



มันสำปะหลังไทย: พืชเศรษฐกิจที่เติบโตในจีน

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บทคัดย่อ

มันสำปะหลัง (Tapioca หรือ Cassava) เป็นพืชสะสมอาหารทางราก อยู่ในตระกูล Euphorbiaceas มีชื่อวิทยาศาสตร์ว่า *Manihot esculenta* Crantz มีลักษณะเป็นไม้พุ่มขนาดเล็ก ปลูกง่าย ทนแล้งได้ดี ขึ้นได้ดีในดินที่มีความอุดมสมบูรณ์ต่ำ ให้ผลผลิตเร็ว ประเทศไทยเป็นผู้ผลิตมันสำปะหลังรายใหญ่ของโลก พื้นที่ที่มีการปลูกมันสำปะหลังมากที่สุดคือ ภาคตะวันออกเฉียงเหนือ รองลงมาคือ ภาคกลางและภาคเหนือ มันสำปะหลังใช้ได้ทุกส่วน ทั้งรากสด ใบ ลำต้น และเมล็ด มันสำปะหลังเป็นแหล่งคาร์โบไฮเดรตที่จำเป็นสำหรับมนุษย์และสัตว์ แปรรูปเป็นผลิตภัณฑ์มันสำปะหลัง เช่น มันเส้น มันสำปะหลังอัดเม็ด และแป้งมันสำปะหลัง ใช้เป็นวัตถุดิบในการผลิตในอุตสาหกรรมต่างๆ ทั้งนี้ผลิตภัณฑ์มันสำปะหลังของไทยได้กลายเป็นสินค้าส่งออกที่ตลาดต่างประเทศมีความต้องการสูง โดยปัจจุบัน เป็นสินค้าส่งออกที่สำคัญของโลกโดยเฉพาะประเทศจีนซึ่งมีความต้องการมันสำปะหลัง ประเทศไทยสูงสร้างรายได้ให้กับประเทศและส่งเสริมการเจริญเติบโตทางเศรษฐกิจ

คำสำคัญ: มันสำปะหลัง ผลิตภัณฑ์ที่ได้จากมันสำปะหลัง พืชเศรษฐกิจ ตลาดต่างประเทศ



Thai Cassava: Economic Crops that Grow in China

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Abstract

Cassava (Tapioca or Cassava) is a plant that stores food in roots in the family Euphorbiaceae. Its scientific name is *Manihot esculenta* Crantz looks like a small shrub that is easy to grow and resistant to drought. It can grow well in soils with low fertility, yielding fast. Thailand is the world's foremost producer of cassava. The area with the most cassava cultivation was the Northeastern region, followed by the central and northern regions. Cassava can be used in all parts, including fresh roots, leaves, stems, and seeds. Cassava is an essential source of carbohydrates for humans and animals. It is processed into cassava products such as Tapioca chips, Tapioca pellets, and Tapioca starch, used as raw materials for production in various industries. In this regard, Thailand's cassava-derived products have become export products with high demand in the international market, with currently the world's most significant export volume, especially in China, where there is a demand for cassava. Thailand is high, generating much income for the country and promoting economic growth [1].

Keywords: Cassava, cassava-derived products, economic crop, international market

1. Introduction

Cassava is an important food crop in tropical countries, especially in Africa, South America, and some Asian countries such as Indonesia, India, and the Philippines, as it is an essential source of carbohydrates for people and animals, which is the fifth food crop in the world after wheat, corn, rice, and potatoes [2]. For Thailand, cassava is an important economic crop. It is popular among farmers because it is drought tolerant, easy to grow, and has few pests. According to the Office of Agricultural Economics, the main cassava planting areas are in the Northeast and Central Regions, including Nakhon Ratchasima, Kamphaeng Phet, Chaiyaphum, Kanchanaburi, Ubon Ratchathani, Sa Kaeo, Nakhon Sawan, Loei, Udon Thani, and Lop Buri. Cassava grown in Thailand is divided into two types: sweet type and bitter type, which can be utilized in all parts, directly consumed as food, and processed into products from cassava, including Tapioca chips, tapioca pellets, and tapioca starch for use in various industries.

Thailand is an essential producer of cassava in the world, but it is rarely used for consumption because it is mainly processed into products for export. Tapioca products from Thailand are export products demand is very high in the international market, which is the number 1 export volume in the world.

