

Current state of rice production in Japan and the need for connected people

Satoshi Morita (Faculty of Economics and Management, Hokuriku University, s-morita@hokuriku-u.ac.jp, Japan)

Takashi Oyabu (Nihonkai International Exchange Center, oyabu24@gmail.com, Japan)

Miyuki Ajiki (Graduate School of Natural Science and Technology, Kanazawa University, m-ajiki@stu.kanazawa-u.ac.jp, Japan)

Satoshi Futakuchi (Faculty of Liberal Arts, Kanazawa Seiryō University, niro@seiryō-u.ac.jp, Japan)

Hidetaka Nambo (Graduate School of Natural Science and Technology, Kanazawa University, nambo@ec.t.kanazawa-u.ac.jp, Japan)

Abstract

Japanese agriculture is at a crossroads. The rice shortage in 2024 caused prices to skyrocket, and led to consumer confusion. While there was not a significant difference in rice production before and after that period, one of contributing factors was the surge in foreign visitors to Japan due to factors such as the weaker yen which led to increased domestic rice consumption. Another contributing factor was the extreme heat in 2023, which led to a decrease in rice production. Japan's food self-sufficiency rate is only about 38 % on a calorie basis and food security is extremely inadequate. On the other hand, the aging of agricultural workers and the significant decrease in the number of small-scale farms are leading to an increase in abandoned farmland in mountainous and hilly areas. No effective measures have been put forward to improve the food self-sufficiency rate. The population is extremely concentrated in Tokyo, and the population living in rural areas is declining. As a result, the number of vacant houses and damage caused by wild animals are increasing, and the deterioration of the country's land is progressing. It is urgent that government subsidies be introduced not only for large-scale farmers but also for small-scale farmers in mountainous and hilly areas to ensure appropriate agricultural production and land preservation. Rice is a staple food for the Japanese people and a policy to balance supply and demand is particularly essential. Rice farmers are subjected to harsh working conditions during the peak season. This paper proposes utilizing connected people (people with ties to the area) to secure labor during the busy farming season and outlines the ideal form of accommodation facilities for the people. It is necessary to consider utilizing them as the connected people giving the rapid increase in foreign visitors to Japan. This paper also discusses the unstable supply of rice in relation to the increase in foreign visitors to Japan, climate change, and changes in agricultural structure.

Keywords

agriculture, rice production, food self-sufficiency, connected people, foreign tourist

1. Introduction

Japanese agriculture is at a critical crossroads. The rice harvest for 2022 (staple rice) was reported as 6.7 million tons, approximately 6.61 million tons for 2023, and 6.79 million tons for 2024. The rice prices for 2024 skyrocketed and it caused a panic among the Japanese people, even though the harvest volume for 2023 was only slightly lower than the previous year [Yamashita, 2025]. The vulnerability of Japan's rice production has been exposed. This market disruption is not solely due to a decrease in harvest yields, but also partly due to increased domestic rice consumption resulting from the rise in foreign visitors to Japan.

The number of foreign visitors to Japan surged and tourists ate Japanese food, and the domestic rice consumption increased with the end of the COVID-19 pandemic [Lai and Furuya, 2024]. It was necessary to take those factors into consideration and balance supply and demand. Flexible management and operation are naturally required, including the release of the government's rice reserves which are said to amount to 1 million tons. Japan ranks third in the world for rice yield per unit area. It is only about 50 % of Australia's yield, so there is still room for improvement. On the other hand, Japanese rice

has excellent taste and texture, and is among the highest-priced rice varieties in the world [Nishimori et al., 2020].

Japanese farmers possess exceptional skills in rice production, but they are facing an aging workforce and the number of agricultural management entities is also decreasing [Kurihara et al., 2025]. It is an important challenge whether elderly farmers will be able to withstand the traditional heavy labor from now on. The natural decline in agricultural production is unavoidable with fewer successors to farming and an increase in abandoned farmland. Even though the introduction of smart agriculture utilizing drones and AI (artificial intelligence) is attracting attention, it is impossible for small-scale farmers to master the use of these devices in a short period of time [Miyake, 2025]. Training institutions and personnel are also needed to disseminate the technology. The reduction in rice production leads to a decline in rice consumption and an increase in rice imports, further accelerating the decline of domestic agriculture. A system of increased production should be made to the extent possible in order for Japanese agriculture to be sustainably maintained. The number of foreign visitors to Japan is increasing and there is a global "Japanese food boom." The opportunities for private companies to flexibly stockpile rice should be increased rather than relying solely on government stockpiling to promote active rice exports and aim for labor savings and cost reductions. Determining the fair value of the "estimated payment" that is made to rice producers before

shipment is also an important matter. The price of rice in Japan in 2025 was an unusually high estimated payment and it caused hardship for consumers. Rice is a staple food for the Japanese people and it is necessary to continuously examine the price from various perspectives. This is an issue that also relates to food self-sufficiency. Policies should be developed that take into account the boom in Japanese cuisine as well as the potential increase in rice exports and foreign visitors to Japan.

