



Asian Cassava Market Update

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Australian Government
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RESEARCH
PROGRAM ON
Roots, Tubers
and Bananas

Summary

Given the wide variety of applications of cassava-based products (starch and chips) and the range in export destinations, the market outlook for cassava produced by smallholder farmers in Southeast Asia needs to be considered in the context of market and policy development in a range of commodities that can be substituted in different applications in which cassava is used; and geographies that both produce and consume these products.

On the demand side, the market outlook for cassava in Asia always needs to be considered in the context of substitutes in different applications. There are markets where:

- (1) cassava chips compete with other sources of carbohydrate for processing into animal feed or ethanol (e.g., maize, sorghum, wheat, molasses). This includes potable alcohol, industrial alcohol and biofuel;
- (2) Applications where cassava starch competes largely on price with substitutes such as maize and potato starch. This includes applications such as glucose and other sweeteners or MSG; and
- (3) Applications where the functional properties of cassava starch or 'clean label' status is desired (e.g., frozen food, dairy, gluten free).
- (4) Markets where the direct consumption of cassava remains important – Indonesia, Philippines, Pacific

Global demand for the final products in which cassava is an ingredient are influenced by overall economic growth. That is, cassava is a 'normal' economic good in the vast majority of contexts in Asia. The COVID-19 pandemic in 2019-2020 has had limited impact on overall demand for cassava products given the strong demand from China, although demand has been impacted in other countries in the region, such as Japan and Indonesia. However, it is difficult to separate some of these impacts from other processes occurring.

On the supply side, the outlook depends on the relative competitiveness of cassava against other land uses, in the context of different trends and shocks. This is a function of:

- (1) the price of cassava relative to other commodities that can be produced in the same agro-ecological zones (e.g., maize, sugarcane, coffee, rubber) and
- (2) changes in production costs, particularly changing labour costs and the ease of mechanization.

Cassava supply will also be affected by long-term climate trends, floods and droughts, changes in land suitability and land degradation, and especially the impact of pests and diseases.

The spread of Cassava Mosaic Disease (CMD) is currently one of the biggest threats to cassava supply and has seen yields impacted throughout the region. CMD has now been reported in Vietnam, Cambodia, Thailand and Laos. While not reported in Myanmar, the westward march of the disease and developing connections to the Thai market mean the threat is high and vigilance is required. At the same time, widespread flooding in Vietnam and Cambodia impacted the supply of roots both through complete crop loss or lower yields that occurred due to early harvest to avoid root rot.

The following sections present a high-level overview of market developments and how they are impacting cassava prices and smallholder farmers.

Global Commodities

The market outlook for smallholder cassava produced in Southeast Asia needs to be considered in a global context. Both the supply of cassava to the market and the demand for cassava-based products is influenced by developments in a range of commodity markets. Figure 1a and 1b present relative price trends of some of the main annual crops (maize and sugar) and perennial crops (palm oil, coffee, rubber) that compete for smallholder land, labour and capital and influence supply available for processors. The price of these commodities also impact relative competitiveness and derived demand for cassava in application in which other commodities can substitute.

The outlook for global commodity markets is mixed based on geography and products, especially in the context of COVID-19. However, there are many other global factors impacting markets – particularly in Asia which remain the focus of the cassava market. Since the outbreak of COVID-19, commodity flows have also been altered by a range of trade policy shifts, animal disease outbreaks (African Swine Fever), and pests (Fall Army Worm) and Diseases (CMD). Many market and trade developments have occurred in the context of China – which remains the main destination for cassava from SEA. China's overall import growth has been one of the main contributors to the trade resilience seen during the pandemic and strong market prices for cassava in Southeast Asia. As FAO reports, unabated import growth was not caused by the outbreak of COVID-19 in China, but took place in spite of it, and despite the ensuing global health crisis (FAO 2020).

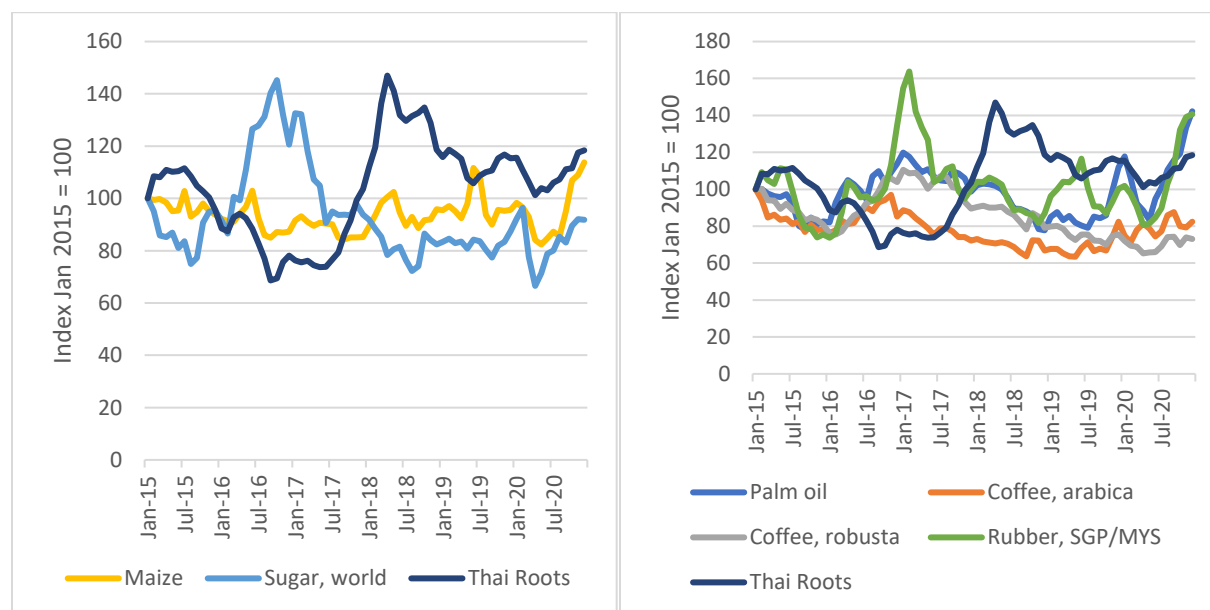


Figure 1a – Index of monthly cassava prices against competing annual crops; **Figure 1b**- Index of monthly cassava prices against main competing perennial crops. Data Source: WorldBank

Current forecasts are for international export prices of all major coarse grains remain elevated on the basis of the strong global demand and trade flows. While global maize production is seen to rise by 1.9

percent¹, total coarse grain utilization is also heading to a new peak in 2020. Feed use of maize is seen rising by 1.6 percent, boosted by anticipated strong demand in Argentina, Brazil and China. Global feed use of barley is also expected to expand, while strong growth in sorghum feed use in China, driven by high domestic maize prices, is expected to push up global sorghum feed use by almost 16 percent (FAO 2020).

At the same time, global inventories in 2020/21 will likely drop slightly. Again, this story is dominated by the situation in China where a sharp reduction of maize inventories is anticipated. This is likely to result in increases in maize purchases by China, driven by stronger feed demand and soaring domestic prices. This is resulting in increased demand for maize alternatives such as sorghum, and through the same process the demand for cassava chips has already increased in late 2020 and into 2021 impacting price (see below).

There has been a strong recovery in the price of rubber and oil palm. This is likely to impact the supply of cassava in locations such as Indonesia and parts of Vietnam, Thailand and Cambodia that are suitable for rubber production. There is of course longer lags in changes between perennial crops in and out of cassava – however the strong root prices have been seeing area conversion from coffee to cassava, particularly in southern Laos.

Cassava Production

National statistics on cassava planted area, yield, and production do not necessarily give an accurate picture of developments in cassava supply. Lags in reporting mean that data helps determine past trends and is less relevant for analysis on current supply and demand. Hence, we are often left explaining changes in supply after the fact, with the possible exception of Thailand with its more efficient recording and updating. Data provided at different administrative levels of government are also well known to be reported within acceptable ranges of government targets with limited mechanism for accurate reporting. Therefore, the following official data should be viewed with some caution. Efforts are being made to better reflect area of production using remote sensing technologies to overcome the limitations.

From the Table 1, the ongoing decline in cassava production in Indonesia is clear. Once the largest producer of cassava in Asia, Indonesia cassava has not been pulled along like Cambodia and Laos by its close connection to China. Prior to COVID-19 there were some indications that cassava may be rising in importance on the policy agenda. However, root prices have not followed and are unlikely to see any major shift towards cassava in the traditional production areas of Java and Lampung. The industry and government are continuing to explore opportunities for the crop in Kalimantan.