2. History of Cassava

2.1 Origin and Distribution of Cassava

Cassava is a native plant native to the tropics of Central America, Northern South America, and Peru; about 2,500 years old, showing that humans have been cultivating cassava for a long time. There are four origins of cassava:

1. Guatemala and Mexico
2. Northwestern South America
3. East of Bolivia and the northwestern part of Argentina
4. East of Brazil

The spread of cassava originated during the colonization period in the 15th century. The slave traders brought cassava from Brazil to be planted in Africa. Later, in 1739, the Portuguese planted cassava on Reunion Island and spread it to Madagascar.

Cassava was first planted in Asia in the Philippines in the 17th century when the Spaniards brought it from Mexico. Later, it was planted in Indonesia. There is also evidence that in 1794, cassava from Africa was planted in India for experimental use, causing cassava to spread throughout Asia. Cassava has many local names: Portuguese called Mandioca, French called Manioc, Spanish called Yuca, and English called Cassava or Tapioca.

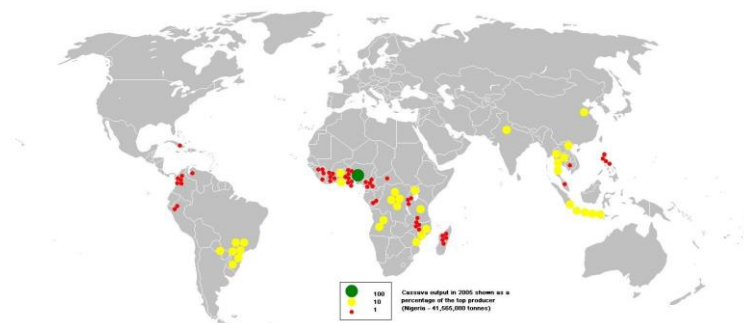


Figure 1 Distribution Area of Cassava [3]

2.2 Type of Cassava

There are about 150 varieties of cassava worldwide. Demanding varieties can be classified according to their hydrocyanic acid content or harvest period. Identification using several external features to aid classification, such as the color of the young leaves, the color of the petiole, the color of the stem, the hair on the young shoot, the shape of the stem and ears. For example, the petiole of the Rayong variety has red petioles. Kasetsart strain Petioles are light green or white. Moreover, Huai Bong will have two colored

stems because Huai Bong is a hybrid of the Rayong variety and the Kasetsart variety. In addition, the shape of the head, the color of the rind, and the flesh will differ depending on the variety.

Identification of species according to the hydrocyanic acid content of a physiological constituent of cassava is divided into two types according to the amount of hydrocyanic acid, which is bitter cassava used as a raw material in the production of cassava starch. It has a high hydrocyanic acid content, and sweet cassava has a low hydrocyanic acid content. On the other hand, classification by harvest age can be divided into two groups: 1) the short season is cassava that will start to have mature tubers. Ready to harvest at the age of 6 months and cannot be left for more than 9-11 months, primarily sweet cassava, and 2) the long season is cassava that matures at the age of 1 year and can be left for 3-4 years, primarily bitter cassava [4].

In Thailand, three groups of varieties of cassava are generally grown as follows:

1. The sweet type is cassava with low hydrocyanic acid (HCN) content. It is a variety that can be used directly for consumption. The taste is not bitter. A soft and firm texture of this type is commonly used for welding, roasting, and burning, not being planted in a large area due to a limited market. In Thailand, some varieties are popularly planted: Five-minute varieties and Rayong 2 varieties, which are varieties developed by the Department of Agriculture. This variety can be observed with dark red leaf stalks; the stalk and bark of the corms are brown, and the corms are often yellowish.



Figure 2 Sweet Cassava [5]

2. Bitter-type cassava has a higher hydrocyanic acid (HCN) content than the first type. It has a bitter, coarse taste unfit for human consumption or uses fresh cassava directly for animal feed. However, because it is a variety with a high starch content, it is commonly used in processing industries such as tapioca starch, cassava chips, pellets, and alcohol. Processing into food using heat such as sun drying, burning, and boiling can cause the cyanide to disintegrate completely. The bitter taste can be reduced. In Thailand, the bitter variety is the variety that has the most planting areas to send industrial plants to process and produce cassava chips, tapioca pellets, tapioca starch, and ethanol alcohol, namely Rayong 1, Rayong 2, Rayong 3, Rayong 5, Rayong 7, Rayong 9, Rayong 60, Rayong 72, Rayong 90, Kasetsart 50 and Huay Bor. D. 60, and Huai Bong 80. Characteristics of this variety are that the leaf stalks are light green and reddish, and the head is smooth and white.



Figure 3 Bitter Cassava [6]



Figure 4 Decorative Varieties of Cassava [7]

3. Varieties used to decorate are used as ornamental plants in various places for beauty. It is called “spotted” because the leaves have white and yellow stripes spread along the length of the leaves. Furthermore, wild yam varieties are planted for shade as medium to large shrubs found in Chonburi and Rayong provinces [8].

