

Structural change in core farmers engaged in land-extensive farming and challenges faced by agricultural cooperatives' group in Japan

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■ Abstract

From 2015 Census of Agriculture and Forestry, we can find out that farmers belonging to so-called Showa single-digit generation, who were born in the first decade of the Showa period (1926 and 1934) and sustained post-war Japanese agriculture, increasingly retired from farming in a very short period. (1) This phenomenon is observed in a beginning of decreases not only in commercial farm households, but also in small-scale farm households (a total number of non-commercial farm households and land tenure non-farm households). On the other hand, (2) organized farm management entities, which became cultivators of farm lands owned by those retired households, have been enhancing their presence by increasing their total area of cultivated lands under management up to a record high of more than 500 thousand hectares in the country. Furthermore, (3) with incorporation of the organized management entities being increasingly progressed, these entities have initiated new business operations in such ways as engagement with so-called “AFFrinnovation” (sixth industrialization of agriculture, forestry and fisheries) and increased employment of permanently hired workers, which operations are different from those of existing individual farm households. (4) It is also suggested that among most of organized management entities that have been incorporated, community-based farm management entities named as “Shuraku-Eino” (literally, community-farming) are particularly playing a major role of sustaining land-extensive farming in the country with continuously being affiliated to agricultural cooperatives as their regular member organizations.

Agricultural cooperatives (JAs) and their nationwide business and organizational network called JA Group will be required to adequately fulfill their functions in a structural change of the land-extensive farming especially by strengthening measures to meet the needs of organized management entities such as community-based farm management entities that have become core farming organizations, in collaboration with public agricultural agencies such as extension centers, while they concurrently maintain JAs' activities of providing services to individual farmers who still occupy a majority of membership at respective agricultural cooperatives.

Introduction

For many years, it has been regarded as a serious problem of the Japanese agriculture how to

maintain its production system in the country after farmers of so-called Showa single-digit generation, who were born between 1926 and 1934 and sustained post-war Japanese agriculture (hereinafter referred to as “Showa single-digit generation” or “the said generation”), retire from farming.

This paper provides an overview of the structural change taking place in land-extensive farming at the grass-roots level with special emphasis on situations of farm management entities (farm households and organized management entities), agricultural labor, farm lands and the like on the basis of various statistical data such as the 2015 Census of Agriculture and Forestry showing a massive wave of the said generation’s retirement from farming.

1. Showa single-digit generation farmers showing a marked tendency to retire from farming

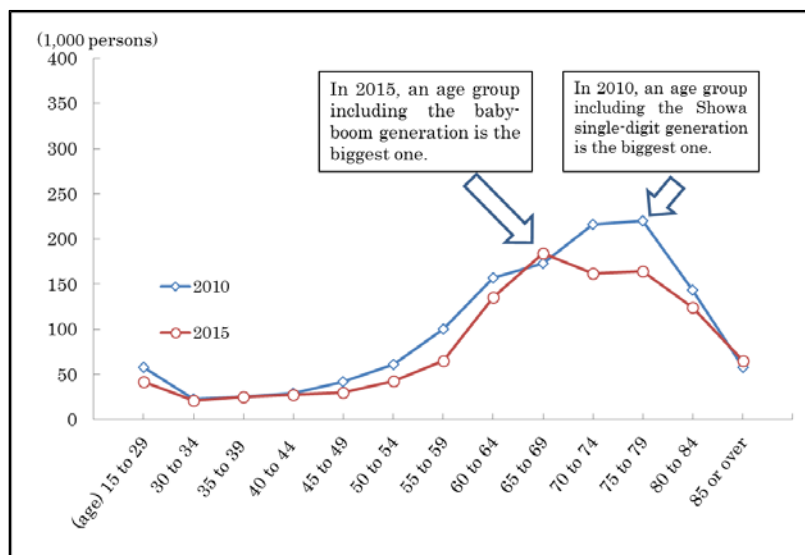
1.1 Shift of majority of Japan’s farmers from Showa single-digit generation to baby boom generation

First of all, let us confirm a movement of Showa single-digit generation farmers by tracing changes in population mainly engaged in farming with past Censuses of Agriculture and Forestry (hereinafter referred to as “the Census”). The population mainly engaged in farming is defined as “among household members involved in farming (household members engaged in self-employed farming), those who are engaged only in self-employed farming, or those who are engaged in work other than farming as well but spend more time in farming during a survey period of one year”.

As of the year 2010, the male and female population aged 75 to 84 who were mainly engaged in farming, corresponding to the said generation, totaled about 696 thousand. In 2015, however, population over 80 years of age mainly engaged in farming, including the said generation, was almost halved to some 350 thousand. Figure 1 shows a comparison of male population by age group mainly engaged in farming between 2010 and 2015. In this Figure, a 75 to 79 age-group including the said generation formed the largest one as of the year 2010. As of 2015, however, a 65 to 69 age-group consisting mainly of the baby-boom generation became the largest one partly because of an increase in those baby boomers joining agriculture after retirement from non-agricultural jobs, which suggests that a generational change took place in the farming population during this period.

