PRODUCERS' APPROACH TO DRIP IRRIGATION SUBSIDIES IN TURKEY: THE CASE OF MARDİN AND ŞANLIURFA PROVINCES

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ABSTRACT

The aim of this study was to investigate the opinions of the producers who received in-farm drip irrigation subsidies within the scope of Rural Development Supports in Şanlıurfa and Mardin provinces on the success and achievement of the subsidies, the problems they encountered during the project preparation stage, and their views on the legal structure of the subsidies. A survey was conducted with 50 producers benefiting from drip irrigation subsidies. Descriptive statistics such as mean and standard deviation were used in the analysis of the data. In terms of the data obtained, the relationships and similarities between the opinions of the producers on the success of the drip irrigation subsidies, the problems they encountered during the project preparation and the opinions on the legal structure of the subsidies were examined by multidimensional scaling analysis. It was determined that all of the producers agreed with the judgments that the subsidies should continue and the majority of them agreed that the amount of the subsidies should be increased and the subsidies should be expanded in terms of subject. It was determined that the producers agreed with the judgment that it was difficult to follow the bureaucratic procedures related to the project and they did not have any difficulties in finding a project consultant. Producers stated that they agreed with the judgment that technical support should be provided by the provincial/district directorates prior to project preparation. In addition, it was observed that the producers mostly thought that the bureaucratic obstacles and the required documents were excessive. Producers stated that small businesses should be supported, more emphasis should be placed on farmer education, and the training provided should be expanded. They stated that it would be positive to provide advantages for small producers and to support underground drip irrigation. Producers stated that small businesses should be supported, more farmer education should be done, and the training should be expanded. They stated that it would be positive to provide advantages for small producers and to support underground drip irrigation.

Keywords: Drip irrigation, Subsidy, Multidimensional scaling, Producer’s opinion

TÜRKİYE’DE DAMLA SULAMA DESTEKLEMELERİNE ÜRETİCİLERİN YAKLAŞIMI: MARDİN VE ŞANLIURFA İLLERİ ÖRNEĞİ

ÖZET

Bu çalışmanın amacı Şanlıurfa ve Mardin illerinde Kırsal Kalkınma Destekleri kapsamında tarla içi damla sulama desteği almış üreticilerin desteklemelerin başarısı ve amacına ulaşması yönündeki düşünceleri, proje hazırlama aşamasında karşılaştıkları problemler ve desteklemelerin yasal yapısı ile ilgili görüşlerinin araştırılmasıdır. Çalışmada damla sulama desteklemelerinden yararlanan 50 üretici ile anket çalışması

gerçekleştirilmiştir. Verilerin analizinde ortalama, standart sapma gibi tanımlayıcı istatistikler kullanılmıştır. Elde edilen veriler bakımından üreticilerin damla sulama desteklemelerinin başarısı, proje hazırlama aşamasında karşılaşılan problemler ve desteklemenin yasal yapısı üzerine yargıları arasındaki ilişkiler ve benzerlikleri çok boyutlu ölçekleme analizi ile incelenmiştir. Üreticilerin tamamının desteğin devam etmesi gerektiği ve büyük çoğunluğunun destek miktarının arttırılması, desteğin konu itibariyle yaygınlaştırılması gerektiği yönündeki yargılara katıldıkları belirlenmiştir. Üreticilerin projeyle ilgili bürokratik işlemlerin takibinin zor olduğu yönündeki yargıya katıldıkları ve proje danışmanı bulmada zorluk çekmedikleri belirlenmiştir. Üreticiler proje hazırlama öncesinde il/ilçe müdürlüğü elemanları tarafından teknik destek verilmesi gerektiği yargısına katıldıklarını belirtmişlerdir. Bunun yanında, üreticilerin çoğunlukla, bürokratik engellerin ve istenen belgelerin fazla olduğunu düşündükleri görülmüştür. Üreticiler küçük işletmelerin desteklenmesi, çiftçi eğitimine daha fazla önem verilmesi ve verilen eğitimlerin yaygınlaştırılması gerektiğini ifade etmişlerdir. Küçük üreticiler için avantajlar sağlanmasının ve toprak altı damla sulamaya da destek verilmesinin olumlu olacağını belirtmişlerdir.

Anahtar Kelimeler: Damla sulama, Destekleme, Çok boyutlu ölçekleme, Üretici görüşü

1. INTRODUCTION

Agriculture is considered as a sector of strategic importance socially and economically with its multifunctional general structure for food safety, rural development, structural adjustment, income and environmental targets.

Regardless of the development levels of nations, agriculture, which has become a sensitive and strategic sector all over the world, is also at the center of political and economic debates. When its weight in the Turkish economy, its contribution to employment and foreign trade figures are analyzed, the agricultural sector is strategic in terms of food security, in addition to its economic and social importance, although its share has decreased recently compared to previous years. In addition, climate change, drought, global food crises, increasing agricultural product prices, and the concerns of countries about ensuring food security cause new policy alternatives for the agricultural sector to be produced and agriculture to be popular as an indispensable and vital sector (Kıymaz, 2021).

Due to the structural characteristics of the agricultural sector, agricultural income is low compared to other sectors. However, the strategic importance of agricultural products makes it necessary to support this sector. With the support policies, production is directed, continuity in production and quality in improvement is ensured and it is aimed to increase productivity in production and to encourage new product diversity with alternative production methods (Yavuz et al., 2004).