3. Example Trading Results of Cassava Abroad

3.1 Cassava Trade in The Republic of China

China is the biggest importer of cassava trade from Thailand. China imports cassava chips to produce ethanol and cassava starch to produce modified starch used in the papermaking and textile industry. The price of cassava for export has been depressed by news of China reducing its Thai imports, following the Chinese government’s policy to subsidize maize. As a result, Chinese manufacturers that produce alcohol from cassava have switched to corn. The Cassava starch production in China is seasonal; wastewater management is difficult for environmental protection.

In 2020, China imported 1,130,654,797 USD in cassava, becoming the world’s largest importer of cassava. In the same year, cassava was China’s 281st imported product. In 2020, China imported cassava primarily from: Thailand 708,295,917 USD, Vietnam 388,761,057 USD, Laos 6,779,450 USD, Cambodia 12,883,185 USD, and Indonesia 13,905,498 USD. Since 2012, China’s importation of cassava has grown. Figure 1 presents China’s top 5 cassava-producing countries, average imported from 2010-2020.

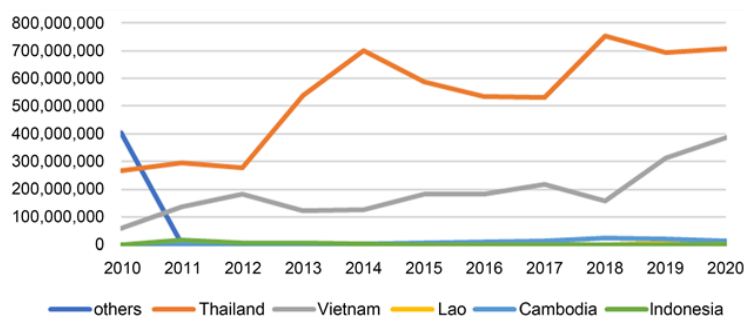


Figure 5 The top 5 cassava-producing countries of China, average imported during 2010-2020 Units = U.S. Dollar [9]

From Figure 5, the worth and quantity of cassava items brought into China from Thailand increased from 2010 to 2020. Nevertheless, in 2014-2017, the value of cassava imports declined from 700,120,546 USD to 531,222,840 USD because Thailand had a problem with natural disasters and the high cost of cassava raw materials. Until 2020, the value significantly rose to 708,295,917 USD. In 2010, cassava products were brought into China from other countries. China has been the biggest importer of cassava products from Thailand since 2011. In 2011, the export industry in Vietnam made a total of 137,795,395 USD by exporting cassava, which became the second largest product shipped to China. The cost of Vietnamese cassava imports to China rose to 388. Cambodia, Lao, and Indonesia followed after that until 2020 and had values of 12,883,185 USD, 6,779,450 USD, and 13,905,498 USD, respectively [9].

In the year 2021 to 2022 The import of cassava from China has continued to increase and is still the number 1 importer of cassava from Thailand. The total amount of imports 5.10 million tons, accounting for 90.41 percent of total imports from China, as shown in Table 1.

Table 1 China's Top 4 Fresh and Dry Cassava Import Markets during January – July 2023 [10]

Country	Quantity/Ton
Thailand	5,104,307
Cambodia	494,341
Vietnam	24,416
Indonesia	771

3.2 World Trade of Thai Cassava Products

Because of its highly developed cassava industry, Thailand is the world's leading exporter of cassava products. The country now has a 66% share of global exports of native starch, 59% of cassava



chips, and 31% of modified starch exports. However, following the 2005 decision by the EU to stop imports of cassava pellets (the EU had until then been a significant importer) and to switch to alternatives, Thai exports of these have dropped to shallow levels. The change in EU policy also had the effect of profoundly altering the structure of Thai exports, which moved from a reliance on sales to Europe to an almost total dependency on Asian export markets, in particular to China, which, with a 72% share of all Thai exports of cassava products, is by far Thailand’s most important market.