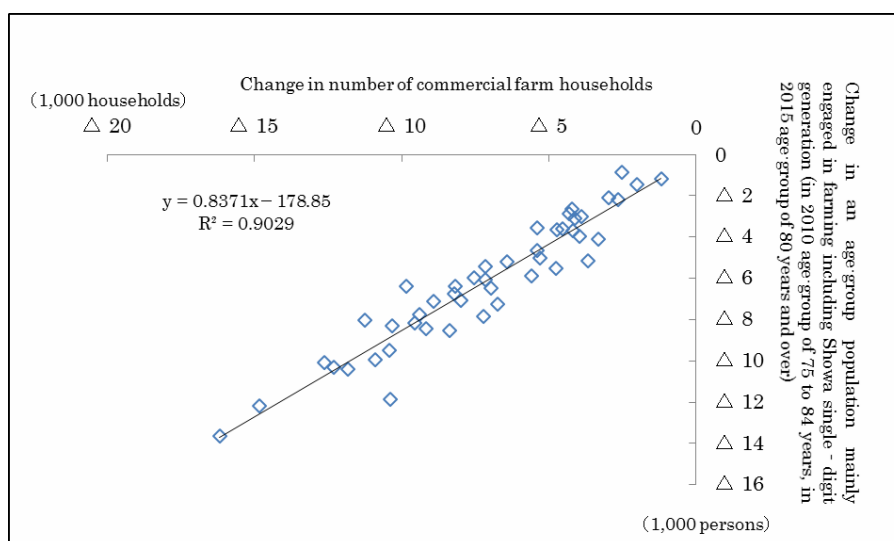
Next, in Figure 2, let us observe changes by prefecture in numbers of commercial farm households as well as an age-group population mainly engaged in farming including the Showa single-digit generation between 2010 and 2015. This Figure shows that the more substantially farming population of the said generation decreased, the more commercial farm households reduced their numbers in respective prefectures. A strong correlation is found between these two groups. During this period, an actual number of commercial farm households fell by approximately 300 thousand, which is almost equivalent to some 350 thousand, a decrease in the population of the said generation mainly engaged in farming. This suggests that the decline in the population of the said generation mainly engaged in farming has made a significant influence on the decrease in commercial farm households.

Figure 1 Population by age group mainly engaged in farming in 2010 and 2015 (male)



SOURCES: Compiled from "2010 World Census of Agriculture and Forestry in Japan" and "2015 Census of Agriculture and Forestry in Japan", Ministry of Agriculture, Forestry and Fisheries.

Figure 2 Changes by prefecture in numbers of commercial farm households and an age-group population mainly engaged in farming including Showa single-digit generation between 2010 and 2015



SOURCES: Ministry of Agriculture, Forestry and Fisheries (See Table 1).

1.2 Small-scale farm households turning to decrease

The decrease in the Showa single-digit generation farmers had an implication different from that in past years, which tells us that the decrease in those farmers led not only to mere reduction of their farm management scale, but also to their retirement from farming in most cases. This can be suggested by movements of households combining non-commercial farm households and land tenure non-farm households (In this paper, households combining non-commercial farm households and land tenure non-farm households are defined as “small-scale farm households”, while households combining commercial farm households and small-scale farm households are defined as “farm land tenure households”).

Table 1 compiled from the Censuses shows changes in numbers of commercial farm households, non-commercial farm households and land tenure non-farm households. These households are respectively defined as in Note 1 (See P5-6). Farming operations shrink in the order of the operation scale, from commercial farm households, non-commercial farm households, to land tenure non-farm households.

As seen in Table 1, small-scale farm households increased during periods of 2000-2005 and 2005-2010, while commercial farm households decreased during the same periods. During a period of 2010-2015, however, small-scale farm households also turned to decline in number by 30 thousand households.

In the 2010 Census and previous ones, commercial farm households decreased in number because some of those households shifted to a group of small-scale farm households in the Census due to reduction of their management scale. It is presumed, however, that most of these small-scale farm households shifted from a group of commercial farm households in the Census had been continuing their farming until 2010 (Uchida 2011).

Table 1 Changes in numbers of farm households and land tenure non-farm households and area of cultivated lands under management

(Unit: 10,000 households, 10,000 hectares)

	Farm households and land tenure non-farm households					Area of cultivated lands under management	
	Commercial farm households ①	Non-commercial farm households ②	Land tenure non-farm households ③	Small-scale farm households ②+③	Farm land tenure households ①+②+③	Cultivated lands under management of commercial farm households	Cultivated lands under management per commercial farm household (hectares)
2005	196	88	120	209	405	345	1.8
2010	163	90	137	227	390	319	2.0
2015	133	83	141	224	357	291	2.2
2005 - 2000	Δ 37.3	10	10	21	Δ 17	Δ 29	0.2
2010 - 2005	Δ 33.1	1	17	18	Δ 15	Δ 26	0.2
2015 - 2010	Δ 30.2	Δ 7	4	Δ 3	Δ 33	Δ 28	0.2

SOURCES: Compiled from "2000 World Census of Agriculture and Forestry in Japan", "2010 World Census of Agriculture and Forestry in Japan", "2005 Census of Agriculture and Forestry in Japan", and "2015 Census of Agriculture and Forestry in Japan", Ministry of Agriculture, Forestry and Fisheries.

During the period of 2005-2010, for instance, small-scale farm households continued to increase in number because a part of commercial farm households shifted to the group of small-scale farm households in the Census. In a period of 2010-2015, however, the total number of small-scale farm households adversely took a downward turn. Although a certain part of commercial farm households supposedly shifted to the group of small-scale farm households in the Census by downsizing their farming operations during this period, it is suggested that the small-scale farm households moved from commercial farm households in the Census were far outnumbered by the commercial farm households that retired from farming.

Behind this background, naturally enough, there was a rapid increase in farmers among Showa single digit generation farmers, who found it difficult to continue farming due to aging (or death). Since all the members of the said generation had become more than 80 years old by 2015, this increase can be recognized as a natural movement of these aged farmers. The similar trend is supposedly taking place among farmers who have continued their small-scale farming operations until recently.

As other papers already pointed out, furthermore, agricultural machines that had been used longer than years of depreciation life by aged farmers including the Showa single-digit generation producers reached the limits of their durability. This also seems to have influenced above-mentioned retirements (Uchida 2012). Actually, an average number of years in use of both transplanting machines and combine harvesters that had been scrapped reached to as many as 17 years as of 2011. In addition, it is considered that an increase in organized farm management entities including community-based farm management organizations, which, as explained afterward, became cultivators of farm lands owned by retired farmers, was another factor making those aged farmers inclined to retire from farming.

