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A SURVEY STUDY ON DETERMINATION OF FARMERS' OPINIONS ABOUT THE LAND CONSOLIDATION PROJECT IMPLEMENTED IN TURKEY, WITH SPECIAL REFERENCE TO BURDUR PROVINCE

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Abstract

Land consolidation is of special importance to the efficient use of land and water resources and sustainable agriculture in countries like Turkey where dense land degradation exists. The benefits expected from land consolidation projects depend on farmers' participation and the fulfilment of their expectations. Therefore, this study aims to investigate to what extent farmers' expectations were met and whether their satisfactions with the new parcel planning were fulfilled through the project implemented in some villages in the province of Burdur, Turkey.This study was conducted in 5 villages of Burdur located in the Mediterranean region. For this purpose, some 159 agricultural enterprises were selected using the stratified sampling method. The Likert-scale survey was used in this study; statistical data analyses were carried out; and some descriptive statistics were presented. It was found that 50.9% of the farmers indicated that their preferences were fulfilled; however, 34.6% of the farmers indicated that they were badly affected by the new parcel planning.

Key words: *land consolidation, survey, Likert scale, Burdur.*

INTRODUCTION

Land consolidation is mainly defined as bringing together those agricultural lands which prevent the formation of parcels convenient for management and which have been fragmented, scattered and deformed to the extent that will complicate the implementation of irrigation and agricultural production techniques and consolidating them in regular shapes (Kara, 1980). Today land consolidation is implemented in the form of projects in which many infrastructural services such as drainage, land levelling, land reclamation, road construction and the rearrangement of village settlement centres are carried out altogether, along with the merging of parcels and the correction of their shapes. In this sense, land consolidation projects can be regarded as one of the most important infrastructural services with respect to the rearrangement of the rural area. Besides many benefits such as cutting down on the cost of infrastructural projects, the facilitation of the implementation of modern agricultural techniques, saving of workforce and time, the increasing of arable agricultural lands, the irrigation of agricultural lands, saving of the materials used to protect parcels, the provision of assurance for land ownership, and the establishment of economic and social balance in the rural area (Arici, 1994; Yaganoglu et al., 2000), the land consolidation projects carried out in the modern sense positively contribute to the scheme performance indicators by enhancing the water use efficiency and the dependability of distribution of water in irrigation schemes (Uçar and Kara, 2006). Many researchers reported that average parcel size was increased but shapeless parcel was decrease with land consolidation projects (Uçar and Kara, 1997; Uçar et al., 2003).

It is reported that land consolidation can be implemented in 14 million ha of 28 million ha of agricultural lands in Turkey, and it is stated that land consolidation has been completed in 1,115,000 ha of this area (Manavbasi et al., 2012). In order for consolidation projects to

become widespread and in order to easily get the approval required for the commencement of the projects from farmers, it is necessary to eliminate the hitches that might occur in the implementation of the projects. To determine what these hitches are, to propose solutions to them and to determine farmers' satisfaction with the project at the end of the project, it is necessary to eliminate the problems that might take place in the carrying out of consolidation projects and to determine farmers' satisfaction with these projects at the end of the project.

In Turkey, Burdur is one of the provinces where land consolidation has become widespread in the recent years. Totally 5 projects (Mürseller, Elmacik, Bademli, Akçaköy, and Kozluca) were completed in Burdur between 2002 and 2010. How satisfied the farmers in the areas where land consolidation had been carried out in Burdur were with the land consolidation projects was established with this planned study. For this purpose, the farmers were surveyed, and solutions were offered to the problems determined.

MATERIALS AND METHODS

The villages of Mürseller, Elmacik, Bademli, Akçaköy and Kozluca in Burdur, where land consolidation projects were carried out, were considered the material in the research. Some features of these projects are provided in Table no 1.

The questionnaire was used as the data collection tool in this study. The questionnaires were filled in through face-to-face interviews. The questionnaire form prepared using the five-point Likert scale consists of 20 questions in total. The hypotheses in the scale used in the research were measured with the 5-point Likert scale. In both ends of each item of the scale are the categories of 1 (strongly agree) and 5 (strongly disagree). Alternatives 1 and 2 that are marked for the hypotheses set forth denote a positive opinion, whereas alternatives 4 and 5 denote a negative opinion. Score 3 in the scale indicates that no opinions have been developed for the factor concerned. Considering this case, it was commented that the enterprise owners agreed with the hypotheses with an average below 2.5 but disagreed with the hypotheses with an average above 2.5.

