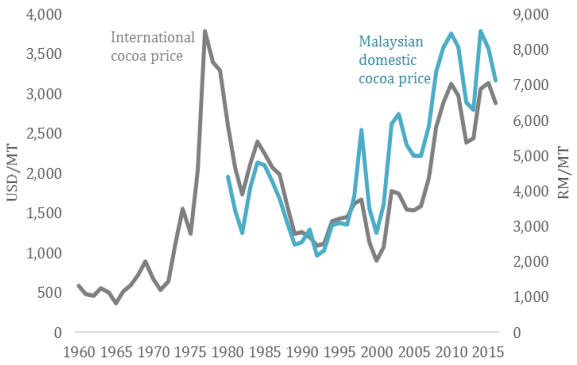
[3] CEIC (n.d.)
[4] FAMA (n.d)
[5] According to the Department of Statistics Malaysia, in 2016, the average size of cocoa estate was estimated at 125.50 hectares; whereas, the average farm size for smallholders was estimated to be 1.21 hectares. Source: DOS (2016)
[6] Arshad, et al. (2015)
[7] During the period of 1980–1990, Malaysia averaged a GDP growth rate of 6.2%. Source: CEIC (n.d.), World Bank (n.d.-b)

Figure 1: Malaysia: Production of cocoa beans (metric tonnes), 1980–2016



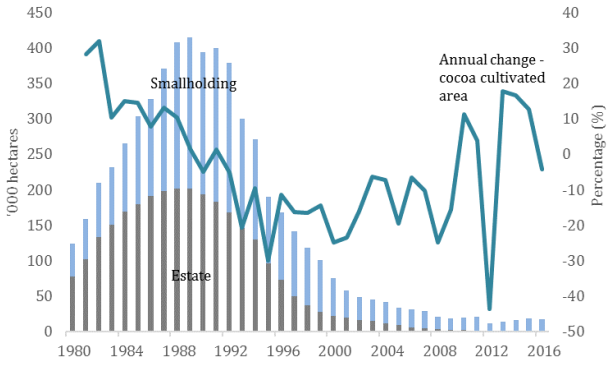
Source: CEIC (n.d.), DOS (n.d.-a), MCB (n.d.-e)

Figure 2: International and Malaysian cocoa prices (USD/metric tonne), 1960–2016



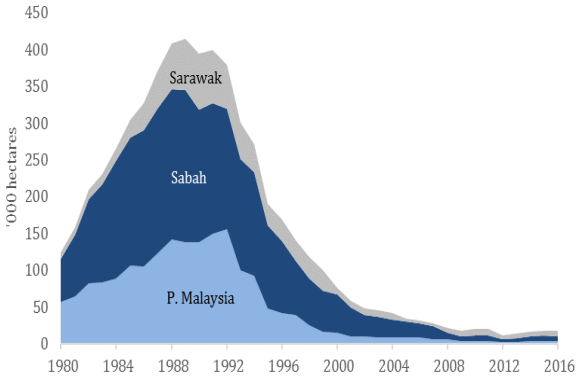
Source: CEIC (n.d.), ICCO (n.d.-a), MCB (n.d.-c), World Bank (n.d.-a)

Figure 3: Malaysia: Cocoa cultivated area (hectares), 1980–2016



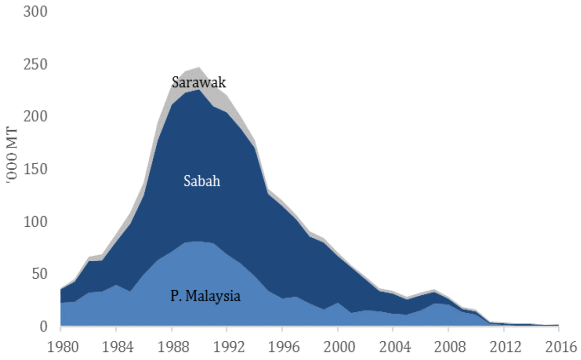
Source: CEIC (n.d.), MCB (n.d.-b)

Figure 4: Malaysia: Cocoa cultivated area by region (hectares), 1980–2016



Source: CEIC (n.d.), MCB (n.d.-b)

Figure 5: Malaysia: Production of cocoa beans by region (metric tonnes), 1980–2016



Source: CEIC (n.d.), DOS (n.d.-a), MCB (n.d.-e)

2.2. … To Bust

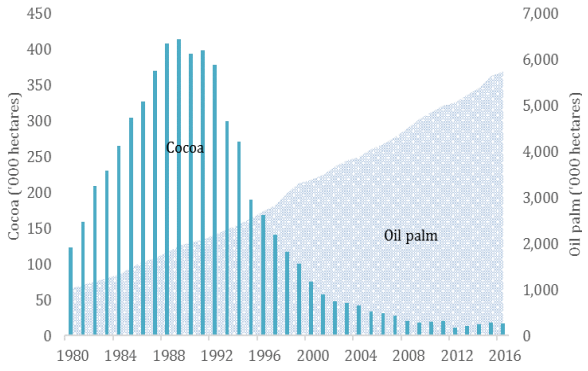
Post-1990s, however, saw fortunes reversed for the local cocoa industry due to a combination of factors.

One of the factors that led to the local cocoa industry's decline was the slump in cocoa prices. Following a strong performance in the 1970s, international cocoa prices began to tumble in the 1980s and fell by more than 50% in five years to USD1,736/MT in 1982 (Figure 2). In Malaysia, cocoa prices began to decline in the mid-1980s, falling by 10.3% Y-o-Y from RM4,750/MT in 2005 to RM4,260/MT 1986. Domestic cocoa prices continued to tumble in the following years before hitting a low of RM2,184/MT in 1992 (Figure 2).

Nevertheless, it was the widespread infestation of the Cocoa Pod Borer Disease (CPB)[8] in the early 1990s that sealed the course of the industry's history[9]. The CPB infestation was first detected in an estate in Tawau, Sabah in 1980[10]. Due to the failure of early detection and poor control of the disease, CPB spread rapidly to Peninsular Malaysia by 1985, and subsequently, throughout Malaysia due to the continued dispersion of planting materials from Sabah to the peninsula until the late 1980s[11].

