

日本におけるキャッサバ芋の生産と販売  
—静岡県的事例—

Cassava Production and Its Commercialization in Japan:  
Cases Studies of Shizuoka Prefecture

Aparecida Mitsue MITUIASSU

Summary

Cassava (*Manihot esculenta Crantz*) is a perennial plant cultivated in many parts of the world. In 2021, cassava was produced in almost 100 countries in Latin America, Africa and Asia. In Japan, however, although cassava can be found in southern islands such as in Okinawa and Tokunoshima, it is not well known among Japanese in the main island. In recent years, however, the author observed a growing supply of fresh cassava in Japan. As cassava is a very perishable root, the growing supply of fresh cassava was an indication of the increase in local production. This paper is the result of an exploratory research conducted by the author with cassava growers in Shizuoka Prefecture about their cassava production, commercialization and the challenges faced in cassava cultivation.

**Keywords:** Cassava, cassava production, Japan, Shizuoka Prefecture

1.Introduction

Cassava (*Manihot esculenta Crantz*) is a perennial plant cultivated in many parts of the world. After maize and rice, cassava is an important source of calories and it plays an important role in guaranteeing food security for millions of people in poor areas of Latin America, Africa and Asia. According to FAO, it is considered an important crop for human consumption and animal feeding and also has many applications in industrial sectors (FAO, 2013).

In 2021, cassava was produced in almost 100 countries in Latin America, Africa and Asia. In this year, cassava world production was of 319,766,584 tonnes and the cultivated area totaled 29,955,187 hectares (FAO Statistics, 2022). The largest 10

producing countries were Nigeria, Democratic Republic of the Congo, Thailand, Ghana, Brazil, Indonesia, Vietnam, Angola, Cambodia and Cote d' Ivoire, consecutively. These countries' production accounted for 73% of world's production.



Picture 1: Cassava roots  
(*Manihot esculenta Crantz*)

In many countries, cassava is cultivated for subsistence purposes whereas in countries such as Brazil, apart from serving as a crop for human and animal consumption, it is also processed and used as inputs for many industries.

Although cassava is an important crop in many countries in terms of food security, according to O'Connor (2013), "studies of empire food commodities have concentrated on the great export commodities sugar, tea, coffee, chocolate, spices and tobacco – the first 'exotic groceries'". And there were other "hidden" commodities of empire such as cassava that "is arguably the most important food crop in the tropical and subtropical regions of the world, but it has been largely overlooked in Anglo-American food histories and studies..." (O'Connor, 2013).

In Japan, cassava is not well known among Japanese in the main island as a crop for consumption. The cassava-derived product "tapioca pearls" became very popular in Japan for being used in drinks, yogurts and desserts and are nowadays easily found in the Japanese market. According to the newspaper "Nikkei Asian Review"(2019), Japan imported 6,300 tons of tapioca from January to July of 2019, which represented more than double the amount imported in the previous year. As a result of this boom, "tapioca" pearls in Japan became very familiar. According to Nagatomo (2003), however, studies show that tapioca pearls were imported from France and United States and consumed in Meiji period (1868~1912), and they were also introduced in many recipes of food publications such as "Shokudoraku"<sup>i</sup>. In

Taisho Era (1912~1926), imported cassava starch was also used in caramels (Nagatomo, 2003). Nowadays, despite the boom of tapioca pearls, it is not widely known that they are made from cassava.

In the case of cassava as a root for consumption or for utilization for other processed cassava products, although it can be found in Okinawa and Tokunoshima Islands in southern Japan, it is not a popular crop among Japanese people, especially in the main island. In the past years, however, a wide range of cassava-processed products has been observed in Japan (Mituiassu, 2018) at ethnic Brazilian shops, e-commerce shops specialized in products for foreigners and Japanese websites such as "Rakuten", "Mercari" and "Yahoo Japan". In addition, the author also observed a growing supply of fresh cassava at sites such as "Facebook", "Yahoo Shopping" and Japanese small farmers' websites. As cassava is a very perishable root, the growing supply of fresh cassava was an indication of the increase in local production.

