Transition of Farmland Use in a Japanese Mountainside Settlement: An Analysis of the Residents’ Career Histories

SHOJI Gen*, YOSHIDA Kunimitsu**, YOKOYAMA Satoshi*** and Eric C. THOMPSON****

* Faculty of Management and Law, Aomori Chuo Gakuin University; 12, Kanda, Yokouchi, Aomori-City, Aomori-Prefecture, 030-0132 Japan.
** Faculty of Education, Kanazawa University; Kakuma-Machi, Kanazawa City, Ishikawa Prefecture, 920-1192, Japan.
*** Department of Geography, Graduate School of Environmental Studies, Nagoya University; Furo-cho, Chikusa-ku, Nagoya 464–8601 Japan.
**** Department of Sociology, National University of Singapore; AS1 #03-06, 11 Arts Link, Singapore 117570.
E-mail: g-shoji@aomoricgu.ac.jp*
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Abstract
A key problem faced by Japanese agriculture is the decline in the number of fulltime farmers due to the aging population, which combined with the absence of farm successors is leading to abandoned and under-used farmland. Under these conditions, we analyze the shifts in labor force allocation within households, between households, and between different communities, in order to secure the continuity of farming activities. Recent agricultural policies aim to increase the active participation in farming of women and of returning farmers, people who left their hometown to engage in non-agricultural work but return to or take up farming after retirement. The study examines strategies to maintain the continuous use of farmland despite the declining numbers of farmers by analyzing the Tachi settlement, whose residents commute for work to the nearby urban areas of Kanazawa and Komatsu cities in Ishikawa prefecture. The study analyzed the occupations of household members in this settlement and evaluated how the residents’ employment choices have influenced the continuous use of farmland in the area. Many studies in agricultural geography in Japan on systems of farmland use and community farming have focused on households centered on a male head-of-household. Our study is original in its focus on the occupations of all individuals in each household to assess the allocation of farming labor in rural households and other mechanisms to maintain their farmland, such as consigning work to other farmers, or renting out their farmland. Over the past decades, with the decline in the number of successors willing to inherit the farms, the number of farms taken over by the next generation has decreased in Tachi, and those responsible for the farmland have had to request help from outside their settlement. However, the study reports some recent positive trends (a family moving back to the settlement and taking up farming, including leasing previously abandoned land). Consequently, farmland use is being localized again within the settlement. Our case study, Tachi, can be considered a representative case study, as it encapsulates many of the recent trends in development of marginal rural communities Japan (rapid socio-demographic decline and its impact on the continuity of farmland use and management practices, especially in terms of labor allocation, but also regarding the mechanisms of renting out/lending farmland). The limited local scale allows for the detailed survey of the entire community as well as an in-depth analysis of data. Findings of this study might prove useful in the elaboration of rural/farming policies with the potential of wider implementation in similar areas in Japan but also (at the broader scale) in Asia.

Key words farmland use, career history, de-population, aging, Nomi City, Ishikawa Prefecture

