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The Necessity of Land Consolidation for Rural Sustainability and Farmers' Approaches to the Issue: The Case of Sulusaray District, Tokat Province

Kırsal Sürdürülebilirlik için Arazi Toplulaştırmasının Gerekliliği ve Çiftçilerin Konuya Yaklaşımı: Tokat İli Sulusaray İlçesi Örneği

H. Sibel GÜLSE BAL
Assoc. Prof.., of Agricultural Economics, Faculty of Agricultural, Tokat Gaziosmanpaşa Univ.
hayriyesibel.gulsebal@gop.edu.tr
ORCID: 0000-0001-7298-1416

Esra KAPLAN
Assist. Prof., Dept. of Agricultural Economics, Faculty of Agricultural, Tokat Gaziosmanpaşa Univ.
esra.gurel@gop.edu.tr
ORCID: 0000-0002-4423-7291

Aysel ERGÜN
Corresponding Author / *Sorumlu Yazar*
Dr., Dept. of Agricultural Economics, Faculty of Agricultural, Tokat Gaziosmanpaşa Univ.
aysel.ergun@gop.edu.tr
ORCID: 0000-0003-0784-6298

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Abstract

Agricultural sustainability and food security have become increasingly important in the context of global crises and climate change. In this process, the importance of rural areas and agricultural production has been further emphasized, while the efficiency of land use and rural development policies has gained greater significance. In this regard, land consolidation is considered one of the key instruments supporting rural development.

This study was conducted in Sulusaray district of Tokat province and aims to examine farmers' attitudes toward land consolidation practices and the factors influencing these attitudes. The main material of the study consists of primary data obtained through face-to-face surveys conducted with 76 farmers in the study area.

According to the findings, the average farm size is 46.0 decares, while the average number of parcels is 5.4. It was found that 47.4% of the farmers reported having knowledge about land consolidation. Findings regarding perceived benefits indicate that farmers evaluate the project positively, particularly in terms of improvements in irrigation and drainage, reduction in the number of parcels, and decreases in production costs. In addition, 67.1% of the farmers were found to support land consolidation practices.

The results of the chi-square analysis revealed statistically significant relationships between farmers' support for land consolidation and both agricultural income level and knowledge level. The findings indicate statistically significant relationships between income level and knowledge of land consolidation, and farmers' project support status.

Keywords: Chi- square analysis, Farmer, Land consolidation, Sustainability, Sulusaray

Kırsal Sürdürülebilirlik için Arazi Toplulaştırmasının Gerekliliği ve Çiftçilerin Konuya Yaklaşımı: Tokat İli Sulusaray İlçesi Örneği

Öz

Tarımın sürdürülebilirliği ve gıda güvenliği, küresel krizler ve iklim değişikliği gibi gelişmelerle birlikte daha da önemli hale gelmiştir. Bu süreçte kırsal alanların ve tarımsal üretimin önemi yeniden artmış, arazi kullanımının etkinliği ve kırsal kalkınma politikaları daha fazla önem kazanmıştır. Bu kapsamda arazi toplulaştırması, kırsal kalkınmayı destekleyen temel araçlardan biri olarak değerlendirilmektedir.

Bu çalışma, Tokat ili Sulusaray ilçesinde yürütülmüş olup, arazi toplulaştırması uygulamasına yönelik çiftçi tutumlarını ve bu tutumları etkileyen faktörleri incelemeyi amaçlamaktadır. Çalışmanın ana materyalini, uygulama alanında yer alan 76 çiftçi ile yüz yüze yapılan anketlerden elde edilen birincil veriler oluşturmaktadır.

Araştırma bulgularına göre çiftçilerin ortalama işletme büyüklüğü 46,0 dekar, ortalama parsel sayısı ise 5,4'tür. Çiftçilerin %47,4'ü arazi toplulaştırması hakkında bilgi sahibi olduğunu belirtmiştir. Fayda algısına ilişkin bulgular, üreticilerin özellikle sulama ve drenaj iyileştirmeleri, parsel sayısının azalması ve üretim maliyetlerinin düşmesi gibi konularda projeyi olumlu değerlendirdiğini göstermektedir. Ayrıca çiftçilerin %67,1'inin arazi toplulaştırma uygulamalarını desteklediği belirlenmiştir.

Ki-kare analizi sonuçlarına göre, üreticilerin arazi toplulaştırmasına yönelik destek durumu ile hem tarımsal gelir düzeyi hem de bilgi düzeyi arasında istatistiksel olarak anlamlı ilişkiler tespit edilmiştir. Bulgular, gelir düzeyi ve arazi toplulaştırması hakkında bilgi sahibi olma durumu ile çiftçilerin projeyi destekleme durumu arasında istatistiksel olarak anlamlı ilişkiler olduğunu göstermektedir.

