

Agricultural Structure of Paddy Field Farming and Core Producers in the Tohoku Region - A Case Study in Hanamaki City, Iwate Prefecture -

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1. Introduction

All the farmers of the first 10 years generation of the Showa period, who have been the core producers in Japan's paddy field agriculture, became 75 years old or older in 2010. The retirement of older farmers is expected to cause further progress of farmland lending in recent future, so large-scale farms and community-based group farming organizations (CGF) are expected to rent this farmland. However, the increase of large-scale farms has slowed in recent years, while many of the CGF, have little content as a collaborative organization. The objective of this paper as follows, (1) examining the willingness to expand the scale of farming of large-scale farms according to types of farms, (2) considering the management content of CGF, and their future direction, and (3) forecasting the future farmland lending and prospecting the types of core producers in paddy field farming based on (1) and (2).

2. Willingness for expansion of scale according to management types of farms

There are plowed newly paddy fields from after WWII in addition to old paddy fields from before the war in the subject area of this paper.

There are three types of large-scale farms in this acreage: (a) upland farming and dairy farms operated by family farms or agricultural corporations, (b) livestock farms operated by family farms, (c) rice farms operated by family farms. The farms of first type (a) and second type (b) produce upland crops in new paddies. The farms of third type (c) produce rice in old paddies, producing set aside crops in new paddies.

Of these, family farms of upland farming/dairy farms (15-50 ha) and livestock farms (7-15 ha) have no interest in scale expansion. However, agricultural corporations of upland farming/dairy farms (over 50 ha) have a keen interest. This is because the farms of former type have reached the maximum farm scale that can be cultivated with family labor forces. In contrast, the farms of latter type are able to use employees depending on farm scale.

Conversely, rice family farms having a paddy field of 4 ha or more have a willingness of additional expansion of 1-2 ha. And rice family farms having a paddy field 7 ha or more have a strong intention to expand up to 15 ha. So there is a clear difference in willingness of expansion depending on their current farmland scale. This difference is thought to arise from sufficiency rate of farming income to household expenses. In farms over 7 ha, household expenses sufficiency rate from farming income is about 80%, so household expenses can mostly be met by agricultural income. Therefore, it is thought that at this scale, the farmer strongly has the intention of scale expansion. As such, rice farms over 7 ha and agricultural corporation of upland farming / dairy farms are expected to core farms in future.

3. The organizational contents of CGF, and their future direction

There are 8 CGF in this area. At the time of their founding, they produced set aside crops in collaborative work, but rice was produced individually by each member. Their organizational contents as collaborative organization were not enough. In response to members becoming unable to do rice cultivation due to aging, illness and so on, 4 CGF converted into collaborative work including rice. Many CGF had poor organizational contents with lack of collaborative work in Tohoku. But, they are improving organizational contents by collaborating on rice cultivation.

4. The farmland liquidation forecast and the core producers prospected

We estimated the number of family farms who are predicted to retire from farming within the next 10 years among elderly farmers over 60 in this region. Table 1 shows the results as follows: the percentage of retiring farmers by aging without a successor for all farmers is 62% with less than 0.5 ha, 36% with 0.5-1 ha, 23% with 1-2 ha, and 11% with 2-3 ha.

The farmland liquidation rate is 9.7%. This acreage of farmland liquidation is corresponding to half of the current liquidation farmland.

Table 2 shows three types of region, comparing the forecast results for this farmland liquidation and the willingness for expansion of scale by large-scale farms. The first is region with farmland shortage, and the second is region with supply and demand equilibrium. In these regions large-scale farms fully rent liquidated farmland. The third is region with excess farmland where they cannot rent liquidated farmland.

It is expected that in the former two types large-scale farms will act as core producer, as in the past. However, in the latter type it will be necessary to secure and train new core producers.

CGF has been established in regions with excess farmland, which are expected to have a shortage of recipients for farmland supply exceeds the farmland demand among recipients due to retirement from farming in the recent future.