2. Japan's rice production and demand

2.1 Rice production

Rice produced in Japan is classified into the following five types. Most are used as a staple food. The government-stocked rice (around 2 %) is included in staple rice. The rice for processing is used for rice crackers, sake brewing and frozen rice dishes. Whole Crop Silage (WCS) is used as feed for cattle and other animals.

Staple food (80-85 %), processing (3-5 %), feed (10-15 %), WCS, seeds (about 1 %)

The trend in the production volume of rice for consumption in Japan is shown in Figure 1. Japanese rice production was maintained at over 7 million tons until around 2020, but it decreased to around 6.7 million tons from 2022 to 2024, resulting in a rice shortage and high store prices (over 4,000 yen for 5 kg). The production hit rock bottom in 2023, and then in 2024, the price surge known as the “Reiwa Rice Riot” occurred, causing confusion among consumers. The production was skyrocketed to 7.5 million tons in 2025, exceeding demand (by approximately 0.4 million tons). Despite this and increased private stockpiles, the retail prices remained high even into April 2026. The retail stores such as convenience stores saw consequently a surge in the prices of items like rice balls. It is necessary to implement measures such as highly accurate harvest forecasts and increasing private stockpiles to ensure a stable supply of rice. Consumers will increasingly turn away from rice if this situation continues, and the effects will boomerang not only on consumers but also on producers. The restaurant

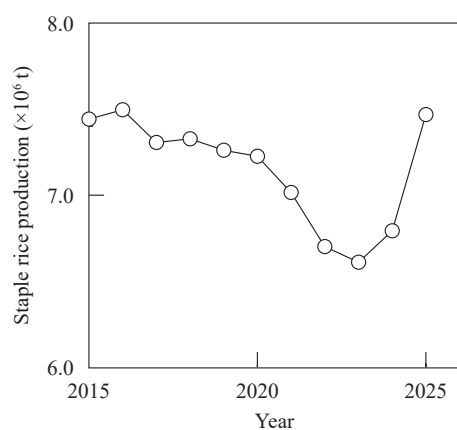


Figure 1: Changes in staple rice production in Japan

industry already uses a large amount of imported rice and the volume of rice imports is rapidly increasing. There are concerns that easily increasing rice imports could jeopardize the ability to maintain the supply of domestically produced rice.

2.2 Import volume of agricultural product

Japan's food self-sufficiency rate is approximately 38 % on a calorie basis and around 60 % on a production value basis. The value is the lowest among the G7 countries. Japan relies heavily on imports for much of its food supply. The trend in the value of agricultural product imports are indicated in Figure 2. Agricultural products generally refer to the following: grains, soybeans, vegetables, fruits, etc.

Grains (corn, wheat) account for the largest volume of imports, while fruits and vegetables account for the largest value of imports [Shogenji, 2019]. It has been increasing rapidly since 2021. If the rice production also declines, it will lead to a further decrease in food self-sufficiency, further jeopardizing food security. The Food and Agriculture Organization of the United Nations (FAO) defines food security as follows: “Food security can be said to be achieved when everyone has access to sufficient, safe, and nutritious food necessary to lead an active and healthy life.”

The restaurant industry and other sectors are increasingly purchasing imported rice due to the soaring price of Japanese rice. The restaurant and prepared food industries (convenience stores, supermarkets, etc.) tend to import rice to reduce the costs for the rice-related products. This trend will further impact to Japan's food self-sufficiency rate. Japan must halt the decline in rice consumption among people, encourage the purchase of Japanese-grown rice, and build a vision for establishing sustainable agriculture. The Japanese Ministry of Finance released the forecast for private rice imports in 2025. It reached 97,000 tons, which is 96 times the amount in 2024 (approximately 1,000 tons). It is clear that the abnormal surge in the price of domestically produced rice is the cause. If this situation continues, it will not have a positive impact on Japan's rice production. The main import-sources are as follows, with most imports coming from the U.S.A.

