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The Management of Arable Land in Japan
- An Analysis on Transition of Non-cultivated Arable Land -

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In Japan, the number of full-time farm households had continued to decrease since the latter half of 20th century. The number of part-time households has been also decreasing remarkably in the last twenty years. Cultivated acreage also aligned with these tendencies and it has decreased. As a result, the farmland which is not cultivated increased and it may also grow into a social problem. Therefore, the present condition and future view of Japanese agriculture was elaborately examined in the study by analyzing the transition of non-cultivated arable lands from a historical perspective.

Key words: *Non-cultivated arable land, Part-time farm households, Non-farm households, Japan*

1 INTRODUCTION

The two of the main labor force features of agriculture in Japan are a small size of management and high rate of the elderly employment and part-time farm households, etc. Another characteristic of agriculture in Japan is the rice, which planted in the paddy field of almost all areas in the plains; and the varieties of vegetables and fruit trees, which are also grown intensively.

Even though the landscapes of the four seasons are remarkably different in any rural area, the number of farm households and farmers has decreased gradually, and the cultivated acreage under management has also decreased. Moreover, the area of farmland which is not cultivated and the rate to the cultivated acreage are gradually increasing. The definition of non-cultivated arable land is the land where the crops are not planted for more than the past one year and there is no clear intention which a farmer cultivates again within several years.

Non-cultivated arable land was added to the questionnaire items of the census of agriculture and forestry in Japan in 1975 for the first time. After rapid economic growth on and after the middle of the 20th century, the non-cultivated lands have been increasing gradually resulting in a significant decrease of the number of farm households and farmers.

The subject of non-cultivated arable land is also examined by researchers from different points. Arizono（1974）considered the problems of non-cultivated arable land at Kutsuki-mura, Shiga prefecture mainly from the land condition, and presupposed that cultivation abandonment of the inferior place had been carried out from the 1920s. Arizono（1974）pointed out the decrease of cultivated land in Japan showed 450 thousands hectares from 1950 to 1970.

A series of researches by Takada（2006a, 2006b）and Takada（2007a, 2007b）have studied the present conditions and the backgrounds of non-cultivated arable land consistently at the East Japan. Takada（2006a）dealt with Tajima town in Fukushima prefecture and Takada（2006b）studied Chonan town in Chiba prefecture. Moreover, Takada（2007a）examined non-cultivated arable land by focusing the relation between the ratio of non-cultivated arable land and history of land use. As the background of stopping to cultivate farmland, he considered weakened farm labor force, low rates of the change on land ownership and land use through lease and dealing of farmland, land acquisition by golf course development, the influences of agricultural policy such as production control of rice

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and the direct payment system delivered to the hilly and mountainous area, etc. Takada (2007b) carried out the questionnaire to all municipalities in Fukushima prefecture, and investigated the actual condition of non- cultivated arable land. He pointed out that the main causes to generate non-cultivated arable land were the shortage of agricultural successors, the aging of farmers, the influence of production control of rice, and a decline of sericulture, etc. Seto et al. (2009) reported the damages of buildings, of roads, and of slopes around the epicentral area immediately after an occurrence of the mid Niigata prefecture earthquake. Furthermore, they surveyed the increase in non-cultivated arable land by seismic damage.

Morimoto (1991, 1993, 2007) announced several papers of non-cultivated arable land in the Kanto district. Morimoto (1991, 1993) explained that the most significant cause of the increase in fallow and abandoned cultivated land is the labor shortage which stems from specialization of intensive vegetable cultivation in terms of minute field surveys and interviews as case studies. Using GIS technique with the rural community statistics of the agricultural censuses in 1975-2000, Morimoto (2007) showed two dimensional distribution of the ratios of non-cultivated arable land in the Kanto district and examined the co-variation between these ratios and several environmental indices such as the altitude of rural settlement, the slope angle of farmland, and the distance from the center of Tokyo.

Teratoko (2009) analyzed the expansion of non-cultivated arable land in a marginal settlement in Kyushu paying attention to the decision-making of management of each farm households.

As mentioned above, the research of non-cultivated arable land has been done to some extent. Those most are, however, detailed case studies in a narrow area like a rural settlement. Therefore, it seems that there is little research which can explain the actual condition of whole Japan moderately. Based on such recognition, the study tackles to analyze non-cultivated arable land in Japan. This research specifies the local difference of the area and the percentage of non-cultivated arable land, and examines those meanings.

2 AREA OF ARABLE LAND AND THE NUMBER OF FARM HOUSEHOLDS

The cultivated acreage in the early 20th century is about 6 million ha in Japan, and the range of increase and decrease was small (Fig. 1). There was not a big difference between the area of paddy fields and upland fields. However, cultivated acreage decreases to about 5 million ha in the second half of the 20th century, and a downward tendency became remarkable especially in 1970 and afterwards. Commercial farm households had 318 million ha of cultivated acreage in 2010. It means that it was mostly halved as compared with 100 years ago.

Paddy area of about 3 million ha or more had been maintained till 1970. However, after the production control policy of rice started, the reduction of the area of paddy fields became remarkable. The area of upland fields also continues to decrease consistently and the area of upland fields in 2010 was below half of that of 100 years ago. The area of orchard exceeded 0.4 million ha in 1970 and 1980, then, it continues to decrease gradually.

Fig. 2-a shows the number of farm households in Japan after 1910. The number of full-time farm households had been greater than the number of part-time farm households till 1930. In 1941, the number of farm households decreased because of World War, the number of part-time farm households almost doubled. In 1950, the number of farm households was about 6.18 million, and the number of full-time farm

households was almost equal to the part-time farm households. The number of farm households has decreased steadily since the latter half of 20th century. Reduction in the number of full-time farm households in the 1960s was particularly remarkable. In the 1970s, the number of full-time farm households was less than 1 million, and it has continued to decrease thereafter. In the 1980s, the definition of farm households changed[1], then, commercial farm households have been mainly investigated in Japan. Therefore, the item of census on subsistence farm households has been extremely simplified.