Data at the Province scale for mainland Southeast Asia for 2018 are presented in the Appendices as well as the change from 2017-2018

¹ Largely driven by expectations of strong production rebounds in the United States of America (USA) and South Africa, as well as record harvests in Argentina and Brazil

Table 1 – Area, production and yields of cassava in main producing countries of Asia

Country	Area harvested (ha)			Production (t)			Yield (t/ha)		
	2018	2019	% Change	2018	2019	% Change	2018	2019	Change (t/ha)
Thailand	1,332,379	1,386,655	4.07%	29,368,185	31,079,966	5.83%	22.04	22.41	0.37
Indonesia	697,384	640,526	-8.15%	16,119,020	14,586,693	-9.51%	23.11	22.77	-0.34
Viet Nam	513,021	519,306	1.23%	9,847,074	10,105,224	2.62%	19.19	19.46	0.26
Cambodia	481,679	504,940	4.83%	12,805,875	13,737,921	7.28%	26.59	27.21	0.62
China, mainland	296,732	299,212	0.84%	4,920,733	4,975,472	1.11%	16.58	16.63	0.05
Philippines	227,644	222,441	-2.29%	2,723,033	2,630,800	-3.39%	11.96	11.83	-0.13
India	173,000	163,000	-5.78%	4,950,000	4,976,000	0.53%	28.61	30.53	1.91
Lao PDR	71,010	67,726	-4.62%	2,279,030	2,258,702	-0.89%	32.09	33.35	1.26
Myanmar	33,373	33,067	-0.92%	394,627	392,443	-0.55%	11.82	11.87	0.04
Sri Lanka	22,360	20,592	-7.91%	323,108	281,075	-13.01%	14.45	13.65	-0.80
Timor-Leste	5,719	5,431	-5.04%	22,724	21,533	-5.24%	3.97	3.96	-0.01
Malaysia	1,971	2,446	24.10%	34,997	42,267	20.77%	17.76	17.28	-0.48
Total/Average	3,856,272	3,865,342	0.24%	83,788,406	85,088,096	1.55%	21.73	22.01	0.29

Source: FAO Stats

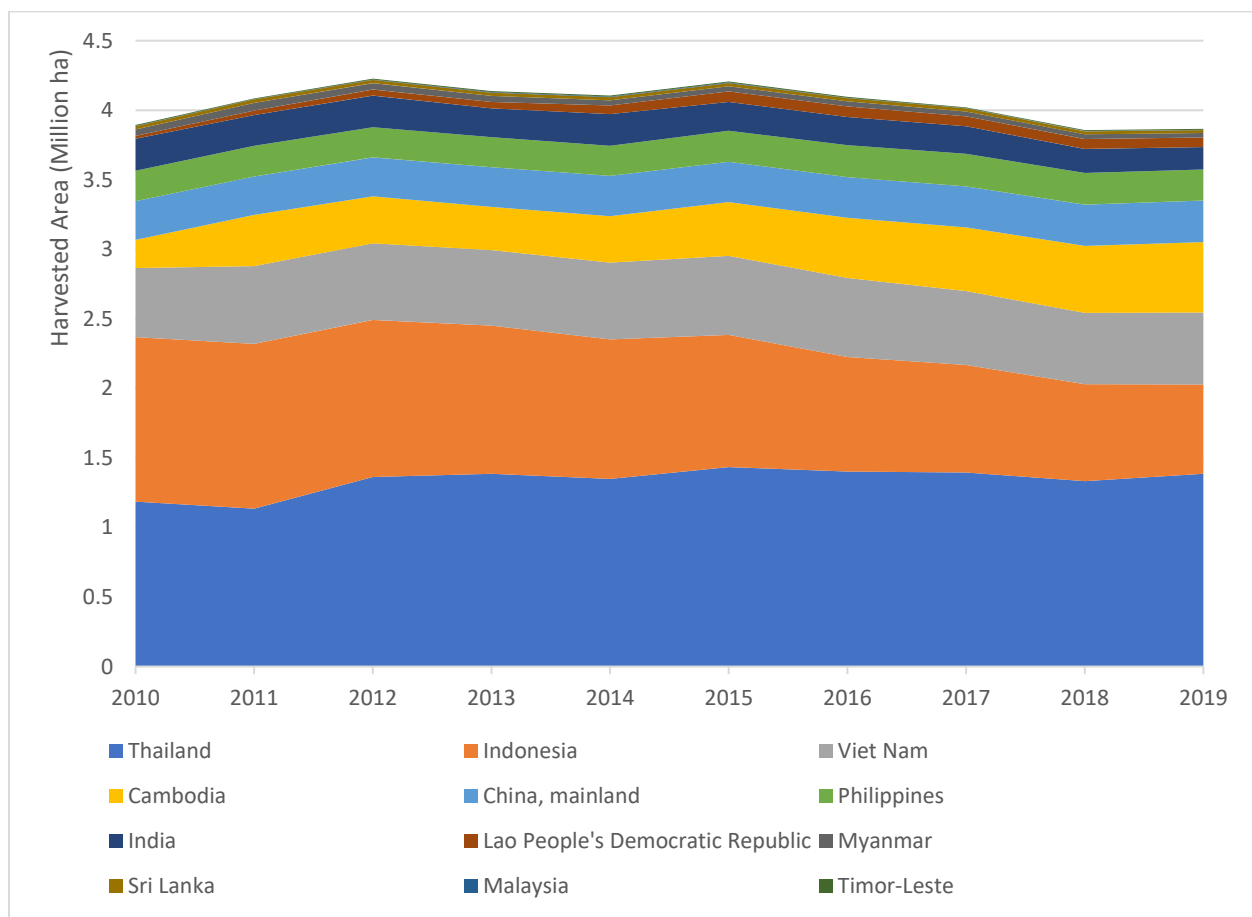


Figure 2 – Cassava production in Asia (Source; FAO Stats)

Trade

Trade in cassava products includes cross-border trade in fresh roots; cross-border and regional trade in dried cassava chips; and global trade in cassava starch. While the global cassava trade remains a multi-billion-dollar industry, the aggregate value of traded roots, chips and starch declined by around 0.5 Billion USD from 2018-2019. This was largely driven by lower demand for cassava chips in China. The global trade in cassava products remains dominated by Asia as both the major source and destination. As can be seen in Figure 3, China remains the dominate market for both dried chips² and to a less extent cassava starch. However, the starch market still remains heavily geared towards East and Southeast Asia.

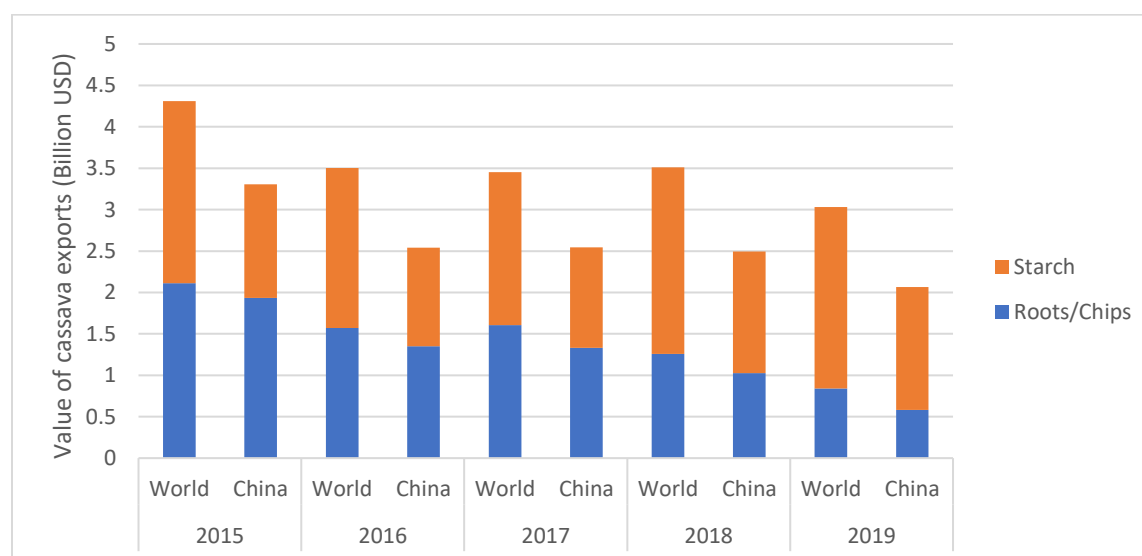


Figure 3 – Value of cassava exports by year to all destinations and China. (Source: Comtrade)

Cross border trade of fresh roots occurs within the Greater Mekong region, with roots sourced from Cambodia and Laos feeding starch and chip processing in Thailand and Cambodia. Thailand and Vietnam also import processed dried chips from its neighboring countries largely for re-export given Laos landlocked nature and relative cost of exporting chips directly from Cambodia.

Table 2 – Value of cassava exports and imports from Thailand and Vietnam in 2019

Country	Export			Import
	Starch	Chips	Total	Root/Chips
Thailand	\$1,219,667,300	\$524,196,331	\$1,743,863,631	\$250,500,728
Vietnam	\$870,353,340	\$81,500,887	\$951,854,227	\$194,174,635
Total	\$2,090,020,640	\$605,697,218	\$2,695,717,858	\$444,675,363

Source: Comtrade

²The 6-digit HS code 071410 aggregates both fresh roots and dried chips. Exports to China compose of dried chips while the total value includes the fresh roots traded between Cambodia and Laos into the Thai and Vietnamese market

In 2020 there was some recovery in the export volume (27%) and value (33%) of cassava chips from Thailand into China. This trend is expected to continue into 2021 as the derived demand for cassava chips increased due to increasing maize prices in China. Starch exports declined slightly (2%) resulting in a reduction in export value by around 6.5 per cent. Higher starch prices have seen exports to Indonesia decline significantly as deep processor seek alternative feedstock for applications that are easier to substitute between starch types – i.e. toward maize.