As a result of the above, the author started conducting exploratory researches on cassava production in Japan<sup>ii</sup> and this paper addresses the result of interviews conducted by the author with cassava growers in Shizuoka Prefecture. The methodology was based on semi-structured interviews made with 3 cassava growers from Kikugawa<sup>iii</sup>, Kakegawa and Hamamatsu cities, in Shizuoka Prefecture (Japan) in 2021 and 2022. The objective of this study was to identify the producer's motivations for producing cassava, the characteristics of this informal cassava market and the challenges faced by the producers.

The paper will be divided into four parts, including this introduction. The second part presents the three case studies and main information obtained from the interviews. The third part presents the cassava production of the three cassava growers, commercialization prices, market trends and challenges faced by cassava growers. The fourth part addresses the main findings, preliminary conclusions and further research.

## 2. Cassava Production and commercialization in Shizuoka Prefecture: three case studies

### 2.1 Cassava Grower A (here and after called CGA), from Kikugawa City

Cassava Grower A (CGA) was born in Kagawa Prefecture in Japan and migrated to Brazil in 1957 at the age of 11. His family, together with other Japanese families, migrated to Brazil as part of the Brazilian immigration program, sponsored by the Brazilian “Instituto Nacional de Imigração e Colonização - INIC” (Colonization and Immigration National Institute). He lived for 32 years in the northern part of Brazil, in Pará State (Amazon biome) and dedicated his life in Brazil to agriculture. At the age of 29, he got married to his wife (also a Japanese national) and she dedicated her time to the family’s business. In 1989, they returned to Japan and initially worked at Japanese manufacturing companies. After a period of comings and goings between Brazil and Japan, they decided to live permanently in Shizuoka Prefecture. In 2003, they opened a Brazilian restaurant specialized in traditional Pará State cuisine which uses a lot of cassava. In the beginning, to prepare the traditional dishes they

acquired the cassava roots, the leaves and cassava flour from a cassava grower from Okinawa.



Picture 2: Maniçoba, traditional Pará State food prepared with cassava leaves.  
Photo taken by the author



Picture 3: Tapioca starch produced by CGA’s wife  
Photo taken by the author

Around 2011, CGA made his first attempts in trying to cultivate cassava in Japan by obtaining the saplings from Okinawa. In the first years, due to the lack of experience in cassava cultivation in temperate climate with periods of very low temperatures, harvesting was not successful and the roots were too small. In addition, the varieties of cassava he obtained from Okinawa and Tokunoshima were different from the ones he knew in Brazil. After trials and errors and testing many cultivation timings and techniques, investing in agricultural inputs and machinery, in 2016, he was successful in the

cultivation of approximately 6 tons of cassava in an area of 9,000 square meters. In that year, around 2/3 of the cassava production were sold fresh directly to customers, mostly Brazilians living in Japan and the remaining part was sold to his wife's restaurant. The cassava was peeled and frozen for future use in preparations of Pará food in the restaurant. Commercialization of cassava was done mainly by direct sales or sent to customers by "takkyubin", a Japanese express delivery service. Facebook was an important SNS tool to reach Brazilian and other customers. Local production allowed CGA and his wife to have fresh or frozen cassava for sales and a cheaper and easier supply of cassava for the restaurant. In addition, it also allowed them to produce cassava-processed products such as cassava flour and frozen cassava starch for the Brazilian community living in Japan. In 2017, cassava harvesting reached around 6 tons but in 2018, due to weather conditions and many typhoons, cassava harvesting was of 2 tons. In 2020, CGA started cultivating in partnership with his son and he also started concentrating his efforts on the production of saplings for sale. In 2020 he harvested around 3 tonnes of cassava, and in 2021, 1.5 tonnes. In 2022, harvest was around 4 tonnes. However, due to the increase of cassava growers, sales dropped significantly. CGA had to reduce substantially his price and 90% of his production was frozen.

CGA has shared his experiences with other Japanese farmers of the region and now some Japanese are also cultivating cassava. Believing that cassava is an im-



Picture 4: Cassava plantation at Cassava Grower A's vinyl house  
Photo taken by the author



Picture 5: CGA's cassava plantation  
Photo taken by the author

portant crop, he made various attempts to introduce cassava to local authorities and agricultural cooperatives but his efforts were also in vain due to unawareness about the crop.