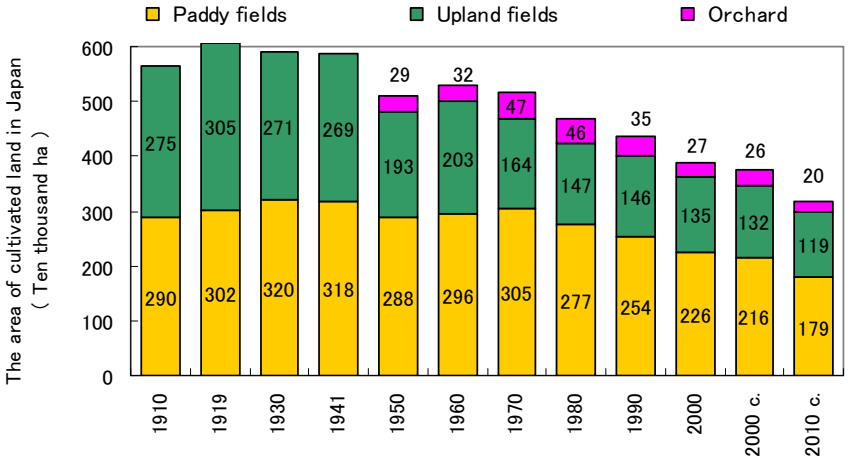


Fig. 1 Area of cultivated land in Japan

(Source: Census of agriculture and forestry in Japan)

Note: "c" indicates only commercial farm households and before 1941, the area of orchard had been included in upland fields.

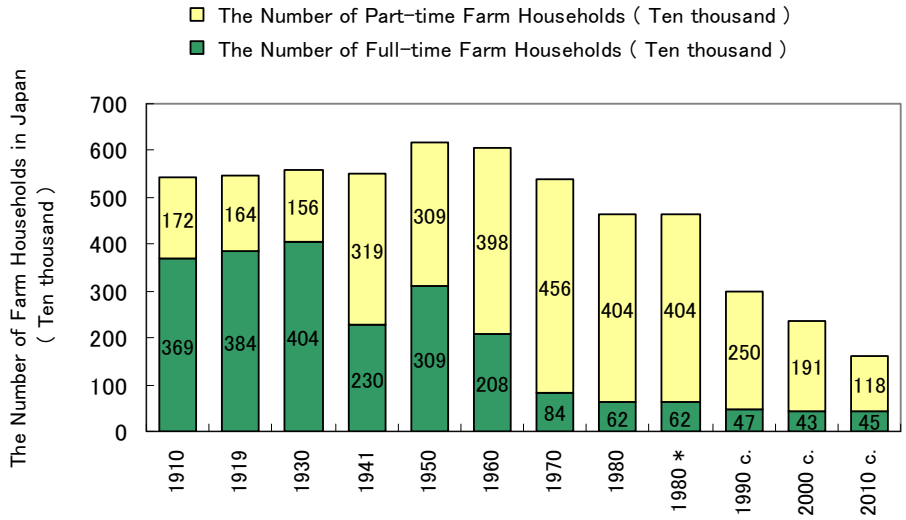


Fig. 2-a Number of farm households in Japan after 1910

(Source: Census of agriculture and forestry in Japan)

Notes: "*" is the definition of farm households changed from the previous one after 1980.

"c" indicates only commercial farm households.

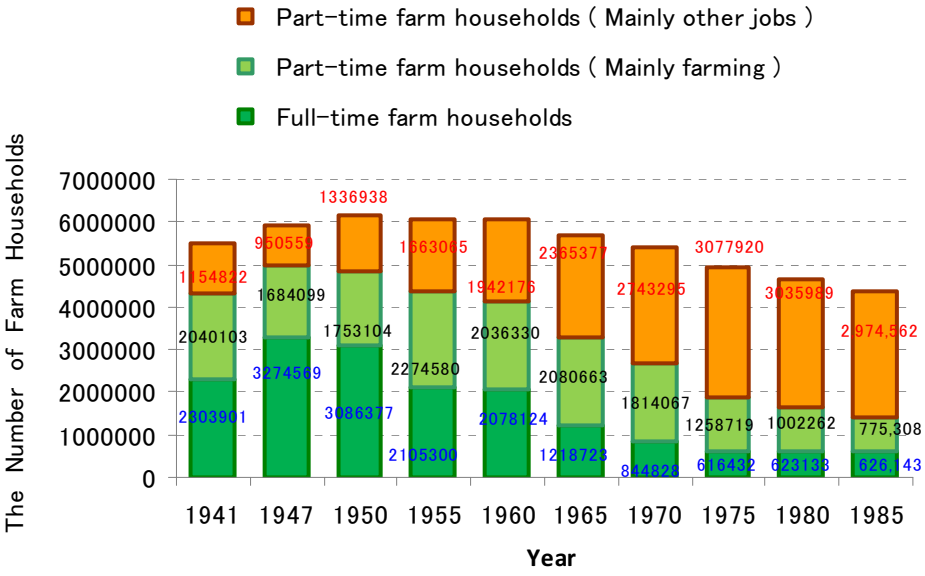


Fig. 2-b Number of farm households in Japan during the period from 1941 until 1985 (Source: Census of agriculture and forestry in Japan)

Fig. 2-b shows the number of farm households in Japan for full-time and part-time farm households during the period from 1941 until 1985. There were, however, once more than 3 million units of the number of full-time farm households, it had drastically decreased throughout the latter half of the 20th century. The number of part-time farm households (mainly farming) had increased until 1955, which started to decline after 1960. The number of part-time farm households (mainly other jobs except farming) had continued to increase until 1975, and this was to mitigate the reduction in the number of farm households. The number of part-time farm households (mainly other jobs) had also started to decline since 1980.

Fig. 2-c shows the number of farm households in Japan after 1990. It should be noted that the stratification criteria of farm households in this figure is different from the criteria in the previous two figures. The number of commercial farm households was almost halved to about 20 years from 1990 to 2010. The number of subsistence farm households had decreased from 1990 to 2000, and then increased. As a result, it experienced an increase of slightly more than in 1990, subsistence farm households counted about 90 ten thousand units in 2010. Nevertheless, the number of farm households was reduced to about half in the past century of Japan, and it obtained about 2.5 million households in 2010.

In addition, we examine the change in the number of farm households in the different districts of Japan in recent years. To view a summary of Japan by region, there are a variety of methods. As known, Japan is made up of 47 prefectures. However, the unit of prefecture is too small to use as a basis for dividing the nation into regions. We should therefore use units consisting of several prefectures grouped together. Each grouping of prefectures will be called a district, and each district will be treated as a unit in this paper. Fig. 3 shows regional division of Japan which is made up of 14 districts. Because the method to separate Japan into 9 or 10 units has been usually used, hence this method may be somewhat more realistic and significant than the others.

Fig. 4 depicts the number of farm households in 14 districts during the period from 1990 until 2010. If we look at Fig. 4, the detailed data can be easily

observed about the number of farm households in each region presented by year. In the districts there were a large number of farm households, which have a decreasing tendency. There were also regional differences in the rate of decrease in the number of farm households. The only common point among regions was downward trend in the number of farm households. There appeared a small reduction in the number of self-sufficient farm households, and the trend was almost the same as in Fig. 2-c. The remarkable reduction in the number of commercial farm households has appeared as a question that is the vision of agriculture as an industry in the future in Japan.