Rural development, in its most general definition, is the process of increasing the economic and social welfare and quality of life of individuals living in rural areas. This situation necessitates a multidimensional development approach and multi-sectorial public policies (Anonymous, 2014). The target audience of rural development policies are the households in rural settlements. All activities aimed at improving working and living conditions, with the main aim of increasing the income level and quality of life of household members, are considered within the scope of rural policies.

The Rural Development Investment Support Program is a rural development program that provides grant support for providing economic and social development in rural areas, in order to encourage real and legal persons' investments in economic activity and their equity-based project investments in pressurized irrigation systems (Anonymous, 2021). By considering the protection of natural resources; the aim of the program is raising the income level in rural areas, providing the integration of agricultural production and agricultural industry, developing agricultural marketing infrastructure, strengthening food safety, creating alternative income sources in rural areas, developing pressurized irrigation systems, increasing the efficiency of the rural development studies and creating a certain capacity in the rural community. Within the scope of the Rural Development Investments Support

Program in Turkey, the Support Program for the Purchase of Machinery and Equipment aimed to support the expenditures on purchasing of certain agricultural machinery and equipment in rural areas by financing them as grants at certain rates. The supports given in this context after 2016 started to be given under the name of "Supporting Individual Irrigation Systems within the Scope of Rural Development Supports" and includes seven investment subjects.

The decrease in water potential as a result of climate change due to global warming and the increase in water demand of the increasing population necessitate the effective use of water resources. The use of about 74% of water resources in agriculture in our country requires water saving as a priority, especially in irrigation. For the effective use of water resources, it is important to carry out studies on the dissemination of drip irrigation systems in agriculture (Çakmak and Gökalp, 2013). Drip irrigation systems will reduce the harmful effects of irrigation on the environment as well as saving water. Especially, pollution in surface and groundwater from pesticides and fertilizers will either be eliminated or reduced.

With the increasing world population, sustainable use of limited soil and water resources is required in order to meet the nutritional needs of individuals. For this reason, the efficiency of irrigation in agriculture becomes important day by day. According to the studies carried out in Turkey, there are 8.5 million hectares of land that can be irrigated economically and approximately 6.2 million hectares are irrigated. Alternative irrigation systems, which use water more effectively, have been widely used in these areas with the technological developments in agriculture. The most common of these systems is drip irrigation systems, and the TR Ministry of Agriculture and Forestry provides significant government support for the installation of the system. Effective use of public resources, determination of the current situation in the enterprises designed and determination of the efficiency of the supports are all important.

In this study, the effects of the in-farm drip irrigation subsidies program within the scope of Rural Development Supports in Şanlıurfa and Mardin provinces were determined. The opinions of the producers on the success and achievement of drip irrigation supports, the problems they encountered during the project preparation and their views on the legal structure of the subsidies were investigated.

2. MATERIALS AND METHOD

The study was carried out in the provinces of Şanlıurfa and Mardin, where drip irrigation subsidies was most received in the Southeastern Anatolia Region. The target group of the study consisted of the enterprises that were given 50% grant support to drip irrigation projects between 2012 and 2017 and selected by sampling. The sample size was selected according to the land size. The primary data of the research consisted of data collected from these enterprises by face-to-face survey technique. The surveys were conducted in 2018. Secondary data, on the other hand, were obtained by using the relevant literature and statistics.

Simple random sampling method was used in the sampling phase (Yamane, 1967).

$$\mathrm{n} = \frac{N\ x\ S^2}{(N-1)D^2 + S^2}$$

where n, S and N are sample size, standard deviation and number of total enterprises, respectively and d is the acceptable error (permissible error 10%), t is the reliability coefficient (1.645, which represents the 90% reliability).

For the calculation of the sample size, criteria of 10% deviation from population mean and 90% confidence level were used. Number of total enterprises, who benefited drip irrigation subsidies between 2012 and 2017, was 539. Thus, the calculated sample size was determined to be 50 producers and these producers were selected randomly. Further-more, 50 producers, who did not benefit drip irrigation subsidies, were interviewed for the comparison of the farms in the same region.

Descriptive statistics such as mean and standard deviation were used in the analysis of the data. The opinions of the farmers on the success of the subsidy, the problems faced by the producers during the project preparation stage and their thoughts on the legal structure of the supports were evaluated with a 5-point Likert scale (1. strongly disagree, 2. disagree, 3. undecided, 4. agree, 5. strongly agree).

In terms of the data obtained, the relationships and similarities between the opinions of the producers on the success of the drip irrigation subsidies, the problems they encountered during the project preparation and the opinions on the legal structure of the subsidies were examined by multidimensional scaling analysis. In multidimensional scaling analysis, without the need for any distribution assumption, it is tried to obtain the display distances using the calculated distance measures with the help of a function (Gündüz, 2011). The aim is to reveal the structure of the objects visually. In other words, multidimensional scaling analysis is a dimension reduction method. Multivariate scaling analysis, which is one of the multivariate statistical methods, is a technique that ranks the differences or similarities between objects or individuals and helps to establish hypothesis tests and examine the dependence structure of the data, as well as being used as a dimension reduction technique.