Anahtar Kelimeler: Ki-kare analizi, Çiftçi, Arazi toplulaştırması, Sürdürülebilirlik, Sulusaray

1. INTRODUCTION

Türkiye's agricultural enterprise numbers and cultivated land sizes have changed over the years; however, the agricultural sector still remains one of the most important sources of livelihood for the rural population. One of the most important structural problems of the sector is the small, fragmented, and highly scattered nature of agricultural lands. Continuous fragmentation of land through inheritance reduces farm sizes, which in turn decreases production efficiency and negatively affects income levels. In addition, fragmented land structure significantly limits the effective use of modern agricultural techniques and mechanization (Takka, 1993; Çevik and Doğan, 1988).

These structural problems accelerate rural-to-urban migration due to insufficient income and difficult living conditions in rural areas. The decline in rural population leads to labor shortages in agricultural production, increased costs, and weakened sustainability of production. Similarly, worldwide, the share of rural population has decreased due to industrialization and urbanization, falling from 63.45% in 1970 to 43.85% in 2020 (Li et al., 2018; Yin et al., 2022). This process has also brought about land abandonment, rural poverty, and environmental problems in many countries.

In achieving rural development, improving infrastructure, increasing quality of life, and enhancing agricultural productivity are of critical importance. Land is one of the fundamental components of rural development both as a means of production and as a source of livelihood (Lerman & Cimpoieş, 2006). Therefore, policies aimed at restructuring land use are among the key instruments of rural development (Metaxiotis et al., 2010; Lerman and Cimpoieş, 2006).

The increase in the number of land parcels leads to more land being allocated for roads, boundaries, and infrastructure in agricultural areas, directly reducing productive land. Moreover, in highly fragmented farms, providing services such as irrigation, drainage, and land reclamation to each parcel increases costs and creates serious implementation difficulties (Küsek, 2014). This situation reduces productivity and profitability, especially in small-scale farms.

Land consolidation emerges as an important tool for addressing these problems. It is a spatial planning method aimed at merging fragmented and scattered parcels into more organized and economically efficient farm structures (Coelho et al., 1996). In a broader sense, it is a comprehensive rural development instrument that also includes rural infrastructure improvements such as irrigation, drainage systems, roads, and land reclamation (Küsek, 2014). In this respect, it aims not only to improve production but also to enhance rural living conditions.

Globally, land consolidation has gone beyond property reorganization and has become part of regional development policies by reorganizing land use (Asiama et al., 2017; Pasakarnis and Maliene, 2010).

In Türkiye, the first land consolidation project was implemented in 1961 in Karkın Village of Konya Province, and over time the process evolved into more comprehensive projects. However, despite these efforts, it is stated that the desired level of success has not yet been achieved (Aktaş et al., 2006).

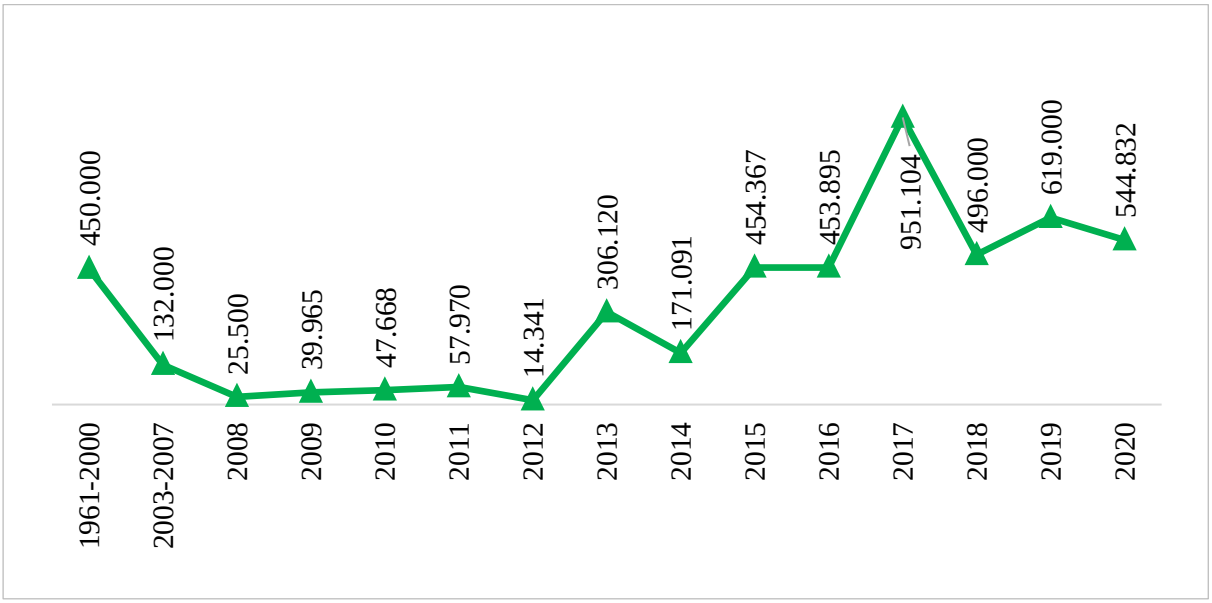
Land consolidation services in Türkiye have shown significant variation over the years. Between 1961 and 2020, the amount of consolidated land has followed a fluctuating trend.

As shown in Graphic 1, the lowest land consolidation amount was recorded in 2012 with 14,341 hectares, while the highest value was reached in 2019 with 619,000 hectares. This demonstrates that implementation levels vary significantly across different periods.