(Note 1) Definitions of farm household and land tenure non-farm household:

- ① Farm households are households engaged in farming with cultivated lands of 10 a.(*) or more under management, or households engaged in farming with cultivated lands of less than 10 a. under management and earning more than 150 thousand yen during one year prior to the census survey date from sales of agricultural products (See a colored-mesh part of the following Reference chart).
- ② Among farm households, commercial farm households are households engaged in farming with cultivated lands of 30 a. or more under management, or households earning more than 500 thousand yen during one year prior to the census survey date from sales of agricultural products. On the other hand, among farm households, households engaged in farming with cultivated lands of less than 30 a. under management as well as earning of less than 500 thousand yen during one year prior to the census survey date from sales of agricultural products are defined as non-commercial farm households.
- ③ Land tenure non-farm households are households other than farm households possessing cultivated lands and abandoned cultivated lands of 5a. or more in total.

(* a. = Area unit, 1 are = 100m² = 119.6 square yards)

(Reference chart)

Image of definitions: Farm households and land tenure non-farm households

Commercial farm household: A household engaged in farming with cultivated lands of 30 a. (*) or more under management, or earning more than 500 thousand yen per year from sales of agricultural products.
Non-commercial farm household: A household engaged in farming with cultivated lands from 10 a. to less than 30 a. under management, and earning an annual income from 150 thousand yen to less than 500 thousand yen from sales of agricultural products.
Land tenure non-farm household: A households engaged in farming with cultivated lands of less than 10 a. under management, possessing cultivated lands and abandoned cultivated lands of 5 a. or more in total, and earning less than 150 thousand yen per year from sales of agricultural products.

SOURCE: Prepared by the author.

(* a. = Area unit, 1 are = 100m² = 119.6 square yards)

1.3 Rice producing farm households occupying more than half of decrease in commercial farm households

Next, let us find out in which farming sector a decrease in commercial farm households took place. Table 2 shows increases in numbers of commercial farm households classified by farm management type during the period from 2010 to 2015. The Table indicates that the largest decline of farm households in number was recorded in a rice producing sector of single farming management households (management entities whose sales of a main crop accounts for more than 80 percent of the total marketing turnover). During this period, 146 thousand rice producing households quit farming, occupying 48 percent of the total decrease in commercial farm households. A certain number of rice producing management entities seem to be also included in management entities other than the single farming management entities. It can be recognized, therefore, that more than a half of the decrease in commercial farm households has been brought about by retirements of rice producing farm households.

In this background, there was a fact that Showa single-digit generation farmers had been heavily concentrated at these management entities engaged in rice production.

Table 2 Decreases in commercial farm households classified by type of farm management organization

(Unit: 1,000 households, %)

	2010	2015	2015-2010	
				Composition ratio
National total	1,631	1,330	Δ 302	100.0
Single farming management households in total	1,153	961	Δ 192	63.7
of which Rice	767	620	Δ 147	48.8
Industrial farm crops	35	26	Δ 9	2.8
Open-field vegetables	79	74	Δ 4	1.5
Vegetables in green houses	46	41	Δ 5	1.6
Fruits	126	115	Δ 12	3.8
Flowers and plants	27	22	Δ 5	1.6
Dairy farming	16	13	Δ 3	1.1
Beefcattle farming	25	22	Δ 2	0.8
Pig farming	3	2	Δ 1	0.3
Poultry farming	3	2	Δ 1	0.2
Other livestock farming	1	1	Δ 0	0.1
Semi-multiple farming management households	242	188	Δ 54	18.1
Multiple farming management households	78	60	Δ 18	6.1
Non-commercial farm households	157	121	Δ 37	12.1

SOURCES: Ministry of Agriculture, Forestry and Fisheries (See Figure 1).

NOTE 1: A single farming management household is defined as a farm management entity whose sales of the main agricultural product accounts for more than 80 percent of the total income from all agricultural product sales.

NOTE 2: In definition of commercial farm households, a household that manages farm lands of more than 30a. but do not sell any products belongs to a category of commercial farm households.

Table 3 shows a commodity-wise composition ratio of the said generation farmers (aged 75 to 84) in core persons mainly engaged in farming (persons who are usually engaged “mainly in farm works” among population mainly engaged in farming) as of the Census year 2010, who are classified by type of farm management organization. As seen in the Table 3, rice producers occupied 40 percent of the total core persons mainly engaged in farming as of 2010, which implies that most of the said generation farmers, belonging to the core persons, were engaged in agricultural production as rice producers.

A small-scale mechanization system had been developed in the sector of rice producing management in the country. This system is considered to have enabled even the Showa single-digit generation, already aged 75 to 84 as of 2010, to continue farming by outsourcing a part of hard works to neighboring organized farm management entities. However, five years further passed since 2010, which supposedly led to a movement of the said generation’s retirement from farming, while an above-mentioned challenge of renewing farm machines was almost simultaneously facing farmers of the said generation.

Table 3 Composition ratio of farmers aged 75 to 84 years in core persons mainly engaged in farming classified by type of farm management organization
(Commercial farm households in 2010)

(Unit: 1,000 households, %)

	Male & Female	of which farmers aged 75-84	Composition ratio
National total	2,051	524	100.0
Single farming management households in total	1,366	355	67.6
of which Rice	655	209	39.8
Open-field vegetables	147	34	6.4
Vegetables in green houses	107	16	3.0
Fruits	210	51	9.7
Flowers and plants	57	10	1.8
Dairy farming	42	4	0.8
Beef cattle farming	42	9	1.7
Pig farming	7	1	0.1
Poultry farming	7	1	0.2
Other livestock farming	3	0	0.1
Semi-multiple farming management households	425	97	18.5
Multiple farming management households	155	31	5.9
Non-commercial farm households	105	41	7.9

SOURCE: Compiled from "2010 World Census of Agriculture and Forestry in Japan", Ministry of Agriculture, Forestry and Fisheries.

2. Organized farm management entities taking responsibility of cultivating farm lands: their movement and characteristic features

2.1 Organized farm management entities enhancing their presence as cultivators

As mentioned above, the 2015 Census suggests that retirement of Showa single-digit generation farmers was one of the background factors behind a substantial decrease in commercial farm households. On the other hand, organized farm management entities (See NOTE 2, p9) are considered to have become one of major cultivators of farm lands owned by those retired farmers.

