Overview of the Special Issue:
“A Regional Analysis of Strategies for Sustaining and Developing Agriculture in Japan”

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I. Introduction
Since the 1990s, agriculture in Japan has faced a crisis with falling agricultural production, an increase in abandoned agricultural land, and competition with imported agricultural products, in addition to an aging agricultural labor force and labor shortages (Tabayashi et al., 2009). Under these circumstances, as agricultural production functions in rural areas decreased, multi-functional agriculture tended to be emphasized. Rural areas, which were basically viewed as providing sites for agricultural production, have become used not only for agricultural production, but also for leisure, therapeutic activities, residential areas of urban populations, cultural and educational activities, and environmental protection. Regarding this as a “consumed rural area” (Tachikawa, 2005) or “commodification of rural space” (Tabayashi, 2013), research has been promoted to understand the present situation of multi-functional rural areas and to explore possibilities for development. However, it is also pointed out that excessive commodification and a resultant emphasis on multi-functional rural areas might reduce agricultural production and lead to a collapse of rural communities (Mitchell and de Wall, 2009). If rural areas reduce or lose their agricultural production functions, multi-functionality will clearly be lost, and farmland and rural communities will also disappear (Tabayashi, 2015). Considering the current situation in Japan, to sustain agricultural production in rural areas, obviously, non-agricultural sectors must be included. For example, it is important to secure additional income from other industries such as tourism and to introduce aid and subsidies for maintaining the environment and local communities. However, even in such cases, agricultural production should play the leading role.

In fact, taking advantage of the conditions of the respective regions in various parts of Japan, some agricultural managements have adopted the essential function of agricultural production to survive, and also have great potential for future development. Based on empirical investigations and research in each area, we aim to comprehend the actual situation of agricultural managements consisting mainly of agricultural production function, their strategies for survival and development, and the regional conditions that support these agriculture managements and their strategies.

II. Background of this special issue:
Trends of agriculture in Japan
In Japan, since the 1980s, the livestock and fruit and vegetable farming agricultural sectors, which had tended to expand, have been shrinking under the influences of trade liberalization. At the same time, stable part-time farmers have tended to give up farming and non-farm households holding farmland have rapidly increased in the sector of land-use ag-

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riculture such as rice cultivation (Hosoyama, 2004). In this way, agriculture in general receded in the 1990s. Therefore, in 1999, the Basic Law of Food, Agriculture and Rural Areas was enacted to replace the Agricultural Basic Law, in order to promote securing stable food supplies and multi-functional agriculture, and to encourage the sustainable development of agriculture and rural areas. To meet these requirements, the Basic Plan of Food, Agriculture and Rural Areas was formulated in 2003, which sought to raise the food self-sufficiency ratio, achieve a sustainable agricultural structure, transition from price policy to income policy, and introduce institutions providing direct income compensation for upland and mountainous areas, among other goals (Ministry of Agriculture, Forestry and Fisheries, 2010). Subsequently, although this plan has been revised three times at five-year intervals, the establishment of agricultural structure, in which efficient, stable farming plays a considerable part in agricultural production, has continued to be emphasized.

According to Tabayashi and Kikuchi (2016), “through certified farmers, income stabilization measures were taken for paddy and upland field farming including the promotion of new farmers, organization of village-based group farming, and incorporation of farm management, in order to establish highly profitable and viable managements, thereby allowing agriculture and rural areas to survive and develop,” which have become important measures of current agricultural policies. In addition, the government drew up measures to enhance the competitiveness of agricultural production in November 2016, in order to grow agriculture as an industry and to improve the incomes of farmers. It has promoted 13 measures, which include reducing agricultural input prices, restructuring distribution and processing, strengthening human resources, and strategically exploring global markets (Ministry of Agriculture, Forestry and Fisheries, 2017a).