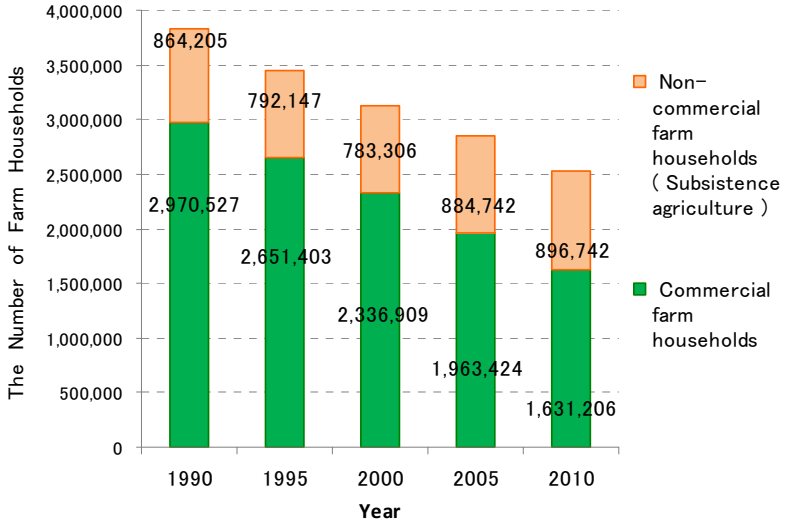


Fig. 2-c Number of farm households in Japan after 1990
(Source: Census of agriculture and forestry in Japan)

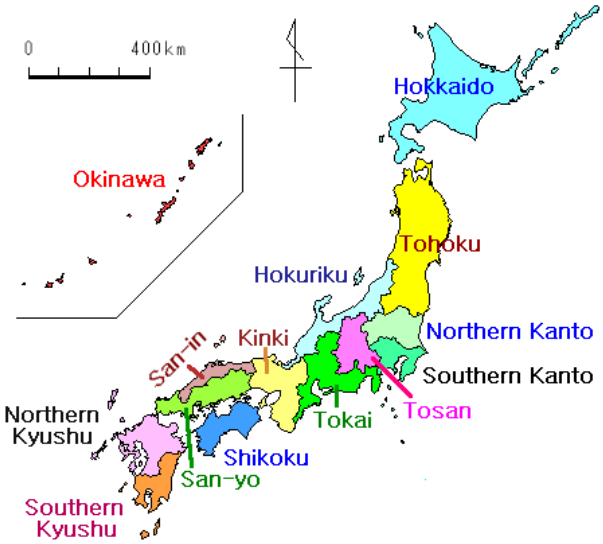


Fig. 3 Regional division of Japan

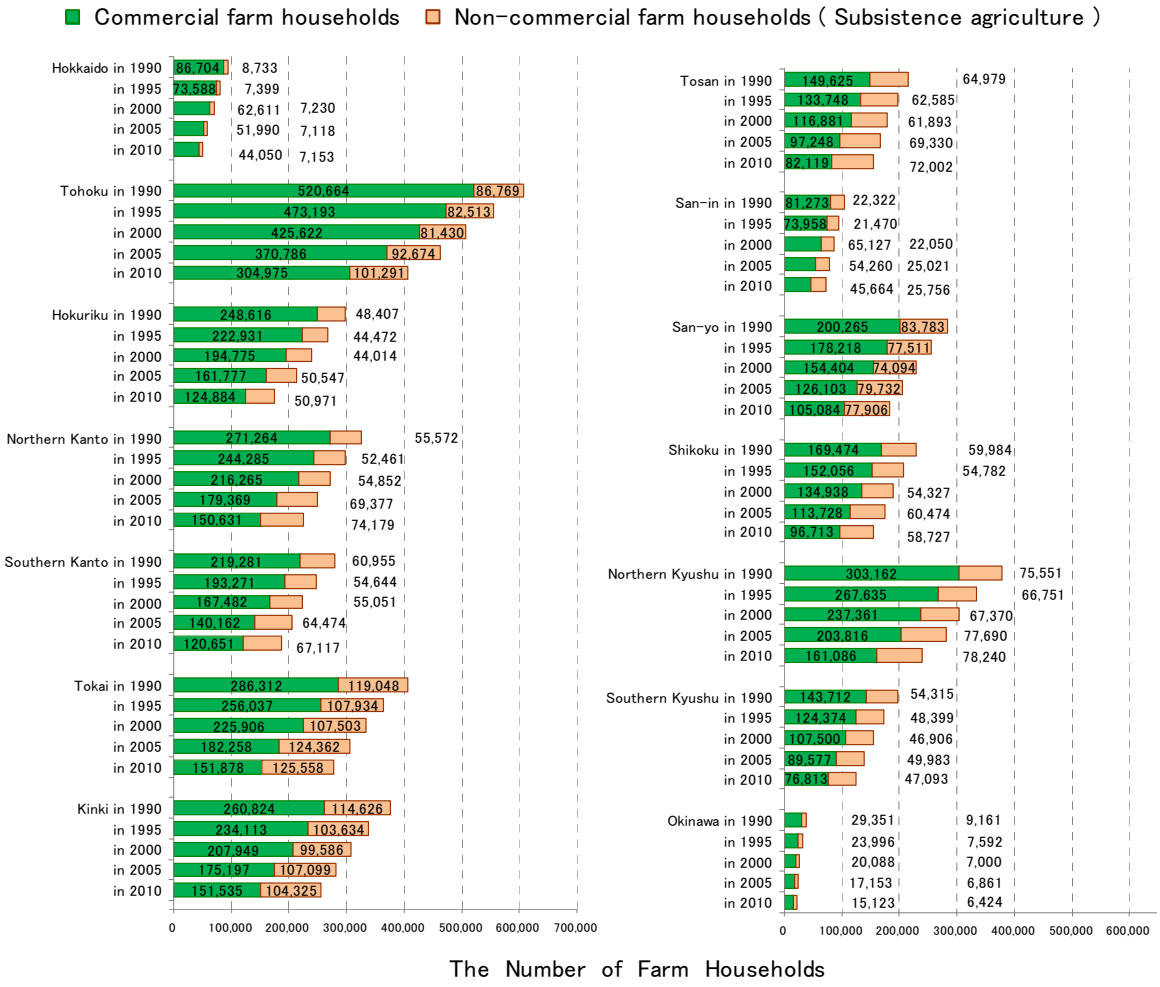


Fig. 4 Number of farm households in every district after 1990
(Source: Census of agriculture and forestry in Japan)

3 TRANSITION OF AREA OF NON-CULTIVATED ARABLE LAND IN JAPAN

Changing trend of the number of farm households which own non-cultivated arable land almost corresponds to the one of the area of non-cultivated arable land in Japan (Fig. 5). Without significant change, two indicators gradually decreased from 1975 until 1985. However, these increased significantly from 1985 to 1990, and they showed a generally increasing trend thereafter. The number of farm households (shown by vertical bars) which own non-cultivated arable land was almost doubled from 1985 through 2005. Non-cultivated arable land area that is now more than 20 ten thousand hectares in the 21st century displayed with a line in the figure.