As Table 4 shows, organized farm management entities increased in number by some 2 thousand from 31 thousand in 2010 to 33 thousand in 2015, and a total area of their cultivated

lands under management was boosted by about 100 thousand hectares from 437 thousand hectares to 534 thousand hectares during the same period. A proportion of cultivated lands under management of these organized entities in the national total rose from 11.4 percent in 2010 to 14.7 percent in 2015, although the total area of cultivated lands under management of farm households was declining in the country. Furthermore, incorporation of these organized management entities continuously progressed. Since a composition ratio of farm corporations in organized management entities increased from 55.0 percent in 2010 to 69.1 percent in 2015, the corporations now occupies almost 70 percent of organized management entities.

Table 4 Changes in numbers of organized farm management entities and others

(Unit: 1,000 management entities, %, 1,000 hectares, and 1,000 organizations)

	No. of organized management entities	of which corporations	of which ratio of corporations	Areas of cultivated lands under management of organized management entities	Ratio of cultivated lands under management of organized management entities (NOTE 1)	No. of Community-based farm cooperatives	of which corporations	of which ratio of corporations	Area of cultivated lands under management per community-based farm management cooperatives (hectares)	Total area of cultivated lands under management of community-based farm management cooperatives	No. of regular member organizations of multi-purpose agricultural cooperatives (NOTE 2)
2005	28.1	13.9	49.4	243	6.3	10.1	0.6	6.4	25.2	253.7	9.5
2010	31.0	17.1	55.0	437	11.4	13.6	2.0	15.0	27.2	369.1	12.2
2015	33.0	22.8	69.1	534	14.7	14.9	3.6	24.4	25.3	375.5	16.5
2010 - 2005	2.9	3.2	5.7	194	5.2	3.5	1.4	8.6	2.0	115.5	2.8
2015 - 2010	2.0	5.7	14.0	97	3.3	1.3	1.6	9.4	Δ 1.9	6.4	4.2

SOURCES: Compiled from "2000 World Census of Agriculture and Forestry in Japan", "2010 World Census of Agriculture and Forestry in Japan", "2015 Census of Agriculture and Forestry in Japan", "Report of Survey on Community-based farm cooperatives", and "Statistics on Agricultural Cooperatives", Ministry of Agriculture, Forestry and Fisheries.

NOTE 1: This shows a ratio of cultivated lands under management of organized farm management entities against total cultivated lands under management of commercial farm households, non-commercial farm households and organized farm management entities.

NOTE 2: Numbers of regular member organizations of multi-purpose agricultural cooperatives are compiled from Statistics on Agricultural Cooperatives for years 2004, 2009 and 2014. The "regular member organizations" have been changed to "regular member corporations" since 2011.

What is considered as one of the background factors for this increase in organized management entities as well as progressed incorporation of these entities are organization of community-based management entities or "Shuraku-Eino" and their incorporation.

Changes in the number of community-based farm management cooperatives and a

composition ratio of community-based farm management corporations are shown in Table 4, which indicates that as a total number of community-based entities increased, the composition ratio of community-based corporations further rose similarly as in the case of organized management entities. A governmental program named New Program to Stabilize Farmers' Income, which was implemented in 2007, made a great contribution to an increase in the community-based management entities. Community organizations were required to participate in the program of the Income Stabilization Measures by submitting their own scheme for incorporating their entity within five years. Some of community-based management entities could not meet the deadline of incorporation and postponed their schemes. Nevertheless, lots of communities set up their voluntary organizations to take advantages of the governmental program and converted these organizations into corporations. Such trend has been reflected in the progress of incorporation of the organized management entities.

(Note 2) Organized management entities:

Organized management entities are defined as agricultural management entities that do not implement business operations on household unit basis (non-family management entities). A single-household corporation, however, is included in the family-based management entities.

2.2 Transfer of cultivated lands under management from land tenure households to organized farm management entities

Moreover, let us confirm changes not only in cultivated lands under management of land tenure households combining commercial farm households and small-scale farm households, but also in those lands of organized farm management entities.

If changes in cultivated lands under management of land tenure households and organized farm management entities in every prefecture (excluding Fukushima Prefecture) during a period of 2005-2015 are analyzed with the Censuses, we can find out a definite correlation in every prefecture that the more cultivated lands under management of land tenure households decreased, the more organized farm management entities increased areas of their cultivated lands under management. In addition, an analysis of increases and decreases by prefecture (excluding Kanagawa Prefecture) during the same period in areas of cultivated lands under management of organized farm management entities and community-based farm management cooperatives shows a similar correlation in every prefecture that the more community-based farm management cooperatives increased cultivated lands under management, the more organized farm management entities also increased areas of their cultivated lands under management.

These correlations suggest that community-based farm management cooperatives have particularly played a leading role among the organized farm management entities in taking over farm lands under management of land tenure farm households that had quit farming during the period of 2005-2015.

2.3 Characteristic features of farm management operated by organized farm management entities

Organized farm management entities are growing their significance among core farmers engaged in land-extensive farming in Japan, while farmers of so-called Showa single-digit

generation have increasingly retired from farming as noted earlier. Farm management operated by these organized farm management entities is different from that of existing commercial farm households in many ways. The farm management of those entities will be characterized by the followings:

a. Equipment of farm machinery

Naturally enough, a larger scale of management can be illustrated as the first characteristic feature of farm management operated by organized management entities. According to the 2015 Census, an average holding of cultivated lands under management per organized farm management entity that has cultivated lands under management is 23.7 hectares, which is far exceeding an average land holding of commercial farm households as shown above in Table 1. As also seen in Table 5, an average number of agricultural machines owned by an organized farm management entity is almost two to three times as many as that of a family-based management entity (including non-commercial farm households which meet external appearance standards, in addition to commercial farm households.). During a period from 2010 to 2015, moreover, farm machines owned by organized farm management entities also increased in number by 15 to nearly 30 percent, while those machines owned by family-based management entities significantly decreased during the same period.