2025: U.S.A. (78.1 %), Taiwan (7.3 %), Vietnam (4.7 %), Others (approximately 10 %)

Japan has established a Minimum Access (MA) quota for tariff-free rice imports (minimum import volume). Up to 770,000 tons per year can be imported tax-free. If the quantity exceeds this amount, a customs duty of 341 yen per kilogram will be charged. The import volume exceeded this limit in 2025. The restaurant industry determined that it could still be profitable even after paying this tariff. California is the main rice-producing region in the U.S.A. for the Japanese market, and it is said to already possess the taste and quality that Japanese people prefer. Japan's rice production will face a critical situation if this situation continues.

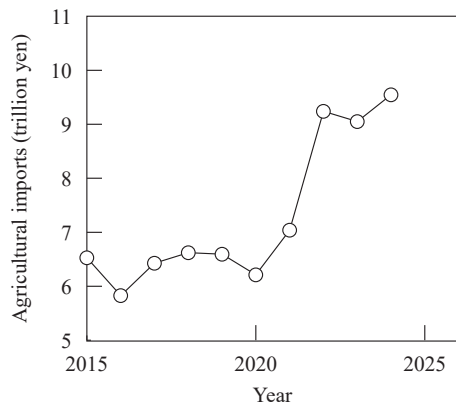


Figure 2: Agricultural imports

2.3 Agricultural product

According to the Ministry of Agriculture, Forestry and Fisheries' "Agricultural Census," the number of agricultural management entities (businesses) in 2025 will be approximately 0.83 million. The number of farmers is declining due to a combination of factors, including individual farmers leaving agriculture and the aging of the farming population. On the other hand, the number of corporate farming entities (large-scale farms) is increasing although the absolute number is small.

- Number of individual farmers: 0.8 million
- Number of corporate farming entities: 0.03 million

Large-scale agriculture is gradually progressing to improve the efficiency of rice production (high labor productivity). Consequently, the number of corporate entities is on the rise. However, the considerable number of individual agricultural entities are also necessary in order to effectively utilize mountainous and hilly areas where large-scale farming is difficult, or in areas with small plots of land. Small and medium-sized farmers support a large portion of Japan's food supply. Mountainous and hilly areas account for approximately 70 % of the country's land area (compared to 30 % for flat land), making them unsuitable for large-scale agriculture. When the number of individual agricultural entities decreases, the mountainous and hilly regions become abandoned farmland. The increase in abandoned farmland in mountainous and hilly areas leads to more vacant houses and increases damage from wild animals, and ultimately, land degradation. In Japan, where arable land is limited, maintaining the number of individual agricultural entities is necessary to prevent an increase in abandoned farmland, and this policy is a national priority. In order to improve food self-sufficiency, some policies are needed to efficiently engage small-scale entities such as subsistence farmers and part-time farmers in mountainous and hilly areas where it is difficult for corporate farms (large-scale) to establish themselves. Supporting these small-scale farmers is crucial for the future of Japanese agriculture. The overview is explained in Figure 3. This figure shows that a sharp rise in the prices of agricultural

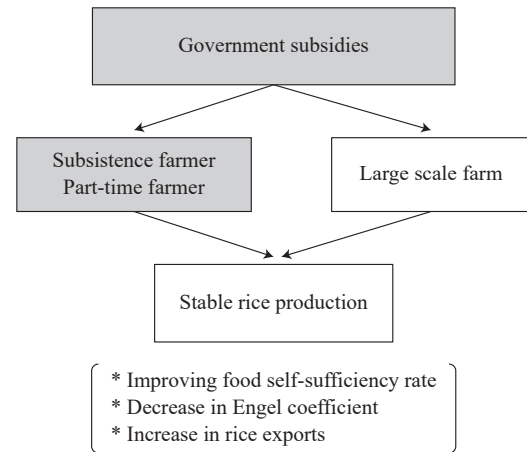


Figure 3: Ensuring the number of part-time farmers through government subsidies

products such as rice can be avoided, and the fluctuations can be kept under control. Furthermore, it can improve food self-sufficiency and contribute to reducing the Engel coefficient [Morita et al., 2025]. A policy of increasing rice production appropriately, rather than a policy of reducing the production, will lead to land conservation in the future. Maintaining the number of small-scale farmers is crucial for preserving the country's land area. Furthermore, the education and implementation of smart farming technologies are needed to improve the quality of management for small-scale farmers [Xiao et al., 2023]. The policies that maintain cultivated area are essential even if the number of farmers decreases.