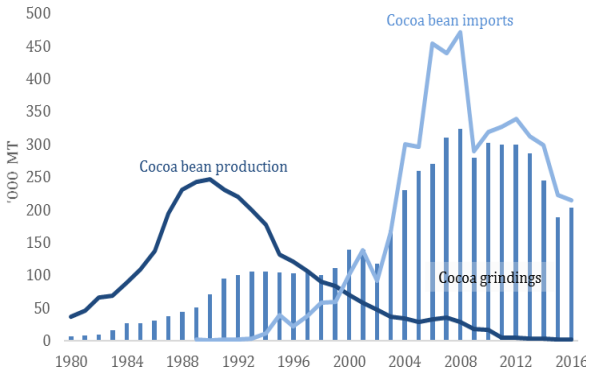
Adding to these "push" factors were other "pull" factors, particularly, the more profitable lure of oil palm and other non-cocoa ventures[12]. Collectively, these factors contributed to the exit of cocoa producers from the industry, especially the estate sector. As Figure 6 illustrates, cocoa cultivated area fell from 378,540 hectares in 1992 to just below 100,000 hectares in eight years. In stark contrast, the oil palm planted area in Malaysia has expanded unabatedly over the past 30 years or so. Although domestic cocoa prices subsequently rebounded to more than RM8,000/MT, this was not enough to revive the local cocoa industry as Malaysia's agricultural focus had predominantly shifted to oil palm.

Figure 6: Malaysia: Cocoa vs. oil palm planted area (hectares), 1980–2016



Source: CEIC (n.d.), DOS (n.d.-a), MCB (n.d.-b)

Figure 7: Malaysia: Cocoa grinding sector supported by bean imports (metric tonnes), 1980–2016



Source: CEIC (n.d.), FAMA (n.d), MCB (n.d.-a), UN Comtrade (n.d.)

[8] Cocoa pod borer (CPB) disease is caused by moth larvae of *Conopomorpha cramerella*. According to ICCO, CPB has been commonly cited as the main cause for the significant yield losses in the global cocoa industry throughout 1980s and 1990s. Source: ICCO (n.d.-b)
[9] Arshad (2015)
[10] Keane, et al. (1992)
[11] Lee (2013)
[12] Arshad (2015)

In 2016, the area under cultivation has dwindled to 17,368 hectares, or about 4% of peak cultivation in 1989 and smallholders now comprise more than 90% of the total planted area[13]. In terms of cocoa bean production, Malaysia produced merely 1,757 MT in 2016; at 1% of 1990's peak production, this is a far cry from the industry's heyday when Malaysia was once a major player in the global cocoa bean market.

In summary, Malaysia's cocoa industry collapsed in the 1990s due to the combination of both economic and environmental factors, namely, the producers' inability to cope with cocoa price shocks, the debilitating effects of the CPB and the lure of more attractive returns from other ventures, particularly, oil palm cultivation.

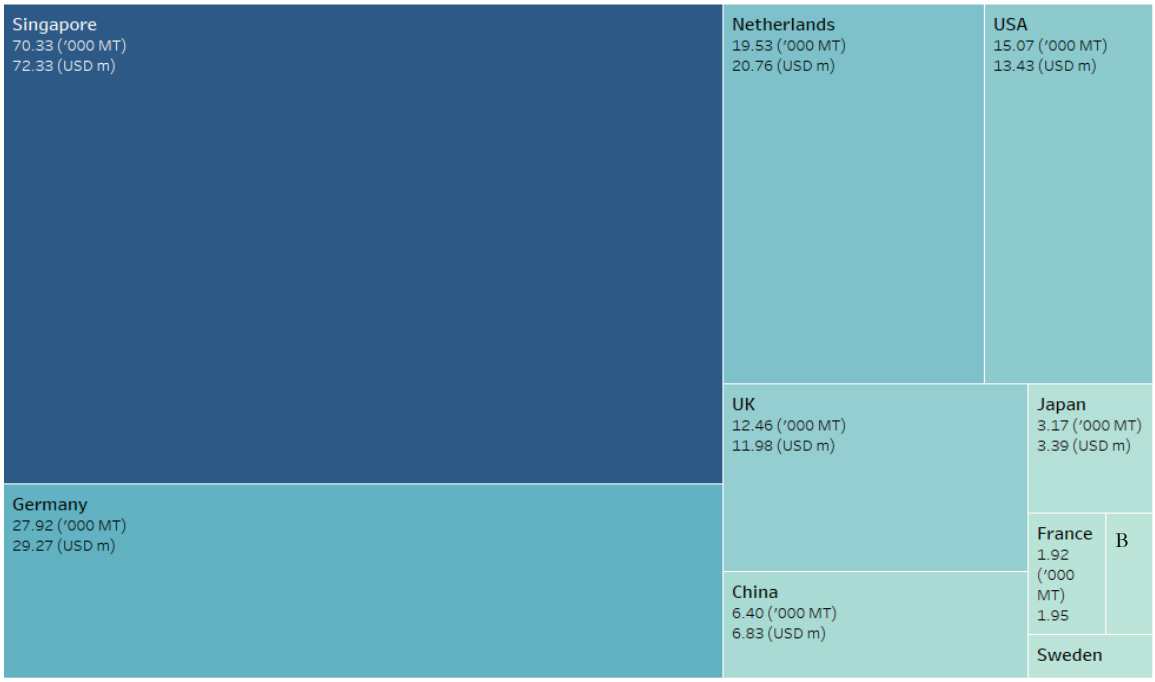
2.3. Grinding Sector Continued to Flourish

While cocoa bean production collapsed in the 1990s, the grinding sector took on a different trajectory. The cocoa grinding sector in Malaysia was established in 1973[14] and expanded significantly in the subsequent years, supported by robust cocoa bean production. From a fledgling annual grinding totalling 6,000 MT in 1980, the grinding sector grew exponentially, averaging an annual growth rate of 18.7% between 1980 and 2000. The sector continued to expand further, peaking at an annual grinding of 323,653 MT in 2008, which placed Malaysia as the fifth largest grinder in the world.

Following the decline in local cocoa bean production, however, the grinding sector had to resort to imported cocoa beans as the local industry was no longer able to meet the grinders' demand. As illustrated in Figure 8, Malaysia imported cocoa beans from various countries in different regions in 2016. These include Ghana and Ivory Coast in Africa, Ecuador in South America, and Papua New Guinea in Oceania. The implication of this is that Malaysia has lost its "single origin cocoa" (SOC) edge – that is, cocoa beans that originate from a single source, which may refer to a single plantation, a small region within a country or a single country[15]. This is a trait that is favoured by artisan or connoisseur chocolate makers due to the uniqueness regarding flavour and character that SOC provides[16]. This could pose as possible marketing or pricing issues for Malaysia's cocoa bean producers, as discussed further in Part 2 of the paper.