Introduction

One of the most significant issues facing agriculture in Japan is the decline in numbers and rapid aging of the farming population, compounded by the absence of farm successors. In this context, it is imperative to find ways to continue using the land belonging to retired farmers to prevent the abandonment of farmland. Specific ways of doing this include the consolidation of paddy fields under farmers seeking to expand the scale of their operations and the collective use of land through group farming. Multiple studies have been conducted on the institutionalization of agricultural production that this consolidation of farmland and group farming represents (Matsui 1964; Kikugawa 1979; Takahashi 1980). Since the drop in the farming population became an issue in the 1980s, considerable empirical research has focused on the consolidation of paddy fields and group farming, exploring practical means of managing the issue (Gojo 1997; Otake 2008; Yoshida et al. 2010; Ichikawa 2011; Shimizu 2013;
Previous research has mainly focused on male heads-of-households or individuals whose primary occupation is farming (for example, Otake 2008; Shimizu 2013; Tabayashi 2007; Tabayashi and Kikuchi 2016). Yet, with household heads, especially young males, working in the non-agricultural sector, other individuals, including farmers’ wives, parents, and returning offspring play an important role in farm management, (Little 1997; Araki 2002; Gullifer and Thompson 2006; Maclaren 2017). For example, Araki (2002) has shown that, in the context of the aging rural population, whether paddy fields are maintained or abandoned in Japan with aging is directly related to securing the farming labor force at home and the feasibility of obtaining the labor of “weekend farmers,” like younger generations returning from neighboring urban areas. Given this situation, it remains difficult for farming households to maintain their farmlands by relying solely on their own labor. Thus, the practice of entrusting farmlands to neighboring farmers, and the renting out of farmlands continues to expand (Hosoyama 2004). Research into trends among the declining farming population has focused on individuals who take over farming or rent land. The results show that households generally undertake leasing and renting out of farmlands from/to people with whom they share strong “social relations” (Yoshida 2015), including next of kin, and neighboring households of the same community. There is also a clear trend toward searching for labor and land outside the settlement if they cannot be found within the settlement (Akitsu 1998). However, the number of farmers is also decreasing in these other settlements, so it is becoming increasingly difficult to secure needed labor.

The general trends discussed above cannot explain some facets of farming. It is vital to investigate how labor is allocated within and among households and communities, and in particular, the roles played by women, people returning to or taking up farming after retirement an emerging trend in the agricultural workforce (Uemura 2016), and returning offspring, to understand the conditions under which farming is continued or abandoned.

This study will consider the role that the career histories of individual household members play in the context of whether farmlands continue to be used. The aim is to clarify the efforts made to continue to use farmlands as the number of farmers fall.

The study uses the variations between men and women, and between generations, to explain trends in the career histories of each member of participating households, rather than merely focusing on the heads of households.

Gender differences in farm household labor allocation, especially focusing on unpaid work, have been analyzed since the 1980s (Buttel and Gillespie 1984). In Japan, this perspective has been used by numerous studies that analyzed individuals’ career histories and accounted for elderly and women household members in Japan (Sekine 1998; Yoshida 2017). Sekine's study (1998) examines the maintenance of farming households through part-time work (pluriactivity) and the increase in people leaving farming; and Yoshida (2017) used this method to explain a mechanism of forest management. Currently, however, besides the elderly and women household members, it is necessary to expand our analysis to the individual career histories of offspring “returning to farming after retirement” and re-consider from a wider perspective the relationship with changes in farmland use. Furthermore, unlike some conventional empirical studies in rural areas in Japan, our study focuses on the allocation of labor both within and among farming households (including support to retired neighboring farmers) as strategies for the continued use of farmland in the community.

This study examines Tachi in Nomi City, Ishikawa prefecture, Japan (Figure 1). Due to the increased accessibility offered by cars, the area studied is within commuting distance of Kanazawa andKomatsu. Often, farming is undertaken in conjunction with work in the city, including in the Tokyo and Osaka metropolitan areas. Therefore, Tachi provides substantial data on commuting patterns, career histories and the impact on continuation of farmland use, making it suitable for the present investigation. Furthermore, Tachi encapsulates many of the recent trends in the development of marginal rural communities in Japan (rapid socio-demographic change and the impact on the continuity of farmland use and management practices, especially in terms of labor allocation, but also mechanisms of renting out/lending farmland). The limited local scale allows the detailed survey of the entire community as well as an in-depth analysis of data.

Many Japanese social scientists have researched the strategies employed by small family rice farmers in rural Japan for continued farmland management. However, most of these trends have only been reported in Japanese language articles in Japanese academic journals. Therefore, the present study contributes to the wider dissemination of research on the mechanisms of farmland use in the Japanese context.

In the near future, most Asian countries are expected to experience economic growth and, therefore, may experience problems similar to Japan’s (Rigg et al. 2016). Findings of this study might serve as a basis in the elab-
oration of rural/farming policies with the potential of wider implementation in similar areas in Japan but also (at the broader scale) in Asia.