In order to establish to which and how many of the existing agricultural enterprises that had benefited from the land consolidation project a questionnaire would be applied in the study, first of all, the number of enterprises that had benefited from the project in the project area was determined. After the determination of the total number of enterprises, the enterprises were arranged according to the land size and a population determination table was created. Since the farmlands owned by the enterprises that constituted the population according to the population determination table varied within extensive boundaries, the coefficient of variation was computed. The sum of lands of all agricultural enterprises constituting the population was computed in the process of stratification. The Quartile Calculation Method was used in the process of stratification. The sample volume was computed by the help of the following formula according to Neyman's Method and with Stratified Sampling from the Framework table (Yamane, 2001).

$$n = \frac{(\sum N_h S_h)^2}{N^2 D^2 + \sum N_h S_h^2}$$

n: Sample volume,
N: Number of enterprises in the population,
N_h: Number of enterprises in the *h*th stratum,
S_h: Standard deviation of the *h*th stratum,

$$D^2 = \frac{d^2}{Z^2}$$

d: Allowed deviation from the population average (amount of errors)
Z: The value of the allowed confidence limits in the distribution table,
The following equation was used to distribute the sample volume which was calculated by means of the above-mentioned equation into strata (Yamane, 2001).

$$n_h = \frac{N_h S_h}{\sum N_h S_h}$$

Table 1. Some land consolidation projects implemented in the province of Burdur and their features

Name of Village	Project Area (ha)	Year of Project	The project was carried out by
2nd part of Akçaköy	400	2008	TRGM (The Directorate General of Agricultural Reform)
Bademli	1,900	2008	TRGM (The Directorate General of Agricultural Reform)
Mürseller	425	2002	The Special Provincial Administration of Burdur
Elmacik	295	2005	The Special Provincial Administration of Burdur
Kozluca	597	2010	The Special Provincial Administration of Burdur

RESULTS AND DISCUSSIONS

At the end of stratified sampling, totally 159 farmers, 32 from Akçaköy, 24 from Bademli, 26 from Elmacik, 51 from Kozluca and 26 from Mürseller, participated in the questionnaire. Of the respondents, 3.77% were aged between 0 and 30 years, while 28.93% were aged between 30 and 50 years and 67.30% were aged over 50 years. The rate of the illiterate was 13.21%, whereas the rate of the literate was 86.79%. The rate of the enterprises with 0 to 3.99 da of land in the study area was 46.54%, while the rate of those with 4 to 7.99 da of land was 28.30% and the rate of those with more than 8 da of land was 25.16%. Of the farmers who participated in the questionnaire, the enterprises with 2 parcels had the highest rate (44.65%), followed by the enterprises with 3 parcels (24.53%), 5 parcels (11.32%), 4 parcels (10.06%), and 1 parcel (9.43%) (Table 2). The mean, standard deviation, chi-square and P values concerning the responses to the hypotheses used to measure farmers' satisfaction in the study area are seen in Table 3. When the means of the responses to the hypotheses in Table 3 are examined, it is seen that the farmers in the study area did not regard their lands as a property that could be bought and sold or as an economic area on which production was carried out, but they were emotionally bonded with their lands. From the responses to hypothesis H2 that determined enterprises' approaches to the project before the project, it was seen that the farmers had had no positive opinions before the project and that when deciding on the carrying out of the project, they had not been influenced by those projects which had been performed before. The farmers reported that it was failed to pay necessary attention to the production of the soil classification map, one of the important stages of land consolidation projects, and that the map produced did not reflect the real condition of the land and they consequently objected to the soil classification map. However, it was seen that the objections were not considered right by

Table 2. Some characteristics of the respondents

Characteristics	**N**	**%**	**Characteristics**	**N**	**%**
Age			**Gender**		
0-30	6	3.77	Female	0	0
30-50	46	28.93	Male	159	100
50+	107	67.30	**Number of parcels**		
Education			1	15	9.43
Illiterate	21	13.21	2	71	44.65
Elementary school	80	50.31	3	39	24.53
Secondary school	44	27.67	4	16	10.06
High school	14	8.81	5	18	11.32
University	0	0	**Village**		
Land assets of enterprises			Akçaköy	32	20.15
0-3.99	74	46.54	Bademli	24	15.08
4-7.99	45	28.30	Elmacık	26	16.35
8+	40	25.16	Kozluca	51	32.07
			Mürseller	26	16.35