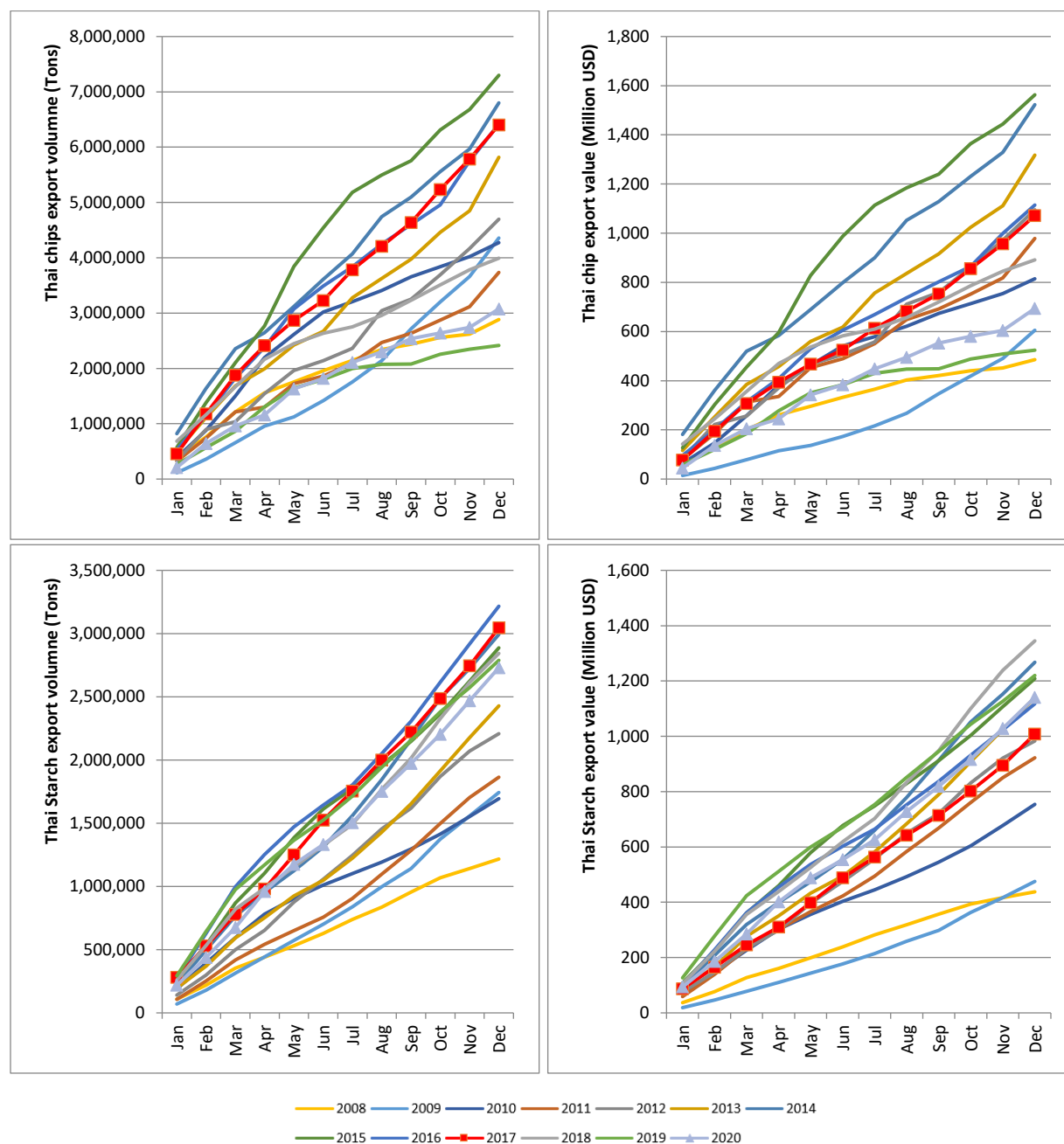


Figure 4 – Cumulative monthly volume and value of cassava chips and cassava starch exports from Thailand (Source: Thai Ministry of Commerce)

Similarly, Vietnam saw cassava chip exports recover in 2020 from the lowest level in the recent past that occurred in 2019. Exports in 2020 increased by 62% and 78% respectively in terms of volume and value year-on-year. Starch exports increased by 6.5% although the value of exports declined slightly. This saw cassava once again be a billion-dollar export crop for Vietnam – which keeps it on the policy agenda.

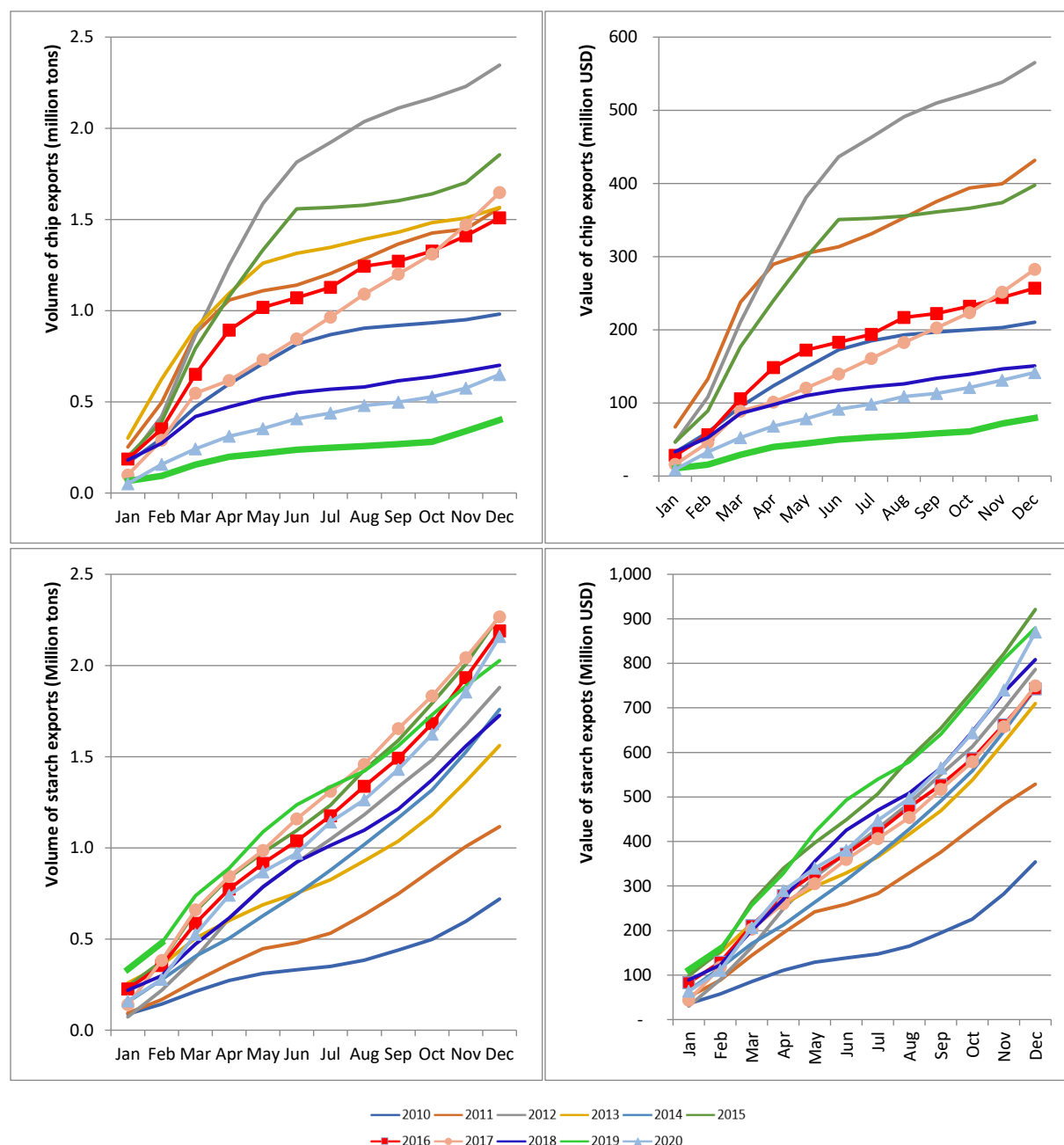


Figure 5 – Cumulative monthly volume and value of cassava chips and cassava starch exports from Vietnam (Source: MARD)

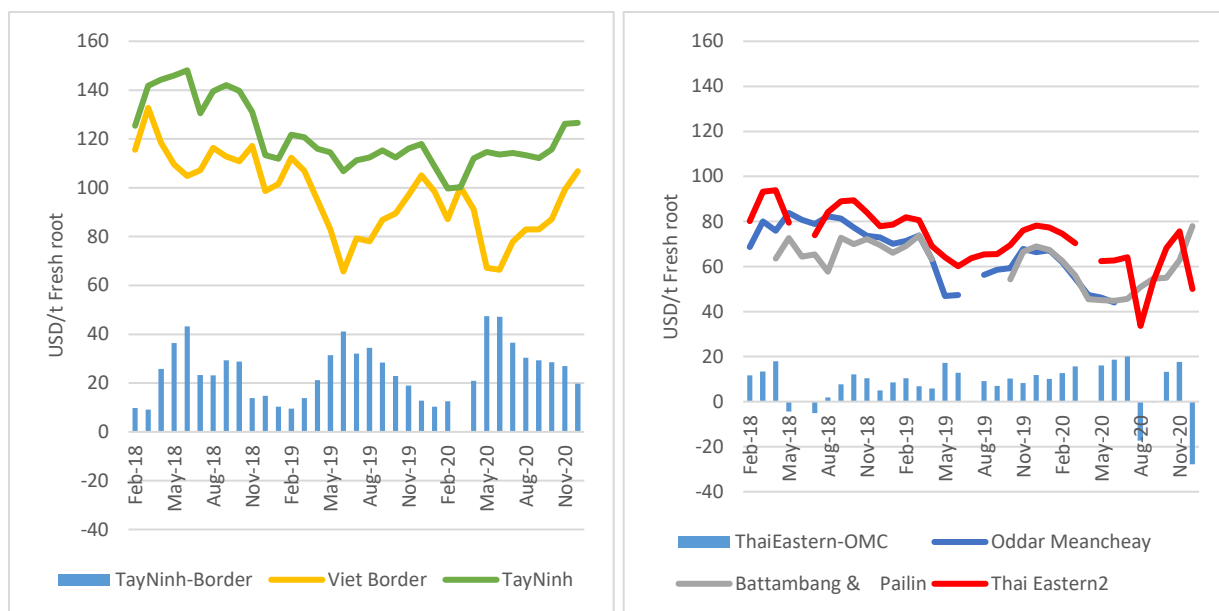


Figure 6 – Price differential at Cambodia-Vietnam border; Figure 7 – Price differential at Cambodia-Thai border