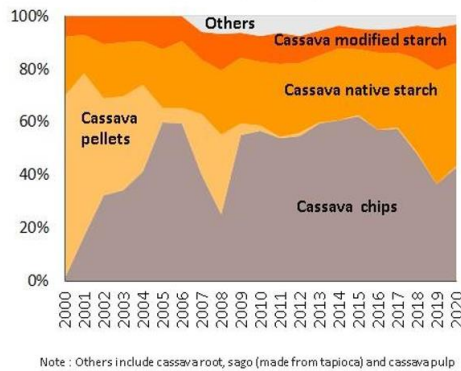


Figure 6 Thai Export of Cassava Products [11]

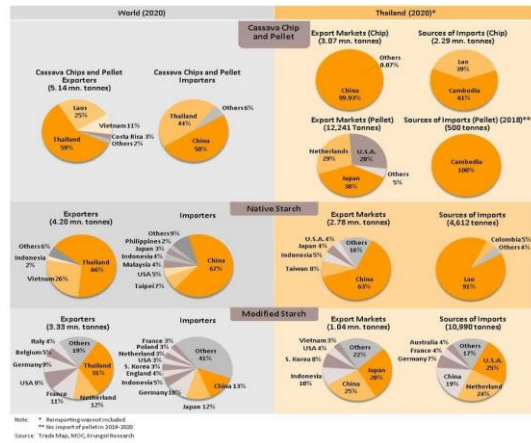


Figure 7 Thai Cassava Export and Import Rates [11]

3.3 Future Trend of Thai Cassava

From 2022 to 2024, demand for Thai cassava products is expected to strengthen relative to 2021 levels. Details of this are given below.

Production: It is expected that cassava production will grow by an average of 0.5-1.0% per year following the expansion of planting areas as farmers are motivated by price benefits from the government’s income insurance scheme, resulting in the price of fresh cassava tending to rise to 2.1-2.2 baht/kg, which is higher than the average cost of 1.9 baht/kg.

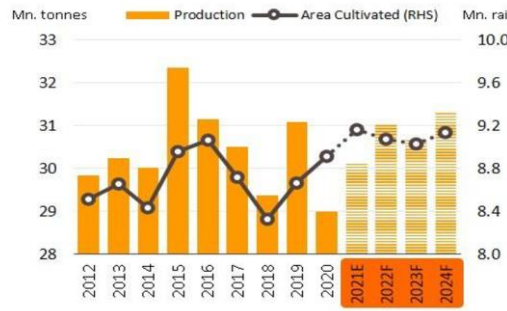


Figure 8 Thai Cassava Root Production Forecast [11]

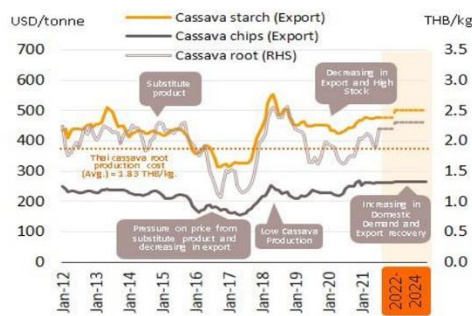


Figure 9 Thai Cassava Prices Forecast [11]

Domestic market: Domestic demand for cassava products is likely to grow by an average of 2.5-3.5% per year, especially for ethanol production.

Export markets: Total exports are expected to expand by 5.0-6.0% annually. Details of individual product groups are as follows:

1. Cassava starch: Exports should improve at approximately 5.0-5.5% per annum, moving in step with a better outlook for downstream industries, especially in the food and beverage sector.
2. Cassava chips: Exports of cassava chips are expected to rise by 6.0-7.0% annually on stronger demand from China (the primary export market) due to increased output of disinfectant alcohol, ethanol for use in construction and as an energy source, and animal feed.
3. Modified starch: Recovery in the global economy and expansion in industries, including the production of cosmetics, food, and medicines, will feed into average yearly growth in exports of 3.0-3.5%.
4. Cassava pellets: The expectation is that overseas sales will grow by some 4.0-5.0% annually on greater demand for use as a biofuel and as an animal feed, but despite this more positive outlook, exports will remain weak and uncertain, and stronger demand will be limited to periods when alternative goods are in short supply.



Figure 10 Thailand Cassava Export Forecast [11]

4. Why is China a Big Export Market for Thai cassava?

China is considered the country that imports the most cassava from Thailand; each year, China imports millions of tons of cassava from Thailand. China is one of the countries with many beliefs that are always ingrained into the daily lives of Chinese people. Even business matters too. China imports products from Thailand this much because they want to produce things to meet the needs of people in the country, including various industries. China's animal feed industry has used cassava as an ingredient in making it because cassava is a plant that is beneficial and rich in various minerals, so the animal feed industry from China is popular to buy cassava in various forms to produce as fodder. The animal that the Chinese people like to raise is a pig because the pig is a symbol of wealth. Any house that raises it will consider that a house with money, not starving. Therefore, they need to find good food or ingredients to raise animals to be healthy, and cassava is one of the excellent ingredients [12]. In addition to the animal industry, Chinese people also use cassava to do other things, such as alcohol production and human food production. The use of cassava as a substitute (instead of high-priced corn) and the latest is ethanol production, making the demand for cassava from Thailand to China grow steadily.