Table 5 Number of farm management entities owning agricultural machinery and their machines

(Unit: 1,000 entities, 1,000 machines, %)

		Power rice trans planters		Tractors		Combine harvesters	
		No. of management entities	No. of trans planters	No. of management entities	No. of tractors	No. of management entities	No. of harvesters
Actual numbers in 2015	Farm management entities	761	788	1,040	1,394	596	631
	Family-based management entities	750	767	1,024	1,342	584	604
	Organized management entities	10	22	17	52	12	27
2015/2010	Farm management entities	△ 23.8	△ 23.2	△ 21.4	△ 16.9	△ 22.1	△ 21.0
	Family-based management entities	△ 24.1	△ 24.0	△ 21.8	△ 18.1	△ 22.6	△ 22.1
	Organized management entities	15.2	28.1	17.4	29.7	8.6	15.2
No. of machines owned per entity (in 2015, unit: machines)	Farm management entities	1.0		1.3		1.1	
	Family-based management entities	1.0		1.3		1.0	
	Organized management entities	2.1		3.2		2.2	

SOURCES: Ministry of Agriculture, Forestry and Fisheries (See Table 1).

b. Diversification of business

In addition to such an external feature as mentioned above, there is a great difference in business contents as well between organized farm management entities and family-based management entities. Table 6 shows tendencies of business activities operated respectively by family-based management entities and organized farm management entities that are both engaged in agricultural production-related businesses. As shown in this Table, a number of agricultural management entities engaged in agricultural production-related businesses declined by nearly 30 percent in total. On the contrary, organized farm management entities engaged in those businesses increased in number by 30 percent. Among those production-related businesses, a direct-to-consumer sales is the most popular business, which is followed by processing of farm products and tourist farm operation. Organized farm management entities and family-based

Table 6 Number of farm management entities operating agricultural production-related businesses (national totals of top six businesses)

(Unit: entity, %)

		Total	of which management entities operating production-related businesses						
				Agricultural production-related businesses (multiple answers)					
				Farm product processing	Direct sales (to Consumers)	Rental farm/ farming experience & others	Tourist farms	Farm inns	Farm restaurants
Actual numbers in 2015	Farm management entities	1,377,266	251,073	25,068	236,655	3,723	6,597	1,750	1,304
	Family-based management entities	1,344,287	241,697	21,503	229,100	3,051	5,862	1,639	873
	Organized management entities	32,979	9,376	3,565	7,555	672	735	111	431
	of which corporations	22,778	8,310	3,378	6,629	595	681	107	418
Proportion of entities operating production-related businesses in 2015	Farm management entities	100.0	18.2	1.8	17.2	0.3	0.5	0.1	0.1
	Family-based management entities	100.0	18.0	1.6	17.0	0.2	0.4	0.1	0.1
	Organized management entities	100.0	28.4	10.8	22.9	2.0	2.2	0.3	1.3
	of which corporations	100.0	36.5	14.8	29.1	2.6	3.0	0.5	1.8
2015/2010	Farm management entities	△ 18.0	△ 28.6	△ 26.6	△ 28.1	△ 36.3	△ 24.8	△ 12.8	4.5
	Family-based management entities	△ 18.4	△ 29.8	△ 32.8	△ 29.1	△ 41.6	△ 28.3	△ 14.9	△ 11.9
	Organized management entities	6.4	32.1	64.7	28.3	9.8	24.8	37.0	67.7

SOURCES: Ministry of Agriculture, Forestry and Fisheries (See Figure 1).

management entities remarkably differ in proportion of engagement in those businesses. Namely, the proportion of the organized entities operating the related businesses considerably exceeds that of the family-based entities. Particularly, a proportion of corporate management entities engaged in such businesses almost doubles that of the family-based entities.

c. Employment of agricultural labor

Furthermore, management of organized farm management entities is also characterized by a larger proportion of permanently hired worker on farm (See *1, p21) in their employed labor. Table 7 shows the total numbers of working person-days of permanently hired worker and temporary hired worker (See *2, p21) respectively employed by family-based management entities and organized farm management entities. As can be seen from the said Table, the proportion of permanently hired worker on farm in employed labor of the organized farm management entities significantly exceeds that of the family-based management entities. In the 2015 Census, the proportion of working person-days of permanently hired worker on farm in those person-days of all the employees of agricultural management entities in the country is also well above those of temporary hired worker on farm because of an increase in organized farm management entities.

As mentioned before, farm management entities were increasingly organized during a period of 2010 to 2015, when incorporation of these entities further progressed. In the same period, it is definitely observed that those organized entities simultaneously diversified their business operations and increased their regular employees.

Table 7 Labor force employed by farm management entities
(total number of worker-days)

(Unit: 1,000 worker-days, %)

		Permanently hired worker on farm ①	Temporary hired worker on farm ②	Total number of employee's worker-days	
				①+②	of which proportion of Permanently hired worker on farm ①/(①+②)
2005	Farm management entities	23,349	33,842	57,191	40.8
2010	Farm management entities	31,388	34,360	65,748	47.7
2015	Farm management entities	43,215	24,821	68,036	63.5
	Family-based management entities	17,861	18,618	36,480	49.0
	Organized management entities	25,354	6,202	31,556	80.3
	Organized management corporation	24,659	5,545	30,204	81.6
	Non-corporation management entities	694	657	1,352	51.4

SOURCES: Compiled from "2010 World Census of Agriculture and Forestry in Japan", "2005 Census of Agriculture and Forestry in Japan", and "2015 Census of Agriculture and Forestry in Japan", Ministry of Agriculture, Forestry and Fisheries.

It is also observed that behind these movements there were political backups provided by the Government such as enforcement of so-called “Law of Sixth Industrialization of Agriculture” in 2011 and implementation of “Employment Promotion Project for Agricultural Management Entities” in 2008, in addition to a background factor of above-mentioned establishments of community-based farm management cooperatives.