Study Area and Study Methods

Study area

Nomi City is located in southern Ishikawa prefecture. The western side of the city abuts the Sea of Japan; the cities of Komatsu and Hakusan are to the south and the east respectively, while the north borders Kawakita Town, with the Tedori River serving as the boundary. The northwestern part of the municipality consists of the alluvial delta formed by the Tedori River and the Kakehashi River, while the southeast comprises the Nomi Hills that extend into the Hakusan mountain range. The current Nomi City was established in 2005 from the merger of the towns of Neagari, Terai, and Tatsunokuchi. Each of these towns had a central urban area.

Tachi, the site for this study, is in the southeast of Nomi and was part of Tatsunokuchi Town, although, since the introduction of the municipal system, it was originally part of the Kokuzo Village from 1889 to 1907 (Takeuchi 1981). Tachi lies in the Nomi Hills, with an altitude ranging between 50 m and 150 m above sea level (Figure 1). The settlement centers on the banks of the River Tachitani, which runs northeast to southwest, with housing and farmlands in the valley alongside the river. Tachi is divided into two areas (Lower and Upper Tachi), which have their own shrines and conduct their harvest festivals. The neighborhood council, which organizes meetings, maintains roadways, and cleans irrigation channels, handles the overall administration of the settlement (Tatsunokuchi choshi hensansenmoniinkai 1985). According to the 2010 National Census, the settlement had 20 households, with 34 male and 37 female inhabitants. The proportion of those over 65 was 23.9%, making it a part of the Nomi municipality with an aging population. The total farmland area of the settlement was 8.4 ha as measured by GIS².

Characteristics of farming

Since the Meiji era, farm households in Tachi mainly practice wet-rice farming. However, drainage is in poor shape, and yield is low. Consequently, full-time farmers are rare, with the men working in the lumber industry as sawyers and carpenters, while the women work in the textile industry as spinners and weavers. In 1970, Kita Nihon Sangyo opened a thread factory in Tachi, and, in 1980, established a textile mill here, expanding the oppor-
tunities for non-farming employment (Tatsunokuchi choshi hensansenmoniinkai 1985). Owing to the improvement of National Road 8, which links Tachi to Komatsu and Kanazawa, and the widespread use of cars, the commuting area of Tachi residents has expanded to these cities.

Due to the low productivity of rice farming and the plentiful opportunities for employment elsewhere, the bulk of the income of most of the farming families in Tachi is from non-farming activities. In 1970, there were only two full-time farming households, and by 1975 the whole settlement fell into the Type 2 part-time farming category (Figure 2). The number of farming families has been decreasing since 1975 because of the expansion of non-farming work; in 2010, there were twice as many non-farming households as farming households.

Examination of the number of farming households’ members shows that it was at its highest in 1980, and this comprised 36 men and 31 women. It declined between 1980 and 1995, but has remained steady since (Figure 3). However, although this number has remained unchanged, people are aging rapidly. In 1995, aged persons comprised 24.1% of the entire population of the settlement, which increased to 27.6% in 2005, and rapidly to 34.5% in 2010.

Due to this, and the considerable opportunities for non-farm work, wet-rice farming has become a secondary source of income in Tachi. Presently, more people are abandoning farming; therefore, while farming and non-farming households coexist, farming households have a greater proportion of an aging population.

**Study methods**

The field survey was conducted in October 2016; thus, this study reflects the recent situation. Unless otherwise indicated, the study is based on field survey data. After investigating the crop combination on individual farmlands, we focused on farmland owners and users through interviews. From these results, we observed the relationship between farmland use and ownership. Additionally, interviews with individual household members in Tachi clarified career histories like occupation, place of work, transference, and engagement in farming. The survey was conducted in 20 households, of which 19 responded.

In this study, the survey results were used to clarify the relation between changes in farmland use and the career history of individual household members, and to examine how farmland use is maintained despite the decline of the farming labor force.