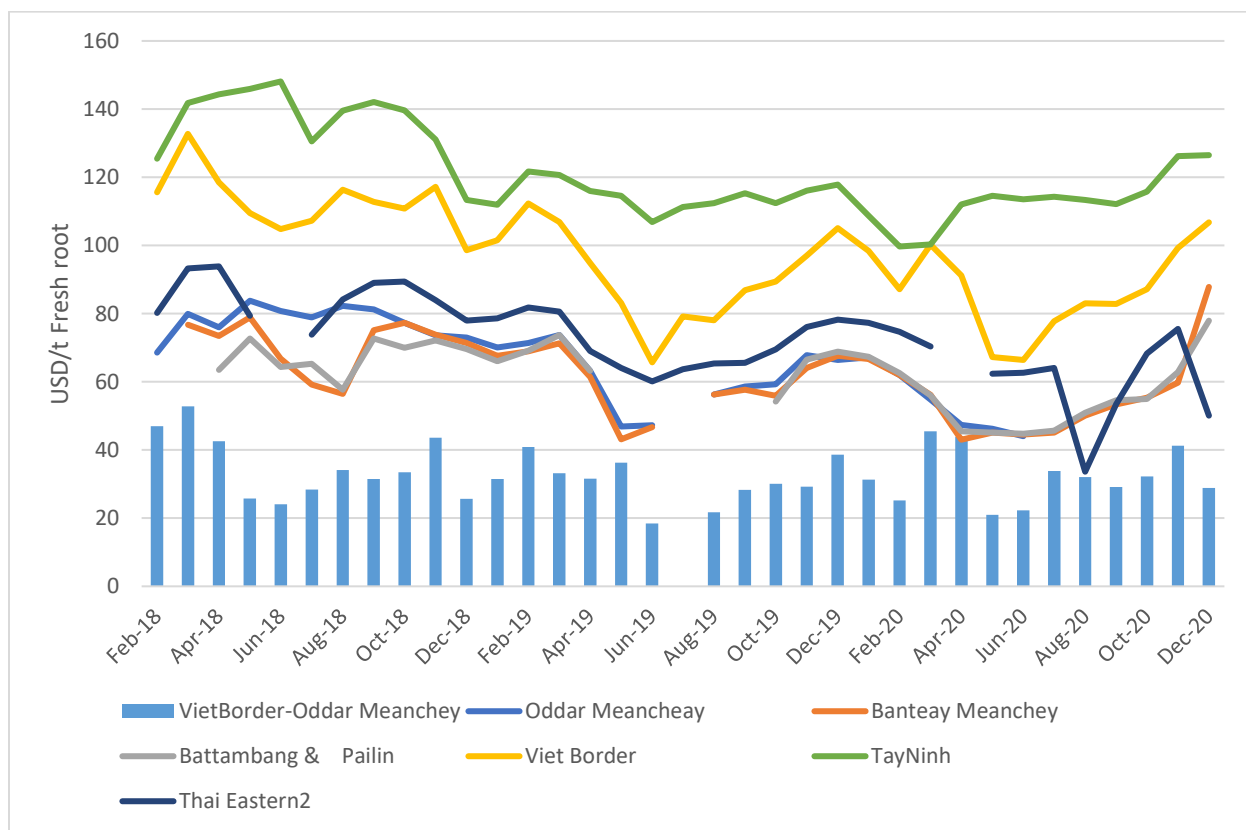


Figure 8 – Price differentials between Thai and Vietnamese markets influence the flow of roots and chips within Cambodia (Source: Industry Sources; TTSA)

Thailand continues to import a significant volume of roots and chips from Cambodia. According to Thai import data, the volume of imports in 2020 increased by 22% while the value of imports increased by 39% to around \$260 million USD. On the otherhand, Cambodian export data presents a different picture with the volume of exports declining by around 30%.

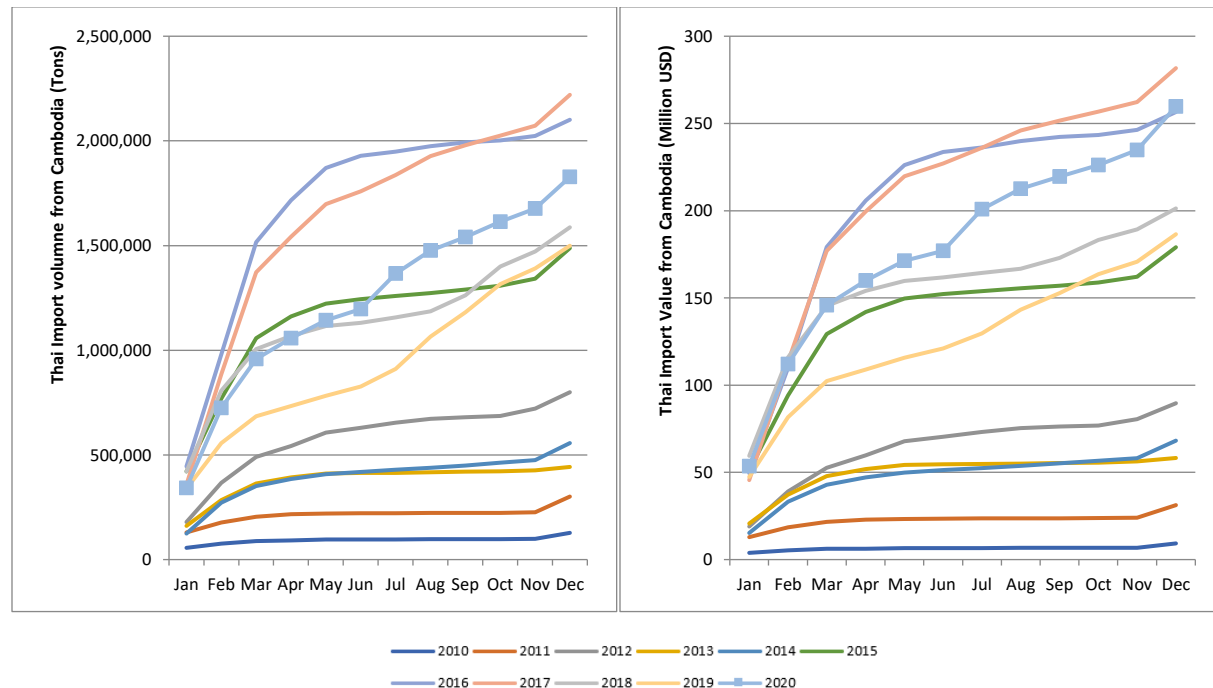


Figure 9 – Volume and value of Thai cassava root and cassava chip imports from Cambodia (Source: Thai Ministry of Commerce)

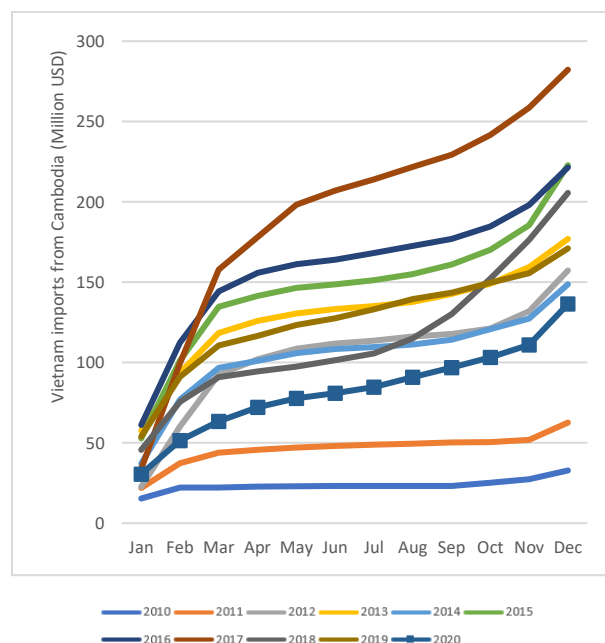


Figure 10 – Value of Vietnam cassava root and cassava chip imports from Cambodia (Source:MARD)

Vietnam customs in 2020 reported an import value of \$136.4 million USD of roots and chips from Cambodia. This represented a decline year-on-year of 20% relative to 2019. Similarly, Cambodian data also points to a decline in exports, with the volume of root exports falling by 53% only slightly offset by a 2% increase in dried chip exports. Price differentials between Thailand and Vietnam (Fig 6-8) would suggest a flow of roots towards Vietnam, therefore a changing of export destination of roots in the east of Cambodia does not explain these numbers. Changes in the volume of informal trade with COVID-19 restriction may explain some of the discrepancies, however the data highlights the risk of making investment decisions based on trade data when trying to understand the supply of feedstock within Cambodia. Again, production data is not available at this stage and accuracy remains a problem. However, the decline could be explained by both a further transition out of cassava as rubber and cashew plantation mature; and declining yields due to CMD and flooding. Prices in TayNinh and industry sources confirm the short supply of roots in TayNinh.

Cassava production in Laos has continued to expand, particularly in the southern Provinces of Salavan, Sekong, and Attapeu. Whether the increase in production is accounted for in the updated production statistics remains to be seen, however there was an 81% increase in the volume of roots and chips that Thailand imported from Laos in 2020 relative to 2019 which due to elevated prices represented a 112% increase in value. It should be noted that the 2020-21 crop has several more months to run and is likely to see a similar trend starting the 2021 calendar year data.