3. Relationship between increasing organized farm management entities and agricultural cooperative organizations

3.1 Participation by most of increased farm management corporations in agricultural cooperatives

Let us consider hereinafter above-mentioned structural change in core farmers engaged in land-extensive farming as well as their influence on agricultural cooperative organizations.

As already noted, organized farm management entities, which increasingly emerged during the years when aged farmers centering on so-called Showa single-digit generation retired from farming, have been playing a major role as cultivators of farm lands that had been previously cultivated by those retired farmers. It is observed not only that most of member farmers of these organized farm management entities still remain regular members of agricultural cooperatives, but also that lots of these entities have continued to operate their businesses in collaboration with agricultural cooperatives even after they were incorporated.

As seen in the above Table 4, regular member organizations among regular members of agricultural cooperatives increased in number by some 7 thousand from about 9.5 thousand to 16.5 thousand in a period from 2004 to 2014. During a similar period of 2005-2015, moreover, corporations among organized farm management entities increased by some 9 thousand and incorporated community-based farm management cooperatives (hereinafter referred to as “community-based farm management corporations”) also increased by about 3 thousand. These increases suggest that most of the incorporated organized farm management entities centering on community-based farm organizations, which took over farm lands of retired farmers as cultivators, have been keeping their membership of agricultural cooperatives.

It can also be observed that organized management entities engaged in land-extensive farming, regardless of corporation or non-corporation status, have been enhancing their presence as the “last core farmers” in many areas, where Showa single-digit generation farmers have increasingly retired. This observation suggests, therefore, that it will be a great challenge for agricultural cooperatives how to strengthen their measures to cope with needs of these organized management entities for the purpose of revitalizing land-extensive farming as well as their cooperative organizations themselves.

In view of a fact that a number of community-based farm management cooperatives have been progressively organized since 2007, many years do not seem to have passed particularly since those community-based entities among land-extensive organized management entities started their business operations. In this sense, the community-based entities will need to take more time to stabilize their management. It will be necessary not only for agricultural cooperatives (JAs) and their nationwide network called JA Group, but also the administration and other farm-related organizations to get positively involved in coping with their needs in accordance with each stage of their management development.

3.2 Necessary measures to be taken for supporting “last core farmers” of land-extensive farming

As already pointed out in this paper, (1) not only commercial farm households, but also small-scale farm households have turned to decrease, while most of Showa single-digit generation farmers retired from farming in Japan. (2) It is suggested that organized farm management entities engaged in land-extensive farming have been increasingly playing a major role as cultivators of farm lands owned by those retired farmers. (3) Among the organized management entities, new ways of business operations such as so-called “AFFrinnovation” or sixth industrialization of agriculture and employment of permanently hired worker on farm have been prevailing, which operations are different from those implemented by existing commercial farm households. (4) Moreover, both of increases in organized farm management entities and cases of incorporation of these entities have brought about a change to agricultural cooperatives in a form of an increase in their regular member organizations.

Under the current conditions, of course, it is obvious that farm management entities except the organized farm management entities predominantly occupy a larger part of cultivated lands under management, namely more than 80 percent of those lands in the country, and they are still playing an important role in the land-extensive farming. It is expected, however, that a structural change in agricultural production, which is characterized by consolidation of farm lands to organized management entities as well as incorporation of these entities, will further continue because of aging of farmers and the direction of governmental farm policies.

In this context, future challenges to be addressed by agricultural cooperatives, JA Group and public related agencies such as agricultural extension centers of prefectural governments in taking necessary measures to support farm management entities will be finally summarized in the following paragraphs, taking it into consideration that organized management entities engaged in land-extensive farming will possibly be main targets to be supported. In this summarization, examples of such measures as taken in the disaster areas stricken by the Great East Japan Earthquake’s tsunami, on which the author have continued to make a field survey every year, will be also touched upon for your reference.

a. Establishment of management system of community-based farm management entities increasingly converting themselves into corporations

It becomes vital for a large-scale organized management entity engaged in land-extensive farming to establish a production system according to its management scale, much larger than that of a family-based management entity. The production system will require the organized management entity, for instance, not only to get machinery equipment and facilities, but also to secure farm labor, finance and other necessities. The large-scale entity will also have to address important challenges, such as quantitative securement of agricultural production, advance in agricultural technology for improving quality of products, securement of operating funds such as wages for employees, as well as establishment of integration as a management entity. In accordance with each stage of development of the entity, furthermore, it will face wide-ranging challenges such as introduction of advanced technologies for production, development of sales channels and managements of labor and finance.

Naturally enough, it is difficult for both agricultural cooperatives (JAs) and extension centers to support the organized management entities facing above-mentioned challenges in such ways as generally applied by JAs or centers when they provide individual farmers

with their farm guidance or technical advices through JA's commodity-wise producers' groups and other organizations of farmers. With a view to coping with challenges faced by the organized entities, JAs and extension centers need not only to build up a close relationship of mutual trust with the respective entities, but also to consolidate a support system for continuously meeting their needs within their organizations. Therefore, it will also become necessary for JAs and extension centers to consider setting up a special system of staff allocation, under which some of their staff members are to be exclusively engaged in jobs of supporting the entities for a long period.

The JA Group has already established a support center for core farmers in some prefectures to strengthen its activities supporting core managers of farms at rural areas in the respective prefectures. There is a recent movement under way even among primary agricultural cooperatives to set up a special section which exclusively takes charge of supporting respective organized management entities. On the other hand, the national government issued the "guideline for management of cooperative farming extension programs" on May 11, 2015, which provides that "regarding targets of extension and guidance activities, high priorities shall be placed on farmers and their groups with strong motivation for improving farm management, new employed young farmers, agricultural newcomers, and women farmers eager to participate in farm management". Under this guideline, support systems for individual core farmers have been consolidated at many areas in the country.

Favorable conditions have been established in this way to encourage JAs, JA Group and extension centers to provide supports in a closely coordinated manner to core farmers and farm management entities. Such examples are actually available in the disaster areas hit by the Great East Japan Earthquake's tsunami, where the three parties of JAs, JA Group and extension centers have been working together to continuously provide assistance to organized farm management entities in those areas until today by helping farmers not only to establish their organized management entities after the disaster, but also to overcome difficulties faced by themselves in the course of resuming their production activities.