Table 3. Results of the analysis of the scale items

Questions of the questionnaire	Means	Standard Deviation	Chi-Square	P Value
H1-I am emotionally bonded with my land (Bonded)	1.91	0.447	22.107*	0.036
H2-Our approach to land consolidation had been positive before beginning the project.	2.89	1.102	77.171**	0.000
H3-We had been influenced by the land consolidation projects carried out in other places when deciding on the carrying out of the project.	2.85	1.026	60.513**	0.000
H4-Necessary attention was paid when producing the soil classification map.	2.82	0.940	64.545**	0.000
H5-The soil classification map produced fully reflects the condition of the land.	2.87	0.982	57.200**	0.000
H6-Objections to the soil classification map were raised.	2.19	0.667	26.251*	0.010
H7-Your objections to the soil classification were corrected.	2.89	0.921	60.448	0.000
H8-Your preferences were (not) abided by when drawing up new parcellation plans.	2.79	0.949	61.747**	0.000
H9-The objections to the new parcellation plan were corrected.	2.86	0.913	58.749	0.000
H10-You suffered loss from the land consolidation project.	3.21	0.990	29.197**	0.004
H11-Your drainage problem was solved.	2.98	0.894	13.296	0.651
H12-Our irrigation system was completed with land consolidation.	2.45	0.816	19.221	0.083
H13-All procedures in the land consolidation project were carried out on time.	2.75	0.941	44.987**	0.000
H14-I was badly affected as the land consolidation project was not completed on time.	3.42	0.937	20.179	0.212
H15-The road quality improved following consolidation.	2.45	0.919	50.580**	0.000
H16-The use of workforce per unit area increased.	3.53	0.525	5.586	0.694
H17-The irrigation cost increased.	3.08	0.665	15.661*	0.047
H18-The product yield increased.	2.43	0.510	18.720*	0.016
H19-The number of parcels increased.	3.93	0.463	29.397**	0.003
H20-Producers' satisfaction increased.	2.45	0.761	43.088**	0.000

Note: Scale: 1: Strongly agree, 5: Strongly disagree.

the project administration and that the errors on the soil classification map were not corrected.

Prior to the project, farmers are interviewed and the requests by farmers are obtained during the planning of the new parcellation. This is crucial to the success of the project and to the acceptance of the new parcels. The farmers stated negative opinions for the question which was asked to determine whether the requests by the farmers had been fulfilled or not. In other words, it was substantially failed to fulfil the requests by the farmers. It is seen that the objections to the new parcellation plan which were submitted to the project administration for the fulfilment of the requests by the farmers were not corrected either. Although the objections to the new parcellation plan were not corrected by the project administration, the respondents reported that they had not been badly affected by the land consolidation project when the project was over. Likewise, it is seen that even though the procedures in the project were not completed on time in accord with the work plan, this delay was not reflected negatively in the farmers. While it was reported that no improvement was experienced regarding the problems about drainage – an infrastructural service – at the end of the consolidation project, it was seen that they remained undecided about the improvement in the road quality. It was reported that the use of workforce did not increase – in other words, decreased – in the study area, which is one of the essential outcomes of land consolidation projects. Likewise, it was established that there was no increase in the irrigation costs either. It might be stated that this result is in agreement with the decrease in the number of parcels in H18. It is seen that the farmers were undecided about the questions concerning the increase in the product yield and the determination of producers' satisfaction following the project.

In the chi-square independence tests, it is seen that the responses to hypotheses other than hypotheses H11, H12, H14 and H16 were independent of the villages (P=0.05), that is, there was no difference in the responses among the villages (Table 3). It is seen that the difference in the responses to hypotheses H11, H12, H14 and H16 among the villages was significant.

CONCLUSIONS

The obtaining of the benefit expected from land consolidation projects depends on the full reflection of the project area by the soil classification map, on making interviews with farmers in accord with the criteria, on drawing up the new parcellation plan in agreement with the interviews, and on completing other infrastructural services such as irrigation, drainage, road and land levelling on time. The non-occurrence of the parameters concerned will bring about the failure of farmers to adopt new projects besides the failure to obtain the benefit expected from the projects. It is seen that the soil classification map in the area where the questionnaire was carried out did not reflect the real condition of the land and that although it was stated that no correction was made despite the objections to both the soil classification map and the new parcellation map, the farmers were generally not badly affected by this case. It might be stated that the undecidedness of the enterprises about producers' satisfaction resulted from the failure to respond positively to the objections by the farmers in the carrying out of the project. The satisfaction at the end of the project can substantially increase provided that the reason why the objections by farmers have been negatively answered can be explained, even if they are not positively answered as required by the criteria for carrying out the project.

In conclusion, project employees should be equipped in terms of "public relations", besides their technical knowledge and skills, in land consolidation projects where the participation of farmers is extremely important for the success of the project. In this context, it is thought that the consideration of the results obtained from the research by decision-makers and project planners will contribute to the easy adoption of projects by farmers and to the enhancement of their satisfaction.

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