In multidimensional scaling analysis, the stress value, which is an expression of the difference between the multidimensional (p-dimensional) real shape and the predicted shape in reduced k-dimensional space, is calculated. Although there is no test for the suitability of the multidimensional scaling analysis, one of the measures used for the suitability of the obtained solution is the Stress value. A stress value greater than 0.20 indicates a weak fit, while a stress value close to 0 indicates full compatibility (Tatlıdil, 1996). For non-metric scaling, the stress value is calculated as follows (Johnson and Wichern, 1992).

$$Stress = \sqrt{\frac{\sum\left(d_{ij} - \hat{d}_{ij}\right)^2}{\sum\left(\hat{d}_{ij}\right)^2}}$$

d_{ij}: Original distances between i. unit and j. units

$\hat{d}_{ij}$: Estimated distances between i. unit and j. Units

The compatibility levels of stress values are given in Table 1 (Özdamar, 2013).

Table 1. Compatibility levels of stress values

Stress Value	Compatibility
>0.20	Low compatibility

0.10-0.20	Medium compatibility
0.05-0.10	Good compatibility
0.025-0.05	Very good compatibility
<0.025	Perfect compatibility

The R^2 value calculated for the stress value, on the other hand, shows the ratio of the disparities-Scaled Data calculated for the k dimension to explain the input distance data of the original input in the p-dimensional real space (Garson, 2010). If the R^2 value is ≥ 0.6, it is an indication of an acceptable compatibility (Orhunbilge, 2010)

For multidimensional scaling analysis, the SPSS program offers two algorithm options, PROXSCAL and ALSCAL. If the weights of the units and objects are important in PROXSCAL, the model is established by considering the weights, while this distinction is not observed in ALSCAL (Garson, 2010). Since there was no weight in the study, the ALSCAL algorithm was preferred and the "Euclidean" model was used according to the data type.

3. RESEARCH FINDINGS AND DISCUSSION

3.1. Socio-Economic Characteristics of the Producers

The socio-economic characteristics of the producers are given in Table 2. The average age of the producers was 42.86, the education period was 8.04 years, the agricultural experience was 18.84 years, the number of individuals in their families was approximately 6 and the number of family members working in agriculture was 3.

While the total size of the farms cultivated by the producers was found to be 158.14 decares, the size of the land they owned was 132.22 decares and the size of the land they cultivated by renting was determined as 25.92 decares. It was observed that the cultivated land was predominantly irrigated (150.46 decares) and the producers generally cultivated field crops (136.86 decares).

Table 2. Socio-economic characteristics of producers

Socio-Economic Characteristics	Average	Standard deviation	Minimum	Maximum
Age (years)	42.86	9.54	25.00	74.00
Training period (years)	8.04	3.99	0.00	17.00
Agricultural experience (years)	18.84	10.32	1.00	55.00
Number of family members	5.90	2.77	1.00	20.00
Number of family members working in agriculture	2.96	2.34	1.00	10.00
Property land (da)	132.22	116.37	0.00	500.00
Rental land (da)	25.92	114.65	0.00	800.00
Irrigated land (da)	150.46	144.93	30.00	800.00
Unirrigated land (da)	7.78	18.42	0.00	80.00
Field land (da)	136.86	120.61	0.00	500.00
Vegetable and fruit land (da)	21.28	61.77	0.00	400.00
Total cultivated land (da)	158.14	142.60	30.00	800.00

3.2. Producers' Opinions on the Success and Purpose of Supports

Producers were asked about their ideas on the success and achievement of the goals of the subsidies, and their answers are given in Table 3. All of the producers stated that they agreed with the judgment that the subsidies should continue, 98% of them agreed that the amount of

support should be increased, that they would encourage the environment to benefit from the subsidies, and that they did a useful work by purchasing equipment with support. In addition, it was observed that the producers mostly agreed with the judgments that the support should be expanded in terms of the subject and that the quality of the equipment received with the support was sufficient. It was determined that about 2/3 of the producers agreed with the judgments such as after-sales services for the equipment purchased with subsidies were sufficient, they were satisfied with the application criteria for the equipment determined by the Ministry, and the support contributed to the regional infrastructure. Besides, they agreed with the statements that there was a certain order and stability in grant payments, the producers were at the forefront by the subsidies, and approximately half of them agreed with the views that the support provided an increase in the diversity of economic activities in the region and the investment period given for the support was appropriate. 50% of the producers stated that the price of the equipment purchased with support was not at a reasonable level compared to the market price.

In the research conducted by Taşçıoğlu (2011), most of the producers benefiting from the Support Program for Rural Development Investments in the Western Mediterranean Region agreed with the judgment that support program should proceed. In addition, producers stated that they agreed with the view that the monetary amount should be increased as well as the continuation of the program. In the study carried out by Cobanoglu et al. (2014), it was determined that the producers who benefited from the support of the Rural Development Investments Support Program in the provinces of Antalya, Aydın, Bursa, Konya, Samsun and Erzurum for the purchase of machinery and equipment mostly did not agree with the opinion that the price of the equipment purchased with the grant support was at a reasonable level compared to the market price. Research results showed similarities with the results of the researches of Taşçıoğlu (2011) and Çobanoğlu et al. (2014)

Table 3. Producers' opinions on the success and achievement of the goals of the subsidies