2.4 Tourism and agriculture

A rice shortage occurred in the Japanese market in 2025. One of the reasons for this is the decrease in production due to the intense summer heat caused by global warming. Furthermore, the weakening Japanese yen made it difficult to import food supplies stably. In the future, there is a need to develop rice varieties that are more resistant to global warming. The rice shortage is partly due to increased consumption resulting from the rise in foreign visitors to Japan. The foreign visitors to Japan are having more opportunities to eat Japanese food with the boom in Japanese cuisine. The trend in the number of foreign visitors to Japan is shown in Figure 4. The number of foreign visitors to Japan was approximately 3.83 million in 2022, partly due to the COVID-19 pandemic. However, it surged to 25.07 million in 2023 (an increase of about 6.5 times) as the pandemic eased. It is natural that food consumption, including rice consumption, increases as the number of foreign visitors to Japan increases. One of the contributing factors is that the government failed to foresee this situation.

The breakdown of foreign visitors to Japan in 2025 is shown in Figure 5. The total accounts for 65 % when the numbers of visitors from South Korea, China, Taiwan, and Hong Kong are combined. These are all countries where people have a tradition of eating rice. South Korea, China and Taiwan are major

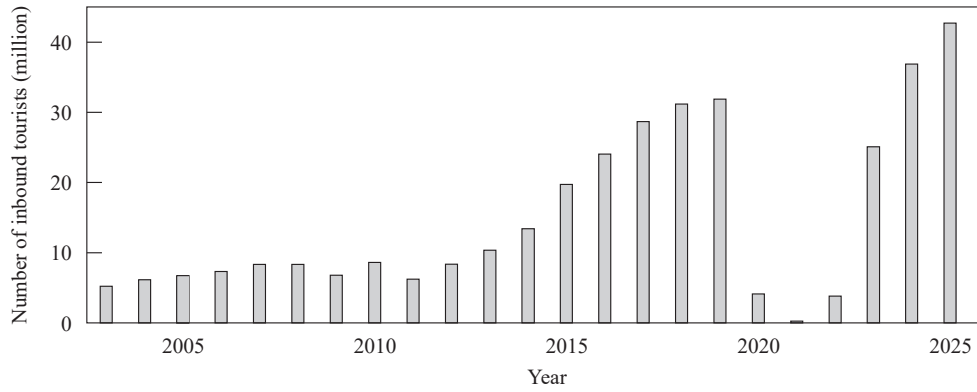


Figure 4: Trends in foreign visitors to Japan

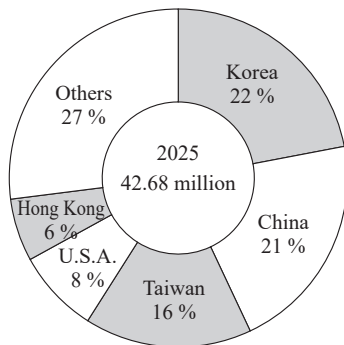


Figure 5: Breakdown of countries and regions of origin for foreign visitors to Japan in 2025

originating regions for foreign visitors to Japan. Japan’s tourism industry is supported by these countries and regions of origin. It is necessary to have a detailed understanding of the number of visitors from these regions from a food consumption perspective. The trends in the number of visitors from these three major countries/regions of origin are indicated in Figure 6. It has risen significantly since 2023, when the COVID-19 pandemic subsided. The policies for domestic rice production and consumption should be developed while also examining the trends of foreign visitors to Japan. Policies that promote the Japanese food boom are a means of maintaining Japanese agriculture. Rice production in 2023 was the lowest at 6.6 mil-

lion tons. The volume in the years before and after that was also in the 6.7 million tons range. Approximately 7.1 million tons are estimated to be needed. If the advantage of the global boom in Japanese cuisine could be taken, and adopt a strategy to increase exports, it will be necessary to produce even more. Maintaining production levels in this way helps maintain the number of agricultural workers and enables the effective use of mountainous and hilly areas. It is necessary to stop the decline in cultivated area by expanding agricultural production.

2.5 Changes in rice production due to global warming

Significant global warming leads to a decrease in rice yield per unit area. In particular, it is said that the intense heat led to a decrease in rice production in 2023. The top three prefectures in Japan for rice production are Niigata (8.3%), Hokkaido (7.5%), and Akita (6.4%), accounting for 22.3% of Japan’s total rice production. The most widely produced variety is ‘Koshihikari.’ The main producing prefectures for this variety are Niigata, Fukui, and Ibaraki. The change in the average daily temperature for August in Niigata Prefecture from 2015 to 2025 is indicated in Figure 7. It is clear that 2023 was a year of unusually high temperatures. The value was 30.6 °C. The average of these values is 27.31 °C. If the average temperature significantly exceeds this value, caution is necessary. An upward trend can be confirmed even excluding 2023. It can be said that global warming is progressing little by little.