Fig. 6 shows the number of farm households which own non-cultivated arable land in Japan after 1990. Non-cultivated arable land occurs without the distinction of paddy fields, upland fields, and orchards.

Fig. 7 shows the area of non-cultivated arable land in Japan after 1990. The trend of change is the same as Fig. 6.

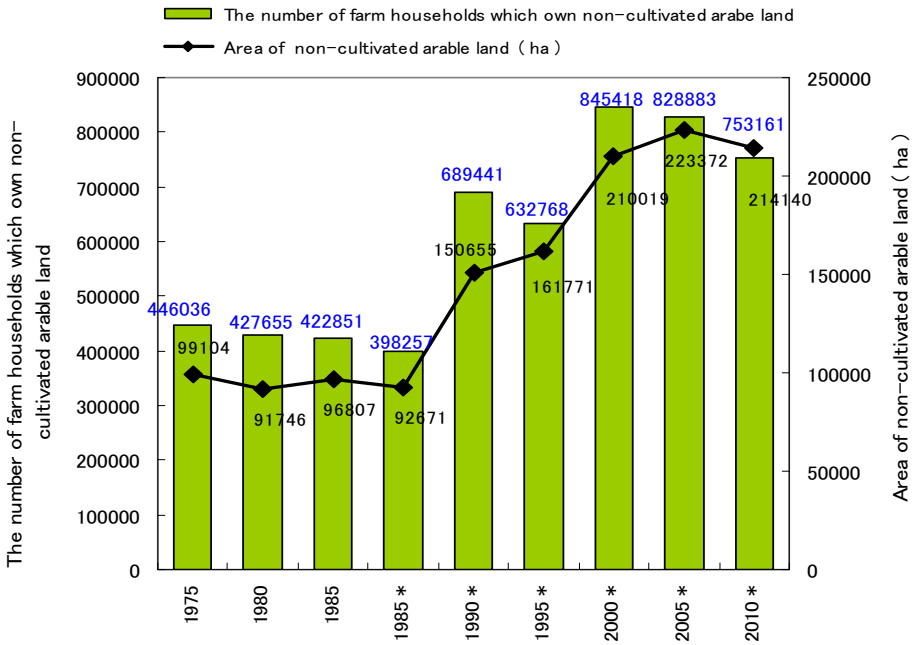


Fig. 5 Number of farm households which own non-cultivated arable land and its area in Japan after 1975

(Source; Census of agriculture and forestry in Japan)

Note: "*" is the definition of farm households changed from the previous one after 1985.

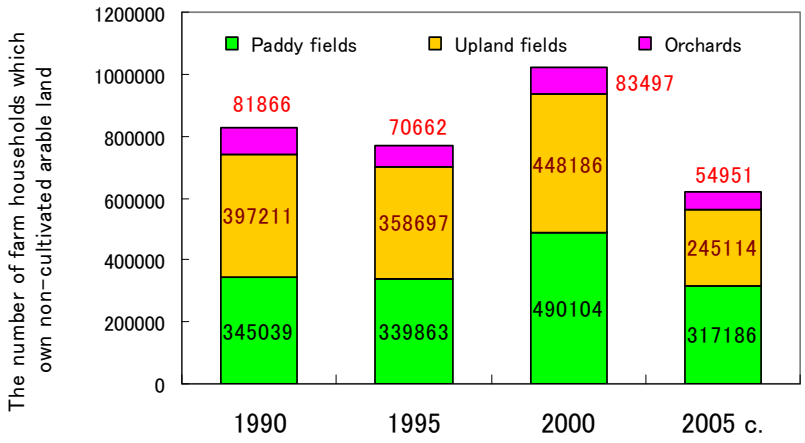


Fig. 6 Number of farm households which own non-cultivated arable land in Japan after 1990

(Source; Census of agriculture and forestry in Japan)

Note: "c" indicates only commercial farm households.

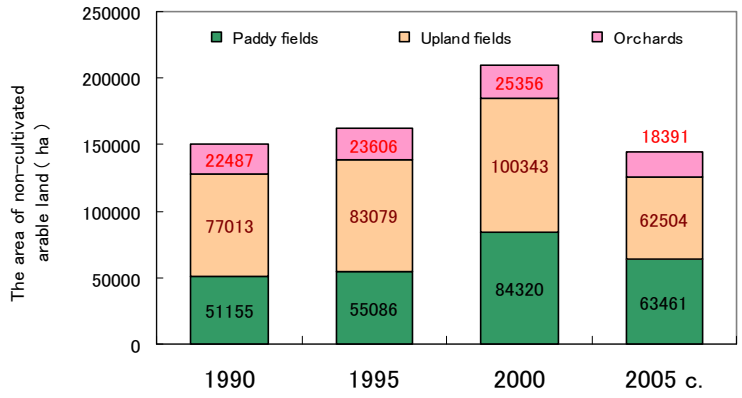


Fig. 7 Area of non-cultivated arable land in Japan after 1990

(Source; Census of agriculture and forestry in Japan)

Note: "c" indicates only commercial farm households.