Producers' opinions on the success and achievement of the goals of the subsidies	Code	Significance levels (%)					Mean	Std. Deviation
		1	2	3	4	5		
There is enough publicity about subsidy.	Success1	6	12	12	54	16	3.62	1.09
Subsidy should be expanded by subject.	Success2	0	0	8	28	64	4.56	0.64
The investment period given for the subsidy is appropriate.	Success3	10	12	24	44	10	3.32	1.13
The amount of subsidy should be increased.	Success4	0	2	0	8	90	4.86	0.50
Subsidy must continue.	Success5	0	0	0	6	94	4.94	0.24
I encourage my environment to benefit from subsidy.	Success6	0	0	2	22	76	4.74	0.49
There is a certain order and stability in grant payments.	Success7	4	18	24	24	30	3.58	1.21
In support, the producer is at the forefront.	Success8	2	18	20	40	20	3.58	1.07
The subsidy contributes to the regional infrastructure.	Success9	4	10	18	40	28	3.78	1.09
The subsidy provided an increase in the diversity of economic activities in the region.	Success10	14	14	14	34	24	3.40	1.37
The quality of the equipment purchased with the subsidy is at a sufficient level.	Success11	0	0	6	40	54	4.48	0.61
The after-sales service of the equipment purchased with the subsidy is sufficient.	Success12	4	8	14	40	34	3.92	1.09
The satisfaction level with the application criteria of the equipment determined by the Ministry is at a good level.	Success13	12	2	10	40	36	3.86	1.28
The price of the equipment purchased with the subsidy is reasonable compared to the market price.	Success14	22	28	16	20	14	2.76	1.38

I think I'm doing a useful work buying equipment with subsidy.	Success15	0	0	2	36	62	4.60	0.54

1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree

By applying multidimensional scaling analysis to the obtained data, the judgments of the producers regarding the success and achievement of drip irrigation subsidies are located. Iterations were stopped when the S-stress value was less than 0.001 (Table 4). In the analysis where the distance matrix according to the variables was calculated, 8 iterations were performed. The stress statistic value was 0.13220 and the agreement level was "medium" compatibility. The stress value was found to be 0.92834, explaining the data at the rate of 92.834%.

Table 4. Stress statistics results

Iteration	S-stress value	Correction
1	0.20983	
2	0.15897	0.05087
3	0.15279	0.00618
4	0.15046	0.00233
5	0.14885	0.00161
6	0.14736	0.00149
7	0.14606	0.00130
8	0.14529	0.00078
Stress statistic	0.13220	
R^2	0.92834	

Two-dimensional coordinate values of the variables are given in Table 5. It was seen that the variables "Subsidy should be expanded by subject", "Subsidy amount should be increased", "Subsidy should continue", "I encourage my environment to benefit from subsidy" and "I think I am doing a useful work by buying equipment with subsidy" had similar characteristics for the producers and the producers mostly agreed with these judgments. The variables "There is a certain order and stability in grant payments" and "The subsidy provided an increase in the diversity of economic activities in the region." were positive and above 1 in the first dimension. This showed that these variables were interpreted similarly by the producers. "The price of the equipment purchased with the subsidy is at a reasonable level compared to the market price" was the variable that was interpreted most differently by the producers, and it was seen that the producers mostly did not agree with this judgment. The variables "The investment period given for the support is appropriate" and "In support, the producer is at the forefront" also got negative values above 1 in the second dimension. The perspectives of the producers against these judgments also showed similarity. The variable "The satisfaction level with the application criteria of the equipment determined by the Ministry is at a good level" had a positive value of more than 1 in the second dimension, and this variable had a different value from other variables because it was the only judgment that 75% of the manufacturers tended to agree with.

Table 5. Coordinates calculated for the variables in the direction of the success and achievement of the subsidies

Variables	Code	Dimension 1	Dimension 2
There is enough publicity about subsidy.	Success1	0.4449	-0.4843
Subsidy should be expanded by subject.	Success2	-1.2198	-0.1544
The investment period given for the subsidy is appropriate.	Success3	0.9603	-1.3195
The amount of subsidy should be increased.	Success4	-1.4335	-0.0184
Subsidy must continue.	Success5	-1.6135	-0.0639

I encourage my environment to benefit from subsidy.	Success6	-1.2450	0.1199
There is a certain order and stability in grant payments.	Success7	1.0377	-0.4065
In support, the producer is at the forefront.	Success8	0.6364	-1.0201
The subsidy contributes to the regional infrastructure.	Success9	0.2423	-0.2266
The subsidy provided an increase in the diversity of economic activities in the region.	Success10	1.2936	1.2714
The quality of the equipment purchased with the subsidy is at a sufficient level.	Success11	-0.7784	0.1335
The after-sales service of the equipment purchased with the subsidy is sufficient.	Success12	0.0087	0.1835
The satisfaction level with the application criteria of the equipment determined by the Ministry is at a good level.	Success13	-0.0232	1.3945
The price of the equipment purchased with the subsidy is reasonable compared to the market price.	Success14	2.9465	0.4344
I think I'm doing a useful work buying equipment with subsidy.	Success15	-1.2569	0.1566

The map showing the similarities and differences of the variables in terms of producers is given in Figure 1. As the distances between the variables increased, it was seen that the differences in terms of producers increased. When Figure 1 was examined, it was seen that the variables coded as "Success3, Success5, Success10, Success13 and Success14" were the variables interpreted most differently by the producers. In addition, it was determined that the variables coded "Success2, Success4 and Success5", "Success6, Success11 and Success15", "Success3 and Success8" and "Success1, Success7 and Success9" coded variables were close to each other and were evaluated similarly by the producers.