**Farmland Use and Farm Management**

**Farmland use**

According to the 1970 Census of Agriculture and Forestry data for 1970, out of the total farmland area of 6.8 ha, there were 5.64 ha of irrigated paddy fields, comprising 82.9% of Tachi’s farmlands (Figure 4). Since 1970, four of Nomiy’s settlements, including Tachi, have implemented the restructuring of agriculture to expand and reallocate paddy fields. Most significant dry field plots (1.71 ha), on which this policy focused, were converted into paddy fields. The area of paddy fields for one block in this study increased from 0.01 to 0.08 ha. Overall, the area of dry fields in Tachi decreased from 1.1 ha in 1970 to 0.27 ha in 1975, while the area of irrigated paddy fields increased to 8.38 ha, making wet-rice farming preponderant.

With increasing adjustments of rice production (Acreage Reduction Policy, hereafter ARP), the area
of irrigated paddy fields has declined from its 1975 peak. Crops other than rice have expanded, and, from 1995, the fallow paddy area has expanded considerably. Additionally, from 2000 to 2005, the farmland area declined by 44.3% due to the construction of a factory and housing for factory workers.

In October 2016, the total area used for wet- and dry-field cultivation, orchards, and abandoned farmland in Tachi was 9.31 ha (Figure 5). Presently, Tachi’s farming is still concentrated on wet-rice production, with paddy fields comprising 63.7% of the farmland. There are 0.70 ha of dry field cultivation of beans or vegetables; however, these productions are a response to the ARP and are largely for self-sufficiency. Nomi City promotes the production of Japanese citron, particularly around the village of Kokuzo, and seeks to develop farmland for it. However, in Tachi, citron is not produced for the market; it is produced for personal or family use, or to give to friends.

In Tachi, after paddy fields, the most significant area is 2.35 ha of abandoned farmland. The fields on the ridges of Lower Tachi have been left abandoned due to insufficient sunlight; however, abandoned farmland is distributed like a mosaic throughout the farmland near the center of the settlement. Much of this mosaic-style abandoned farmland belongs to people who no longer reside in the settlement (Figure 6). The area of farmland held by these absentee landlords is 1.91 ha, of which 0.84 ha is abandoned, which means 42.8% of all Tachi’s abandoned farmland.

With the expansion of abandoned farmland, Tachi is experiencing the consolidation of farmlands in certain farmers’ hands. The producers leasing farmland are Household No.1 (hereafter No.1), and an agricultural corporation (hereafter Corporation S) from outside the settlement, to be discussed below. No.1 farms 2.97 ha in Tachi, of which 2.45 ha are leased. Corporation S leases 2.2 ha in Tachi. This area of leased farmland comprises
half of all Tachi’s farmland. No.1 and Corporation S use most of the farmland in Tachi, but neither leases much farmland from absentee landlords. No.1 and Corporation S leased only 0.22 ha and 0.23 ha of farmland, respectively, from absentee landlords. As the abandoned farmlands belonging to non-residents are scattered, the holdings of No.1 and Corporation S are not concentrated, and their productivity is poor.

Farmland management

Farm management by individual households

Currently, there are 20 households in Tachi. For this study, we conducted interviews with them all. Tachi’s households have been divided into “farming households,” “former farming households,” and “households that have moved to the settlement,” depending on whether they own farmland, how they manage it, and whether they have re-settled (Table 1).

Nos.1–4 are farming households who practice wet-rice farming. In each of these households, the primary farmer is a male member aged between their 60s and 70s, although, in No.2, there were other male farmers in their 40s.