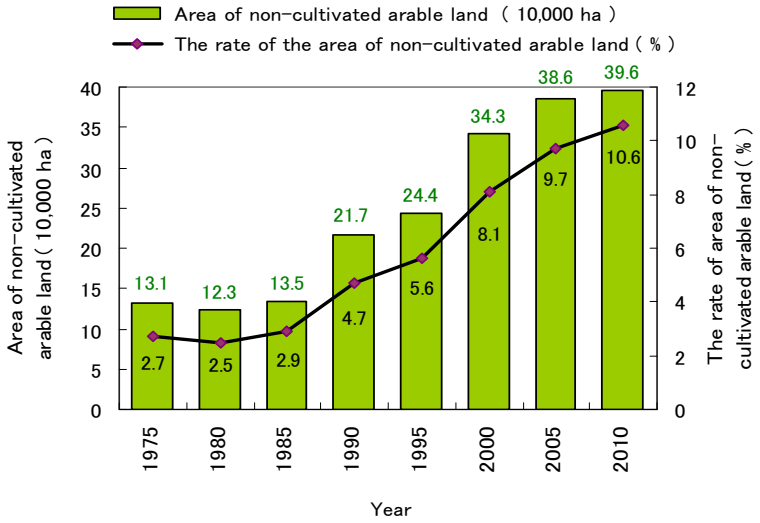


Fig. 8 Area of non-cultivated arable land and the rate in Japan after 1975

(Source; Census of agriculture and forestry in Japan)

Fig. 8 shows the area of non-cultivated arable land and the rate after 1975. This area of non-cultivated arable land includes the one of non-farm land owners. It is evident when compared to Fig. 5. The area in 1975 was 13.1 ten thousand hectares, and then continued to increase gradually, it became to 39.6 in 2010. The rate of area of non-cultivated arable land was only 2.7 percent in 1975. It continued to increase significantly after the 1990s, and it reached more than 10% in 2010. After the 1990s, the increase of non-cultivated arable land area is quite noticeable as well as the trend of the rate.

Table 1 shows the number of farm households and non-farm households which own land in the 21st century in Japan. Total number of farm households is less than 300 ten thousand unit. It is expected that it will continue to decrease in the future. In 2010, the percentage of commercial farm households accounted for 64.5%, the percentage of non-commercial farm households which was less than 90 ten thousand accounted for 35.5%. The number of non-farm households

which own land was more than 120 ten thousand and it exceeds far more than the number of farm households maintaining subsistence agriculture. Proportion of the number of non-farm households which own non-cultivated arable land accounted for the overall number of households concerning non-cultivated arable land was about 30%.

Table 2 shows the information on the top 10 prefectures which own non-cultivated arable land after 1975. From 1975 until 1985, Hokkaido stood out with non-cultivated arable land more than twenty thousand ha. Non-cultivated arable land area in the prefectures such as Nagano, Okayama, Hiroshima, Nagasaki, Kagoshima, Aichi, and Niigata etc. was also located at the top 10. After 1990, the area of non-cultivated arable land in Hokkaido decreased much less than before. Since the 1990s, the area of non-cultivated arable land in Fukushima, Ibaraki, Nagano, Chiba, Iwate, etc. has come to be located at the top 10.

In recent years, the area of non-cultivated arable land in Fukushima prefecture occupies the first place. However, the nuclear power plants exploded by the damages due to the earthquake and tsunami in March 2011, the residents of eastern Fukushima prefecture were forced eviction. Therefore, it is supposed to be expanded further. Since rapid reconstruction plan by the government of Japan still remains unclear and insufficient despite the large amount of donations and volunteer assistance, full-scale reconstruction work has been significantly delayed.

Non-cultivated arable land area of these prefectures located in the upper rank has more than 5,000 ha, respectively. From this table, it can be understood that the area of non-cultivated arable land has increased significantly over the past 35 years in Japan.

Table 1 Number of farm households and non-farm households which own land

Year	Total number of farm households (a) = (b) + (c)	Commercial farm households (b)	Non-commercial farm households (Subsistence agriculture) (c)	Non-farm households which own land (d)
		100(b) / (a)	100(c) / (a)	100(d) / ((a)+(d))
2005	2,848,166	1,963,424	884,742	1,201,488
		68.9 %	31.1 %	29.7 %
2010	2,527,948	1,631,206	896,742	1,374,160
		64.5 %	35.5 %	35.2 %

(Source; Census of agriculture and forestry in Japan)

Table 2 Transition of the top 10 prefectures which own non-cultivated arable land

Rank	**1975**	Area (ha)	**1980**	Area (ha)	**1985**	Area (ha)	**1990**	Area (ha)
1	Hokkaido	28,255	Hokkaido	21,692	Hokkaido	20,940	Nagano	8,994
2	Nagano	4,481	Nagano	4,919	Nagano	6,399	Fukushima	7,669
3	Niigata	3,993	Okayama	3,927	Okayama	3,590	Hokkaido	6,853
4	Okayama	3,970	Kagoshima	3,708	Hiroshima	3,383	Ibaraki	6,507
5	Hiroshima	3,266	Hiroshima	3,341	Nagasaki	3,322	Chiba	6,370
6	Kagoshima	3,086	Aichi	3,186	Aichi	3,251	Shizuoka	5,455
7	Aichi	3,012	Niigata	3,100	Fukushima	3,135	Niigata	5,234
8	Nagasaki	2,711	Nagasaki	2,836	Shizuoka	3,108	Hiroshima	5,174
9	Shimane	2,569	Saitama	2,514	Kagoshima	2,964	Nagasaki	5,012
10	Chiba	2,428	Shizuoka	2,254	Niigata	2,764	Okayama	4,960
Rank	**1995**	Area (ha)	**2000**	Area (ha)	**2005**	Area (ha)	**2010**	Area (ha)
1	Fukushima	12,353	Fukushima	15,651	Fukushima	16,141	Fukushima	15,696
2	Nagano	9,548	Ibaraki	12,060	Ibaraki	13,370	Ibaraki	12,543
3	Hokkaido	8,786	Nagano	10,907	Nagano	11,065	Nagano	10,891
4	Ibaraki	8,331	Chiba	9,556	Chiba	9,592	Chiba	9,194
5	Chiba	6,962	Hokkaido	9,336	Hokkaido	9,551	Iwate	8,536
6	Nagasaki	5,382	Iwate	8,093	Iwate	8,308	Hokkaido	7,515
7	Shizuoka	5,074	Aomori	7,137	Aomori	7,981	Aomori	7,436
8	Iwate	4,996	Gunma	7,082	Gunma	7,670	Gunma	7,193
9	Kagoshima	4,905	Miyagi	6,368	Nagasaki	6,442	Kumamoto	6,187
10	Niigata	4,719	Niigata	5,981	Kumamoto	6,313	Miyagi	6,099
			Nagasaki	5,981				

(Source; Census of agriculture and forestry in Japan)

Fig. 9 shows the area of non-cultivated arable land in Japan after 1990. The area has almost doubled in about 20 years. The area of non-cultivated arable land by commercial farm households had increased until 2000, and then decreased. The area of non-cultivated arable land in non-farm households and non-commercial farm households has been increased significantly in both real and percentage. Non-cultivated arable land area owned by subsistence farmers increased by more than twice the number in 1990, and it had more than 9 ten thousand ha in 2010. This is also similar to the change in the area of non-cultivated arable land owned by the non-farmers. The percentage of non-farm households had increased from 30.5 % in 1990 to 45.9 % in 2010.