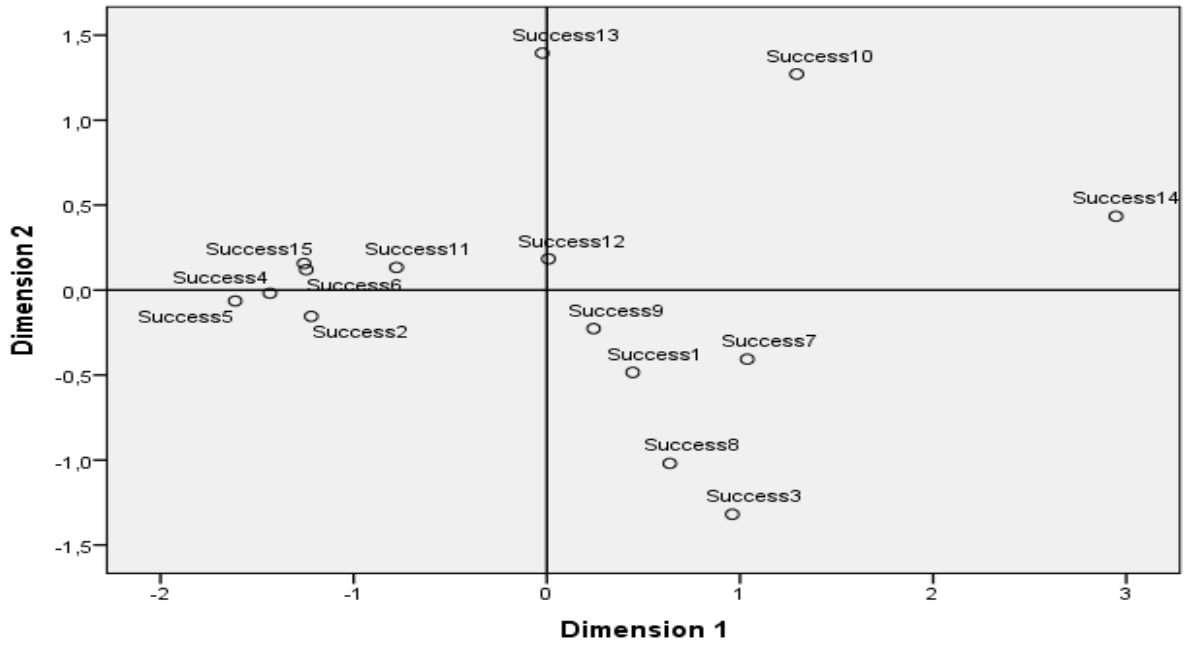

Figure 1. Spatial map of producers' opinions on the success and achievement of the goals of the subsidies

3.3. Problems Encountered by Producers During Project Preparation

Producers receiving drip irrigation subsidies were asked about the problems they encountered during project preparation and their answers are given in Table 6. More than 2/3 of the producers stated that it was difficult to follow up the bureaucratic procedures related to the

project, they faced difficulties in obtaining the necessary permits and licenses, and the project preparation documents were not sufficient and understandable.

It was determined that the most undecided subject of the producers was the inadequacy of the application materials, and more than half (56%) stated that the bureaucratic procedures were intense in the project application, acceptance and implementation processes, and 50% stated that the application period was short.

It was determined that the rate of producers who agreed with the judgment that the file preparation cost was high and who were undecided on this issue was the same. Nearly half of the producers stated that they did not agree with the judgments that the technical staff did not provide sufficient information during the application, the project consultant demanded high wages, could not communicate sufficiently with the project owner, and that the project consultant did not provide sufficient information.

The ratios of the producers who stated that they did not agree or were undecided with the judgment that the project consultant did not have sufficient knowledge were found to be quite close to each other. Majority of the producers (70%) stated that they had no difficulty in finding a project consultant.

In the study conducted by Altuntop (2014), producers who benefited from the support program for the purchase of machinery and equipment in Mersin stated that the number of file preparation and bureaucratic procedures were the primary problems. In the study carried out by Cobanoglu et al. (2014), it was determined that producers in the provinces of Konya, Samsun and Şanlıurfa did not have difficulty in finding project consultants. It was determined that the producers in Bursa and Erzurum were undecided about the application period, and in the provinces of Aydın, Bursa, Erzurum and Şanlıurfa, the producers were undecided about the adequacy of the application materials. These results were similar to the results of the research.

In the study conducted by Risha (2016) on drip irrigation systems and subsidies, the majority of producers stated that they had difficulty in implementing the drip irrigation system and that there should be ease of payment. In the study conducted by Yolal and Değirmenci (2020), it was observed that producers were mostly satisfied with the subsidies, but they had more difficulties in terms of technical support and spare parts supply. In addition, it was concluded that they had problems with transportation to people or companies that would offer technical support.