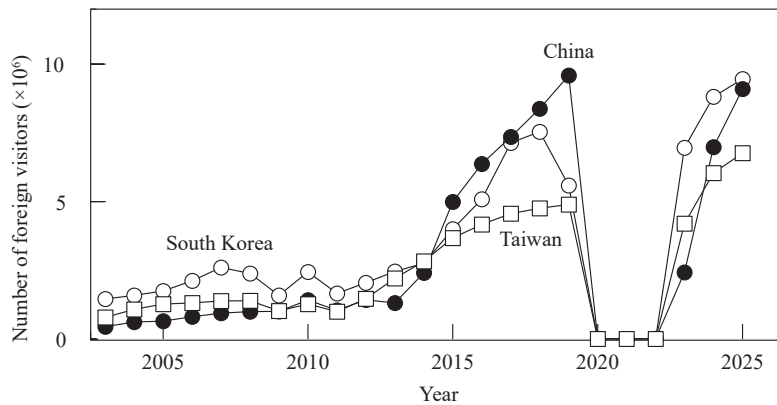


Figure 6: Trends in the number of visitors to Japan from South Korea, China, and Taiwan

It is well known that the yield of rice for consumption is affected by the temperature during the growing season. A scatter diagram of Figure 1 and Figure 7 is created to derive the relationship between temperature and production volume, and it is shown in Figure 8. The important plots include the year. There is no correlation except for 2023, which was unusually high temperature. The low production levels in 2022 and 2024, which are years around 2023, suggest that temperature fluctuations in those years may have negatively impacted rice growth. The scatter diagram yields a correlation coefficient $R^2 = 0.311$ ($R = 0.5577$), indicating a slight correlation. However, there is almost no correlation except for the 2023 plot. Rice production is influenced by various environmental factors, so temperature during growth is not the only factor, but generally, caution is needed when the temperature exceeds approximately 30 °C. Ideally, the temperature in each region with harvest yield

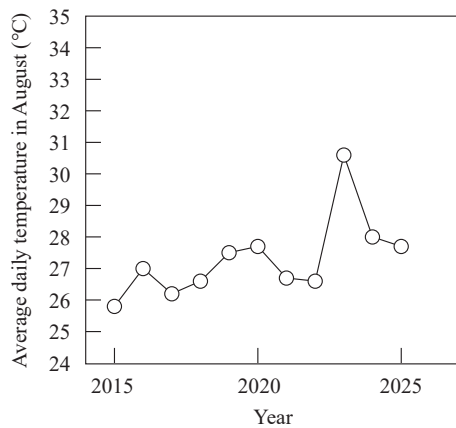


Figure 7: Average daily temperature in Niigata in August

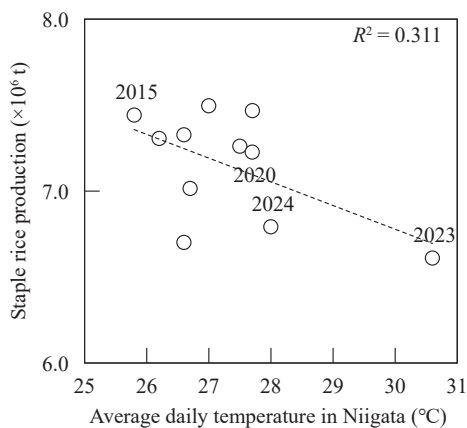


Figure 8: Scatter diagram between average daily temperature in Niigata in August and staple rice production

should be examined, but the relationship with the average daily temperature in August in Niigata Prefecture was investigated, which has the highest harvest yield.

3. Rice production process and cost

Rice goes through a work schedule (process) before reaching the consumer. A rough outline of the process is shown in Figure 9. The fields are tilled and the rice seedlings are planted in early spring. This task is short in duration but physically demanding for farmers. The small-scale farmers also need the labor of family and relatives. The subsequent processes of harvesting, threshing, and hulling the rice are also hard work. The rice harvesting is particularly affected by the weather, and the working time varies depending on the condition of the rice plants (such as whether they have been knocked down by storms). Some farms are experimentally adopting a technique called dry-field direct seeding in order to reduce the labor required for rice planting. This method involves sowing seeds directly into dry rice paddies without flooding them, and is expected to reduce labor during rice planting. Once the seedlings have grown to a certain extent, the rice paddies are filled with water to create a suitable environment for rice cultivation. This method still faces the challenge of weed control.