5. Conclusion

Cassava is an essential economic crop in Thailand. It is a plant that is easy to grow, drought tolerant, and good in low-fertility soils. It produces fast and has many food sources, including benefits that can be used in many ways and all parts. Currently, the cassava market is growing rapidly for production in various industries, such as the human food and animal feed industries, and these industries are part of the fact that will allow the cassava market to continue to grow. In particular, Thailand is the number 1 exporter of cassava in the world; many countries are interested in the cassava market that comes from Thailand, especially from China. After all, the Chinese market is the leading market where Thailand exports cassava because the Chinese people like to use it [13]. Cassava is used in everyday life due to the beliefs of Chinese people who have long-lasting life, resulting in continuous demand for products. China also imported cassava as a replacement product. Now prices have skyrocketed due to the Russo-Ukrainian war, and China has to look for substitutes to meet demand, generating revenue for the country. It is a lot and promotes the country's economy. The government has continuously supported the Thai cassava market because this type of plant has created enormous income for the country [14].

At the same time, as the cassava market continues to grow, many competitors are also increasing, especially now that neighboring countries like Vietnam have begun to develop the cassava market to become popular in the world market by co-developing with superpowers—the United States to bring cassava from Vietnam as the world’s primary export market. Therefore, Thailand should take measures to cope and develop better quality products. In the future, it is expected that the demand for cassava will tend to increase due to the increasing use of cassava for ethanol production in the renewable energy industry.

References

- [1] Department of Science Service Bureau of Science and Technology Information. (2018a). *Tapioca and products*. <http://siweb1.dss.go.th/repack/fulltext/IR44.pdf>. (In Thai)
- [2] Faculty members of the Department of Agronomy, Faculty of Agriculture, Kamphaeng Saen Campus, Kasetsart University. (2004). *Economic Plants*. (2nd Ed.). Bangkok: Kasetsart University Press. (In Thai)
- [3] Department of Science Service Bureau of Science and Technology Information. (2018b.). *Cassava and Products*. <http://otop.dss.go.th/index.php/en/knowledge/informationrepack/339-tapioca-and-products?showall=1&limitstart=>. (In Thai)
- [4] Kasetsart University Research and Development Institute. (16 June, 2015a). *Cassava: Identification of types and varieties of cassava*. <https://www3.rdi.ku.ac.th/?p=18052>. (In Thai)
- [5] Dr. Margaret Briley, M. (2020, October 5). *Sweet Potatoes, Yams, and Cassava*. The University of Texas at Austin School of Human Ecology. <https://he.utexas.edu/hdfs-news/sweet-potatoes-yams-and-cassava>.
- [6] Kasetsart University Research and Development Institute. (2015b). *Cassava: Kasetsart 72 variety*. <https://www3.rdi.ku.ac.th/?p=18167>. (In Thai)
- [7] Editorial Team. (2018, August 4). *Decorative Varieties of Cassava*. Digital Agricultural Database System. <https://data.addrun.org/plant/archives/760-manihot-esculenta-crantz>. (In Thai)
- [8] Hirst, K. K. (2019, January 20). *The History and Domestication of Cassava*. Thoughtco. <https://www.thoughtco.com/cassava-manioc-domestication-170321>.
- [9] Sadanun Sukpanich & Weiqiang Wang (2022). *Analysis of the Export Competitive of Thai Cassava in the Chinese Market (2010-2020)*. Scientific Research An Academic Publisher. <https://www.scirp.org/journal/paperinformation.aspx?paperid=114703>.
- [10] Bangkok Bank SME. (23 September,2022). *The import of Thai cassava from China continued to increase*. <https://www.bangkokbanksme.com/en/10inter-chinese-cassava-demand-grows-strongly>. (In Thai)
- [11] Sowcharoensuk, C. (2021 September 01). *Industry Outlook 2022-2024: Cassava Industry*. Krungsri Research. <https://www.krungsri.com/en/research/industry/industry-outlook/agriculture/cassava/io/io-cassava-21>.
- [12] Mark, J. J. (2019 January 24). *Pigs in Ancient China*. World History Encyclopedia.



<https://www.worldhistory.org/article/1320/pigs-in-ancient-china/>.

[13] The Observatory of Economic Complexity. (2021a). *Cassava in Thailand Export and Import*.

<https://oec.world/en/profile/bilateral-product/cassava/reporter/tha>.

[14] The Observatory of Economic Complexity. (2021b). *Cassava in China Export and Import*.

<https://oec.world/en/profile/bilateral-product/cassava/reporter/chn?redirect=true>.