At nearly 3 ha, the area of farmland managed by No.1 is the most extensive in the settlement, and only this household leases farmland. They lease the farmland from a farmland redistribution scheme, and rather than paying, they take the farmland on contract from the leaser. No.1 has 2.4 ha of wet-rice paddy fields, planted with two varieties of rice: Koshihikari and Yumemizuho; both varieties yield around 540 kg/0.1 ha. The entire harvest is sold directly to consumers, about 70% of which are in Ishikawa Prefecture, and the remaining 30% are outside the prefecture. While No.1 essentially does all the farming, they rely on a friend from outside the settlement to provide them with seedlings, as they have no land for a

| Type  | HH No. | Household members | Male (Age group) | Female (Age group) | Management land (ha) | Lending land | Borrowing farmer |
|-------|--------|-------------------|------------------|-------------------|----------------------|-------------|------------------|
| Type A | 1 | ○ | ○ | ○ | 2.4 (R), 0.18 (B), 0.42 (N) | 20 | None |
| 2 | ○ | ○ | ○ | 0.5 (R), 0.2 (N) | 30 | No.1 |
| 3 | □ | ○ | □ | 0.3 (R), 0.1 (N) | 40 | 0.2 |
| 4 | × | ○ | × | 0.4 (R) | 50 | |
| Type B | 5 | □ | × | □ | × | 0.04 (V) | 60 | No.1 |
| 6 | □ | × | × | None | 70 | S |
| 7 | × | □ | × | 0.01 (V), 0.01 (N) | 80 | 0.4 |
| 8 | □ | × | × | None | 90 | S |
| Type C | 9 | □ | × | × | 100 | |
| 10 | □ | × | × | |
| 11 | × | |
| 12 | □ | □ | × | |
| 13 | □ | □ | |
| 14 | □ | |
| 15 | □ | |
| 16 | □ | |
| 17 | |
| 18 | □ | □ | |
| 19 | □ | × | □ | |

1 "Type A" is farm households, "Type B" is retired farm households and "Type C" is migration households.
2 Symbols in household members are the following meanings. "○" is farmer, "□" is non-farm worker and "×" is non-worker.
3 "Ch." in household members is children and this figure is a number of children who don't work.
4 Letters in management land have the following meanings. "R" is rice, "B" is beans, "V" is vegetable for self sufficiency and "N" is non-planted land.
5 "S" in borrowing farmer is the agricultural corporation S.

Source: Interview in October, 2016.

Table 1. Constitution of households in Tachi settlement (2016)

Migration households don’t have farm lands.
greenhouse for seedlings.

Apart from No.1, the areas of farmlands managed by the other farming households are small, ranging between 0.4–0.7 ha, and only comprise farmlands they own. Each of these households seeks to reduce the area farmed because of the age of the main farmer. Therefore, it seems likely that, in the future, Nos.2–4 will become former farming households.

The next four former farming households, Nos.5–8, do not practice wet-rice farming. They merely grow some vegetables for their own consumption and leave the rest of their farmlands abandoned. Therefore, most of the farmland owned by these former farming households has been leased out to No.1 and Corporation S. These households comprise individuals aged from their 30s to 60s, who are employed outside their farms. Principal farmers are at least 80 years old or have already died. When individuals in these former farming households became too old to manage farming activities, the farmland was leased out. Although these households do not cultivate anything other than vegetables for their own consumption, they participate in maintenance work related to agricultural production, such as weeding local roads and cleaning irrigation channels.

No. 9–19 are households that have moved to Tachi. The head of No.9 was born in Tachi and moved back in 2015, but because they own neither farmlands nor farms, they are included in the group of households that have moved in. These households include members of various ages, ranging from preschool children to senior citizens over 80. None of these households owns, borrows, or cultivates farmland. However, like the previous category, they participate in maintenance work connected to agricultural production, such as weeding local roads and cleaning irrigation channels. The households that have moved in but have younger members play an important role in maintaining the agricultural infrastructure in Tachi, as all the farmers are very old. They perceive that their participation in this work is linked to the settlement's autonomy, and contributes to the preservation of the environment and landscape of the settlement.

Farm management by Corporation S Five farmers in their 40s established Corporation S in 1992 in a settlement that was a part of Tatsunokuchi. They initially cooperated to share agricultural machinery and respond to ARP, and by 1996, had unified their management and become an agricultural corporation.