Fig. 10 presents the percentage and its change of area of non-cultivated arable land of each district. Broadly, it is a matter of course, the contents of Fig. 10 is similar to findings in Fig. 9. However, the change of the percentage of non-commercial farm households is different from district to district. In Hokkaido where non-cultivated

arable land area increased from time earlier than other districts, the percentage of non-farm households was much higher than the average. This trend was more marked in Okinawa. In addition, there appeared particularly large proportion of non-commercial farm households in the Tosan district.

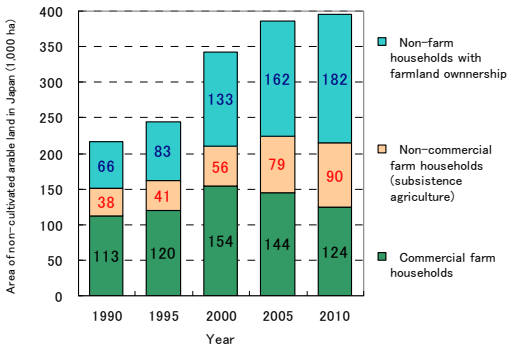


Fig. 9 Area of non-cultivated arable land in Japan after 1990
(Source; Census of agriculture and forestry in Japan)

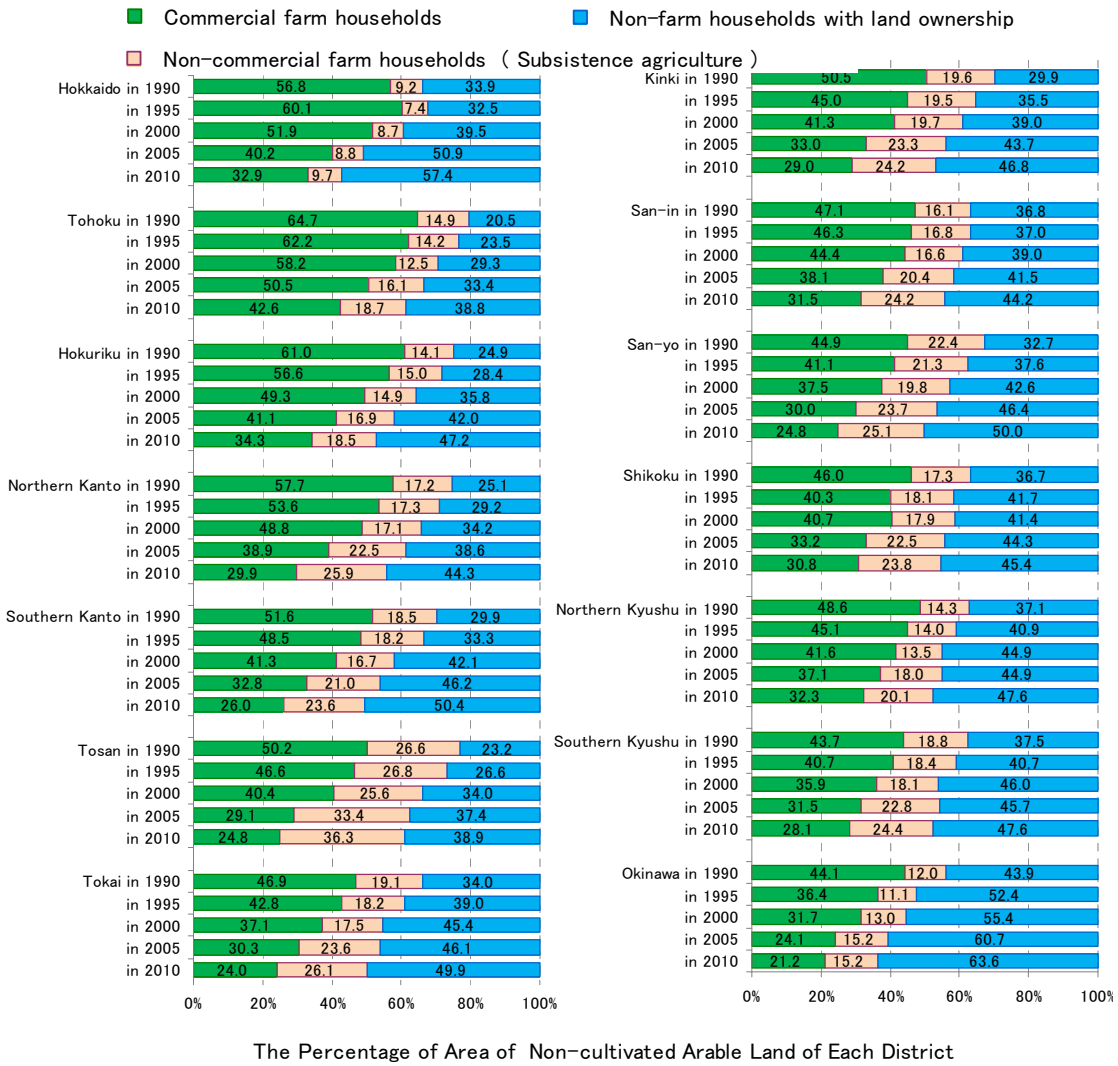


Fig. 10 Percentage of area of non-cultivated arable land of each district
(Source; Census of agriculture and forestry in Japan)

Fig. 11 depicts the percentage of non-cultivated arable land in 2010. Particularly high rates of non-cultivated arable land are shown in the San-yo, Shikoku, and Tosan districts. High score can be also seen in the Northern Kyusyu, San-in, Tokai, and Southern Kanto district. Because the rate of non-cultivated arable land in the Hokkaido and Hokuriku districts is less than 10%, the arable land has been used relatively effectively.

Fig. 12 shows the rate of non-cultivated arable land in 2005 by municipalities in the Kanto district, Nagano and Shizuoka prefectures, the Tokai district excluding Shizuoka prefecture, the Kinki district, and the Chugoku and Shikoku districts, respectively. High scores with 30 % or more are distributed in mountainous and hilly areas in Yamanashi, Saitama, and Gunma prefectures. The same categories are seen in the Izu peninsula, southern part of Nara, Wakayama, Mie, and Hiroshima prefectures, western part of Tokushima, Shimane, and Okayama prefectures. Overall, the regional distribution of high value is noticeable in mountainous and coastal areas that are away from urban areas.