## 2.2 Cassava Grower B (here and after called CGB) from Kakegawa City

Cassava Grower B (CGB) was born in Brazil in the State of São Paulo and is a Brazilian citizen with Japanese ancestry ("Nikkei"). In 1989, at 22 years old, CGB came to Japan to work at Japanese manufactures. Nowadays, he still works at Japanese factories and on weekends he dedicates his time to cassava culture.

In 2018, CGB started cultivating cassava in partnership with 2 other partners, in an area of 1,500 m<sup>2</sup> and they were able to harvest around 300 kg of cassava. The first cassava saplings were obtained from Tokunoshima, Kagoshima Prefecture. As cassava samplings were also obtained from other sources, Cassava Grower B has selected the best saplings and cassava roots to standardize the production and improve its quality. As a result, CGB has produced his own saplings. Due to soil preparation and management, the use of fertilizers and improvements in cultivation, CGB mentioned that cassava productivity increased significantly. In addition, investments on machinery also contributed to faster cultivation and harvesting.

In 2019, CGB started producing cassava independently in the same area and harvested around 500kgs. In 2020, harvest was around 1,200 kgs of which 200kgs were frozen for further sales. In 2021, he increased the area to 2,000 m<sup>2</sup>, and harvested around 800kgs with 300kgs being frozen. In 2022, from the 1.5 tonnes of harvested cassava, 500kgs were frozen. CGB mentioned that he experienced substantial decline in sales due to the increase of cassava growers in the region.



Picture 6: Cassava Grower B's plantation  
Photo taken by the author



Picture 7: CGB's Frozen Cassava (boiled and raw)  
Photo taken by the author

CGB's wife who is in charge of sales and advertisement, uses the Facebook page to sell their cassava. Cassava roots are sold directly to customers at the plantation site or are sent by "takkyubin", a Japanese express delivery service. Both fresh and frozen cassava are sent using this delivery system. In 2021, apart from Brazilian customers, CGB also observed an increase in demand for cassava by foreigners from Indonesia, Philippines and Thailand. In the case of Indonesians, there was also demand for cassava leaves for the preparation of Indonesian dishes. CGB did not sell but donated cassava leaves for Indonesian customers. In 2022, however, most customers were Brazilians and just a few customers were of other nationalities. CGB believes that customers from other countries may be purchasing cassava from cheaper producers or from new cassava growers of their nationality. CGB also pointed out that the decrease in sales is also related to the low income of foreigners, especially Brazilians due to the effects of Corona Virus on foreigners' working hours and employment. As a result, in 2022, CGB made several donations to individuals that had lost their jobs. In addition, due to the large

amount of cassava available, CGB also made donations to a Brazilian school and to the local church.

### 2.3 Cassava Grower C (here and after called CGC) from Hamamatsu City

Cassava Grower C (CGC) was born in Brazil, in São Paulo State and is a Brazilian citizen with Japanese ancestry (“Nikkei”). In 1984 he moved to Mato Grosso do Sul State in Brazil, where his family used to be dedicated to agricultural activities and also sales of vegetables at the local market. In 2007, CGC came to Japan with his family to work at Japanese auto parts factories. In 2009, however, due to the Lehman Shock he lost his job and started a small business for the production of Brazilian seasonings. To guarantee a stable source of ingredients, he started producing chives and parsley in a small plot of land.

In 2015, CGC started producing various vegetables in a vinyl house he rented from a Japanese farmer. In that year, he cultivated around 50 cassava trees and could harvest around 300 Kgs. The first saplings were obtained in Tokunoshima, Kagoshima Prefecture and from his own harvest he could produce his own saplings. In the following years he did not increase his cultivation so much. In 2018, he noticed an increasing demand for cassava, increased his cultivation and harvested around 4 tonnes of cassava. However, once more, noticing that the supply of cassava was increasing due to a growing number of cassava growers, he decreased again his cultivation in the following years. In 2019 he harvested 150 Kgs and in 2020, he produced 300Kgs. Sales of fresh cassava were done at the cultivation