Across Türkiye, land consolidation activities conducted between 1961 and 2020 were most extensively implemented in Şanlıurfa, Diyarbakır, and Konya provinces. In contrast, in Tokat province, such implementations remained at a more limited level during the same period (Anonymous, 2023).

The current status of the implemented projects and their outputs in the Sulusaray district of Tokat province, which constitutes the study area, are presented in Figure 2 and Figure 3.

Figure 1. Land consolidation services in Türkiye by years (hectares)



Source: Anonymous, 2023. https://www.dsi.gov.tr/Sayfa/Detay/1499

Figure 1. Previous situation of the land consolidation parcels in Dutluca village

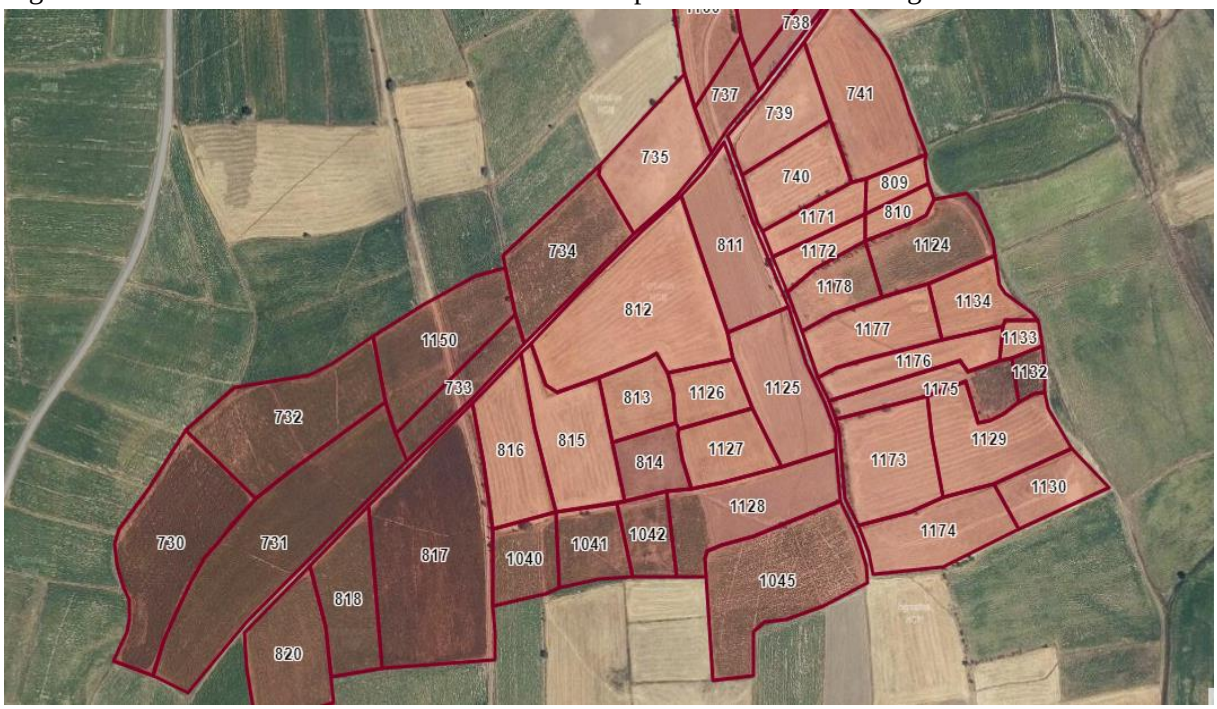


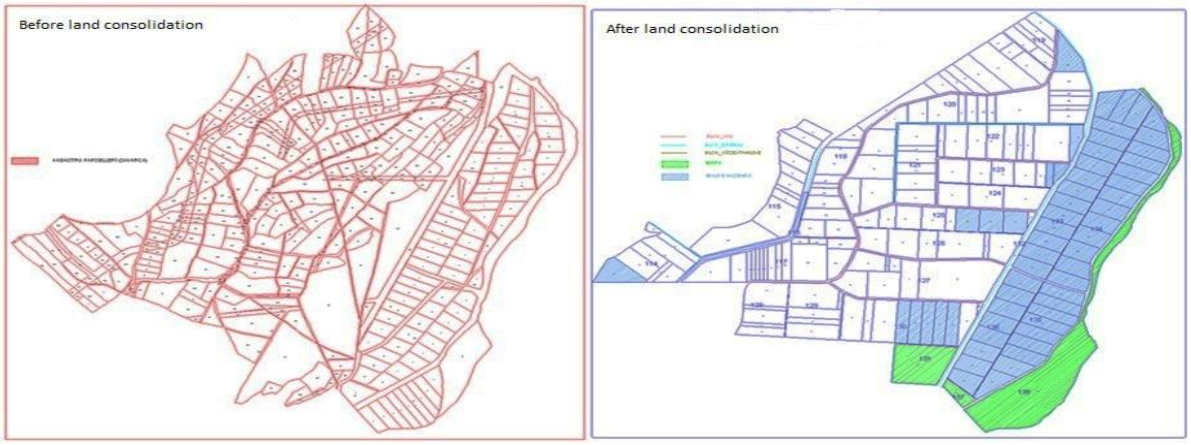
Figure 1 illustrates the small, fragmented, and irregular structure of land parcels prior to land consolidation, while Figure 2 shows the post-consolidation land structure, which is more organized, accessible, and integrated with irrigation infrastructure.