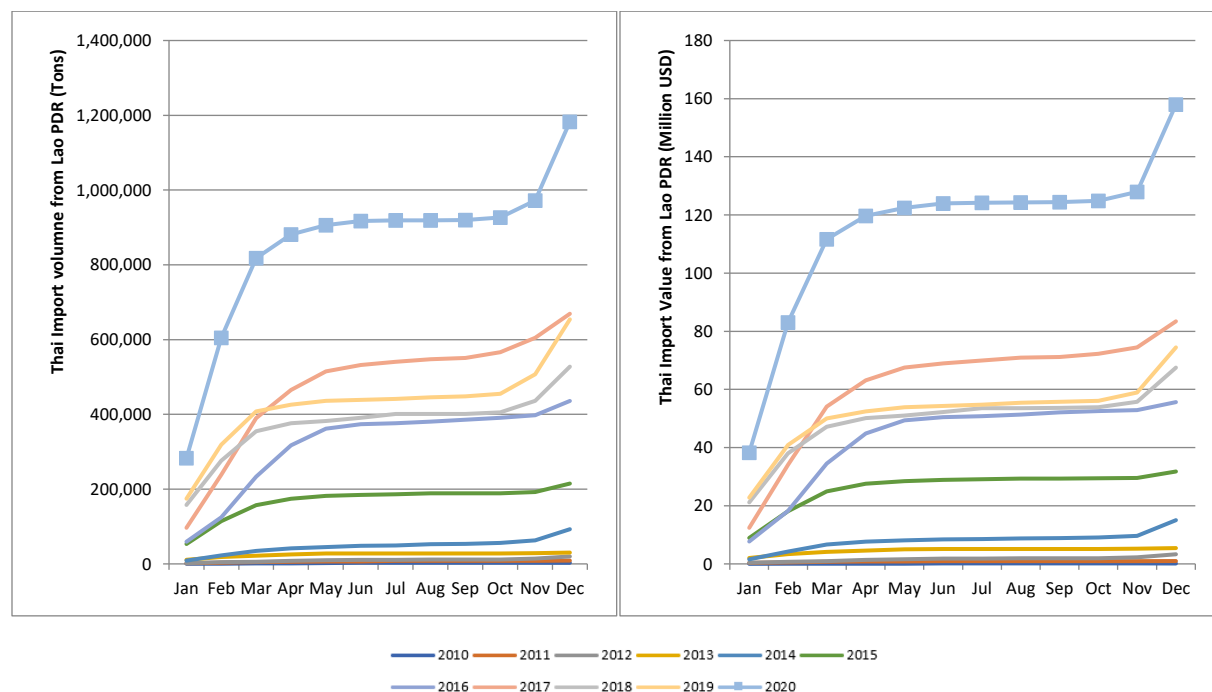


Figure 11 – Volume and value of Thai cassava root and cassava chip imports from Laos (Source: Thai Ministry of Commerce)

Vietnam imports of roots and chips according to Vietnam customs have been relatively stable between 2019 and 2020. There has been an increase in starch processing within the country with Vietnam importing around \$22.7 million USD of cassava starch from Laos in 2020, mainly from Vietnamese investments within the country.

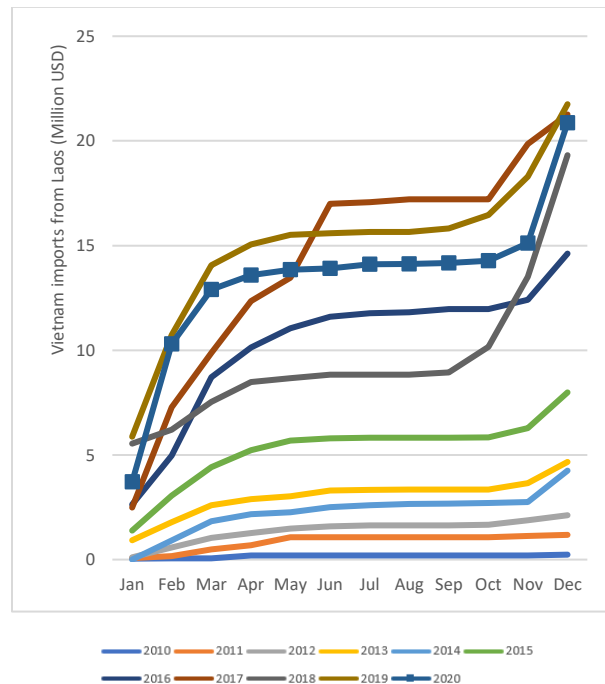


Figure 12 – Value of Vietnam cassava root and cassava chip imports from Laos (Source: MARD)

Laos also exports some product (mainly starch) to China. Collectively exports to Thailand, Vietnam and China are likely to push cassava close to the number one agricultural export from Laos by value in 2020, depending on developments in the banana industry. Several new starch processing factories have been completed in 2020 which may see further value adding in 2021.

Price

The price of cassava in 2020-21 is being strongly influenced by the maize market in China. In Figure 13 the significant increase in maize futures (Nearby Dalian) can be seen. This has increased the gap between Chinese and US maize. Import quotas and tariffs limit the amount of maize that can be imported providing the incentive for processors to look for alternative.

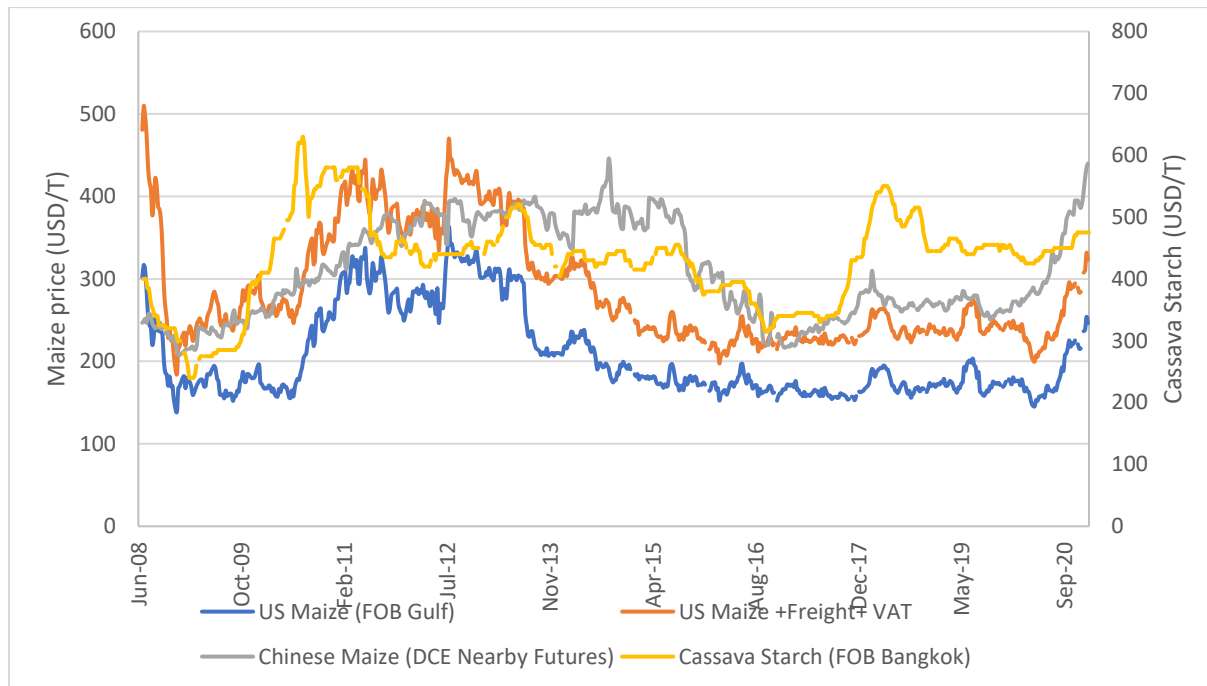


Figure 13 – Chinese maize prices relative to US maize prices and cassava starch (Data Source: US Grain Council; Dalian Futures Exchange; TTSA)

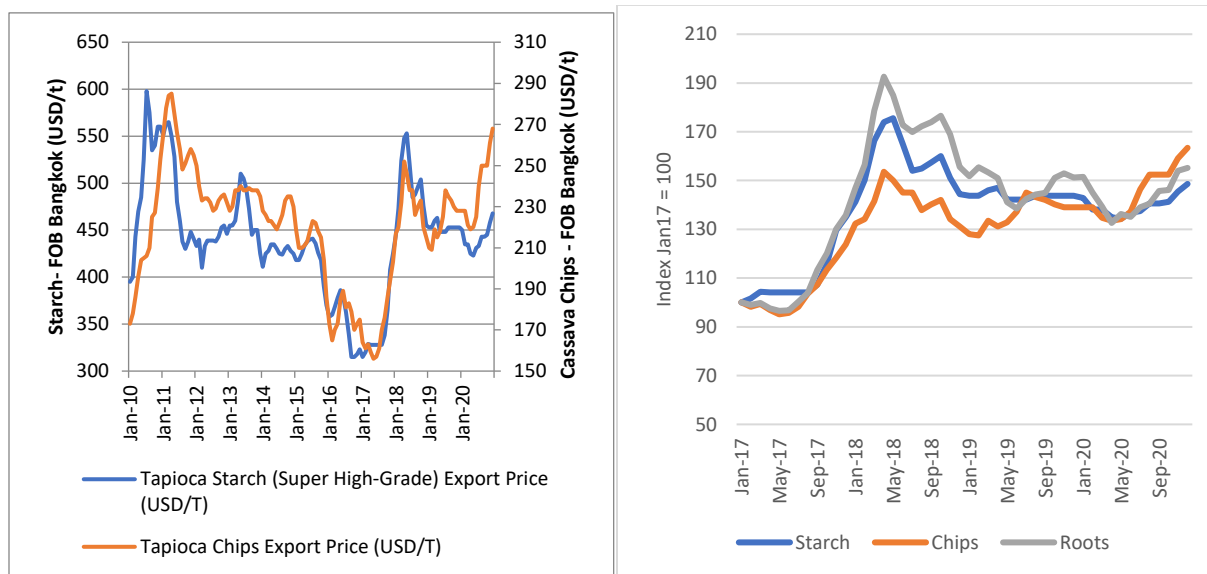


Figure 14a – Export price of Thai Cassava Starch and Thai Cassava Chips; **Figure 14b** – Index of cassava starch, roots and chips. (Data Source: TTSA)

As can be seen in Figure 13, the cassava starch price (FOB Bangkok) has not followed to the same extent the price of maize in China. This is further explained in Figure 14. In Panel 14a the rapid increase in the price of cassava chips has occurred in late 2020. This has elevated the price of roots beyond the high prices that occurred in 2019, with less price transmission into the price of starch.

Smallholder farmers throughout the region have enjoyed very strong prices for roots, and a dry chip price that has provided incentive for those farmers with time and resource to process their own chips. Figure 15 illustrates the variation in root prices within southeast Asia. The price declines away from key processing hubs in Vietnam (Tay Ninh) and Thailand (Nakhon Ratchasima or Korat) based on transport and other transaction costs. The relative low prices in Indonesia are also evident in Figure 15.