The rice production costs have been derived. The Japan Rice Supply Stabilization Support Organization presented a model value for the costs from rice production to delivery to consumers (production and distribution). The estimated average price per 5 kg of polished rice was 2,811 yen as of March 2026. It is estimated to be around 3,500 yen after adding a typical profit margin to this value. The retail price was approximately 4,000 yen at that time. Controlling and stabilizing rice prices is an urgent priority. Of course, it is also necessary to focus on reducing the cost at the production and distribution stages. The fair pricing for rice and other agricultural products contributes not only to consumers' diets but also to the maintenance of Japanese agriculture.

4. Connected people

Japanese agriculture is in decline. There are several factors that contribute to the decline. The factors are indicated as follows:

- Aging and decline of agricultural workers
- Japanese people are moving away from rice
- Increase in abandoned farmland
- Soaring prices of fertilizers, etc.
- Rising prices and maintenance costs for agricultural machin-

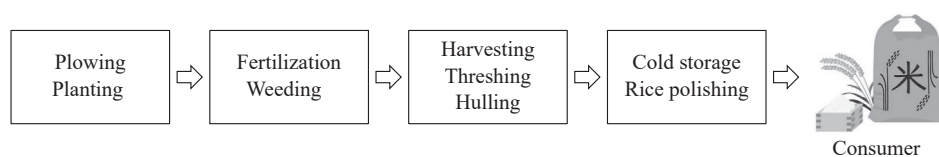


Figure 9: Process from rice cultivation to rice milling

ery

- Government production cuts

The most significant factor in these is the decline and aging of the agricultural workforce. This factor is leading to an increase in abandoned farmland. If agricultural productivity improves and the income increases, it would be possible to increase the number of agricultural workers, but there is no good solution at present. At least, land conservation by introducing agricultural digital transformation (DX) and subsidies for small-scale farmers should be considered. Japan's agricultural land area is far below the area required to produce enough food to feed the entire population. The policies to secure necessary farmland are essential from the standpoint of food security. The government is focusing on consolidating farmland from small-scale to large-scale agriculture to improve productivity, and the subsidies are effectively concentrated in the hands of large-scale agricultural entities. The subsidies should be preferably introduced for small-scale agricultural entities.

Rice production fluctuates due to government policies. The production is currently on a downward trend, but there are also expectations for further increases in production. The contributing factors include a global boom in Japanese cuisine and an increasing trend in Japan's rice exports. The trend in export volume of rice for consumption is shown in Figure 10. It has been increasing rapidly since around 2022. It was the year when the COVID-19 pandemic began to ease. The exports amounted to approximately 4,000 tons prior to the year. Since around 2022, the Japanese food boom has become somewhat established, and the consumption of *sushi* and *onigiri* (rice balls) has increased with the rise of health consciousness. The rise of Japanese cuisine is directly linked to the export of Japanese rice. Although Japanese rice is expensive, the demand for authentic products is increasing, especially among the wealthy, and more countries are importing it. Further market development will enable Japanese people to maintain their increased production capacity.

Large-scale agriculture is difficult in mountainous and hilly areas. Large tractors and combine-harvesters cannot be brought in there. The ratio of agricultural land area in mountainous and hilly areas to agricultural land area in flat areas is roughly 7:3, with mountainous and hilly areas making up the majority. Since large-scale agriculture is difficult to implement in mountainous and hilly areas, there are advantages to entrusting those areas to small-scale farmers. The small-scale farmers have long been familiar with the strengths of Japanese rice and possess the potential to further develop. The following are some of the advantages of Japanese-grown rice. These advantages can be leveraged to increase the production and the export of branded rice.

- Goodness of the taste (sweetness and stickiness)
- Plant breeding technology has advanced significantly
- Advanced safety and quality control

- Excellent compatibility with Japanese cuisine
- High brand power

Highly skilled personnel in the agricultural sector is necessary through measures such as introducing subsidies for small-scale farmers and promoting the scaling up of agricultural entities. The introduction of agricultural DX and skilled farmers are required to increase rice production. If there were people to take over the farming business, there would be no problem. However, leaving the securing of agricultural labor to farmers alone will not provide a solution because the declining birth-rate and aging population are progressing. Labor productivity is particularly low among small-scale farmers in mountainous and hilly areas. Labor is concentrated during the rice planting and harvesting seasons. If these farmers can secure enough labor during this period, the production capacity can be maintained and the production volume can be also increased. If "connected people" and other resources can be utilized when labor is needed, the progression of abandoned farmland can be also stopped. The definition of "connected people" is as follows: The people are not "resident population" who have moved to the area, nor "exchange population" who have come as tourists; they are people who are involved with the region in diverse ways.