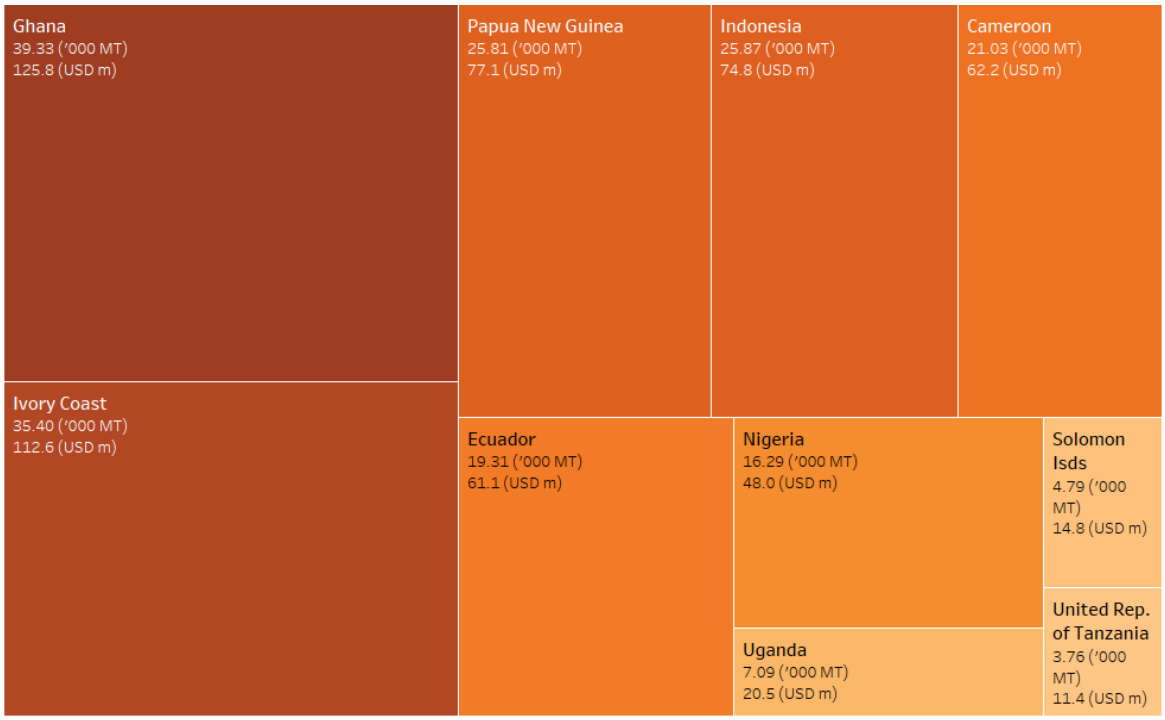
[13] DOS (n.d.-a)
[14] Lee (2013)
[15] Chocolate Trading Company Ltd. (2017)
[16] The beans of cacao plant, like any other plant, adopt the characteristics of the plant's terroir – that is, the natural environment in which the plant is grown, including the soil, topography and climate. The terroir, therefore, adds unique flavours to the finished chocolate product. However, when cocoa beans from different origins are blended, the unique characteristics of the terroir are lost. Source: Gail Ambrosius Chocolatier (2017), Oxford University Press (2017).

Figure 8: Malaysia's top 10 export destinations for cocoa beans, 1990 ('000 MT)



Source: UN Comtrade (n.d.)
9th Ranking: Sweden at 1.28 ('000 MT) and 1.15 (USB m) and 10th Ranking: Belgium (B) at 1.10 ('000 MT) and 1.21 (USD m).

Figure 9: Malaysia's top 10 countries of origin for cocoa imports, 2016



Source: UN Comtrade (n.d.)

Today, five major cocoa grinders are operating in Malaysia, including Barry Callebaut, Guan Chong Cocoa Manufacturer Pte Ltd, and JB Cocoa Pte Ltd, amongst others. In 2016, total grindings in Malaysia stood at 203,093 MT, or 56.4% of the total grinding capacity (360,000 MT)[17]. In other words, there was an excess grinding capacity of about 40%. Currently, Malaysia ranks as the eighth largest cocoa grinder in the world and the largest in Asia and Oceania[18].

[17] Lee (2013)
[18] MPIC (2011)

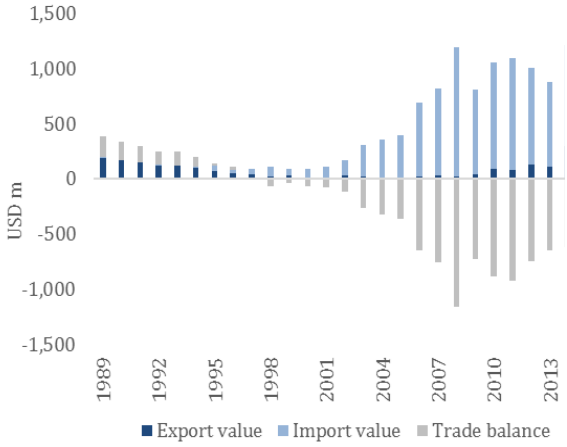
2.4. Trade

In the past, Malaysia played a significant role in the global cocoa trade. Export of cocoa beans from Malaysia increased from 30,640 MT in 1980[19] to a peak of 162,617 MT valued at USD165.8m in 1990. Consequently, Malaysia was ranked as the world's largest cocoa bean exporter ahead of Brazil and Indonesia. However, Malaysia's cocoa bean exports started to progressively decrease in the 1990s, reflecting the decline in cocoa cultivation and production.

Concurrently, Malaysia's imports of cocoa beans rose exponentially from about 2,000 MT in the early 1990s to 100,707 MT in 2000, before peaking at 470,885 MT in 2008[20]. In 2016, Malaysia imported a total of 213,841 MT of cocoa beans valued at USD653.9m, ranking it as the world's fourth-largest importer of cocoa beans[21].

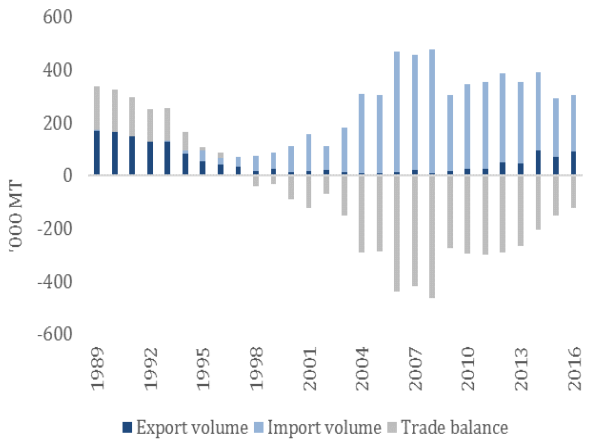
Figures 8 and 9 illustrate the contrasting positions of Malaysia's trade in cocoa beans in 1990 and 2016 respectively. While the country's cocoa beans were once destined for export markets such as Singapore, the United States and Germany when Malaysia was the world's leading cocoa bean exporter (Figure 8), the country now depends heavily on cocoa bean imports (Figure 9). Although Malaysia still exports cocoa beans to Singapore and the US, its trade balance has transposed from surplus to deficit, both in terms of value and volume as shown in Figures 10 and 11 respectively.