More specifically, such assistance jointly provided by these three parties includes backings for paperwork of the entities such as legal procedures for an establishment of a corporation and application procedures for receiving various subsidies, comprehensive supports ranging from production to marketing including selection of new crops to be produced, provision of cultivation technology, and development of sales outlets. Moreover, the three parties have been cooperative in providing the entities with supports necessary at each stage of their management development, such as assistance to consolidate their financial management system by sending professional management consultants to them (Norinchukin Research Institute 2016).

b. Multiple farming management with "rice plus extra crops"

In many rice producing areas, organized farm management entities, which are engaged in large-scale land-extensive agricultural production centering on rice farming, have supposedly found it necessary for them to challenge multiple farming on their paddy fields, since an environment surrounding rice is getting remarkably uncertain. Some of these entities have begun to grow vegetables on open fields or horticultural crops in green houses used for growing rice seedlings, in addition to production of some crops introduced under the policy of rice production control. In order to promote multiple farming, other entities could not help streamlining farm works for rice production by introducing a way of direct seeding and the like.

However, it will be a major requisite for a successful multiple farming to secure a stable

demand for crops to be newly introduced, if costs of farm equipment necessary for the multiple farming and labor force are taken into consideration. Essential points for the multiple farming, furthermore, will be production of new crops based on the assumption of secured sales channels as well as establishment of the technology for producing them. Here are important fields of activities in which JAs and JA Group can fulfill their key functions. Namely, they are development of sales outlets and promotion of joint marketing of farm products through JA's organizations of member farmers. In addition, if the extension centers can take responsibility of providing the entities with guidance on establishment of such production technology as meets the requisites of the sales outlets including standards of farm products, JAs, JA Group and extension centers will be able to create a market-oriented and comprehensive support system for agricultural production.

An example of such collaboration by these three parties at the earthquake-hit area is available in Miyagi prefecture, where production of business-use green onions for processing was initiated in addition to rice farming. As the author has introduced this example several times, JAs and other related organizations have been successful in establishing a new production center of the green onions by sharing the responsibility among themselves. JA ZEN-NOH Miyagi or Miyagi Prefectural Headquarters of ZEN-NOH (National Federation of Agricultural Cooperative Associations) fulfilled its function to develop the sales outlets. JAs took leadership not only in organizing a producers' group of green onions with organized management entities being as its core members, but also in promoting collection and shipment of the green onions for the joint marketing. JA Group also provided the entities and farmers with supports particularly in soil improvement for producing the onions, constructions of facilities, and deployment of farm machineries. Furthermore, extension centers played a major role in improving producers' technology.

This project was implemented in a larger area, where three JAs and three regional extension centers joined the project. The success in this project also suggests that it is important for JAs and extension centers to consolidate a production-to-marketing system as well as a technical guidance system in such a wider area as crossing over their respective territories in order to build up their integrated system for coping with the needs of large-size organized management entities.

c. Sophistication of business management

As already indicated, organized management entities are highly dependent on employed labor, particularly on permanently hired worker on farm, which requires the entities to consolidate their systems for personnel and labor managements. At the same time, it will be a major challenge for them how to routinely manage their working capital such as labor costs which they need to pay regardless of a seasonal fluctuation in their business operation. These entities will also need to get prepared for paying a large amount of funds for renewing their farm machines and facilities. Furthermore, it will be necessary for the entities to raise capital for a new investment if they take a step toward diversification of their business management into so-called "AFFrinnovation" or sixth industrialization of agriculture and other additional businesses. On the other hand, national and local governments provide farmers with various kinds of subsidies, which include institutional funds accessible for entity's stabilization of management such as Agricultural Management Consolidation Reserve Fund Program. Under these conditions, leaders of the organized management entities are required to make executive judgements with a full knowledge on those subsidy programs as well.

There are many JAs and extension centers that have held a seminar for the people of organized

farm management entities by inviting licensed tax accountants as resource persons. These organizations have also sent professional management consultants to the entities. It will be a future challenge for them to facilitate development of their human resources with specialized knowledge in both agriculture and accounting. In France, for example, there is a special organization of management guidance for farm management entities, which is called as “Conseil D’ Economie Rurale: CER (Rural Economy Consultation Council)”. CER is providing wide-ranging services to the farm management entities, including not only support for tax return, but also advices on CAP (procedures regarding EU’s Common Agricultural Policy and so on), legal consultation, proposals on management improvement on the basis of comparison with other entities, and preparation for business diagnosis certificates (Katsura 2016). Besides, CER provides the entities with guidance on funding necessary for a business enlargement of the management entity and an entry into a new business as well.

When the author visited a dairy farm at Loire-Atlantique Department, France, in 2016, which had been provided with management guidance by CER, the farmer told the author that he had considered his working capital on the basis of CER’s business diagnosis. The dairy farmer added that he would consult with CER before negotiating on funding with financial agencies when he made his judgement on a heavy investment.

d. Measures to be taken in geographically disadvantaged regions and supports for maintenance of public-interests functions

Business environments surrounding organized farm management entities engaged in and-extensive farming greatly differ depending upon respective geographical features such as agricultural conditions. As shown in Figure 3, for instance, a total area of farm lands consolidated by a community-based farm management entity located in a mountainous agricultural region is averagely almost half of that in a flat agricultural region. As pointed out by the author (Uchida 2012), difference in productivity of farm lands between these regions seems to be much bigger than that in the areas of the lands, if a delayed implementation of projects to enlarge plots of paddy fields located in the mountainous regions is taken into consideration.