For example, someone who visits a specific region to participate as a volunteer during rice planting or harvest season, and also takes part in festivals and the preservation of the local landscape. The length of stays for these connected people increases, effectively increasing the "number of staying residents × length of stays" by deepening the ties between these connected people and the local community. The relationship among just the visitor, the connected people and the resident is shown in Figure 11. All three of these elements bring economic benefits to the region. The visitors and connected people increase opportunities to experience different regional cultures and atmospheres, leading to regional revitalization. It is desirable to adopt the connected people from the population concentrated in urban areas. It is also possible to provide agricultural products such as rice and vegetables to the connected people involved in the region as compensation for their labor, which will help maintain production levels. Utilizing of connected people from the sister cities abroad should be also considered. International exchanges can make a significant contribution to diplomacy and have a high potential to boost exports in the midst of a challenging international environment. These exchanges could contribute to the Japanese government's agricultural export target (5 trillion yen by 2030) and also contribute to building collaborative systems during disasters. The accommodation facilities become a challenge when introducing connected people during the busy farming season.

5. Accommodation facility for agricultural experience participants

In Japan, agriculture is declining due to a decrease in the

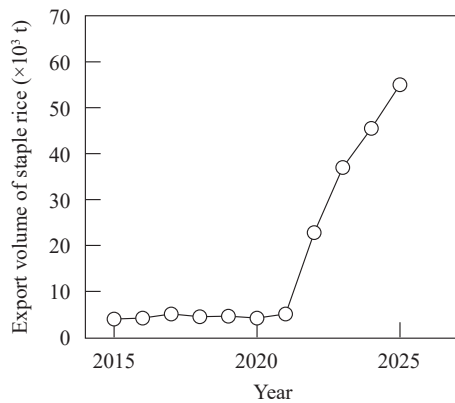


Figure 10: Changes in staple rice export volume from Japan

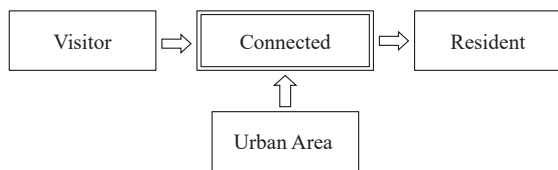


Figure 11: Relationship between visitor, connected people and resident

number of agricultural workers and a slow pace of DX. Innovation is needed to break the current situation. It is difficult to solve these problems quickly. One of the solutions is to establish accommodation facilities where the connected people can easily experience farming during the busy farming season, thereby increasing the manpower and opportunities for people to engage in agriculture. The increase in the number of people participating in agricultural experiences fosters some connections among those involved in the community, which helps to cultivate the local culture and traditions. Agriculture is no longer merely a means of producing food; it is transforming into a way to revitalize a region and pass on its local culture and traditions. The naming of these accommodations is also important. For example, the accommodation could be named “AI Farm Resort” and established in various regions, similar to “Roadside Stations” to create a network. The construction of these accommodation facilities requires government subsidies to maintain agriculture.

It is essential to give AI Farm Resort some distinctive features. While bedding is a given, it is also advisable to prepare farming supplies (rubber boots, work gloves, some work clothes, hoes and sickles, etc.) and essential items for emergencies. The various resources (water, electricity, etc.) must be self-sufficient as much as possible. It utilizes solar power generation and rainwater, and is equipped with a wastewater treatment system. It will also be used as accommodation for some evacuees in the event of a disaster. Flexible operation becomes possible by installing and networking these AI Farm Resorts in various locations. The functions of this facility are shown in Figure 12. This accommodation is equipped with solar power generation (and battery storage), rainwater storage tanks (for

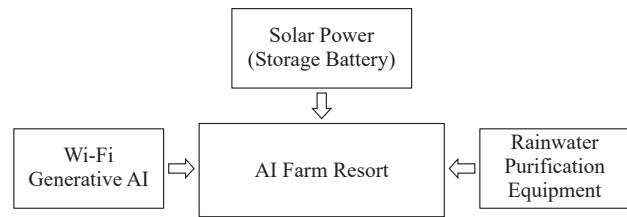


Figure 12: Overview of AI Farm Resort

purification, sterilization and disinfection), Wi-Fi, AI, and a generator. Rainwater is used to water the fields and other areas. Furthermore, the water is purified and sterilized and used for domestic purposes. The use of sterilized water may be considered in some cases, which is a slightly less stringent method than sterilization that reduces the probability of micro-organisms being present to less than 1 in 1 million. It is desirable to adhere to the International Red Cross’s “Sphere Standard” to some degree to make facilities usable during disasters. This standard includes the indicators for water, food, living space, toilets, and other items. In other words, it sets minimum standards for the following four elements that are essential for protecting lives during disasters [Sphere Association, 2018; Sphere Project, 2014; Matsulawa et al., 2022].