According to current legislation, land consolidation projects are based on voluntariness; therefore, farmers' adoption of the project is of critical importance for the success of its implementation (Özkan, 1999). For this reason, identifying the socio-economic characteristics and

attitudes of producers in the implementation area is essential.

Although numerous studies in Türkiye have examined farmers' attitudes toward land consolidation, studies focusing specifically on the relationship between farmers' knowledge levels, income perceptions, and support tendencies in relatively less-studied rural districts such as Sulusaray remain limited. In this respect, the present study contributes to the literature by providing empirical evidence from a local case study and by examining the statistical associations between socio-economic characteristics, knowledge levels, and farmers' support for land consolidation practices.

Figure 2. View of land consolidation on the project



The aim of this study is to examine farmers' support status, knowledge levels, perceptions, and attitudes toward the land consolidation project implemented in the Sulusaray district of Tokat province. In addition, the study aims to examine the statistical relationships between farmers' support status for the project and certain variables related to farmers using chi-square analysis.

Tokat province is located at an elevation range of 200-2000 meters and has significant agricultural production potential. Sugar beet, potatoes, and wheat production are prominent, while livestock farming and forage crop production are also widely practiced. However, it is observed that there is insufficient industrial infrastructure to transform agricultural products into higher value-added goods.

In conclusion, land consolidation is a critical tool both for increasing agricultural productivity and for maintaining the rural population. Structural problems in agricultural policies in Türkiye reduce the competitiveness of small-scale producers and accelerate rural-to-urban migration. Therefore, land consolidation practices constitute an important policy instrument for agricultural sustainability.

2. MATERIALS and METHODS

This study was conducted in three settlements (Merkez, Alpudere, and Dutluca villages) in the Sulusaray district of Tokat province, where land consolidation practices have been implemented. The study area has a rural structure in which agricultural production is the main source of livelihood, land fragmentation is widespread, and rural-to-urban migration continues.

The main material of the study consists of primary data obtained through face-to-face interviews with farmers living in the research area. The questionnaire applied in this context was designed to reveal the socio-demographic and economic characteristics of farmers as well as their agricultural structures. In addition, farmers' self-assessments regarding their income levels, their support status for the land consolidation project, their level of knowledge about the project, and their perceived benefits, attitudes, and experiences were examined. Furthermore, farmers' perceptions regarding the reasons for supporting

or not supporting land consolidation and the importance of these reasons were evaluated.

The sample size was determined using the proportional sampling method (Baş, 2008). The population of the study consists of 360 farmers. Based on a 95% confidence level and a 10% margin of error, the sample size was calculated as 76. The following formula was used in the proportional sampling method (Newbold, 1995):

$$n = \frac{Np(1-p)}{(N-1)\sigma_p^2 + p(1-p)}$$

n = sample size, N = population size, p = estimated proportion, and $\sigma^2 p$ = variance of the proportion.

The data obtained in the study were analyzed using descriptive statistics such as frequency and percentage distributions. In order to determine the factors affecting farmers' support for the land consolidation project, the chi-square test was applied. In this context, the dependent variable was defined as farmers' support status for land consolidation. The independent variables were income level and knowledge level regarding land consolidation. The income level variable was constructed based on farmers' self-assessments of their agricultural income.

"Very low" and "low" income groups were classified as the lower-income group, while "medium" and "high" income groups were classified as the upper-income group. The level of knowledge about land consolidation was determined based on farmers' responses to the statement "I have knowledge about the land consolidation project to be implemented in my village." Accordingly, responses of "strongly disagree" and "disagree" were classified as low knowledge level, "undecided" as medium knowledge level, and "agree" and "strongly agree" as high knowledge level. All variables used in the analysis are categorical and were structured in accordance with the assumptions of the chi-square test.

Relationships between categorical variables were analyzed using the chi-square test. Test assumptions were checked, and it was observed that the expected frequency values were above 5. A significance level of 5% ($p < 0.05$) was adopted in the statistical analyses.

It should be noted that the chi-square analysis used in this study identifies statistical associations between categorical variables and does not imply causal relationships.

This study was conducted with approval from the Ethics Committee of Tokat Gaziosmanpaşa Üniversitesi, Session No: 01, Decision No: 01-03, Date: 28.11.2025.

3. RESULTS and DISCUSSION

3.1. Socio-demographic and Economic Characteristics of Producers

Table 1 presents the findings regarding the socio-demographic and economic characteristics of the producers participating in the study. Of the producers, 93.4% are male and 6.6% are female. In terms of age distribution, 2.6% are between 18-25 years, 11.8% are 26-33 years, 26.3% are 34-41 years, 28.9% are 42-49 years, 22.4% are 50-57 years, and 7.9% are 58-64 years old.