site or sent by “takkyubin”, the Japanese express delivery service. He reached his consumers through his page in Facebook and You Tube. In 2021, from the 500Kgs harvested, around 70% were sold directly to a Japanese chain store. In 2022, CGC was able to harvest around 600Kg and almost the whole production was sold to the same Japanese store, leaving just a few kilograms for self-consumption. In case of direct sales, most customers were Brazilians who live in Hamamatsu and surrounding areas. And sales by couriers were Brazilians and foreigners from other regions. In the case of the customers of the Japanese chain store, as it is a shop where there are many foreign clients, CGC believes that his cassava was also purchased by foreigners especially from Asia, and not only by Brazilians living in Hamamatsu.

CGC mentioned that due to the introduction of soil preparation and management, introduction of fertilizers and calcium, rotations of cultures and introduction of various cultivation techniques, cassava productivity increased substantially. And these techniques he shares on his page in You Tube.



Picture 8: CGC's cassava production in the vinyl house

Photo taken by the author



Picture 9: CGC's vinyl house  
Photo taken by the author

### 3. Cassava Prices, Market Trends and Challenges

According to the interviews conducted with cassava growers, the motivations that led them to invest in the cultivation of cassava was the growing demand for this crop, especially among the foreign residents in Japan. In the case of Cassava Grower A, the initial motivation was also related to the possibility of guaranteeing a more stable and cheaper source of cassava for the restaurant of his wife that is specialized in Pará State culinary which uses a lot of cassava. And having the cassava, it also allowed them to produce other cassava products such as cassava flour and tapioca starch. Table 1 shows a summary of cassava production of the three cassava growers presented in the previous section.

Table 1. Cassava Production in Shizuoka Prefecture (Case Studies)  
Tonnes(\*)

Year	Cassava Grower A	Cassava Grower B	Cassava Grower C
2015			0.3
2016	6		0.3
2017	6		0.5
2018	2	0.3	4
2019	2	0.5	0.15
2020	3	1.2	0.3
2021	1.5	0.8	0.5
2022	4	1.5	0.6

(\*) Approximate quantities

Source: Data based on interviews conducted with cassava growers

In recent years, however, the interviewees mentioned that there has been an increasing number of new cassava growers, motivated by the opportunity of obtaining an extra income through the cultivation of cassava. The basic principles of supply and demand can be observed in this informal cassava market. Due to the increase of cassava growers (suppliers), the cassava growers A and B mentioned that sales dropped substantially, especially in the past two years, and a large portion of the harvested cassava had to be frozen for sales during the off-season period to avoid losses. In the case of Cassava Grower C, direct sales and distribution to a Japanese chain store allowed him to commercialize almost all of his cassava production in 2022, leaving only a few kilograms for self-consumption. As a result of the market mechanism, the increase in supply of cassava in the market forced prices downwards and the cassava growers interviewed in this study, in order to guarantee their sales and avoid losses also reduced their prices as can be seen in Table 2.

Table 2. Cassava's Price in Shizuoka Prefecture (Case Studies)

	Fresh Cassava ¥/Kg		Frozen Cassava (Peeled) ¥/Kg	
CGA	2021	¥700 → ¥500	2021	¥1,000
	2022	¥800 → ¥600 → ¥500	2022	¥800
CGB	2021	¥700 (> 4kg: ¥650)	2021	¥1,000
	2022	¥650	2022	¥900
CGC	2021	¥1,000	2021	¥1,000
	2022	¥800 (direct sales) ¥900 (Japanese store)	2022	¥1,000 (not peeled)

Source: Data based on interviews conducted with cassava growers

Table 2 shows the price of fresh cassava and frozen cassava sold by each producer. In the case of CGA, in 2021, the price of fresh cassava in the beginning of the

harvest was ¥700 per kilogram. However, CGA had to reduce his price to ¥500 in the end of harvest season as there were too many cassava producers, meaning the supply was much higher than the demand. The same trend occurred in 2022. In the beginning of the harvest season, the price was ¥800 per kilogram. However, due to the competition from other growers, he had to reduce the price to ¥500 to guarantee sales and avoid stocks or losses. Even reducing the prices, in 2022, a great part of this production had to be peeled and frozen (around 90%). In the case of peeled frozen cassava, in 2021, CGA sold it at ¥1,000 per kilogram whereas in 2022, he had to reduce the price to ¥800 per kilogram.