- Water supply, sanitation, hygiene promotion
- Securing food and nutrition
- Shelters, reservations, non-food items
- Health activities

It is necessary to proceed with the construction of AI Farm Resort, taking into account installation and maintenance costs in anticipation of an era of population decline. The people staying will use AI to understand the day’s weather data and plan their farm work accordingly. They use AI to display the weather data and crop growth status to help understand the work to be done. They also refer to past weather data and fertilization practices. The instructions from nearby dedicated farmers and other farmers who provide support, will also be necessary.

6. Conclusion

Japanese agriculture is in a critical situation. In particular, some disruptions occurred in rice production and sales from 2024 onwards. One of the causes of the disruption is the decrease in rice production due to extreme weather events caused by global warming. Furthermore, the discrepancy between rice production forecasts and demand forecasts is also a contributing factor. The accurate forecast for rice production volume was not available. From now on, rice demand forecasts must take into account factors such as the increase in foreign visitors to Japan and the rising demand for Japanese rice due to the Japanese food boom. The demand for rice will also rise accordingly as the number of foreign visitors to Japan increases. Japanese rice is of high quality and has the potential to be exported. Measures to address the aging and declining agricultural

population, as well as the slow pace of agricultural DX, are essential. There is an urgent need to address the labor shortage during the busy farming season with the aging population. This paper proposes utilizing “connected people” and providing accommodation facilities (AI Farm Resort) as a countermeasure. Furthermore, this paper highlighted the difficulty of introducing large-scale agriculture in mountainous and hilly areas, and the need for measures to cultivate skilled small-scale farmers and prevent the expansion of abandoned farmland.

References

- Kurihara, S., Maruyama, A., and Sakurai, S. (2025). Data utilization in agricultural management and its issues. *Agricultural Management Studies*, Vol. 63, No. 2, pp. 12-17. (in Japanese)
- Lai, J. A. and Furuya, H. (2024). Changes in destination combinations of inbound foreign visitors before and after the COVID-19. *Proceedings of Japan Institute of Tourism Research Annual Conference*, pp. 325-330. (in Japanese)
- Matsukawa, A., Takaoka, S., Kisaku, N., Shibano, M., and Ariyoshi, K. (2022). Basic research on improving the quality of evacuation life: From interviews with people who have experience in running an evacuation shelter. *Journal of Social Safety Science*, No. 41, pp. 107-117. (in Japanese)
- Miyake, S. (2025). Changes in farm organization of upland farming using smart agriculture technology. *Agricultural Management Studies*, Vol. 63, No. 2, pp. 25-30. (in Japanese)
- Morita, S., Oyabu, T., Ajiki, M., Futakuchi, S., and Nambo, H. (2025). Importance of agriculture in Japan for inbound tourists. *Journal of Global Tourism Research*, Vol. 10, No. 2, pp. 95-100.
- Nishimori, M, Ishigooka, Y., Wakatsuki, H., Kuwagata, T., Hasegawa, T., Yoshida, H., Takimoto, T., and Kondo, M. (2020). Rice quality analysis using the Crop Survey database of Japan for climate impact assessment. *Climate in Biosphere, Climate in Biosphere*, No. 20, pp. 1-8. (in Japanese)
- Shogenji, S. (2019). Japan’s position in the context of agricultural trade issues. *Agricultural Management Studies*, Vol. 90, No. 4, pp. 332-338. (in Japanese)
- Sphere Association (2018). *The sphere handbook: Humanitarian charter and minimum standards in humanitarian response*. Practical Action Publishing.
- Sphere Project (2014). *Sphere project: Core humanitarian on quality and accountability*. CHS Alliance.
- Xiao, J., Aggarwal, A. K., Rage, U. K., Katiyar, V., and Avtar, R. (2023). Deep learning-based spatiotemporal fusion of unmanned aerial vehicle and satellite reflectance images for Crop monitoring. *IEEE Access*, Vol. 11, pp. 85600-85614.
- Yamashita, K. (2025). Reiwa kome-soudou no keizai bunseki [Economic Analysis of the Reiwa-kome-soudou]. *RIETI Policy Discussion Paper Series*, 25-P-002, pp. 1-22. (in Japanese)

Received: April 28, 2026

Revised: May 8, 2026


Accepted: May 25, 2026

Published: May 31, 2026

Copyright © 2026 International Society for Tourism Research



This article is licensed under a Creative Commons [Attribution-Non-Commercial-NoDerivatives 4.0 International] license.

 https://doi.org/10.37020/jgtr.11.1_111