Regarding education level, 6.6% of the producers are literate without formal schooling, 36.8% are primary school graduates, 28.9% are secondary school graduates, 21.1% are high school graduates, and 6.6% are university graduates. When income levels are examined, it is observed that 10.5% of the producers have a monthly income of $120 and below, 38.2% between $121-225, 28.9% between $226-375, 15.8% between $376-525, 5.3% between $526-750, and 1.3% above $750.

All participants (100%) earn income from agricultural activities, while 22.4% also have additional non-agricultural income sources. In terms of farming experience, 6.6% of the producers have 1-5 years of experience, 32.9% have 6-15 years, and 60.5% have 16-25 years of agricultural experience.

Table 1. Socio-demographic and economic characteristics of farmers

		Frq.	%			Frq.	%
Gender	Male	71	93.4	Monthly income level (USD)	≤ 120	8	10.5
	Female	5	6.6		121-225	29	38.2
	Total	76	100		226-375	22	28.9
Age groups	18-25	2	2.6		376-525	12	15.8
	26-33	9	11.8		526-750	4	5.3
	34-41	20	26.3		≥ 751	1	1.3
	42-49	22	28.9		Total	76	100
	50-57	17	22.4	Income source	Agriculture	76	100
	58-64	6	7.9		Non-	17	22.4
	Total	76	100		Total	76	*
Education level	Literate (no formal schooling)	5	6.6	Farming experience (years)	1-5	5	6.6
	Primary school	28	36.8		6-15	25	32.9
	Secondary school	22	28.9		16-25	46	60.5
	High school	16	21.1		Total	76	100
	University	5	6.6				
	Total	76	100				

* Multiple responses were allowed.

3.2. Land Tenure Structure and Cropping Pattern of Farms

Table 2 presents the average sizes of land tenure types in farms according to irrigation conditions. According to the findings, in irrigated farming enterprises, the average owned land size was determined as 26.1 da, the average rented land size as 15.8 da, and the average jointly used land size as 18.1 da. In this group, the average total farm size was 22.5 da.

In dry farming enterprises, the average owned land size was found to be 22.5 da, while the average rented land size and jointly used land size were determined as 19.3 da and 15.0 da, respectively. The average total land size of these enterprises was 20.8 da. In addition, the average number of parcels per enterprise was calculated as 5.4, and the average farm size was determined as 46 da.

Table 2. Mean farm size (decare, da) by land tenure type and irrigation status

	Owned	Rented	Shared	Total
Irrigated	26.1	15.8	18.1	22.5
Rainfed	22.5	19.3	15.0	20.8

The most commonly cultivated crop in the surveyed farms was wheat (94.7%). This was followed by sugar beet (73.7%), barley (61.8%), maize (25.0%), and oat (19.7%). Crops cultivated at lower rates included tomatoes and other vegetables (5.3%), chickpeas (5.3%), vetch (1.3%), sunflower (1.3%), alfalfa (1.3%), and fruit crops (1.3%).

In general, production was mainly oriented toward meeting household needs and supplying feed requirements for livestock production. With the implementation of land consolidation, it is anticipated that farmers may increasingly shift toward crops grown under irrigated conditions that have a higher income-generating potential.

3.3. Farmers' Perceptions of Agricultural Income Levels

Table 3 presents farmers' evaluations regarding the level of agricultural income in their villages.

According to the findings, 7.9% of the respondents described the income level as "very low," 25.0% as "low," 53.9% as "moderate," and 13.2% as "high." Considering the overall distribution, it is evident that more than half of the farmers (53.9%) perceived the income level as "moderate." This indicates that income perceptions were mainly concentrated at a medium level. When the "low" and "very low" categories are evaluated together (32.9%), it can be seen that a considerable proportion of farmers assessed their income negatively. In contrast, the proportion of respondents who perceived their income level as "high" (13.2%) remained relatively limited.

The findings indicate that perceptions of agricultural income in the research area were predominantly at a moderate level; however, there was also a significant group of farmers with negative perceptions regarding their income levels.

Similar findings have been reported in previous studies, indicating that farmers' income perceptions are generally concentrated at low to moderate levels due to structural constraints in agricultural production systems, limited farm sizes, and high input costs (Vurgun and Aydoğdu, 2024; Kadı et al., 2014).

Table 3. Farmers' self-assessments of agricultural income levels in their villages

	Frequency	%
Very low	6	7.9
Low	19	25.0
Medium	41	53.9
High	10	13.2
Total	76	100

3.4. Producers' Support for the Land Consolidation Project

Table 4 presents the level of support among producers for the land consolidation project. According to the findings, 67.1% of the producers stated that they supported the project, while 32.9% reported that they did not support it. This indicates that the general tendency toward the project in the research area was predominantly positive.

However, the fact that nearly one-third of the producers (32.9%) did not support the project reveals that there were differing opinions and evaluations regarding the issue. This finding suggests that individual perceptions and expectations play an important role in practices involving structural changes such as land consolidation.

Overall, the majority support for the project points to a positive tendency. Nevertheless, the considerable proportion of producers who did not support the project highlights the importance of informational and awareness-raising activities aimed at increasing acceptance of the implementation.