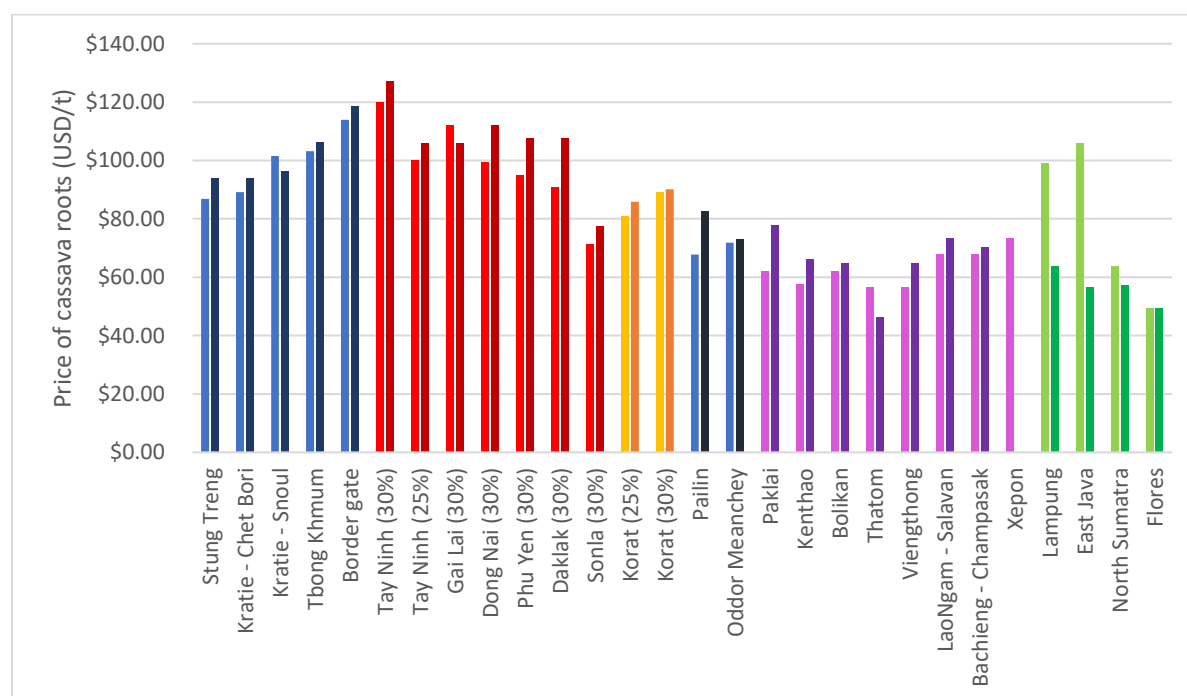


Figure 15 – Fresh root price comparison between December 2019 and 2020 at locations within Southeast Asia (Data Source: Industry and government contacts)

The following figures help explain why to date the price of starch has not followed the chip price to the same extent. First, unlike cassava chips, the export market for cassava starch is more diversified from the Chinese market. Therefore, starch processors need to continue to compete in markets outside China against other sources of starch³. The price of US maize starch relative to Thai cassava starch is presented in Figure 16. That is, starch processors must compete for roots against dry chip processors, and then still be competitive against maize in export markets outside China. At the same time, they must also compete with Vietnam processors. Root prices in Vietnam have continued to trade at a significant

³ China does remain a major exporter of maize starch. However other significant sources of maize starch into markets such as Indonesia include India and maize grain from South America and Ukraine.

headline premium to Thailand. Yet the HCMC Export price of Vietnamese starch has continued to be below Thailand FOB Bangkok. Of course, these prices do not consider quality and final markets.

The competitiveness between Thai and Vietnamese starch is also influenced by relative exchange rates. As can be seen in Figure 19, the Thai Baht has strengthened in value against the US dollar the Vietnamese Dong.

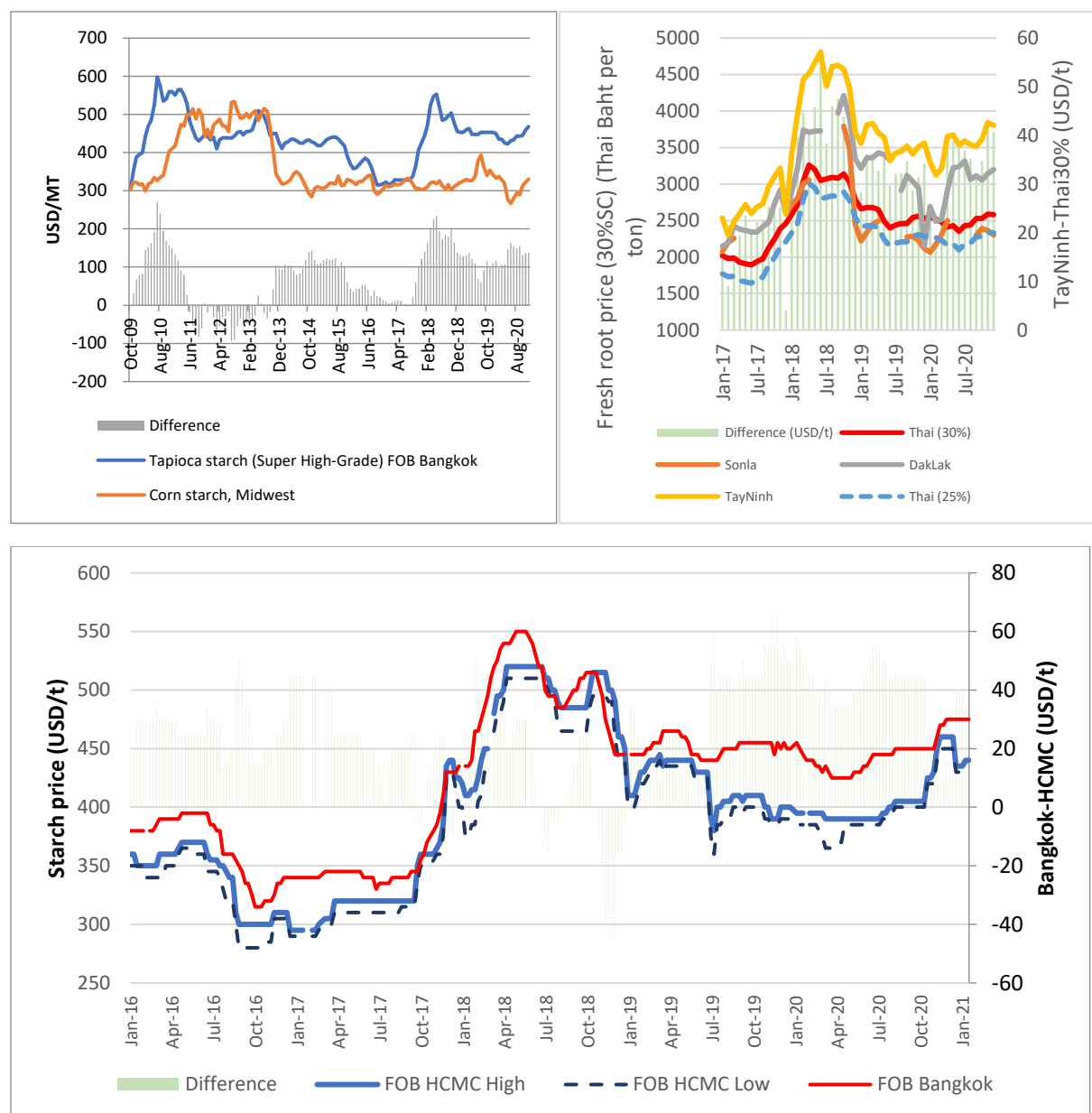


Figure 16 – Thai cassava starch relative to US maize starch⁴; Figure 17 – Thai cassava roots relative to Vietnamese cassava roots⁵; Figure 18 – Thai cassava starch relative to Vietnamese cassava starch⁶.

⁴ Data Source: USDA

⁵ Data Source: Vietnam Cassava Association (ViCaAs)

⁶ Data Source: TTSA and ViCaAs

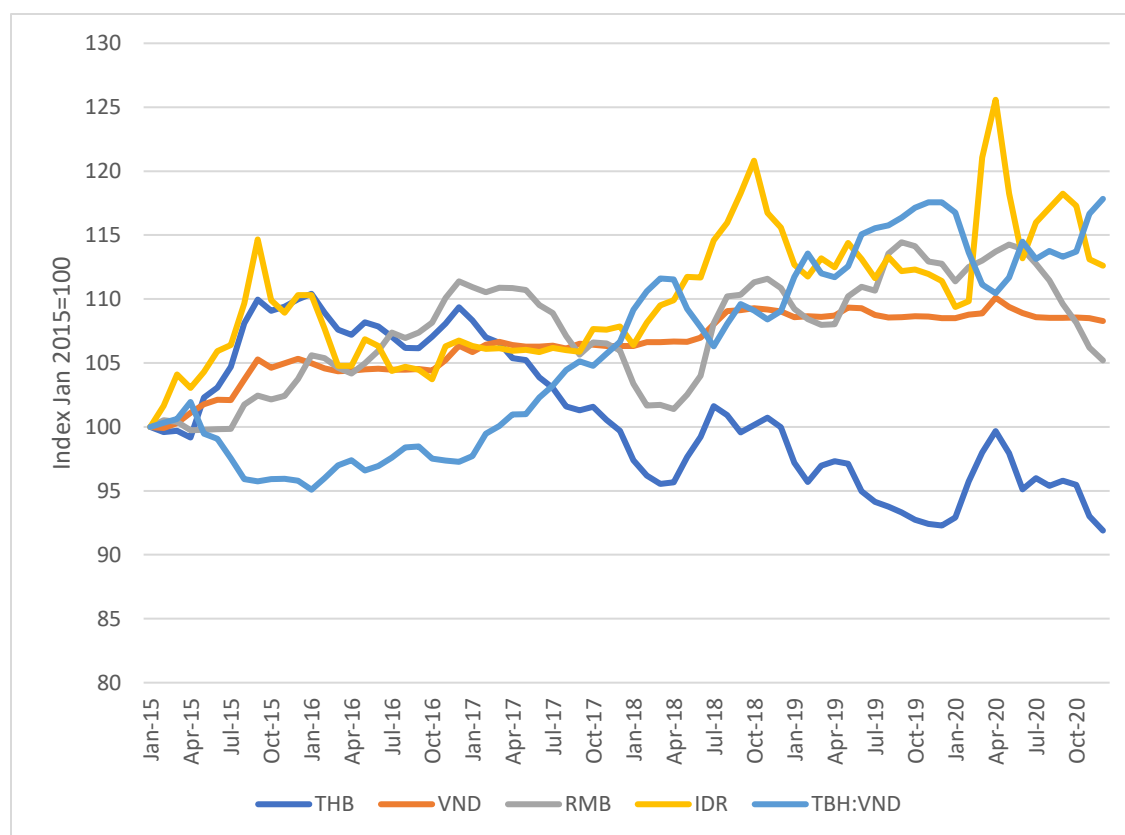


Figure 19 – Index of exchange rates for Thailand, Vietnam, China, Indonesia.