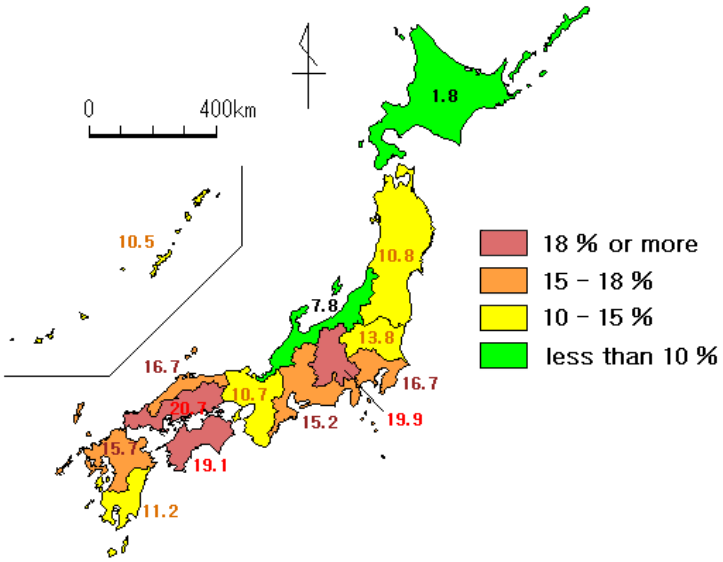
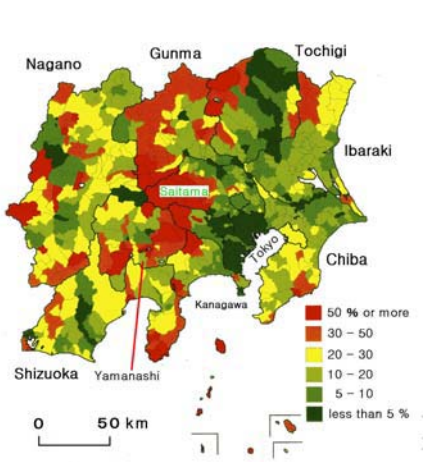
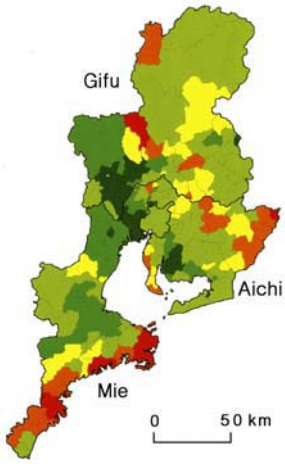


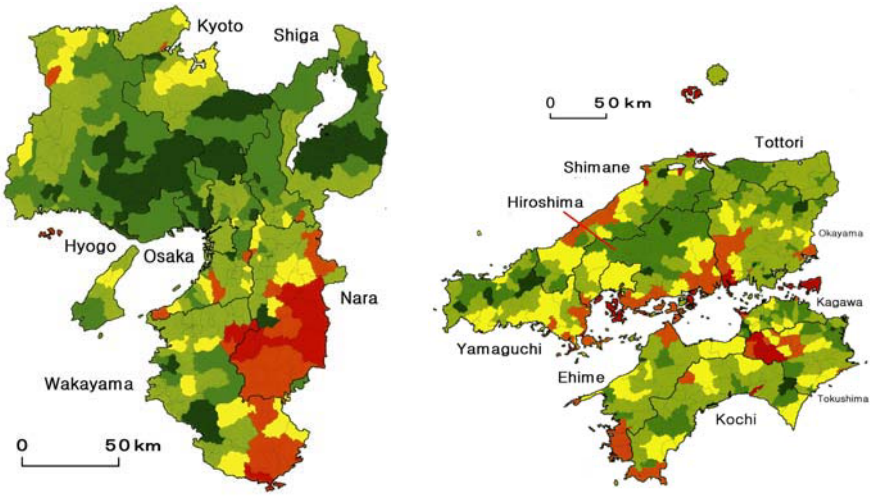
Fig. 11 Percentage of non-cultivated arable land in 2010



a) The Kanto district, Nagano and Shizuoka prefectures



b) The Tokai district excluding Shizuoka prefecture



c) The Kinki district d) The Chugoku and Shikoku districts

Fig. 12 Rate of non-cultivated arable land in 2005 by municipalities[2]

(Source: The 2005 census of agriculture and fishery in Japan)

Notes: The rate of non-cultivated arable land = 100 ・ ncal / (ncal + al)

ncal ; The area of non-cultivated arable land

al ; The area of arable land

Fig. 13 A sample of non-cultivated arable land without paddy rice planted

Fig. 14 A sample of non-cultivated arable land with paddy rice planted

Figs. 13 and 14 present a few samples of non-cultivated arable land in 2012 in Okayama city. Rice has been planted in paddy fields; however, weeds now seem to be flourishing in the swamp. If the conditions continue for many years, the possibility which non-cultivated arable land will be restored to the paddy is extremely low. The expansion of non-cultivated arable land should be avoided from a long-term perspective.

4 ANALYSIS AND DISCUSSION

Reduction of population engaged in agriculture and of the number of farm households starts around 1960 in Japan. The current number of farm households is about 3 million people and about two-thirds of this is the part-time farm households which mainly engaged in non-agricultural work. Indeed, thoughts about the countryside and agriculture in general are recently

growing. In effect, the number of new farmers is increasing.

Even though the Agricultural Basic Law[2] was enacted in 1960, young people continued to be attracted to the city by the expansion of the urban economy, rural area went lost a lot of our leaders of the next generation. Then, rural areas changed significantly before and after 1975 and the collapse of the rural settlements went willingly. A part of the reasons is the change of rural areas in suburbs into residential areas due to the expansion of the city and the change of farmland into real estate due to the rise of land value.

In addition, food distribution policy and agricultural policy has changed policy to provide a stable supply of fresh food for the city and to supply to the wholesale market in the metropolis on a priority basis to foster a large production area. As a result, small-scale vegetable production areas were obsolete and the number of part-time farmers to produce rice increased more and more.

Traditionally, local production for local consumption was commonplace, and this scheme began to collapse around 1975. At present, however, local production for local consumption has been activated in many areas. Also, the price of rice had risen at a rate substantially equal to inflation until about 1970. But then, the price of rice is no longer reflected in the rate of price increases and wage increase.

Broadly, a process that has been described so far is the expansion of urban markets, the outflow of the rural population, the decline of rural settlement functions, and the dismantling of settlements, the demise of local distributions.

Supporting farm income is a system for the government to compensate for the income of all farm households to participate in the suppression of rice cultivation. Japan turned to population decline in the early 21st century. Consumption of rice has declined inevitably and production of rice is obviously in excess of the demand. If agricultural policy compensates for the income of all farm households, rice production is further increased and the price of rice will continue to decline. Therefore, this system would require fundamental assessments and arrangements.