Table 4. Farmers' support status for the land consolidation project

	Frequency	%
I support the project	51	67.1
I do not support the project	25	32.9
Total	76	100

Similar findings have been reported in previous studies conducted in different regions of Türkiye. Kaplan and Bal (2021) and Karkacıer and Karabaş (2019) reported that farmers generally had positive attitudes toward land consolidation projects, although some concerns regarding implementation processes remained. Likewise, Karaönder and Gürel (2021) and Kızılaslan and Kılıç (2023) emphasized that farmers' perceptions, expectations, and access to information play an important role in shaping

support for land consolidation practices. Previous studies have also shown that farmers' support for land consolidation is generally related to expected benefits such as improved irrigation, reduced land fragmentation, easier transportation, and increased mechanization opportunities (Kaplan and Bal, 2021; Kahramanoğlu and Dağdelen, 2018; Miranda et al., 2006). In addition, socio-economic characteristics and farmers' knowledge levels have been reported to influence attitudes toward land consolidation projects (Altıntaş and Akçay, 2009; Kızılaslan and Almus, 2000; Özkan, 1999). The findings of the present study support these observations.

3.5. Reasons for Producers' Support or Opposition to the Land Consolidation Project

As land fragmentation increases, more land must be allocated for parcel boundaries, roads, and irrigation canals. This directly leads to losses in productive agricultural land. In addition, fragmented land structures make operations such as irrigation, drainage, land leveling, and land reclamation both more difficult and more costly (Arslan and Değirmenci, 2024; Küsek, 2014).

For this reason, land consolidation is considered an important tool for increasing agricultural productivity and supporting rural development (Pasakarnis and Maliene, 2010; Huang et al., 2011). The literature also indicates that this practice reduces production costs, improves farm efficiency, and positively affects profitability (Nguyen et al., 1996; Van Hung et al., 2007; Hiironen and Riekkinen, 2016; Janus and Markuszewska, 2017).

Table 5 presents the perception levels of producers regarding the reasons for supporting or opposing land consolidation. According to the results, the reasons for support were generally at a high level. In particular, "easier access to land" (80.5%), "reduction in the number of parcels through parcel consolidation" (78.0%), and "facilitating the use of machinery" (78.0%) emerged as the strongest reasons. This indicates that producers mainly evaluated the project in terms of improving operational convenience and increasing the efficiency of the production process.

Table 5. Farmers' perceived impact levels of reasons for supporting and not supporting land consolidation projects

		Very effective		Somewhat effective		Ineffective	
		F	%	F	%	F	%
Reasons for supporting	Fragmented lands will be combined and the number of parcels will decrease	32	78.0	8	19.5	1	2.4
	Easier access to agricultural land will be provided	33	80.5	7	17.1	1	2.4
	Machinery use will become easier	32	78.0	7	17.1	2	4.9
	Land leveling, irrigation and drainage improvements will be carried out	30	73.2	10	24.4	1	2.4
	Irrigation opportunities will increase	31	75.6	9	22.0	1	2.4
	Crop loss due to field entrance layout will decrease	24	58.5	14	34.1	3	7.3
	Production costs will decrease	28	68.3	10	24.4	3	7.3
Reasons for not	I do not think the evaluation process will be fair	13	37.1	16	45.7	6	17.1
	I do not think it will have a positive effect on yield	9	25.7	16	45.7	10	28.6
	I do not think production costs will decrease	7	20.0	19	54.3	9	25.7
	I may be assigned worse land compared to my current fields	17	48.6	14	40.0	4	11.4

In addition, expectations regarding improvements in infrastructure such as irrigation and drainage (73.2%) and increased irrigation opportunities (75.6%) were also quite high. The belief that production costs would decrease (68.3%) and product losses would decline (58.5%) further suggests that economic benefits played an important role in shaping producers' decisions. Overall, it can be stated that land consolidation was perceived positively by producers in both technical and economic terms.

The particularly high expectation regarding the

reduction in the number of parcels indicates that land fragmentation is one of the most important concerns for producers. Similarly, a study conducted in the Dalaman Plain of Aydın Province found that all producers preferred owning a single parcel instead of multiple small parcels (Kahramanoğlu and Dağdelen, 2018). This finding is consistent with the results of the present study and demonstrates that parcel integrity is an important expectation for producers. The literature also emphasizes that land consolidation facilitates mechanization, reduces transportation costs, and thereby contributes to increased efficiency (Miranda et al., 2006).

On the other hand, regarding the reasons for opposition, concerns that "the evaluation process would not be fair" (45.7%) and that "lower-quality land could be allocated" (48.6%) were among the most prominent issues. In addition, some producers expressed negative expectations that the project would neither increase productivity nor reduce costs. This suggests that producers had concerns particularly related to the land allocation process and the fairness of implementation.

Overall, it can be stated that producers' attitudes toward land consolidation were mainly shaped by expectations of production convenience and technical benefits; however, concerns regarding whether the implementation process would be conducted fairly also played an important role in their decisions.