As such, the maize prices in China relative to the global price have a large impact on the demand for cassava products outside China. The best example of this is the demand for cassava starch in Indonesia. Despite being once the largest producer of cassava in Asia, Indonesia has relied on imports of cassava starch from Thailand (mainly) and Vietnam (a small amount). The country has historically been the second largest importer of cassava starch, after China. The amounts imported (Fig 21) depended on the relative price of cassava starch delivered to main processing hubs in Java sourced internationally from Bangkok or domestically from Lampung⁷. Root price in mainland southeast Asia have been elevated due to demand from China at a time when root prices have been in decline in Indonesia. This has resulted in reduced imports, but has yet to flow into the price and supply of cassava in Indonesia – with several large processors already switching some of their applications over to maize feedstock.

Therefore, the outlook for Indonesia is much more contingent on the global maize outlook – of which China remains a significant player – however the situation in South America, Ukraine and India also become important. The value of maize starch imports in 2019 was around \$87 million USD higher than 2017 at a value of \$146.4 million USD. However, the origin of around 80% of this starch was China.

⁷ Lampung is one of the main processing hubs of cassava starch in Indonesia. Located in the south of the Sumatra island.

Processors that have relied on Chinese imports of maize starch will urgently be looking for an alternative source of starch. Domestic cassava producers have had little incentive to increase supply.

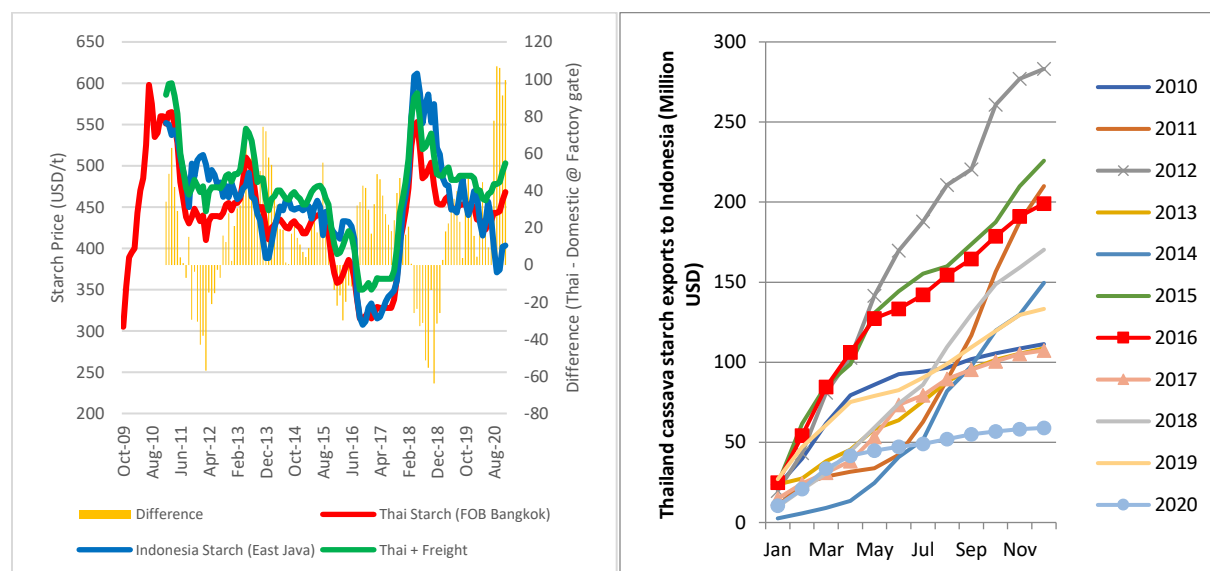


Figure 20 – Relative cassava price (FOB Bangkok versus East Java)⁸; **Figure 21** – Thai exports of cassava starch to Indonesia⁹

Adding further complexity to the current situation is the rapid increase in container freight cost due to the trade imbalance between China (and Asia) and the US. Time series freight costs are not available from Bangkok to East Java processing plants and in Figure 20 a constant freight cost of \$35USD/t. Twelve months ago the freight and port handling (THC) was around \$15USD/t, with road transport making up the difference. Today freight and THC alone around \$28/t. Figure 22 and 23 illustrate the high cost of shipping from Asia to the US, with freight to Europe following similar trends.

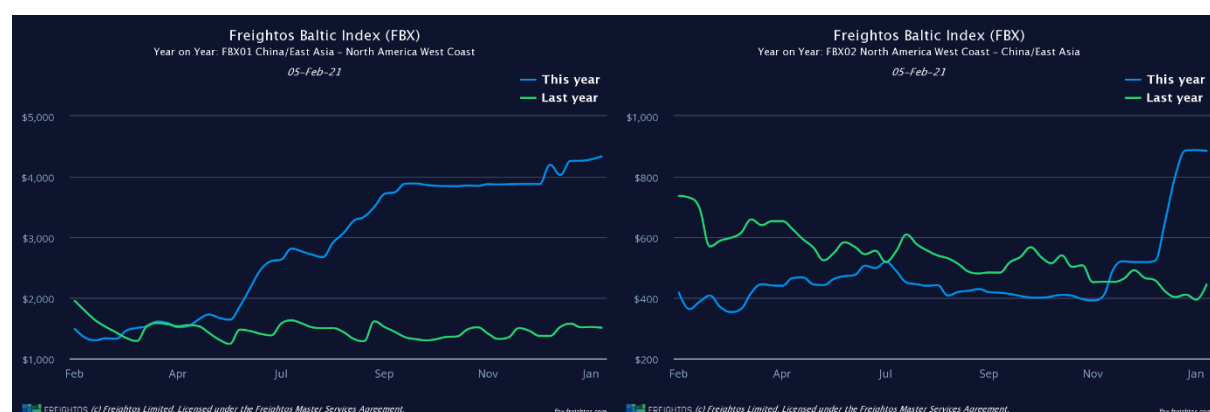


Figure 22 – Freight cost China/East Asia – North America West Coast; **Figure 23** – Freight cost North America West Coast - China/East Asia¹⁰

⁸ Data Source: Industry Sources, authors calculations

⁹ Data Source: Thailand Ministry of Commerce

¹⁰ Source: Freightos Baltic Index - <https://fbx.freightos.com/>

Finally, the elevated root prices have added additional pressure to ethanol processors for biofuel (Fig 24). Current root prices result in the cost of the feedstock for biofuel production being higher the Futures price of ethanol (Nearby Price CBOT). There has been some additional demand for cassava chips for industrial alcohol within the region to deal with COVID-19 sanitation, but the biofuel industry remains severely challenged by cheaper alternatives and a low oil price.

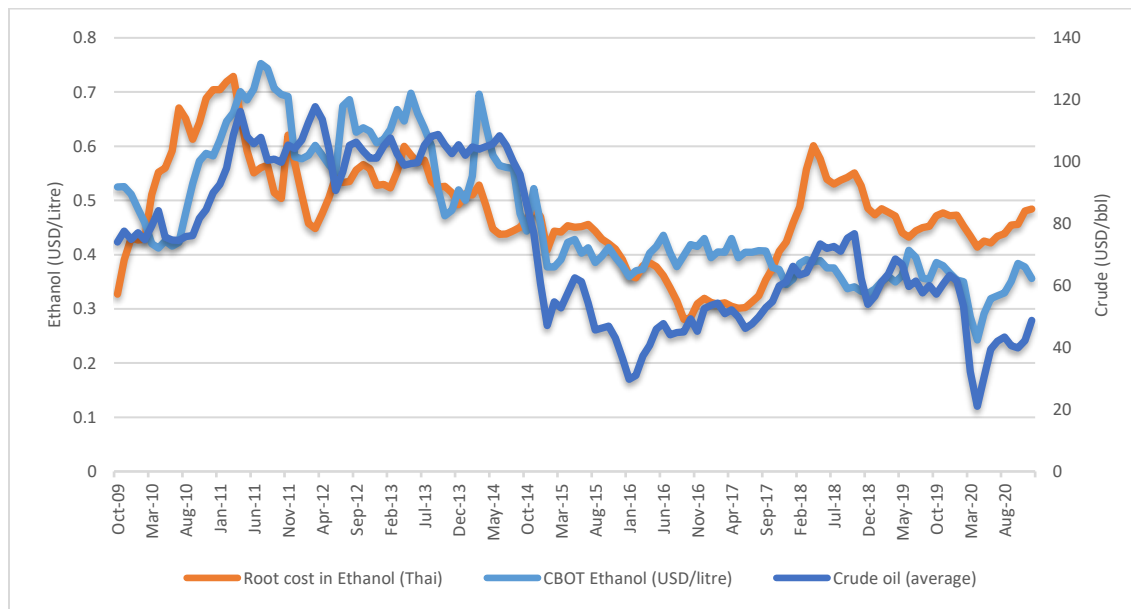


Figure 14 – Cost of cassava roots required for ethanol production versus US Ethanol and Crude Oil (Data Source: TTTA, WorldBank, CBOT)

Conclusion

Cassava farmers in Southeast Asia are currently enjoying some of the highest root prices in the past decade. That is, those farmers who have not lost production due to floods and disease. The elevated prices are a factor of both supply shocks and trends coupled with a significant increase in the derived demand due to the maize situation in China. This is likely to see supply of cassava increase in the coming season, with farmers changing from other annual crops to cassava, and in some cases the conversion perennial crops. The frontier is also likely to be under pressure, with expansion into forested areas where regulations are not enforced.