Figure 10: Malaysia: Trade balance in cocoa beans, USD millions (1989–2016)



Source: UN Comtrade (n.d.)

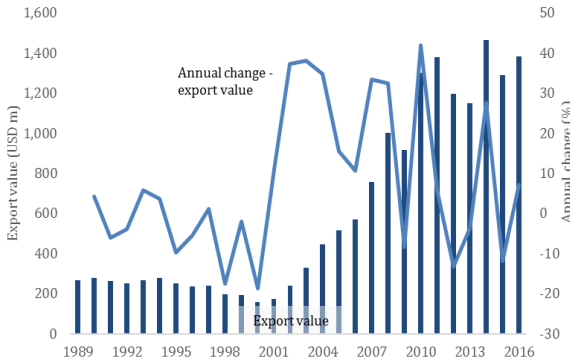
Figure 11: Malaysia: Trade balance in cocoa beans, metric tonnes (1989–2016)



Source: MCB (n.d.-a), UN Comtrade (n.d.)

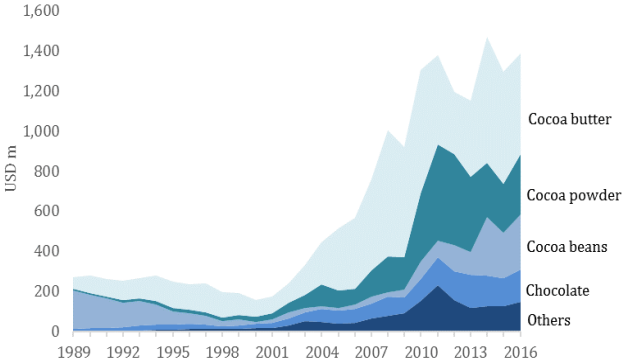
[19] Lee (2013)
[20] UN Comtrade (n.d.)
[21] Ibid.

Figure 12: Malaysia: Export value of cocoa and cocoa products, USD million (1989–2016)



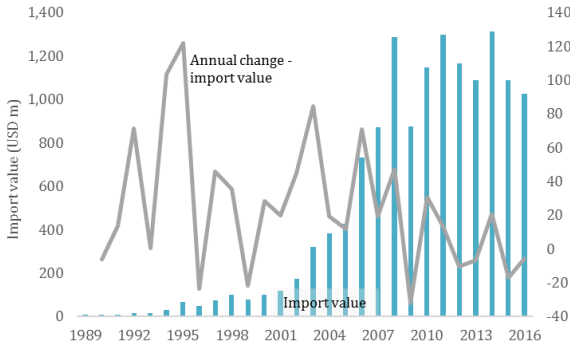
Source: UN Comtrade (n.d.)

Figure 13: Malaysia: Export value of cocoa and cocoa products by type, USD million (1989–2016)



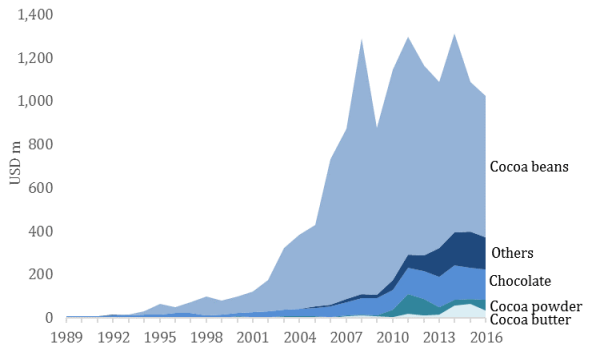
Source: UN Comtrade (n.d.)

Figure 14: Malaysia: Import value of cocoa and cocoa products, metric tonnes (1989–2016)



Source: CEIC (n.d.), DOS (n.d.-a), MCB (n.d.-d)

Figure 15: Malaysia: Import value of cocoa and cocoa products by type, USD million (1989–2016)



Source: MCB (n.d.-d), UN Comtrade (n.d.)

As for, cocoa products, both export and import values have grown steadily over the past few decades. In 2016, the total export value of cocoa and cocoa products stood at USD1.4b (Figure 12), while the total import value amounted to USD1.0b (Figure 14), translating into a trade surplus of about USD400m. Cocoa butter accounted for the largest proportion of export value at USD500.4m or 36.2% (Figure 13), while cocoa beans constituted the highest proportion of import value at USD653.9m or 63.8% (Figure 15).

2.5. Conclusion

In this section, the Malaysian cocoa industry's performance was discussed, in particular, the degeneration of the upstream segment, from one that was once robust enough to position Malaysia as a key global market player to one that is almost extinct now. Nevertheless, Malaysia's cocoa grinding sector has continued to perform well, placing the country as the world's eighth largest cocoa grinder[22].

In the next section, the paper explores the challenges faced by cocoa smallholders who are now the mainstay of the Malaysian cocoa industry, with the exit of the estate sector following the industry's collapse in the 1990s.

[22] ICCO (2016)

3. CHALLENGES FACING COCOA SMALLHOLDERS IN MALAYSIA

Following the 'bust' of cocoa production in the late 1990s, smallholders have been gaining prominence as the main mode of cocoa production in Malaysia. Considering that the future of Malaysian cocoa production might hinge on the smallholders, this section seeks to explore some of the major challenges facing the local growers. Note, however, that given the scant literature available on this subject, this section aims to be introductory and is, therefore, non-exhaustive.

The discussion on challenges faced by cocoa smallholders starts with challenges faced by cocoa smallholders globally, before focussing on the challenges within the local context. According to the World Cocoa Foundation (WCF)[23], small cocoa-growing communities across the globe share the following key challenges:

- Pest and disease management

  The threats from pests and diseases loom large in the minds of smallholders as they are often not financially fit to recuperate from a sharp decrease in output. WCP estimates that 30% to 40% of cocoa production losses in major cocoa growing countries is caused by pest and disease infestation[24].

- Marketing challenges

  While the factors vary from place to place, cash-strapped smallholders are usually price takers due to the lack of market information, poor knowledge in cocoa quality and low volume production.