Table 6. Problems encountered by producers during project preparation

Problems encountered by producers during project preparation	Code	Significance levels (%)					Mean	Std. Deviation
		1	2	3	4	5		
I'm having trouble finding a project consultant.	Project1	34	36	18	6	6	2.14	1.14
The project consultant demands high wages.	Project2	20	46	16	14	4	2.36	1.08
The project consultant does not provide sufficient information.	Project3	18	38	18	24	2	2.54	1.11
I cannot adequately communicate with the project owner.	Project4	12	44	14	24	6	2.68	1.15
The project consultant does not have sufficient knowledge.	Project5	14	26	34	18	8	2.80	1.14
It is difficult to follow the bureaucratic procedures related to the project.	Project6	8	4	12	32	44	4.00	1.21

Bureaucratic procedures are intense in the project application, acceptance and implementation processes.	Project7	14	14	16	22	34	3.48	1.45
Project preparation documents are not sufficient and understandable.	Project8	2	12	14	46	26	3.82	1.02
The technical staff does not provide sufficient information during the application.	Project9	28	22	18	12	20	2.74	1:50
File preparation cost is high (analysis and tests etc.)	Project10	4	36	30	14	16	3.02	1.15
Application materials are insufficient.	Project11	12	18	50	16	4	2.82	0.98
The application period is short.	Project12	14	20	16	34	16	3.18	1.32
I am facing difficulties in obtaining the necessary permits and licenses.	Project13	12	12	6	20	50	3.84	1.46

1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree

The opinions of the producers regarding the problems they encountered during the project preparation phase were located. For the two-dimensional solution, iterations were stopped when the S-stress value was less than 0.001 (Table 7). In the analysis where the distance matrix according to the variables was calculated, 7 iterations were performed. Stress statistic value was 0.17143 and agreement level is "medium" compatibility. The stress value was found to be 0.83869, explaining the data at the rate of 83.869%.

Table 7. Stress statistics results

Iteration	S-stress value	Correction
1	0.24132	
2	0.20008	0.04124
3	0.19015	0.00993
4	0.18503	0.00512
5	0.18251	0.00252
6	0.18139	0.00112
7	0.18084	0.00055
Stress statistic	0.17143	
R^2	0.83869	

The two-dimensional coordinate values of the variables are given in Table 8. It was observed that the variables "I'm having trouble finding a project consultant" and "The project consultant demands high wages" had similar characteristics in terms of producers and that the producers mostly did not agree with these judgments. The variable "The technical staff does not provide sufficient information during the application" was positive and above 1 in the first and second dimensions. This showed that this variable was perceived differently by the producers. The variable "It is difficult to follow the bureaucratic procedures related to the project" had negative values above 2 in the first dimension, and the variables "Bureaucratic procedures are intense in the project application, acceptance and implementation processes" and "I have difficulties in obtaining the necessary permits and licenses" had negative values above 1 in the same dimension. The perspective of the producers against these judgments also showed similarity and it was determined that the producers mainly agreed with these judgments.

Table 8. Coordinates calculated for the problems encountered during the project preparation phase

Variables	Code	Dimension 1	Dimension 2
I'm having trouble finding a project consultant.	Project1	1.9080	-0.4399

The project consultant demands high wages.	Project2	1.2001	-0.4205
The project consultant does not provide sufficient information.	Project3	0.6457	-0.7524
I cannot adequately communicate with the project owner.	Project4	0.9681	0.0311
The project consultant does not have sufficient knowledge.	Project5	0.8604	0.7129
It is difficult to follow the bureaucratic procedures related to the project.	Project6	-2.0645	-0.5592
Bureaucratic procedures are intense in the project application, acceptance and implementation processes.	Project7	-1.1209	-0.8267
Project preparation documents are not sufficient and understandable.	Project8	-0.8762	0.9593
The technical staff does not provide sufficient information during the application.	Project9	1.0912	1.5801
File preparation cost is high (analysis and tests etc.)	Project10	-0.1128	0.0100
Application materials are insufficient.	Project11	0.1117	-0.1919
The application period is short.	Project12	-0.8362	0.8356
I am facing difficulties in obtaining the necessary permits and licenses.	Project13	-1.7747	-0.9382

The map showing the similarities and differences in terms of the problems encountered by the producers during the project preparation phase is given in Figure 2. When Figure 2 was examined, it was seen that the variables coded as "Project1, Project6, Project9 and Project13" were the variables interpreted most differently by the producers. In addition, it was determined that the variables coded "Project8 and Project12", coded "Project6, Project7 and Project13" and coded "Project1 and Project2" were located close to each other and evaluated similarly by the producers.