3.6. Producers' Perceptions and Attitudes Toward Land Consolidation

Producers' perceptions and attitudes toward the land consolidation project are shaped not only by direct knowledge but also by what they hear from others, as well as by their previous experiences and observations. In this respect, Table 6 presents producers' positive and negative experiences and their general expectations regarding the project.

According to the findings, 59.2% of the producers stated that there were people in their villages whom they trusted and who supported the project. This indicates that social environment and trust relationships play an important role in the adoption of new practices in rural areas. In other words, producers often obtain information from people around them rather than from official sources.

While 60.5% of the producers reported that they had heard positive examples related to land consolidation, 47.4% stated that they had personally observed such practices. On the other hand, the relatively high rates of hearing about negative examples (46.1%) and personally observing them (36.8%) indicate that producers' perceptions were influenced by both positive and negative experiences. This suggests that the fact that land consolidation practices do not produce the same outcomes everywhere may affect producers' attitudes.

Table 6. Farmers' perceptions, experiences, and attitudes toward land consolidation projects

	Yes		No	
	Frequency	%	Frequency	%
I have trusted acquaintances in my village who support this project	45	59.2	31	40.8
I have heard of very good examples of such projects	46	60.5	30	39.5
I have seen very good examples of such projects	36	47.4	40	52.6
I have heard of negative examples of such projects	35	46.1	41	53.9
I have seen negative examples of such projects	28	36.8	48	63.2
I expect this project to be beneficial	45	59.2	31	40.8

Furthermore, 59.2% of the producers stated that they believed land consolidation would be beneficial. Although this proportion generally indicates a positive tendency, it also suggests a cautious approach rather than complete acceptance. Similarly, the literature indicates that producers' attitudes are largely shaped by the outcomes of implementation processes, local experiences, and social interactions (Tunalı, 2024; Önder, 2019; Lisec et al., 2014; Sayılı and Ekinci, 2012). From

this perspective, the findings obtained in this study are consistent with previous research and demonstrate that perceptions in rural areas are not one-dimensional but are formed through the interaction of multiple factors.

Overall, producers' attitudes toward land consolidation do not reflect a clear acceptance or rejection; rather, they demonstrate a complex structure influenced by social environment, observations, and personal experiences. Therefore, increasing acceptance of the project requires not only technical information and guidance but also making successful local implementation examples more visible.

3.7. Producers' Knowledge Levels and Perceptions of the Benefits of Land Consolidation

Table 7 presents producers' levels of knowledge and perceptions regarding the benefits of land consolidation.

An examination of the findings indicates that producers' level of knowledge about the project was generally relatively low.

When responses to the statement "I have knowledge about the land consolidation project to be implemented in my village" were examined, 47.4% of the producers stated that they agreed with the statement, while 25.0% reported that they disagreed. The proportion of undecided respondents was 27.6%. While 36.8% of the producers stated that they were informed about the institution responsible for implementing the land consolidation project, 42.2% indicated that they had no knowledge on this matter.

The proportion of producers who found the pre-project informational activities sufficient was 34.2%, whereas 50.0% considered them insufficient. Similarly, while 38.1% of the producers stated that they clearly understood the information provided, 39.5% reported that they did not understand it.

Table 7. Farmers' knowledge level and perceived benefits regarding land consolidation

	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%	F	%
I have knowledge about the land consolidation project to be implemented in my village	23	30.3	13	17.1	21	27.6	3	3.9	16	21.1
I have knowledge about the institution implementing the land consolidation project	22	28.9	6	7.9	16	21.1	16	21.1	16	21.1
The information provided before project implementation is sufficient	20	26.3	6	7.9	12	15.8	21	27.6	17	22.4
I clearly understood the information provided about the project	21	27.6	8	10.5	17	22.4	16	21.1	14	18.4
I know that such projects contribute to irrigation and drainage improvements of land	11	14.5	12	15.8	20	26.3	22	28.9	11	14.5
I know that the project will reduce the number of my land parcels	13	17.1	14	18.4	24	31.6	11	14.5	14	18.4
I know that when parcel numbers decrease, my production costs will decrease and income will increase	13	17.1	12	15.8	15	19.7	18	23.7	18	23.7
I know that the project will improve access to my land	12	15.8	17	22.4	26	34.2	13	17.1	8	10.5

In terms of benefit perceptions, producers appeared to have a relatively more positive attitude. Among the respondents, 30.3% stated that land consolidation would contribute to irrigation and drainage infrastructure. Additionally, 35.5% believed that the number of parcels would decrease, while 32.9% thought that production costs would decline and income would increase. Furthermore, 38.2% stated that transportation and access to land would become easier. However, it is noteworthy

that the proportion of undecided responses ranged between 15% and 34% for many of the statements. This may be explained by the fact that a considerable proportion of producers lacked sufficient knowledge about the issue or had not yet formed clear opinions.

Overall, it can be stated that producers' perceptions regarding the benefits of land consolidation were partially positive; however, lack of information and the high proportion of undecided responses may hinder the full acceptance of the project.