- Productivity improvement

  Without expansive knowledge on effective agricultural practices, many smallholders struggle to meet expected yield and cover production costs. Most small farmers also lack the financial resources to purchase superior planting materials and efficient machinery that could boost crop productivity and reduce reliance on labour-intensive practices.

Having looked at the general challenges, the following paragraphs elaborate on the above-mentioned points in the Malaysian context.

[23] Founded in 2000, WCF has partnered with various public and private entities, including major cocoa producing countries, global cocoa manufactures and international organizations like the World Bank. The organization aims to provide a network platform for multiple actors in efforts to achieve a more inclusive and sustainable cocoa sector.
[24] WCF (2017)

3.1. Pest and Disease Management: Limited Agricultural Extension Support

While the drop in large-scale cocoa plantations has provided an avenue to explore the many advantages of growing cocoa trees in a small-scale and eco-friendly setting[25], a lack of hands-on and technical knowledge, as well as resources, continue to cripple farmers' confidence in preventing and controlling pests and diseases[26].

Threats from pests and diseases are a matter of great concern for Malaysian small growers. Admittedly, the drastic decline of cocoa cultivation area from 393, 465 hectares in 1990 to 190, 127 hectares in 1995 has been attributed to intermingled factors like the drop in global cocoa prices and the growth of the Malaysian oil palm sector[27]. Nevertheless, the CPB infestation has been singled out as the main factor driving the reduction in cultivated area, showing the severity of pest and disease-related damage[28]. In fact, the aftermath of the CPB infestation was so drastic that even the eventual increase in cocoa bean prices could not entice cocoa farmers and large estate owners to revive the cocoa industry to its former heydays[29].

Acknowledging the importance of pest and disease management in sustaining cocoa production and as part of the agricultural extension support, the Malaysian Cocoa Board (MCB) has taken the initiative to set up an online 'info-structure' that outlines preventive and curative measures for key cocoa diseases and insect pests. However, less tech-savvy growers with low socioeconomic status living in inland areas may not be able to take full advantage of such a platform.

Studies have shown that face-to-face interactions could be the most effective medium for knowledge transfer. According to Hislop (2005)[30], face-to-face communication is a superior communication medium especially when there is a need to transmit tacit knowledge that cannot be effectively expressed in writing. This might be especially true for cocoa farming in Malaysia given that its curative and preventive strategies are highly contextual, depending on the farm's environmental conditions, the types of cocoa trees planted, and the infected diseases[31]. While there might be other cost-effective ways to address these local factors, the physical presence of the relevant officers could provide the much-needed assurance of continuous government support and viability of cocoa production[32]. Such physical engagements could also allow for two-way communication to take place, where the farmers can directly air their concerns and grievances as well as share their best practices. Notwithstanding the expected benefits, anecdotal evidence gathered from the trip to Mr Koh Ah Kau's cocoa farm revealed that improvements in the frequency of such extension activities could prove invaluable for the industry.

[25] Arshad, et al. (2015), Fule (2014)
[26] Fadzim, et al. (2016)
[27] Lee (2013)
[28] Ibid.
[29] Ibid.
[30] Hislop (2013)
[31] Lamin, et al. (2011)
[32] Arshad, et al. (2015)

3.2. Marketing: Inconsistent Quantity and Quality

Due to the small size of production, smallholders' yields are often inconsistent in both quality and quantity. To some extent, this lack of consistency makes it difficult for small growers to market their crop to large processors[33].

In terms of volume, most Malaysian small cocoa producers struggle to meet the demand of high-volume grinders and processors. As illustrated in Figure 7 and 10, the inability of local cocoa producers to satiate the demands of larger grinders, along with the easy access to imported beans, has transposed Malaysia from a net cocoa bean exporter to a net cocoa bean importer[34]. The decreasing reliance on local cocoa production implies that smallholders are more likely to be price takers, further exacerbating their income insecurities and vulnerabilities to the fluctuating commodity prices.

Another factor that impedes the profitability of small growers is the inconsistency in the quality of cocoa beans. As the farm-gate price is driven mainly by volume and not governed by robust quality control, small farmers are incentivised to neglect the quality of their beans. Accordingly, many farmers choose to skip time-consuming fermentation and drying techniques[35] that can enrich the quality of their beans. While this may make economic sense, it limits the opportunities for small farmers to sell their beans at a premium price. As such, these external structural factors continue to weigh on the smallholders' profitability and income security.

3.3 Productivity: Competition for Labour and Lack of Credit Facilities

Production Cost: Competition for Labour

The profit of small-scale production can be maximised through increasing productivity and/or improving the quality of the beans. Apart from good farm management and conducive agro-climatic conditions, labour is another key factor influencing farm productivity and product quality. Many of the recommended good agricultural techniques such as pruning, tree spacing, shade system or grafting are technical and laborious[36]. Unfortunately, most hired-labourers are short-term migrants, thereby discouraging monetary investments in their training. At the same time, cocoa farmers, especially those who rely on hired workers, are finding it increasingly difficult to hire workers due to competition from alternative estates that require low-maintenance and low-skills such as oil palm[37]. This is not surprising considering that in 2012 at RM 4,794/ha, the total estimated earnings for oil palm doubled the expected earnings from planting cocoa[38].

[33] IFC (2013)
[34] Arshad (2015)
[35] WCF (2017)
[36] Fadzim, et al. (2016)
[37] Lee (2013)
[38] MPOB (2014)

In summary, the attractiveness of oil palm planting and other non-cocoa ventures continue to exert a downward pressure on the supply of labour, thus raising production costs and making it increasingly difficult for owners to manage and improve the productivity level of their farms as well as to stay profitable.

Credit Facilities

Other than the labour-intensive practices employed by small farmers, a lack of access to credit facilities might also hinder small farmers from investing in automating their cocoa production activities. While monetary incentive packages are provided by MCB, most of them exclude the adoption of machinery[39]. Financing programmes offered by Agrobank Malaysia[40] come with specific eligibility criteria and are only open to certain agricultural products, making it hard for cocoa smallholders to qualify. This paper will not delve deeper into the issue of credit facilities but acknowledges its importance.

3.4. National Commodities Policy: Challenges in Meeting the Targets for the Cocoa Industry

The government is cognisant of the challenges facing the cocoa industry, particularly regarding improving productivity and increasing cocoa cultivation area in the upstream segment. Under the National Commodities Policy (NCP) 2011–2020, the government outlined several strategies to develop the cocoa industry that will focus on expanding new areas and conserving existing cocoa cultivated area. Some of the broad strategies include:

- Improving productivity in cocoa bean and cocoa-based products.
- Increasing research and development (R&D) activities.
- Involving more Small and Medium Enterprises (SMEs) in the downstream segment.
- Enhancing institutional support through stronger cooperation among the implementing agencies.