In spite of such ongoing measures, modern agriculture in Japan still has various problems. According to the Ministry of Agriculture, Forestry and Fisheries (2017b), agricultural workers numbered 2.01 million in 2015, accounting for 3.2% of total employment, but the proportion of total agricultural production to gross domestic product was only 0.9%. While the proportion of agricultural imports to the total value of imports was 8.4%, the proportion of agricultural exports to total exports was 0.6%. Japan’s import surplus, obtained by subtracting the value of exports from the import value of agricultural products, had become the second largest in the world after China. As a result, the food self-sufficiency rate on a calorie basis in 2015 was only 39%, which was half of that in 1960. Gross output of agricultural production, number of farm households, population of farm households, and agricultural employment are decreasing, and the agricultural labor force is continuing to age, with the proportion employed in agriculture at over 65 years old accounting for 65.2% of the total employed in agriculture in 2016. Besides, the area of arable land declined 22.9% from 5,796,000 ha in 1970 to 4,471,000 ha in 2016.

As described above, agriculture in Japan is in a difficult situation, but in recent years some signs of agricultural regeneration and restructuring have been pointed out. They are: 1) acceleration of farmland mobility by leasing and concentration of farmland through large-scale management; 2) increase of agricultural holdings other than farm households; 3) development of industrialized agriculture based on advanced agricultural technologies; 4) maintenance of local communities through village-based farming organizations; 5) diversification of management by combining agriculture and processing and services (sixth industrialization); and, 6) promotion of agriculture incorporating other industries such as tourism (Ando, 2012; Choumei et al., 2015; Tabayashi and Kikuchi, 2016).

Based on these trends of agriculture and rural areas in Japan, in this special issue, agricultural managements, in which the agricultural production function is significant, are
selected as cases from among typical farming sectors in individual regions of Japan. Furthermore, we clarify the respective agricultural managements and their strategies and regional conditions underlying management and strategies. In other words, we show the characteristics of agricultural management incorporating the agricultural production function through eight empirical research papers covering various parts of Japan. In the review, we consider the strategies of the respective agricultural managements and regional conditions under which strategies are accepted. Consequently, it is possible to present the basic direction of modern agriculture in Japan in the face of its problems and challenges. Research cases were selected from among typical types of agricultural management located in agricultural areas categorized by the Ministry of Agriculture and Fisheries. The eight cases come under the categories of: 1) vegetable production accompanied by direct sales in an urban agricultural area; 2) upland crop production; 3) combining paddy rice and upland crops; 4) horticulture; 5) fruit production; 6) livestock farming in a flatland agricultural area; 7) outdoor vegetable production; and 8) vegetable production with farmer’s shop in an upland and mountainous agricultural area.

III. Outline of this special issue

In cities, even in suburbs and inner areas, there are still cases of agriculture continuing to compete with urban land use. Here, the basis of agricultural production is the existence of urban residents, who are consumers, living nearby. Iizuka et al. (2019) took up a case in Kodaira City, Tokyo, as an urban agricultural area, focusing on exchanges between farmers and urban residents as consumers. He clarified the actual situation of urban agriculture and examined how such exchanges contribute to the sustainability of urban agriculture. In Kodaira, while most farmers focus on multi-item vegetable production in small quantities and direct sales on their farms, some manage farms for tourists who can pick flowers or provide vegetables for school lunches. Through direct sales and tourist farms, exchanges occur not only through deliveries of agricultural products but also through oral communication with urban residents. In addition, by providing vegetables for school lunches, there is communication through lectures on agriculture in schools.

In this way, based on economic exchanges of agricultural products between farmers and consumers, social exchanges occur through communication, and these exchanges create and sustain communities within the city. Thus, these exchanges between farmers and consumers can contribute to the existence of direct sales and tourist farms, and to the sustainability of urban agriculture.

In flatland agricultural areas, where arable land areas can be sustained and expanded, it is possible to demonstrate the original functions of agriculture. As a typical example of land-extensive farming in a flatland agricultural area, large-scale upland farming on the Tokachi Plain, Hokkaido and rice production with upland crops on the Saga Plain, Saga Prefecture are investigated.

On the Tokachi Plain in Hokkaido, taken up by Kuribayashi (2019), the arable land area per farm expanded from the 1970s until 2015. This expansion through advanced rotation systems of four upland crops such as wheat, beet, potato, and beans progressed initially with improvements in income. However, since 2010, improvements in income due to increases in scale have not been seen; instead, farmers have begun to diversify sales channels to achieve higher incomes. In the case of Obihiro, the reasons considered for such a diversification of sales channels are that farmers cannot expect to increase revenue by shipping through agricultural cooperatives; they want to be involved in price formation; and, it is difficult for them to increase scale through land acquisitions.