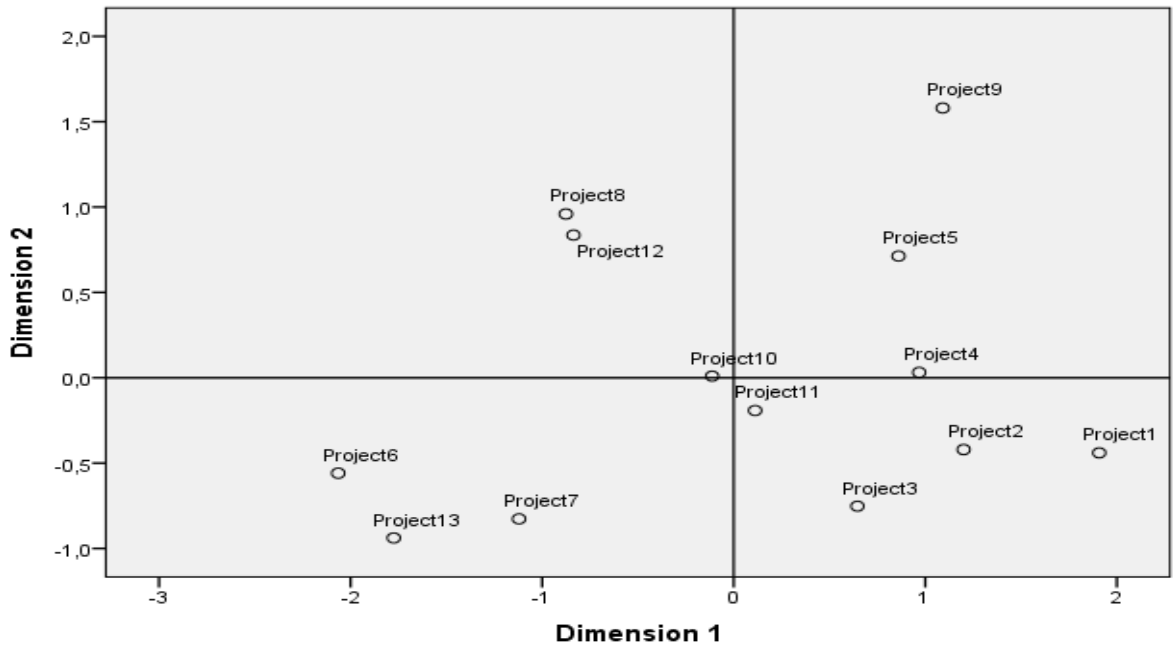

Figure 2. Spatial map of the problems encountered by producers during project preparation

3.4. Producers' Thoughts on the Legal Structure of the Subsidies

The opinions of the producers regarding the legal structure of the subsidy are also given in Table 9. Producers mostly stated that they agreed with the judgments that technical support should be provided by the provincial/district directorate staff before the project preparation, arrangements should be made in the way the support was given, bureaucratic obstacles and the required documents were excessive. In addition, approximately 2/3 of the producers stated that legal arrangements should be made regarding implementation projects, while half of them

stated that the introduction of the law was not adequately made. It was determined that more than half of the producers did not agree with the views that the law for subsidy was sufficient and that they had sufficient information about the law.

In the study conducted by Taşçıoğlu (2011), producers agreed with the fact that the required documents were excessive, bureaucratic obstacles were high and the regulation was made in the way that the support was given. The results of the research were similar to the results of Taşçıoğlu (2011) research.

Table 9. Opinions of producers on the legal structure of the subsidies

Producers' opinions on the legal structure of the subsidies	Code	Significance levels 1	2	3	4	5	Mean.	Std. Deviation
The law for subsidy is sufficient.	Legal Structure1	44	12	18	16	10	2.36	1.44
I have sufficient information about the law.	Legal Structure2	24	24	22	14	16	2.74	1.40
Legal arrangements should be made regarding implementation projects.	Legal Structure3	2	6	28	26	38	3.92	1.05
Before preparing the project, the staff of the Provincial/District Directorate should provide technical support.	Legal Structure4	2	0	14	40	44	4.24	0.85
The introduction of the law has not been adequately made.	Legal Structure5	12	18	20	18	32	3.40	1.41
Arrangements should be made in the way the subsidy is given.	Legal Structure6	8	4	12	28	48	4.04	1.23
Bureaucratic obstacles are excessive.	Legal Structure7	8	4	10	10	68	4.26	1.28
The required documents are excessive.	Legal Structure8	4	4	14	14	64	4.30	1.11

1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree

The opinions of the producers regarding the legal structure of the subsidy are located. For the two-dimensional solution, iterations were stopped when the S-stress value was less than 0.001 (Table 10). In the analysis where the distance matrix was calculated according to the variables, 6 iterations were performed. The stress statistic value was 0.02966 and the fit level was “very good” compatibility. The stress value was found to be 0.99690, explaining the data at a rate of 99.69%.

Table 10. Stress statistics results

Iteration	S-stress value	Correction
1	0.03039	
2	0.02559	0.00480
3	0.02299	0.00261
4	0.02129	0.00169
5	0.02025	0.00104
6	0.01948	0.00077
Stress statistic	0.02966	
R^2	0.99690	

Two-dimensional coordinate values of the variables are given in Table 11. The variable “The law for subsidy is sufficient” was positive over 2 in the first dimension, and the variable "I have sufficient information aboutthe law" got a positive value over 1 in the first dimension. It was observed that these variables had similar characteristics in terms of the producers and producers mostly did not agree with these judgments. Variables “Bureaucratic obstacles are

excessive" and "The required documents are excessive" were negative and above 1 in the first dimension. This showed that these variables were perceived similarly by the producers, and it was determined that the producers mostly agreed with these judgments. The variable "Before preparing the project, the staff of the Provincial/ District Directorate should provide technical support" had relatively high values, although not above 1 in both dimensions. Considering that the producers mostly agreed with this judgment and only 2% of them did not, it was striking that this variable was positioned differently from the other variables.