The NCP 2011–2020 targets cocoa cultivated area to increase to 40,000 hectares by 2020 through existing and new planting area. Additionally, cocoa production is expected to rise to 60,000 MT by 2020 through improving extension services in new planting areas as well as rehabilitating unproductive cocoa areas (Table 1).

However, these targets are unlikely to be achieved as cocoa cultivated area fell from about 20,000 hectares in 2010 to 13,826 hectares in 2013 after the policy was formulated, before increasing to 17,368 hectares in 2016. As for cocoa beans, production stood at 1,757 MT in 2016, significantly below the targeted 60,000 MT by 2020. On a positive note, with regards to the export revenue of cocoa-based products, the 2020 target of RM6b is likely to be exceeded as exports in 2016 had already reached RM5.7b. Nevertheless, given the smallholders' limited involvement in secondary production and the processors' heavy reliance on imported beans, it is difficult to see how the latter trend could be of benefit to the small producers.

[39] MCB (2015)

[40] A continuation of Bank Pertanian Malaysia, Agrobank is a Government-owned bank under the Ministry of Finance Incorporated (MFI) that offers financial services and facilities to agricultural communities in Malaysia.

Table 1: Cocoa industry prospects, 2011–2020

	Year			Annual Growth (%)		
	2010	**2015**	**2020**	**2011-2015**	**2016-2020**	**2011-2020**
Area (ha)	20,070	30,000	40,000	8.4	5.9	7.1
Smallholders	18,770	27,500	37,500	7.9	6.4	7.2
Estates	1,300	2,500	2,500	14.0	0.0	6.8
Production ('000 MT)	16	33	60	15.6	12.7	14.1
Productivity (MT/ha)	1.2	1.2	1.5	0.0	4.6	2.3
Export revenue (RM b)	4.2	4.9	6	3.1	4.1	3.6

Source: MPIC (2011)

3.5. Conclusion

In this segment, we have outlined major challenges faced by cocoa smallholders in Malaysia. Some of these challenges involve productivity, pests and diseases and marketing challenges.

The following section illustrates two things: firstly, how the challenges as described in the literature manifest themselves, and secondly but perhaps more importantly, how Mr Koh Ah Kau has addressed these challenges. The practical insights gained from this case study show that there is hope for small cocoa farmers in Malaysia and existing stumbling blocks can, in fact, be turned into stepping stones.

4. SMALLHOLDER: THE STORY OF MR KOH AH KAU



Figure 16. Mr Koh holding two different cocoa varieties. PBC 139 on the left side of the picture and KKM 22 on the right.

4.1 Background

Born in 1949, Mr Koh Ah Kau is a cocoa farmer and owner of Koh Cocoa Enterprise Pte Ltd (Figure 17) located at Taman Bunga Matahari, Sungai Ruan, Pahang. He is both a cocoa farmer and a cocoa bean collector for downstream distribution. He is currently cultivating cocoa trees on 10 acres of land managed by two workers living on-site. It is located about six km off the main road of Jalan Sungai Klau in Pahang, flanked by previously existing cocoa farms, but now converted into oil palm estates. His cocoa farm is located towards the foothills with access to fresh river water.



Figure 17. Koh Cocoa Enterprise Pte. Ltd. at Sungai Ruan, Pahang

In addition to producing cocoa, Mr Koh also collects cocoa beans from other farmers to be sent in bulk (10 tonnes per delivery) to one of Malaysia's largest grinder, Guan Chong Pt. Ltd. in Johor. This not only reduces the cost of transportation, but Mr Koh has a good reputation among the grinders in producing and delivering top quality beans. He achieves this by helping other producers in Pahang to cultivate and produce beans at an acceptably consistent quality.



Figure 18. Cocoa beans from other farmers collected at Koh Cocoa Enterprise Pte. Ltd.

Mr Koh grew up in Port Dickson with a father who worked in the rubber industry. He was first introduced to cocoa farming by the Ministry of Agriculture Malaysia in 1983 when he was in his 30s. A year later, Mr Koh planted his first nine acres of cocoa farm. From the initial size of nine acres, his cocoa farm gradually grew to 36 acres at the height of Malaysia's boom in the cocoa industry (1990–2004). When the cocoa industry went bust in the 2000s, Mr Koh's cocoa farm shrank to about 10 acres today.



Figure 19. A ripe cocoa pod at *Kebun Koko Koh Ah Kau*

Mr Koh is well known within the cocoa production industry. He is the founder and advisor to Raub Regional Crop Producers' Cocoa Farmers' Association (*Persatuan Pengusaha Tanaman Industri Daerah Raub*), formerly known as Raub Cocoa Farmers' Association (*Persatuan Penanam Koko Daerah Raub*). Members of this association would meet three to four times a year to discuss matters related to the industry as well as farming challenges. Back in the 1990s when the cocoa industry was at its peak, there were about 500 members, but today the association is left with only 50 members. Additionally, in 2004 and 2006 (Figure 20), he received the Cocoa Industry Award by the Malaysian Cocoa Board and in 2011, received certification by the Cocoa of Excellence Programme.



Figure 20. *Kebun Contoh Koko Koh Ah Kau* (Koh Ah Kau model cocoa farm)

Recognising Mr Koh's vast knowledge, experience and impressive track-record in the cocoa industry, KRI decided to visit his farm and interview Mr Koh (Figure 21). The objectives are to understand the challenges in being a cocoa smallholder and what other smallholders can do to be a successful farmer.



Figure 21. An interview with Mr Koh. Counter-clockwise: Datin Paduka Prof. Fatimah Arshad, Mr Koh Ah Kau, Dr Ng Keng Yap and Dr Sarena Che Omar (KRI).

4.2. Farm Strategies



Figure 22. Mr Koh irrigating his farm with river water. According to Mr Koh, river water is rich in nutrients accumulated as it passes through natural forests from the nearby hills. The tree on his right is a cocoa tree, while the large trunk on his left is a durian tree and in the background of the image are banana plants. Mr Koh believes that cocoa trees benefit from a diversified farm as its natural environment are tropical forest floors.

Mr Koh believes that the most important recipe for success in cocoa farming are:

- Small-scale, skilfully-managed farms.
- Perseverance, discipline and constant innovation.