Similarly, studies conducted in different regions have shown that the proportion of farmers who had prior knowledge about land consolidation before implementation was 31% in Yemişli Village of Karataş district in Adana Province (Aktaş et al., 2006) and 87.7% in İpsala district of Edirne Province (Önder, 2019). In contrast, the proportion of farmers with no prior knowledge about land consolidation was reported as 73.9% in Güzelbeyli village of Tokat-Zile (Kızılaslan and Almus, 2000), 26.4% in Boyacılı Village of Samsun-Çarşamba (Kılıç et al., 2000), and 6.67% in the Erbaa Plain of Tokat (Altıntaş and Akçay, 2009).

3.8. Factors Affecting the Tendency to Support Land Consolidation

Within the scope of the study, the factors influencing producers' support for the land consolidation project were examined. For this purpose, chi-square analysis was applied to the collected data.

Table 8 presents the relationship between producers' support for the project and both the village-level agricultural income groups and the level of knowledge regarding the land consolidation project, along with the results of the chi-square analysis.

When the relationship between support for the project and agricultural income groups at the village level was examined, a statistically significant relationship was found between the variables (χ^2=3.851; p=0.050). The support rate in the low-income group was 17.1%, while the rate of opposition was 15.8%. In the high-income group, the support rate was 50.0%, whereas the rate of opposition was 17.1%. These results indicate that agricultural income level is statistically associated with producers' support tendencies toward the project.

Table 8. Some characteristics of producers and their support for land consolidation chi-square analysis between

Variables	Support		No support		Chi-square analysis results
Agricultural income group at the village level	F	%	F	%	
Lower income group	13	17.1	12	15.8	Chi-Square=3.851
Upper income group	38	50.0	13	17.1	DF=1
Total	51	67.1	25	32.9	P-Value = 0.050
Knowledge level					
Low	7	9.2	12	15.8	Chi-Square =10.511
Moderate and high	44	57.9	13	17.1	DF=1
Total	51	67.1	25	32.9	P- Value =0.001

When the relationship between support for the project and the level of knowledge was analyzed, a statistically significant relationship was also identified between the variables (χ^2=10.511; p=0.001). It was observed that producers with a low level of knowledge had lower support rates, whereas those with moderate and high levels of knowledge showed higher levels of support. This finding suggests that higher levels of knowledge are associated with higher levels of support for the project.

Overall, the findings suggest that knowledge level is more strongly associated with support for land consolidation compared to income level.

These findings are broadly consistent with previous studies in Türkiye. For example, research from Tekirdağ shows that farmers' perceived benefits are mainly linked to satisfaction levels, pre-project information, and yield outcomes, whereas knowledge level alone does not appear to be statistically significant. This points to the idea that practical experience and perceptions may matter more than knowledge by itself in shaping farmers' attitudes toward land consolidation (Yılmaz and Yılmaz, 2026). In a similar way, other studies have found that farmers' participation is related to factors such as farm size, parcel structure, income level, and involvement in information meetings (İldeniz and Demiryürek, 2015). Taken together, these results indicate that farmers' attitudes are influenced by several interrelated factors, including knowledge, economic conditions, farm structure, and access to information.

4. CONCLUSION

Land consolidation stands out as an important practice in reducing productivity problems arising from the fragmented structure of agricultural land in Türkiye. Within the scope of this study, farmers' perceptions of land consolidation and the factors associated with these perceptions were examined in the Sulusaray district of Tokat province.

Overall, the results indicate that farmers generally have a positive attitude toward the project; however, this tendency is not uniform across all participants. The chi-square analysis revealed a statistically significant relationship between knowledge level and support status (χ^2=10.511; p=0.001). In addition, a weaker but still statistically significant relationship was identified between income level and support status. However, these findings should be interpreted as statistical associations rather than evidence of causal relationships, since the chi-square analysis used in the study does not establish causality between variables.

The findings suggest that farmers with higher levels of knowledge about land consolidation tend to show higher levels of support for the project. In this respect, knowledge and access to information appear to be important elements associated with project acceptance. In addition, issues related to trust and perceptions of fairness may also shape farmers' attitudes toward the project. In particular, concerns regarding the fairness of land allocation or the possibility of receiving lower-quality land may negatively influence farmers' perceptions.

These results indicate that land consolidation projects should be considered not only as technical land reorganization practices but also as socially embedded rural development processes. Therefore, increasing farmers' participation, improving information dissemination activities, and strengthening trust among stakeholders may contribute positively to the acceptance of such projects.

This study has some limitations that should be considered when interpreting the findings. First, the research was conducted only in the Sulusaray district of Tokat province; therefore, the results may not be generalizable to all rural regions or land consolidation areas in Türkiye. Second, the study was based on questionnaire data obtained from farmers' self-reports, which may include subjective evaluations and recall bias. In addition, the cross-sectional nature of the data limits the ability to evaluate changes in farmers' attitudes over time. Future studies conducted in different regions and based on larger sample sizes may provide more comprehensive results regarding farmers' perceptions of land consolidation practices.

In conclusion, land consolidation is not merely a reorganization of land parcels but also a social transformation process affecting rural structures. Therefore, its success depends not only on technical implementation but also on farmers' understanding, participation, and acceptance of the process.

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