A long memory is not required to remember a similar situation in the recent past. World maize prices last diverge from Chinese maize during the price support scheme in China, which ended abruptly in 2015 causing root prices to crash and many smallholders to be stranded from the market. That is, with farm-gate price below the costs of production, particularly at the frontier. It is critical that policy makers understand the market fundamentals and dynamics to ensure a similar situation does not occur when the Chinese maize balance sheet shifts again.

The ability to conduct this analysis would be greatly enhanced by the provision of more timely and accurate data. Following official data that is at best a year old does not help decision makers. The

Alliance of Bioversity and CIAT is currently working to help shine a light on the processors through a new information platform – The Cassava Lighthouse¹¹

Finally, the exposure of smallholders to global maize and commodity markets can be mediated by adding value to the functional properties of cassava starch, so that it competes more strongly on the functional applications of the starch rather than the price alone. While this will not provide a solution for all cassava farmers in the region, lifting the profile of cassava will help lift investment in the crop across the border.

Acknowledgments

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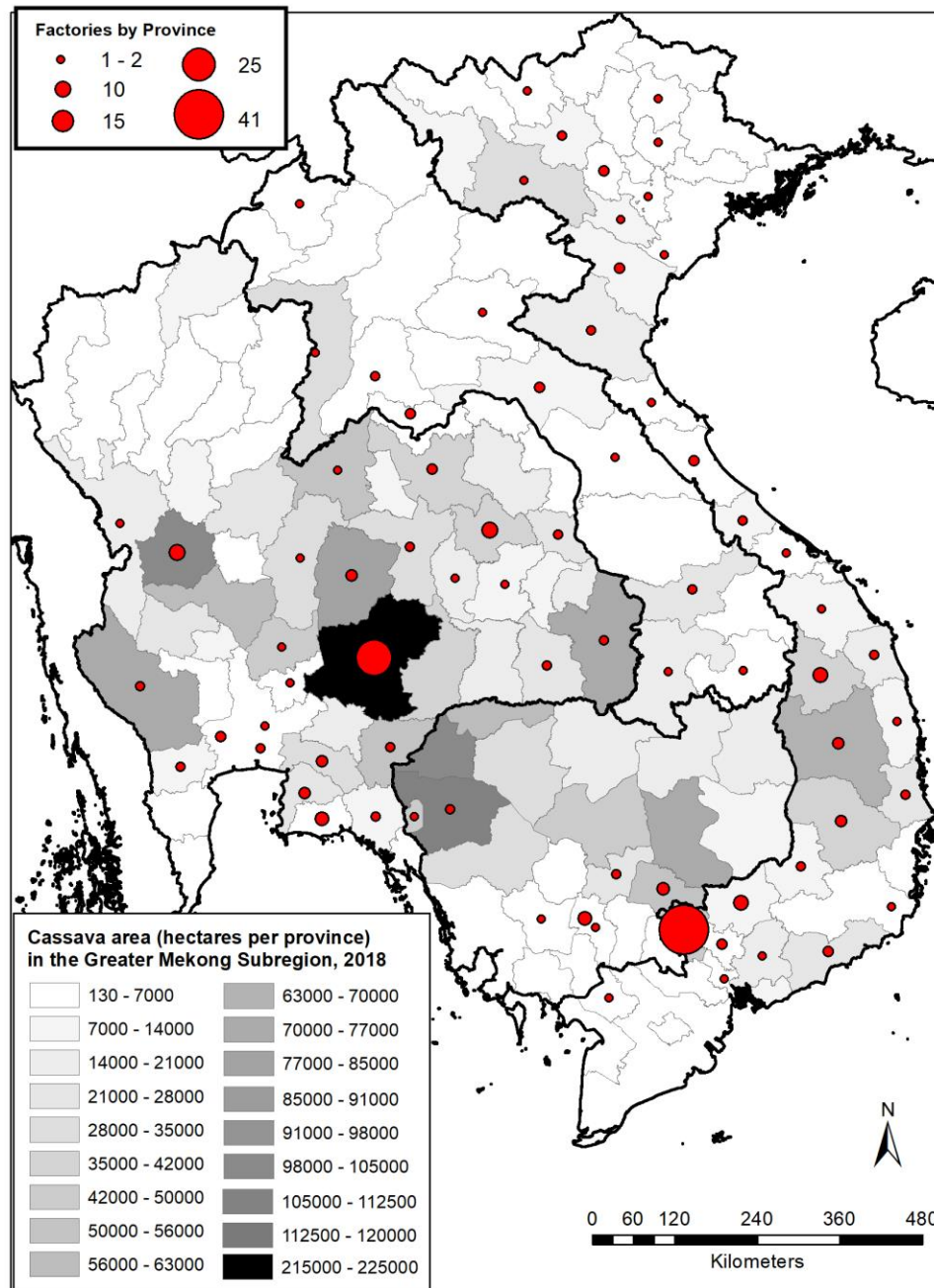
The authors are grateful for the data and insights provided by industry and government partners throughout Asia.

For more information:

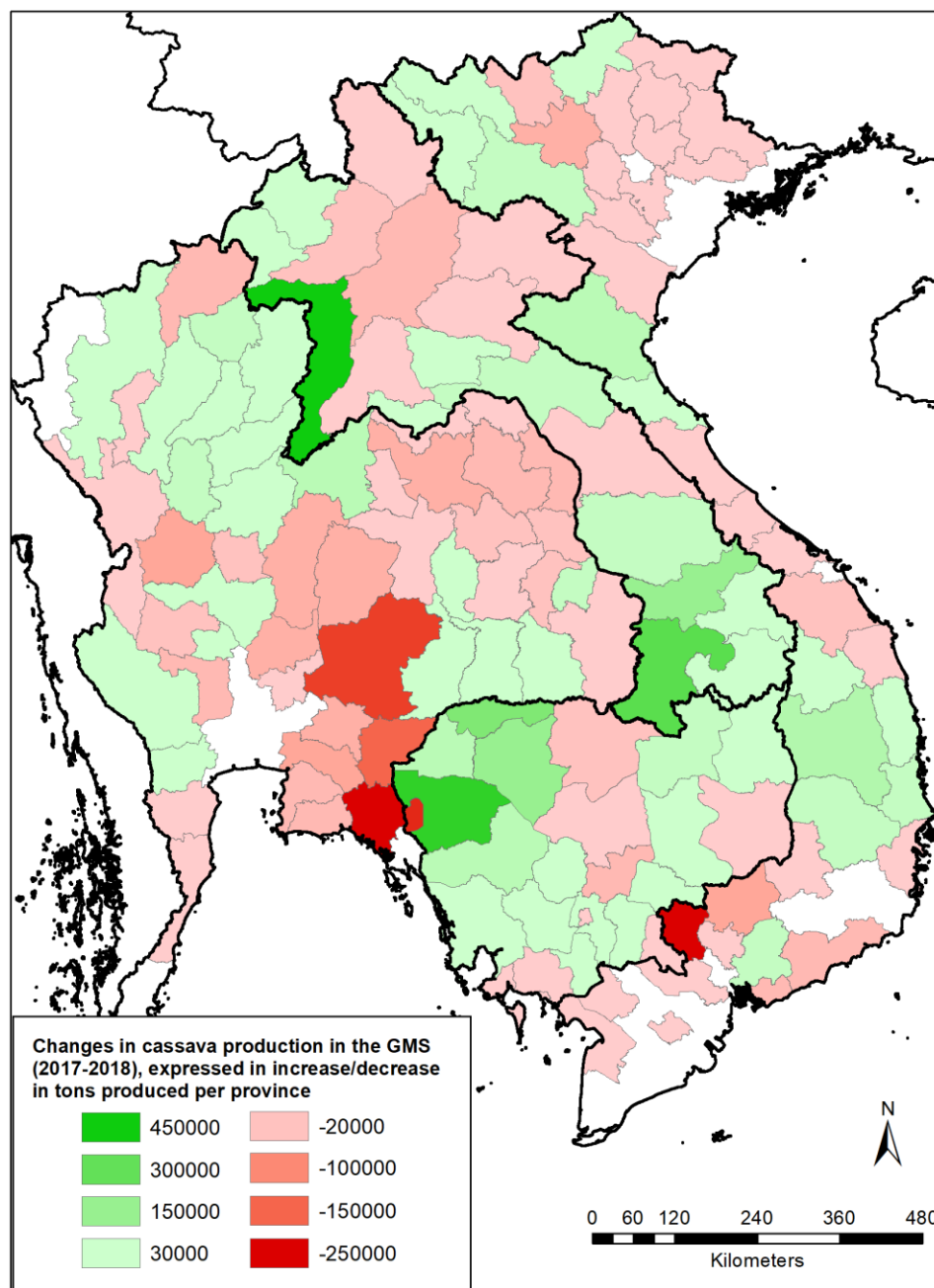
<https://cassavadiasesolutionsasia.net/>

¹¹ <https://cassavalighthouse.org/>

Appendices



Appendix 1 – Province production of cassava in Thailand, Vietnam, Cambodia and Laos (Map - E.Delaquis)



Appendix 2 – Change in production of cassava in Thailand, Vietnam, Cambodia and Laos 2017 to 2018
(Map - E.Delaquis)