Small-scale, skilfully-managed farms

Cocoa trees (*Theobroma cacao*) are delicate crops. This is so compared to other commodity crops such as oil palm (*Elaeis guineensis*) and rubber trees (*Hevea brasiliensis*). This means that while following a standard operating procedure (SOP) or a one-size-fits-all modus operandi may prove effective for oil palm and rubber cultivation, the same will not work for cocoa farming. As such, a large-scale estate approach or a small cocoa farm cultivated nonchalantly will not bode well for cocoa trees. Instead, each tree requires individual care and constant monitoring especially since each farm has its unique soil composition, local weather, flora and fauna. Due to this, cocoa farm cultivation can be optimally achieved between five and ten hectares managed by a skilled and experienced farmer with the help of at least two hired labourers.

As an example, Mr Koh noted that it is important to trim cocoa trees properly and to achieve this requires experience and expertise. Trimming cocoa trees to keep it short helps to channel the nutrients and energy of the tree into producing more and higher quality cocoa pods as opposed to using the same resources to grow taller. To best attain this, there are specific flower buds and leaf shoots that should be snipped, branches that needed to be sawed off, and those that should be allowed to grow. It is difficult to teach short-term labour workers to do this correctly. Even after many years of training, the trimming of cocoa trees by hired workers still requires Mr Koh's close supervision. As a reflection on the importance of close monitoring and responsive cultivation, on average, Mr Koh spends 20 to 25 days per month on the farm, and his day often starts as early as 6:00 am.

In another example, Mr Koh believes that the best mode of pesticide application is a combination of scheduled spraying with adjustments according to the weather (Figure 23). For example, although the cocoa trees have just been sprayed as per schedule, an unexpected rain occurring continuously for several hours meant that an immediate re-application is necessary. On the contrary, during dry spells and upon disease absence, he will avoid spraying his cocoa trees to prevent chemical burns on the leaves and to minimise the unnecessary use of chemicals.

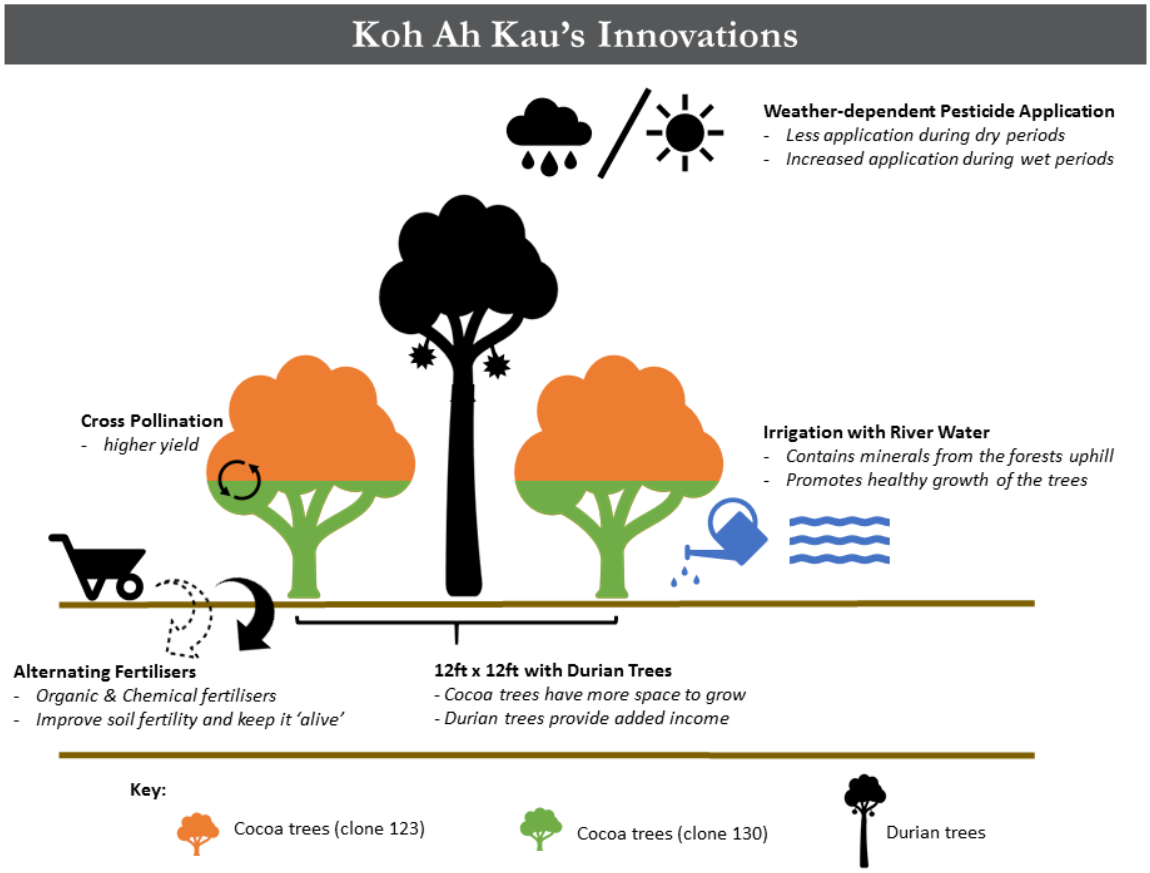


Figure 23. Various Innovations Practiced by Mr Koh

Discipline, Innovation and Perseverance

In any farming system, it is important for farmers to understand the reason for certain practices and to follow a set of SOPs and pre-determined schedules. In this case, the authorities and research institutions have provided a general SOP in cocoa farming that farmers can adhere to as a start. However, to be able to attain better yield and quality beans, on the back of disciplined work habits, smallholders must fully understand the unique characteristics of his farmland and adapt appropriately. A farmer should constantly experiment with his techniques, seek improvements and persevere.

Mr Koh noted that over the years, the use of chemical fertilisers reduced the fertility of his farm soil. In response, he is now alternating organic and chemical fertilisers to help improve the biological diversity of the soil and thus, the soil health (Figure 23). He also noted that after experimenting with a new foliar application, his trees are more resistant to drought during dry spells. Following the use of this foliar spray in 2016 during a particularly dry period, his yield improved from 2.5 MT/hectare to 4 MT/hectare. He believes the mixture, when sprayed, helps to create a protective layer over the leaves, thereby reducing the loss of water via evapotranspiration[41].

In another example, currently, the Malaysian Cocoa Board recommends the planting of cocoa trees at a density of 10ft by 10ft interspersed with Gliricidia trees (*Gliricidia* sp.) to help provide

[41] Evapotranspiration – the loss of water from inside a plant to the outside air, via the breathing pores of a leaf (stomata). It is similar to the loss of bodily moisture through a human's mouth when breathing.