Three individuals manage Corporation S, and it has ten employees, which includes two of the three managers. They are all employed year-round, although two of the four female employees are part-time workers, and are not only from Nomi, but come from Hakusan, Kanazawa, and so on. Apart from being recruited via personal reference or from unemployment offices in Ishikawa prefecture, the employees also include those who applied through Corporate S’s website. The average age of employees is 38.5, which is young compared to the resident farmers in Tachi.

Currently, Corporation S leases 65 ha of farmland in Tachi and the other settlements, of which 35 ha are flatlands, 10 ha consist of hilly areas, and 20 ha are mountainous. In addition to these, farm households in Nomi City employ Corporation S for planting services on 10 ha and harvesting services on 15 ha. They pay labor fees to Corporation S and sell the rice. When leasing farmland, Corporation S negotiates with owners directly rather than using a public organization known as the “Farmland Intermediary Management Institution,” acquiring usage rights for ten years. The leasing fees are JPY 9,000/0.1 ha for flat land and JPY1,500/0.1 ha for hilly and mountainous areas, but they sometimes pay in kind, with harvested rice.

Of the farmland leased, 50 ha is used for wet-rice agriculture, with the rest being used for the cultivation of other products like pumpkin (6.5 ha), barley (6 ha), and freesia (0.03 ha). Except when agricultural machinery is used, female employees handle the farming of pumpkin and freesia, while male employees manage rice and barley. The varieties of rice grown are Koshihikari, Hitomebore, Mitsuhikari (a high-yielding variety), and Kaguramochi (glutinous rice). By planting the early-ripening Kaguramochi and the late-ripening Mitsuhikari, they can balance their harvesting across the year and, thus, can cultivate over a broader area.

Corporation S sells 70% of the rice it cultivates directly to consumers via the Internet. Over half of this is shipped to the Kanto region. It supplies the remaining 30% to rice brokers. Of the rice varieties Corporation S grows, Koshihikari and Hitomebore are for general consumers, while Mitsuhikari is sold to brokers. The price for 60 kg of Koshihikari or Hitomebore is set as high as JPY 20,000 or more. To maintain this high price, Corporation S has reduced the use of fertilizers and pesticides, and it uses natural compost. It has gained recognition as “Ishikawa Prefecture eco food,” adding value to the rice and allowing it to be sold directly to consumers.
Career Histories of Individual Household Members and Farmland Use

This section analyzes the household composition and the career histories of members in the 19 households interviewed (Figure 7) and the relation with labor allocation for the continued use of farmland. Based on the results of this analysis, household members were divided into three categories: First, the parents’ generation are individuals born before 1934, and thus comprise household members aged over 80, with over half having passed away. Second, the children’s generation comprises household members aged between 60 and 70. Third, the grandchildren’s generation accounts for household members aged 50 years or younger. Generational change roughly synchronizes with changes in farming practices: the par-

**Figure 7.** Movements of residents by household in Tachi settlement (2016).

Source: Interview in October, 2016.
ent’s generation coincides with the period before the introduction of agricultural machinery, the children’s generation with the period after the introduction of agricultural machinery, and the grandchildren’s generation with the implementation of the farmland leasing system, respectively.

Until farmland improvement in 1970, farming in Tachi was entirely unmechanized. During this period, the primary farmers were of the parents’ generation. In this generation, residents of Tachi found off-farm employment nearby, in Tatsunokuchi (which includes Tachi itself), and in Komatsu, except for the head of No.9, who was employed by a merchant shipping company outside Ishikawa prefecture. When employed in Tatsunokuchi, jobs were largely in carpentry, education, or textiles. Those who commuted to Komatsu also worked in making or selling Kutani pottery ware, as well as in the textiles or steel industries. Additionally, they were engaged primarily in seasonal work, making it possible for each household to cultivate their farmlands using only the labor available within their household.