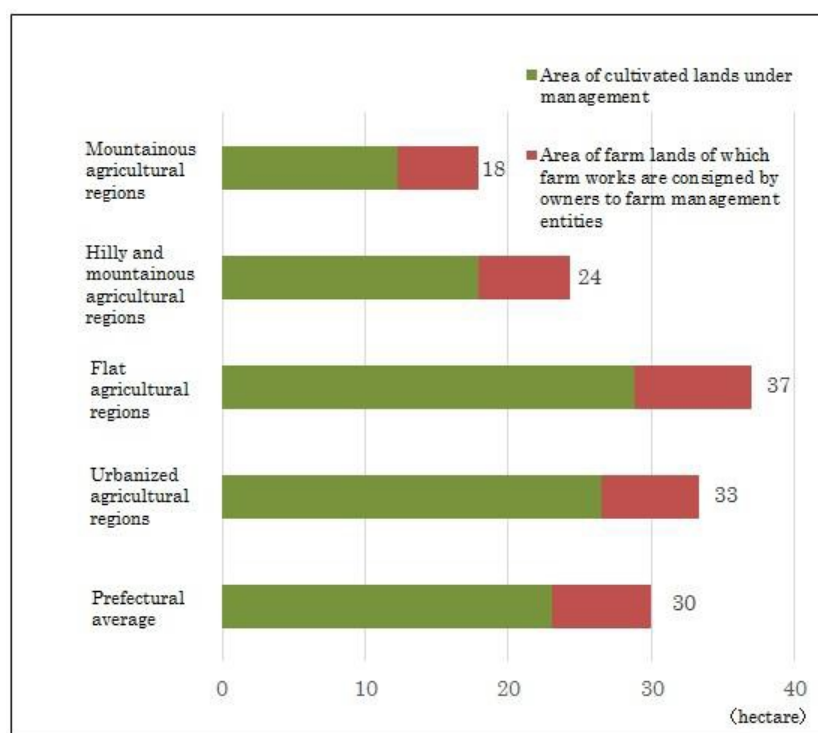
In geographically disadvantaged regions where there is a limited possibility of expanding cultivated lands under management, it will be effective for more than one organized management entity to promote cooperation among themselves in a larger area uniting their territories not only to improve their efficiency of business operations, but also to jointly launch a new business of “AFFrinnovation” and so on. In addition, an agricultural cooperative (JA) will find it possible to fulfil its function as a coordinator for such cooperation of these entities. JA Miyoshi in Hiroshima prefecture, for example, has been successful in setting up its own network of community-based farm management entities in its territory, through which the JA is providing supports to them. More specifically, joint uses of agricultural machines are facilitated within the network in order to avoid excessive investments by respective entities. A processing business is jointly implemented as well by the entities of the network, which has achieved favorable results especially in product development and improvement of processing technology (Nobutaka Ishida, Norinchukin Research Institute 2015, pp.74-80).

In hilly and mountainous regions, furthermore, it appears that a number of organized farm management entities based on rural communities cannot help taking charge of serving functions for public interests including maintenance of farm lands and irrigation facilities such as channels, which functions have been fulfilled so far by respective members of those communities. It is concerned, however, that these organized entities would become unable

to play a role of the “last core farmers” in land-extensive farming if they were overburdened with works to fulfill those public-interests functions in such regions as used to be unfavorable for agricultural production.

In some of these regions, a general incorporated association has already been set up to take over above-mentioned public-interests functions from business departments of community-based farm management entities. An example of such cases can be found at Kasagi district in Nichinan town, Tottori prefecture, where a general incorporated association named Kasagi Farming Association was organized in June 2015. This Association has been taking responsibilities of certification of farm land use rights as well as community works such as weeding on roadsides of farms and cleaning of irrigation channels. It carries out an additional function of receiving various kinds of subsidies (Japan Agricultural News, July 29, 2016). There is a high probability that such measures as taken at Kasagi district will be increasingly put into practice at other geographically disadvantaged areas in the future, where it is difficult to balance economic activities and maintenance of public-interests functions. This should be taken into consideration as a future direction of differentiation of functions to be performed by the community-based farm management entities.

Figure 3 Average area of farm lands consolidated per community-based farm management entity classified by type of agricultural regions (46 prefectures excluding Hokkaido prefecture)



SOURCE: Compiled from "2015 Report of Survey on Community-based farm cooperatives", Ministry of Agriculture, Forestry and Fisheries.

■ Afterword

As already mentioned in this paper, farmers of the Showa single-digit generation, who had sustained post-war Japanese agriculture, have increasingly retired from agricultural production, which has brought about a dramatic change to the production structure of land-extensive farming in the country. As a result, organized management entities engaged in the farming are now beginning to play a major role as key cultivators of the farm lands. At the same time, most of these organized entities, continuously maintaining close relationship with their agricultural cooperatives, are being regarded as the “last core farmers” of land-extensive farming in Japan.

While organized farm management entities are more increasingly converting themselves into corporations, these organized farm management corporations will be required to sophisticate their management in order to address a number of challenges in every aspect such as business operations from production to marketing, financial management, labor management, continuous fulfillment of public-interests functions and the like. However, it will be difficult for the entities to overcome these challenges by themselves. JAs and JA Group, national and local governments, extension centers and other related agricultural organizations will have to further facilitate coordination and cooperation among themselves for strengthening their measures necessary to meet various needs of these “last core farmers” of land-extensive agriculture in Japan.

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(Information current as of January 1st, 2017)

[complementation]

- *1 Permanently hired worker on farm: Refers to workers hired mainly for farm management with an employment agreement (including verbal agreement) covering a period of seven months or more (including the workers hired regardless of an employment period).
- *2 Temporary hired worker on farm: Refers to Day and/or seasonal workers hired on a temporary basis for farm management (including mutual help among farm households (labor exchange) and assistants (labor accepted for free)), but not including the laborers employed under a partial farm work contract. It includes cases in which workers are hired mainly for non-farm management work but engaged in farm management during the busy season, as well as those who had an employment agreement for longer than seven months but quit before reaching seven months.

Source: “Overview of the 2015 Census of Agriculture and Forestry in Japan”, Ministry of Agriculture, Forestry and Fisheries,
<http://www.e-stat.go.jp/SG1/estat/ListE.do?bid=000001085818&cycode=0>

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