30% to 40% shade (Figure 24). Instead, Mr Koh is currently proposing planting cocoa trees 12ft by 12ft apart. He believes that 12ft by 12ft will be able to provide optimal space for healthy cocoa growth which will lead to higher yield, while the durian trees provide additional income. For 10 acres of land, he recommends planting 400 durian trees and between 800 to 1,000 cocoa trees. Nevertheless, even with 33 years of experience in cocoa farming, Mr Koh is still experimenting and improving his techniques.

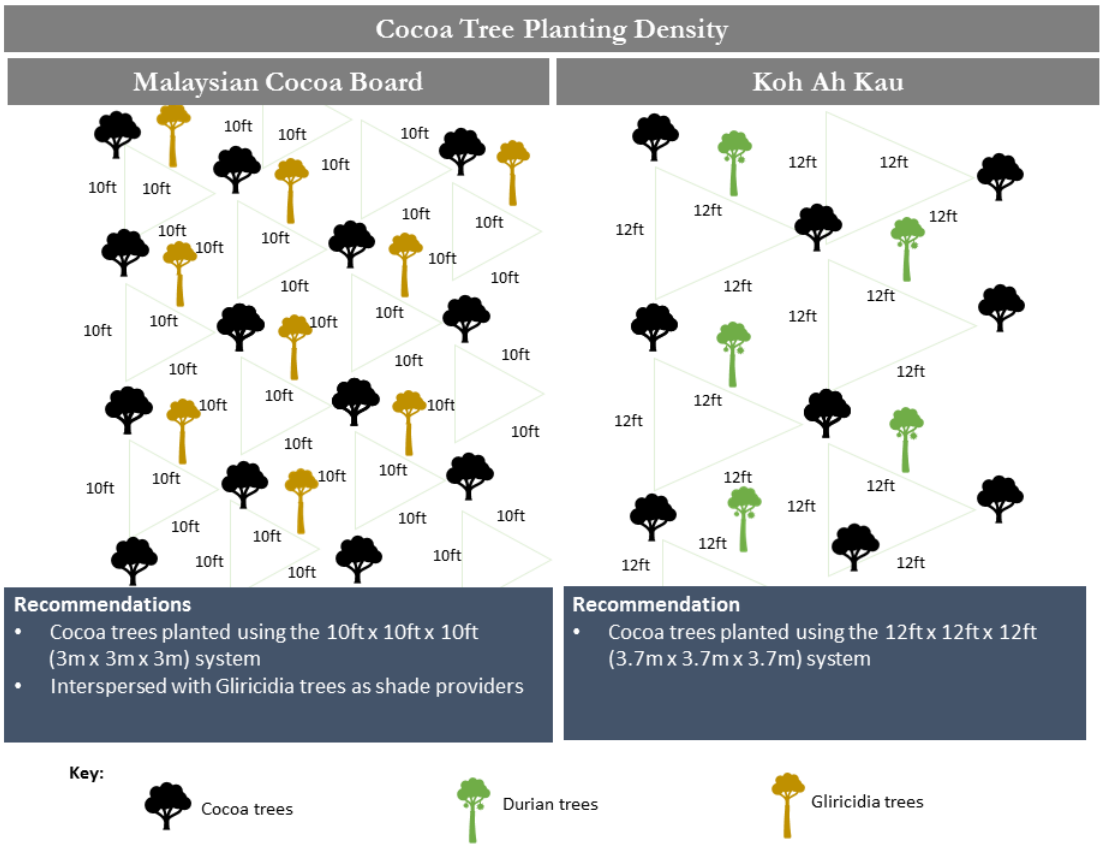


Figure 24. Cocoa Tree Planting Density

Probably his most important innovation and contribution to the Malaysian cocoa production sector which warrants a special mention is the introduction of the 'umbrella' technique first conducted in 1998. During that year, the most commonly used cocoa variety was Clone PBC 130. Unfortunately, there was a cocoa disease outbreak (Vascular Streak Dieback[42]) which led to a significant reduction in cocoa yield. Mr Koh had the following dilemma: to keep the matured trees at the expense of yield or to replant new trees and wait for several years before it bears fruit. Instead of opting for either, he did both. Mr Koh acquired the living shoots of PBC 123, a disease resistant variety. Through grafting[43], he replaced the top side of the matured PBC 130 trees with PBC 123 shoots (Figure 23). This resulted in trees that could yield disease resistant pods in a short period. As an added advantage, both clones could cross-pollinate, which led to higher yield as a result of hybrid vigour.

[42] Vascular streak dieback (VSD) is a disease caused by fungus called *Oncobasidium Theobroma*. According to ICCO, VSD was the cause of major losses of trees in large cocoa plantations in Malaysia. Source: ICCO (n.d.-b)
[43] Grafting – the insertion of a living shoot from a different tree (often young), onto a well-established tree of another compatible tree, usually of the same species. This technique enables a new variety of plant to quickly grow by leveraging on the established roots of an older tree.

4.3. Other Challenges

Interestingly, according to Mr Koh, the biggest threat to his farm, and subsequently his income, is not price volatility, weather or theft. It is diseases and in particular, fungal diseases. Given the delicate nature of cocoa trees and its susceptibility to getting infected, Mr Koh reiterated the importance of close monitoring and farm-specific cultivation practices. Small-scale farming is the ideal farming model to achieve this.

Unfortunately, small-scale farming tends to produce inconsistency in quality, and this problem is exacerbated in cocoa farming. Mr Koh opined that a slight difference in the process of preparing cocoa beans before it is sent to the grinders could lead to a significant change in the quality and taste of the cocoa. The maturity state of the pod upon harvesting, the number of days the seeds are left to ferment, and the drying time for the seeds, would introduce variations to the quality of the delivered product. Large-scale grinders will only buy bulk with a set of standards to meet. Many smallholders cannot meet the bulk demand of grinders and therefore sell their products to collectors such as Mr Koh who will also try to control the quality of the seeds collected. Mr Koh noted the difficulty in ensuring that the various farmers meet these requirements. Furthermore, Mr Koh stated that the presence of very few but large-scale grinders made it almost impossible to create a single-origin premium cocoa brand. Instead, Mr Koh suggests that the government encourage the establishment of smaller grinders so that they can focus on processing the smaller scale single-origin products such as premium Raub cocoa beans.

5. CONCLUDING REMARKS

Thus far, the paper has discussed the cocoa industry's performance as well as the challenges faced by cocoa smallholders in Malaysia. Nevertheless, despite the drastic shrinkage in cocoa cultivation and bean production, there remain cases of successful and profitable cocoa farms in Malaysia, as we have seen in the case of Mr. Koh Ah Kau.

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