In 1970, the scheme for improving agricultural infrastructure was implemented in Tachi. With this, the parents’ generation bought agricultural machinery, thus, reducing the labor force required to farm. While both men and women of this generation worked nearby, the introduction of machinery brought with it a gendered allocation of farm labor, with the men operating the machinery and the women assisting. The 1970s saw the children’s generation entering the labor force, but no one worked in Tatsunokuchi, except for the wife of the household in No.4, who was employed at a factory that manufactured wire harnesses; most commuted to Komatsu or Kanazawa. The majority took on regular full-time work in manufacturing or freight forwarding. Consequently, while farm management continued to be done by each household, the male children began to operate the agricultural machinery while the routine management of the farm and assistance during planting and harvesting devolved to the older generation and the women. In other words, the introduction of machinery divided wet-rice farming into machine-related and management-related tasks, the response to which saw each household maintaining their farms through a division of labor between men and women of two generations, with different places and patterns of work.

However, this division of farm work between the generations and genders transformed with the aging of the parents’ generation. With No.8’s lending out farmland to Corporation S in 2006, Corporation S became a user of Tachi farmland. The grandchildren’s generation found work during this period; however, compared to the past two generations, their employment area was much more extensive, and the types of work are also much more varied. This generation is notable for being employed in the cities of southern Ishikawa. Furthermore, employment outside the prefecture has increased, with people working in the neighboring prefectures and urban areas of Kanagawa and Osaka. Jobs in the grandchildren’s generation include electronic assembly, construction, and office work, with many of the women employed as care workers in the nearby settlement. Most people of this generation in their 20s and 30s, moved out of Tachi for studies, and none have returned. Due to the broader employment area, and because more people are engaged in employment outside the area, the two sons of No.2 are the only farmers from this generation, and even their contribution is limited to planting and operating machinery at harvest time. Therefore, with the parents’ generation retiring from farming, there was no reallocation of farm work between the generations. Instead of children managing the farms, and grandchildren operating machinery, the labor force was limited to the children’s generation. Thus, in households with an aging children’s generation, it has become difficult to continue farming, and these households have retired from farming. Corporation S, from outside the settlement, has leased the farmland left by these retired farmers.

However, with the head of No.1 and his wife returning to farming after retirement in 2010, a new actor taking up farmland management has emerged in the settlement. Through the re-emergence of actors leasing farmland within the settlement, households retiring from farming in the future will be able to lend out their farmlands to No.1. However, No.1’s eldest son lives in Chiba and has no intention to move back to the settlement and take up farming after retirement. Therefore, the agricultural labor force may be insufficient in the long term.

Ten households moved to the settlement from outside Tachi, and these can be divided into two groups. For the first household group, the purpose of moving in for Nos.10–15 was to start and engage in business. In the past, there were two textile factories and a concrete plant in Tachi, and households Nos.10–13 are involved in these businesses. Apart from them, No.15 (a Kutani pottery artist), moved from Kanazawa in 2006 because clay was readily available in neighborhoods of this settlement. For the second household group, the motivation to move for Nos.14, 16, and 17–19 was to relocate to a scenic landscape in a hilly and mountainous area.
These men and women work at various locations and in different industries, and they have kept their previous jobs; therefore, they commute from Tachi. Additionally, these new households that have moved into the settlement do not own or lease farmlands, so they are not involved in farming. In the past, only farmers engaged in the maintenance of farming infrastructure, such as weeding local roads and clearing channels. However, to help preserve the Tachi landscape, which was the reason they moved to the settlement, the heads of these households enthusiastically participate in weeding local roads and cleaning channels. Unlike machine-related and management-related farming tasks, there is no shortage of workers for the maintenance of farming infrastructure by “households that have moved in.”

**Conclusion**

Focusing on Tachi Settlement in Nomi City, a hilly and mountainous area along the commuting belt for Kanazawa and Komatsu, this study has attempted to clarify strategies to maintain farming activities in the face of the decreasing number of farmers. As such, the study examines the career histories of individual household members and the various patterns of labor allocation within and between households put in place to allow the continued use of farmland use.

Over the past few decades, the number of farms being taken over by the next generation has steeply decreased, and those responsible for the farmland management have had to request help from outside the community. Recently however, one household returned to Tachi and to farming after retirement and succeeded in re-localizing the use of farmlands within the settlement. Additionally, with the reduction in the number of households holding farmlands in the settlement, the presence of non-local families that have moved to the settlement has become a factor for the maintenance of its agricultural infrastructure.