Cassava Grower B used to sell fresh cassava for ¥700 per kilogram until 2021. For larger purchases (more than 4 kgs), a ¥50 discount was granted and consumers purchased it for ¥650 per kilogram<sup>iv</sup>. In 2022, however, Cassava Grower B reduced his price to ¥650 per kilogram and did not give discounts for purchases of larger quantities. As for frozen peeled cassava, Cassava Grower B also reduced the price from ¥1,000 to ¥900 per kilogram. Even after reducing the prices, CGB was not able to commercialize the cassava due to an overabundant supply, and 1/3 of the harvested cassava had to be peeled and frozen.

In the case of Cassava Grower C, in 2021, the price of fresh cassava both for direct sales and for distribution to the Japanese chain store was ¥1,000 per kilogram. In 2022, CGC, in order to guarantee his sales, reduced the price of

direct sales to ¥800 per kilogram and ¥900 per kilogram for the Japanese chain store. In the case of frozen cassava, in 2021, peeled cassava was ¥1,000 per kilogram and in 2022, he offered non-peeled frozen cassava for ¥1,000 per kilogram.

As observed, the cassava market in Japan is undergoing many adjustments due to the increase of cassava growers. The basic mechanisms of supply and demand can be observed here, where with larger supplies of cassava, the prices also have declined. From the point of view of consumers, it is a positive aspect as with a larger number of cassava growers they can have access to lower prices. However, it is not possible to predict how the cassava market will develop in the short-run and how prices will be defined in the following years due to the lack of data on cassava growers, production, sales, prices, investments, etc. According to the interviewees, most of the newcomers (new cassava growers) do not take into account all the embodied costs of production such as input for cultivation (especially the price of saplings), working hours (during the weekends), investments in machinery and equipment (agricultural machinery, freezers, etc.), marketing and “know-how”. Cassava newcomers are mostly attracted by the price of crop for sales, without taking into account other costs. As a result, the prices set now by the market may still be a misleading parameter. In addition, according to one of the interviewees, the lack of experience on plantations and knowledge on the correct period for harvesting has caused many losses for many



cassava growers in 2022. So, it will be important to observe the production, commercialization and price trends in 2023 and following years in order to understand the development of the cassava market in Japan.

In relation to the challenges faced by the interviewees, they mentioned that they have dedicated plenty of resources (time and capital) in the cultivation of cassava in Japan and the increasing number of cassava growers without basic expertise may affect their business. In addition, through “learning by doing”, they have developed their own cultivation techniques. They also mentioned that cassava cultivation is very challenging due to the temperate climate, periods of heavy rains and typhoons, and the financial risks are quite high. In addition, in Japan, the period for cultivation and harvest (April to November) is too short compared to other countries where the cassava root can be kept in the soil for long periods. As temperatures become very low in December, it is not possible to keep the cassava roots in the soil. As a result, to guarantee saplings for the next cultivation, it is necessary to cut the cassava trees and keep the stems protected in a warm place until the following cultivation that takes place around April and May.

Another important fact mentioned by the interviewees is the lack of knowledge by the Japanese people about cassava roots, its food culture and the possibility for use not only for human consumption but also for animal feeding or in other industries. As a result, cassava is still limited to the foreign community in Japan.

#### 4. Important findings, preliminary conclusions and further research

In this paper, the author presented the result of an exploratory research and interviews conducted with three cassava growers of Shizuoka Prefecture, Japan about the production and commercialization of cassava. Although cassava is not a popular crop among Japanese people, in this exploratory research, it was observed that cassava growers were motivated to cultivate cassava due to the potential of the Brazilian and foreign community market in Japan. Many foreigners living in Japan are from countries where cassava is cultivated and highly consumed such as Brazil, Peru, Philippines, African and various Asian countries. As a result, these foreign communities in Japan represents an important market niche for cassava and cassava-derived products.