Some farmers diversify sales channels with a further diversification of activities, selecting shipping destinations, engaging in direct sales, selling to supermarkets and restaurants, expanding volume sales in transactions with
processors and trading companies of other prefectures, and providing menus in their own restaurants. Such diversification has contributed to increases in revenue. Besides, to develop sales channels, they use networks of farmers and are also members of an organization called the *Nokei* Group, whose other members are non-agricultural industries and small business entrepreneurs.

On the Saga Plain, which is analyzed by Kikuchi and Tabayashi (2019), where the main crop of rice is traditionally combined with wheat as a second crop, farmers attempted to maximize production. But, when the government introduced measures to control rice production in the 1970s, the crop combination was changed to rice and soybean as the main crop. Since the 1970s, the formation of village-based farming organizations has progressed along with the block rotation of rice and soybean and the cooperative use of rice transplanter and harvesting machines. Cooperative drying preparation facilities for rice, wheat, and soybeans have also been established. As a result, agriculture and arable land that combine rice, wheat and soybeans in the region have tended to survive. While incorporation of village-based farming organizations has been encouraged by agricultural policies, many farmers who do not participate in village-based farming organizations have become full-time certified farmers. When these full-time farmers have successors, they expand their arable land by buying or renting arable land from part-time farmers inside and outside the region. Agriculture on the Saga Plain is supported by village-based farming organizations, taking the forms of cooperatives and corporations, and by privately owned or incorporated large-scale rice farmers. Each management type is selected according to different situations in this region. That selection has contributed greatly to the maintenance and survival of agriculture and farmland on the Saga Plain, along with flexibly accepting and applying national agricultural policies.

In the agricultural management of flatland agricultural areas, a trend can be seen of using agricultural facilities for intensive farming to maintain and expand production. Hayashi (2019) picked up chrysanthemum (*Ringiku*) production at Tahara, located on the Atsumi Peninsula, Aichi Prefecture, which is the largest horticultural area in Japan. Focusing on a network of producers, he clarifies how horticulture of flowers has been maintained.

On the Atsumi Peninsula, after production infrastructure was developed with the construction of the Toyokawa irrigation canal in 1968, complexes of greenhouses and livestock were established. Then, vegetable production was developed extensively. Tahara City is Japan's leading agricultural area, with a high ratio of agricultural employment, low average age of farmers, and high agricultural sales. At the center of production is floriculture, which has been expanded since the 1980s. Introducing year-round cultivation by triple-cropping chrysanthemum has supported growth.

Agricultural cooperatives and their underlying organizations play a large role in the production and shipment of chrysanthemum. It is possible for producers to obtain a good reputation in the market and stable shipment destinations if they are members of the agricultural cooperative, *JA Minami Aichi (Ringiku Group)_; i.e., they are incorporated within the production network. In addition, if they are members, they can use an automatic separating and packing facility. Because they can reduce the burden of work using this facility, they can maintain or expand their management. In addition, farmers meet face to face at a high frequency when handling day-to-day shipments, and exchange and share information on cultivation techniques, agricultural materials, and machinery with neighboring farmers in the same shipment organization.

Subsequently, fruit production in a flatland agricultural area is taken up. Tabayashi *et al.* (2019a) clarify present fruit production and its sustainability at Misaka, Fuefuki City in the southeastern part of the Kofu Basin, focusing on farm operators and family labor.

In this region, from the late 1960s, conver-
sion from sericulture and rice to fruit occurred, and fruit production peaked in the 1990s. Although fruit production has decreased from its peak, managed fruit production remains highly profitable. Based on the employment status and main income sources of farm operators and family members, types of agricultural management are categorized as full-time farmer, former salaried-workers-turned-farmer, part-time farmer, and elderly farmer. Located close to the Tokyo metropolitan area, farmers can select a variety of shipping forms according to individual management type such as system shipments through agricultural cooperatives, sales by courier, and contract sales with consumer cooperatives and supermarkets. The high profitability of fruit is also based on these selection options.

Today, full-time farmers take the lead in fruit agriculture. To increase management scale, they rent farmland from farmers who have reduced production because they are aging or have other employment income, or from non-farm households that hold farmland. In the farming peak seasons, they hire local residents and residents of surrounding areas as temporary labor, especially retired farmers, who are still important components of the labor force, although foreign workers have increased in recent years.