The continuation of farmland use was not based on the continuity between generations within households but has been adjusted based on social relations within and beyond the settlement according to the circumstances of the time. Currently, the absence of successors within households is an issue, but this does not indicate a pessimistic outlook regarding securing users for farmlands from within the settlement at present.

However, the lack of successors in households means that abandoned farmlands will continue to expand in this settlement and it does seem certain that in the future it will become problematic to secure users of farmlands within the settlement. It is unclear whether landowners would seek organizations like Corporation S and have them lease more of the farmland. In addition to Tachi, many communities (in this area) will experience a shortage of people to work the farmland. Currently, there are limits on the amount of farmland that Corporation S can lease. Will Corporation S or other outside actors prefer leasing farmlands in Tachi over other settlements? Therefore, with limits on the amount of farmland that can be leased, and with expanding demand, how could these actors be persuaded to choose Tachi above other settlements? Generally, such a decision is based on factors like the productivity of the farmland, the quality of the farming infrastructure, or the local social situation. Furthermore, other factors are involved, such as whether sharing maintenance work between a landowner and outside actors or whether the outsourcer can offer any support about maintenance. It is anticipated that responses and adjustments to the demands of lessees would be necessary for the farming of leased out or entrusted farmland to proceed smoothly. Although this study has elucidated the relationship between changes in farmland use and the career history of individual household members, adjustments for leasing farmland have not been fully considered. Therefore, the motivations that drive the choices of lessees, and this adjustment for smoothly leasing farmland will have to be examined separately.

Currently, non-farming households that do not own or lease farmland are involved in the maintenance of agricultural infrastructure. However, there is no guarantee that these non-farming households will continue to provide their support in the long term. This would seem to give rise to the problem of task-sharing between the public and the private spheres, which might result in disagreement between those residents who have always lived in the settlement and new residents. Is it possible to respond to this problem at a regional level? Having grasped the current situation in the settlement, we intend to engage with this issue. Our research findings could serve as the basis for the development of policies and solutions with the potential for broader implementation in regions facing similar situations in Japan and, in the near future, in Asia.

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**Notes**

1. Kanazawa City is the prefectural capital, and many manufacturing companies are located in Komatsu City, for example, Komatsu Ltd. that produces construction machines.

2. The total farmland area of Tachi settlement in 2010 Census of Agriculture and Forestry is 4.13ha, while the GIS measurement shows a difference of approximately double at 8.4ha. The Census of Agriculture and Forestry does not consider farmland leased to outside organizations, so that the data does not reflect the reality in the field. In this article, therefore, we use GIS-computed data for 2010.

3. The income of a “Type 1 part-time farm household” is mainly farming. Conversely, the income of a “Type 2 part-time farm household” is mainly from non-farm work.

4. For 1970, we use data of the Census of Agriculture and Forestry, which records 6.8ha farmland area in Tachi. In 1970 the system of farmland leasing was not implemented yet, so that the census data can be considered corresponding to the reality in the field.

5. Acreage Reduction Policy is designed to limit rice production by encouraging rice farmers to grow different crops or leave fields fallow. By growing different crops and leaving fields fallow, the acreage used for rice production was reduced, and farmers were then paid a subsidy per their reduction. This policy was implemented between 1970 and 2018.

6. The area measured by GIS is 9.31ha, which includes the area of farmland where the factories and houses were built.

7. In 2016, the average price of Koshihikari from Ishikawa Prefecture was JPY 14,880 per 60kg.

8. Kutani Pottery is one of the most famous traditional industries in Japan.

9. Located in the Tokyo metropolitan area.

10. Before returning to the settlement, they met with local farmers many times to discuss farmland leases. In addition, the wife was preparing in advance for purchasing agricultural machinery and learning driving skills.

11. Located in the Tokyo metropolitan area.

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