Table 11. Calculated coordinates for producers' opinions on the legal structure of the subsidy

Variables	Code	Dimension 1	Dimension 2
The law for subsidy is sufficient.	Legal Structure1	2.6492	-0.0201
I have sufficient information about the law.	Legal Structure2	1.7967	-0.1104
Legal arrangements should be made regarding implementation projects.	Legal Structure3	-0.3214	0.5504
Before preparing the project, the staff of the Provincial/ District Directorate should provide technical support.	Legal Structure4	-0.6075	0.7478
The introduction of the law has not been adequately made.	Legal Structure5	-0.2916	-0.8008
Arrangements should be made in the way the subsidy is given.	Legal Structure6	-0.7611	-0.2211
Bureaucratic obstacles are excessive.	Legal Structure7	-1.2555	-0.1186
The required documents are excessive.	Legal Structure8	-1.2087	-0.0272

The map showing the similarities and differences in terms of the producers' opinions on the legal structure of the subsidy is given in Figure 3. When Figure 3 was examined, it was seen that the variables coded "Legalstructure1, Legalstructure4, Legalstructure7" were the variables that were interpreted most differently by the producers. In addition, it was determined that the variables coded "Legalstructure1 and Legalstructure2", "Legalstructure3 and Legalstructure4" and "Legalstructure7 and Legalstructure8" were located close to each other and were evaluated similarly by the producers.

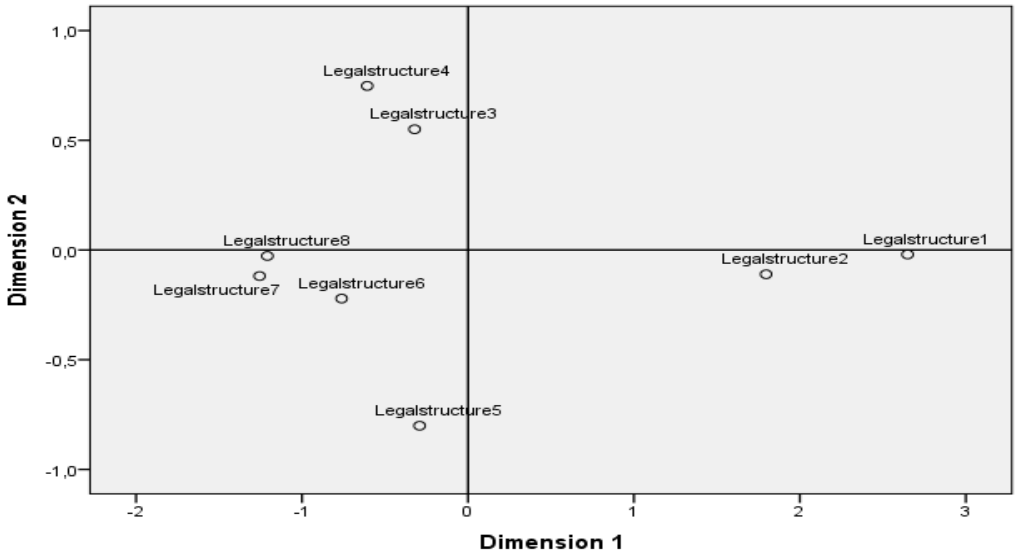

Figure 3. Spatial map of the producers' opinions on the legal structure of the subsidy

4. CONCLUSION

In this study, the opinions of the producers on the success and achievement of drip irrigation subsidies, the problems they encountered during the project preparation stage and the legal structure of the supports were investigated. Producers mostly agreed with the judgments that the subsidy should be continued, the amount of subsidy should be increased, and the subsidy should be expanded in terms of the subject. It was determined that the judgments that the support contributed to the regional infrastructure and that the quality of the equipment purchased with the subsidy was at a sufficient level were also adopted by the producers. In addition, it was determined that enterprises tended to disagree with the view that the price of the equipment purchased with the subsidy was at a reasonable level compared to the market price.

It was determined that the producers agreed with the judgment that it was difficult to follow the bureaucratic procedures related to the project and they did not have any difficulties in finding a project consultant. Producers stated that they agreed with the judgment that technical support should be provided by the provincial/district directorates prior to project preparation. In addition, it was observed that the producers mostly thought that the bureaucratic obstacles and the required documents were excessive.

Producers were also asked for their general views on subsidies. The general opinions and suggestions of the producers regarding the drip irrigation subsidies were as follows.

The producers stated that the promotion of the subsidy and the information about the application process should be made in a way that reaches the investors within the framework of an appropriate calendar, and the paperwork in the application form and transactions should be reduced as much as possible. They expressed their opinions about employing personnel experienced in irrigation in the Provincial Directorates, increasing the existing capacity, and providing in-service training to engineers who are authorized to carry out irrigation projects. They stated that reducing VAT to 1% as in fertilizer and diesel, increasing the 50% grant rate further and including VAT in the grant would be beneficial for the continuation of the subsidy.

There is an obligation to have an "Irrigation Project" among the application documents. It was observed that the cost of preparing the project caused expense to the investor if the grant support was not given, and this situation reduced the number of applications. It is very important to support small enterprises, to give more importance to farmer education and to expand the trainings, and to implement supports for the GAP Region, which is a disadvantaged area in terms of water availability.

Producers manufacturing by rent are adversely affected due to the condition of a minimum three-year contract, and support should be given to the renter with on-site detection. Soil analysis costs should be removed. Advantages should be provided for small producers, irrigation unions should provide advantages to drip irrigation producers (water cost should be reduced), and subsoil drip irrigation should be supported.

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