As a result, agricultural land and the communities are maintained due to a combination of core full-time farmers, former salaried-workers-turned-farmers, part-time farmers, and elderly farmers as supplementary labor.

Another agricultural management type in flatland agricultural areas is livestock farming. As an example, Wakamoto (2019) cites a producer of premium beef Maesawa Gyu in Oshu City, Iwate Prefecture.

In this high-grade Wagyu beef production area, family-run labor-intensive fattening is normally dominant and moves towards large-scale management are limited. Despite soaring prices of feed and feeder calves in recent years, farmers do not accept drastic readjustments to cut costs, because they fear that such readjustments would adversely influence the quality of meat. Under these conditions, adapting to changing circumstances in agriculture after the liberalization of beef imports (as well as economic fluctuations, BSE, mis-labeling of beef, accidents at a nuclear power plant, and soaring calf prices), farmers tried to maintain and develop the local brand. Wakamoto (2019) clarifies the adaptation process, focusing on the relation between selection of feeder calf and feed, which affect beef quality and improvements in labor productivity.

Until the 1990s, farmers engaged in fattening Maesawa Gyu selected breeds with excellent qualities as feeder calves, but they changed to breeds characterized by increased carcass weight from the 2000s, in response to a decline in carcass sales prices during an extended economic downturn. As a result, although breeds having both quality and quantity have increased, producers have consistently used breeds with excellent qualities on a priority basis. In addition, since the mid-2000s, there has been a conversion from self-mixed feed to the use of complete mixed feed. Regarding the breeding management and feed design of such excellent breeds, information sharing has been attempted by groups of beef producers in agricultural cooperatives. Labor productivity has increased too, due to the selection of breeds with emphasis on balancing quality and quantity, shortening the fattening period by transitioning to complete mixed feed, and labor savings brought about by refurbishing cattle barn structures and switching to straw rolls.

Amidst a decrease of calves produced in Maesawa and soaring prices of calves in recent years, it has become difficult to maintain an integrated production system within the region, but supplies of breeding cattle from the Oshu region are being developed with funds. In addition, while management is shifting to the successor generation in 40- to 60-years-old age group, the parent generation aged over 70 years is also active, and the fattening technology cultivated still contributes to the production and sale of high-quality Maesawa Gyu.
On the other hand, Nishino (2019) picked up Tsumagoi Village in Gunma Prefecture, which is a major production area of summer and autumn cabbage, as a representative example of outdoor vegetable production in upland and mountainous agricultural areas. Although the cultivation area of summer and autumn cabbage in Tsumagoi village had been increasing consistently, expansion seems to have entered a mature stage and has almost stopped.

The fact that Tsumagoi village is located in a highland area and products can be shipped in an off-crop season was an important condition underlying the formation of this production area. Meanwhile, policies implemented at different times have also played important roles. Price compensation aid for vegetables began with various measures from 1963, and contracts for stable supplies of vegetables were made with the Tokyo Metropolitan Government in 1973 and with Yokohama City in 1974. These increased the motivation of farmers, which was further strengthened by sales of government property through state-managed and prefecture-managed pilot projects.

In addition to these policies, the shipping strategy of agricultural cooperatives, which is based on shipping to markets offering higher prices, and the establishment of own sales channels developed by farmers who do not depend on cooperatives have also contributed to increasing management scale. As a result, Tsumagoi Village cabbage has become a major brand. In the background of brand formation, they are introducing mechanization for improving productivity, researching crop breeds and seeds, introducing pre-cooling technology, and constructing road networks. Thus, as brand formation increased the motivation of farmers, farms with two or three generations expanded their scales, and were able to obtain high stable incomes. They could then obtain and train many successors. These processes seem to form a virtuous circle. Again, to maintain a production area, it is important to form reliable networks of farmers and market participants. However, in recent years, because expansion by renting arable land from neighboring farmers cannot be managed with a family labor force alone, foreign labor has become essential.

Upland and mountainous areas are generally remote from urban markets. It is difficult to maintain and expand management scale because of depopulation and aging; therefore, the survival of agriculture is threatened. In Maniwa City, which is located on the Hiruzen plateau, Okayama Prefecture, and is one of these upland and mountainous agricultural areas, Oishi (2019), while paying attention to a farmer’s market that is responding to the development of tourism, examined the viability of agriculture.