An important finding was that the cultivation of cassava in Japan still presents many challenges for growers. The three interviewees mentioned that cassava cultivation is very challenging due to the temperate climate, periods of heavy rains and typhoons and constant climate changes. As a result, the financial risks are also very high. From the point of view of production techniques, it was interesting to observe that through a “learning by doing” process, in order to improve cassava cultivation, these cassava growers have introduced many techniques such as cultivation methods, soil preparation and management, the use of fertilizers, rotation of cultures, etc. This is an important asset and demonstrates the importance of the experiential and tacit knowledge in the

cultivation of a new crop in temperate regions.

The cassava market in Japan is undergoing many adjustments due to the increase of cassava growers. With the growing number of cassava growers, prices have decreased substantially. However, due to the lack of information on cassava producers, production values, commercialization, prices, investment on production, marketing, etc, it is still difficult to predict how the cassava market will behave in the following years. From these three case studies, it was possible to find important information about the production, commercialization and common challenges faced by cassava growers in Shizuoka Prefecture. Still, further and more detailed exploratory research is necessary to understand the development of the cassava market in Japan.

Cassava has been cultivated in various prefectures in Japan such as Aichi, Nagano, Gunma, Hyogo, Chiba, Okinawa, Kagoshima and many others. Not only Brazilian but also Japanese and foreigners of other nationalities are cultivating cassava and further exploratory research in other prefectures will be the focus of future studies.

#### References :

- Food and Agriculture Organization of the United Nations – FAO.2013. Save and Grow: Cassava - A guide to sustainable production intensification. Rome. Available at: <http://www.fao.org/3/a-i3278e.pdf>. (Last access: December 25, 2022).
- Food and Agriculture Organization of the United Nations. FAOSTAT Statistics Database. Available at <http://www.fao.org/faostat/en/#home>. (Last access: December 30, 2022).
- Mituiassu Aparecida Mitsue.2018. “Cassava and Its Market Expansion Possibilities in Japan”, *Hamamatsu Gakuin University Collected Treatises* 14, 61-79, Hamamatsu Gakuin University.
- Mituiassu Aparecida Mitsue.2019. “Cassava in Japan: an overlooked crop? Case Studies of Kagoshima and Shizuoka Prefectures”, Proceedings of the “The Joint International Conference of the Japan Society for International Development (JASID) and the Japan Association for Human Security Studies (JAHSS)”, Pages 7-13, Tokyo University, November 16 & 17, Tokyo.
- Nagatomo Makiko.2003. “Nihon ni okeru tapioca koukyushokuzai kara daiyoushoku e”, *Human and Life Science* 37, 41-47, Doshisha Women’s College of Liberal Arts
- Nikkei Asian Review.2019. “Japan imported 6,300 tons of tapioca from January to July of 2019, which represents more than double of the amount imported in the previous year”. Available at <https://asia.nikkei.com/Business/Business-trends/Tapioca-imports-to-Japan-surge-thanks-to-bubble-tea-popularity> (Last access: December 25, 2022).
- O’Connor K. 2013.Beyond ‘Exotic Groceries’: Tapioca/Cassava/Manioc, a Hidden Commodity of Empires and Globalisation. In: Curry-Machado J. (eds)

Global Histories, Imperial Commodities, Local Interactions. Cambridge Imperial and Post-Colonial Studies Series. Palgrave Macmillan, London.

### Acknowledgements

Special thanks for the cassava growers from Kikugawa, Kakegawa and Hamamatsu who kindly provided information on cassava production and commercialization.

---

<sup>i</sup> In Japanese, the name of the publication is 「食道楽」.

<sup>ii</sup> The author has also conducted exploratory research on cassava production in Tokunoshima, Kagoshima Prefecture, Japan in 2018. For exploratory research on Cassava in Tokunoshima, Kagoshima see Mituiassu (2019).

<sup>iii</sup> The first interview with the cassava grower from Kikugawa was made in 2018, and follow-up interviews have been made periodically.

<sup>iv</sup> Cassava Grower B mentioned that some customers used to buy the cassava for re-sales.