Table 1. Farmland liquidation forecast by scale of managed paddy field acreage

(Units: Number of farms, %, ha)

Paddy field acreage	Total number of family farms (2005)	Number of farms in village surveyed A	Number of farmers 60 years or older	Predicted number of farmers to retire from farming B	Predicted ratio to retire from farming B/A	Paddy field acreage in village surveyed C	Predicted acreage to be liquidated D	Predicted acreage ratio to be liquidated D/C
Total	630	336	204	81	24.1	974	94	9.7
< 0.5ha	82	37	28	23	62.2	11	7	61.0
0.5 - 1.0ha	97	61	40	22	36.1	46	16	35.0
1.0 - 2.0ha	195	106	59	24	22.6	156	33	20.9
2.0 - 3.0ha	106	47	25	5	10.6	115	11	9.9
3.0 - 4.0ha	69	37	23	6	16.2	128	20	15.6
4.0 - 5.0ha	32	13	7	—	—	58	0	0.0
> 5.0ha	49	35	22	1	2.9	461	8	1.8

Source: Agricultural census, agriculture cooperative documents, PRIMAFF research.

Note (1) The total number of family farms is shown referencing the number of family farms by scale of acreage in the agricultural census.

(2) The number of farms in the village surveyed includes those with over 10a of paddy field.

(3) The method for predicting retirement from farming is to hear existence of a successor of farmers of 60 years old or more in village through the representative of that village.

Table 2. Farmland liquidation forecast and core producers prospected

(Units: ha, Number of farms, %)

Region	Acreage of paddy field (1)	Farms of 5 ha or more		Willingness for expansion in farms surveyed			Farmland liquidation forecast								Future farmland supply and demand (comparison of A and B)	Existence of CGF
				Number of farms surveyed	Willingness to expand	Acreage of expansion (A)	Number of farms in village surveyed (2)				Farm's paddy field acreage in village surveyed (4)			Liquidation forecast acreage B (1) x (5) / (4)		
		Number of farmers 60 years or older	Predicted number to retire from farming (3)				Predicted rate to retire from farming (3) / (2)	Liquidation forecast acreage (5)	Liquidation forecast acreage ratio (5) / (4)							
Total	1,552	50	632	21	9	88.0	336	204	81	24.1	974	94	9.7	150	Farmland excess	-
(6)	212	6	124	4	2	12.8	22	12	3	13.6	143	3	1.8	4	Farmland shortage	-
(1)	51	3	26	2	1	few	21	9	4	19.0	51	2	4.1	2	Supply-demand balance	-
(3)	348	9	172	4	3	66.2	75	47	20	26.7	213	27	12.7	44	Farmland shortage	Partia
(7)	344	14	167	4	1	1.5	76	45	14	18.4	245	13	5.3	18	Farmland excess	Yes
(2)	157	6	56	2	0	0.0	62	39	13	21.0	153	11	7.2	11	Farmland excess	-
(4)	298	8	62	3	2	7.5	54	34	18	33.3	119	26	21.9	65	Farmland excess	Yes
(5)	143	4	25	2	0	0.0	26	18	9	34.6	50	13	25.0	36	Farmland excess	Yes

Source: PRIMAFF research.

CGF is expected to rent the farmland of retired farmers, and to collaborate not only on set aside crops but also on rice.

5. Conclusion

Large-scale farms have been the core producers so far in Tohoku. But it is clear that farmland liquidation will accelerates as small scale elderly family farmers retire from farming. While there are villages where large-scale farms will be able to rent these liquidated farmlands, there are also many villages where it is forecast that such farmlands cannot be rent and it will be difficult to maintain regional agriculture. In the latter villages, it will be necessary to establish CGF as the core producer. While the proliferation of CFG in Tohoku in recent years is in part a response to government policies, it is also an emergency response by these villages towards ensuring the future of core producers. Many of the CGF established while meeting the expectations of their village are still inadequate at the moment. In the future, it is required that they enrich their farming and become core producers in regional farming, so support for this will also be necessary.

* See the following for details of these results.

Hirabayashi, Mitsuyuki and Ono, Tomoaki (2015) "Agricultural structure of paddy field farming and core producers in the Tohoku Region", *Journal of Agricultural Policy Research*, Policy Research Institute, Ministry of Agriculture, Forestry, and Fisheries, 24, pp. 27-57.

(<http://www.maff.go.jp/primaff/koho/seika/seisaku/pdf/2015-24-2.pdf>)