The main industries of Maniwa City are tourism and agriculture. In agriculture, it is a major producer of so-called highland vegetables such as radish and cabbage. In particular, “Hiruzen radish” was well known and was shipped mainly to the Kansai region. However, depopulation and aging were observed, and farmers had problems such as competing with other production areas. On the other hand, although the Hiruzen area experienced the development of tourism as the largest highland resort in western Japan, tourism was shrinking due to the effects of the collapse of an asset inflation-led economic bubble in the 1990s. Therefore, in the Hiruzen region, to promote tourism by taking advantage of agriculture, a farmer’s market was established in 1992 by the third sector co-funded by the former Kawakami village, agricultural cooperatives, and dairy cooperatives. For farmers using a farmer’s market, securing shipments is more important than profits. While, for large-scale farmers, a farmer’s market functions as a place to ship surplus crops outside agricultural cooperatives and markets, for small farmers, a farmer’s market functions as a shipping destination that supports farm management. In addition, the attitude of neighboring farmers, namely, the fact that small-scale farmers are maintaining management and shipment of products, encourages other small-scale farmers. As a result, local agriculture is maintained.
Finally, in addition to the eight cases featured in this special issue, Tabayashi et al. (2019b) examine a total of 10 cases, including the Hokuriku region as a case of rice production in a flatland agricultural area and a foothill area of Mount Akagi in Gunma prefecture as a case of vegetable production also in a flatland agricultural area, which promote combining agriculture, secondary, and tertiary industries into a sixth industry. The 10 cases are reexamined according to the features of each farm management; strategies adopted for survival and development; and, regional conditions that support agricultural management and its strategies.

Strategies for farm management to survive and develop in individual cases are as follows: 1) ensuring farm managers and employed labor force: ensuring labor force, including farm managers and successors and ensuring leading farmers, generational change, internal cooperation within a family, foreign labor, and establishment and inheritance of agricultural technologies; 2) expansion, improvement, and rationalization of management: enlargement of area, use of facilities, collectivization, mechanization, joint use of machines, labor-saving, and incorporation and introduction of agricultural technologies; 3) ensuring sources of stable high incomes: multi-item small-scale production, variety of agricultural produce, management of real estate, and off-farm employment; 4) establishment of sales network: diversification of sales channels, quality improvement, branding, local foods, direct sales, and agro-processing; 5) construction of human networks: exchanges between producers and consumers, access to useful information, networking with producers, organizations, and consumers, and maintenance of local communities. These are selected and used in combination according to the local conditions of the individual cases.

Regional conditions underlying agricultural management, which orientates mainly towards agricultural production, and strategies for survival and development are locational conditions such as proximity to a city forming an agricultural market; natural conditions such as climate, topography, and soil, economic conditions such as population density and market scale; social conditions such as traditional organizations of villages, characteristics of communities, and degree of interaction among farmers; historical and cultural conditions such as when settlements were established; and political conditions such as implementation of policies by national and local governments and support by agricultural organizations.

It is important to have talented and ambitious managers, who can apply appropriate strategies and achieve profitable farm management, while evaluating and utilizing the variety of regional conditions in each part of Japan. It is considered that these managers, who are not only superior in a managerial sense, but are also popular, could bring vitality to local organizations, create new functional organizations in cooperation with other agricultural managers, and further broaden them; and, through these measures ensure the survival and development of agriculture. It is important to have successors motivated to engage in agriculture in order to have successful generational change. In addition, because agriculture based on inheritance within farm families is reaching its limits, agriculture based on enterprise management is required. It is necessary to promote agricultural policies that function in the long term.

In this special issue, although major cases of farm management that maintain the original functions of agricultural production and have the possibility of surviving and developing in Japan are presented, they are not necessarily representative of all types. In addition, as the circumstances surrounding agriculture and rural areas change, for example, with increases in exports of agricultural products, migration to rural areas, and introduction of new farmers, and the spread of inbound tourism to rural areas, new survival and development strategies are also thought to have been adopted. It is necessary to grasp the overall picture of agriculture in Japan with its possibility of survival and development by adding new case studies,
and by re-evaluating existing research results.

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