Practical farm households have devised everyday technology for cultivating delicious rice. In addition, part-time farm households have grown rice for the time being easy to grow in order to obtain the subsidy. Of course, both should be treated separately.

Japan's paddy area is too large compared to the demand for rice. For this reason, it should be specialized in rice production to concentrate on prime farm households. In addition, to promote the cultivation of crops other than rice, it should reduce the acreage of rice.

Part-time farmers maintain agricultural land of adverse conditions and they continue to cultivate rice passively. No longer will plant rice in rural areas where depopulation and aging progresses, there is also a view that's exactly rural decay. Passive management in paddy fields is to prevent landslides, contributing to land conservation. In addition, non-cultivated farmland area and its percentage of the total area are increasing. It is also necessary that society as a whole will continue efforts to properly maintain the non-arable farmland. These need to be discussed carefully, because there is a relationship between the settlement policy and rural development policies.

On the other hand, these need to be examined from various viewpoints such as the increase in consumption due to food education, some change of the payment system to farm households in hilly and mountainous areas, and direct export to foreign countries. Rice has been produced since ancient times in many parts of the plains of Japan. However, a part of Japanese food culture changes, society is facing a population decline. Rice demand is greatly reduced, and downward trend in rice prices is inevitable in the long term.

Fig. 15 shows the number engaged in

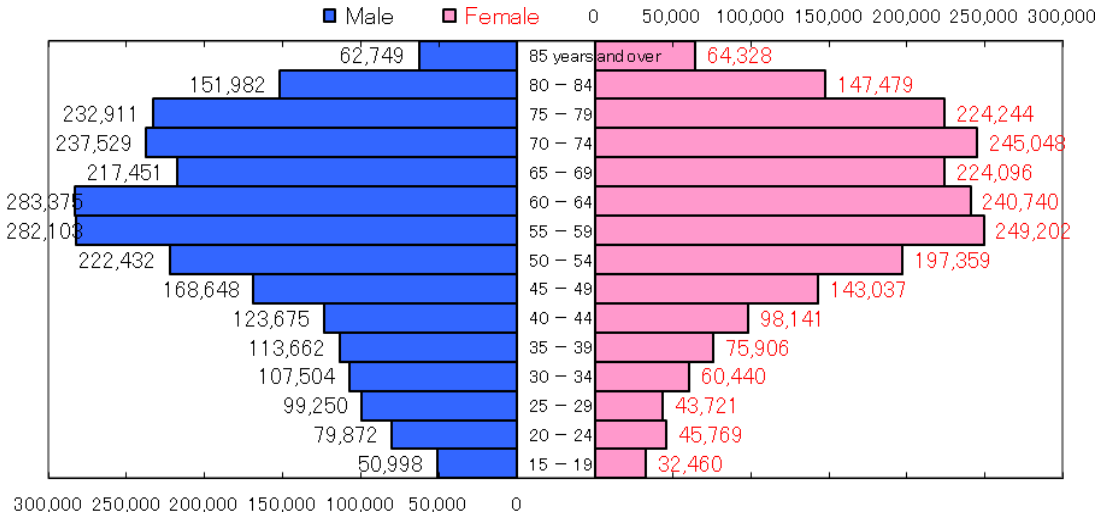


Fig. 15 Number engaged in self-management agriculture in Japan in 2010
(Source; Census of agriculture and forestry in Japan)

self-management agriculture in Japan in 2010. Age of many farmers is over 50 years old. In male, there are relatively large workers of 55 to 64 years of age. In female, there are relatively large workers up to 79 years from the age of 55. In any case, there is little potential to increase agricultural workers who are going to be much less than 50 years of age in the future. What kind of people will manage the farmland in Japan? To improve fundamentally agricultural environment in Japan, first of all, it is necessary that many people including younger generation have a strong interest in agriculture and rural areas.

5 CONCLUDING REMARKS

First, the temporal change in the cultivated area and the number of farm households has been studied in Japan. Both had increased in the first half of the 20th century. However, both began to decline in the late 20th century and the trend continues to the present.

The area of non-cultivated arable land has been significantly increased especially since the 1990s. The area and the ratio of non-cultivated arable land which non-commercial farm households and non-farmers own have remarkably increased. Each prefecture has been working little by little on these issues, so far, there is no significant improvement.

To be approximately the same as the productivity level of other industries, it is fundamental to improve the productivity of agriculture. There are some success stories in agriculture, but unfortunately still less than expected. For this reason, there is a need to establish a lucrative job as a manual farming, and to disseminate it widely. In addition, there is a need to increase the model case which full-time farmers can participate in farm management. To do this, farm management should be flexibly combined with not only production but also the aspects of processing, distribution and sales.

In fact, farmers begin to work with the distribution and sales companies, or companies have begun the agricultural production in Japan. If these changes are not rare but become on a daily basis, an increase of non-cultivated arable land may be relaxed. From the long-term perspective, a decrease in the rate of utilization of arable land is undesirable. Therefore, the management of part-time farmers to use narrow agricultural land is still

important. However, if the current situation continues, since the number of part-time farmers gradually continues to decrease, the cultivated arable land decreased and non-cultivated arable land area will be subject to increase. Effective agricultural policies should be carried out meticulously.

NOTES

1) For farm households there is a definition of the new and old. First, we describe the new definition. A farm household denotes a household which performs the cultivated acreage more than 10 are (1,000m^2) or the one whose agricultural-products sales amount for one year is 150,000 yen or more even if it holds cultivated acreage less than 10 are.

Also, there are two types of farm households, which are commercial farm households and non-commercial farm households (subsistence farmers). Commercial farm households own more than 30 are of arable land under management. Alternatively, commercial farm households sell agricultural products more than 50 ten thousand yen or more a year. Farm households other than those listed above are referred to as subsistence farmers or non-commercial farm households.

The old definition is that a farm household denotes a household which owns more than 5 are of arable land under management in the west Japan and 10 areas in the east Japan. However, even if the household does not satisfy this criterion, the households with more than 10 ten thousand yen of farm value of sales of agricultural products for one year prior to the date of the survey in 1980 are included. The boundary value or the measure of sales of agricultural products varies from year to year; it is twenty thousand yen in 1960, thirty thousand yen in 1965, fifty thousand yen in 1970, and seventy thousand yen in 1975.

2) In order to ensure market growth, the realization of double income, the workers in the city, Ministry of Agriculture, Forestry and Fisheries tried to change traditional type of small-scale family farming, and to improve the efficiency of production by large-scale management and the commercialization of agricultural products.

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