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The Socio-economic Profile and Technical Support Needs of the Maize Producers' at GAP-Sanliurfa, Turkey

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Abstract: *The aim of this study was to determine the socio-economic profile of farmers who planted maize in Şanlıurfa, and to determine their views on the technical support needs of maize plant cultivation. The main material of the study is the data obtained from farmers planting maize in Şanlıurfa. The surveys were conducted through face-to-face interviews with 294 farmers who were selected by simple random sampling among the farmers who made maize cultivation in the 2017 production season. Chi-square and Kruskal Wallis tests were done in SPSS for statistical evaluation of the results. According to research results, average age was 43.41 years, the average amount of land is 27.8 hectares, 91,8% of farmers are farming in their own property, average of the farmers' annual experience in maize production was determined as 8.51 years, at the most family workmanship is used in maize production with 61%, and the average income per hectare has been calculated as 4,720 TL. The farmers need technical support during agricultural activities by 79% and age, land amount and income are effecting factors in their needs. The 61% of farmers receive technical support from marketing companies and one of the most striking results is the technical support from the public only by 5.4%. The increase or decrease of maize production areas is directly related to demand. This research is one of the first of its type for GAP-Şanlıurfa, Turkey and results will be helpful for decision and policy makers.*

Keywords: *Farmers' profile, GAP-Şanlıurfa, Technical Support Need, Turkey, Maize Production*

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I. Introduction

Maize plants are generally used as human and animal food in the world. Maize is a product that grows in tropical, subtropical and temperate climates which can be grown everywhere except Antarctica [1]. A total of 1.5 billion hectares of agricultural land, approximately 712 million hectares of grain is cultivated, while maize is grown in 183 million hectares of this area in the world. The share of maize in the grain cultivation is 25.7% [2]. According to the data of FAO, maize comes after wheat and rice in the world in terms of cultivation area and is the first in terms of production quantity in the world. Most maize producing countries are USA, China, Brazil, Argentina, Mexico, India, Ukraine and Indonesia. Turkey ranks 24th among producer countries. In the last 10 years, maize plantation areas increased by 24% and production amount increased by 42.3% [2]. In addition to the use of maize as human food, animal feed and industrial raw material, it is also possible to use paper production and some little wicker handicrafts. Also can be consumed as a snack. Depending on the increasing amount of production of maize, feed, oil and sweetening sector and biofuels-bioethanol production are increasing. Maize production amount depending on the consumption and usage, efficiency rate in Turkey is about 80% [3]. Maize is an annual hot climate grain plant and has a vegetation period ranging from 90-120 days. It is suitable to plant the maize plant as a first product in April-May, and as a second product in June-July in Turkey [1]. The most suitable soil for corn farming, due to their high water holding capacity and high nutrient storage, ease of processing, good drainage and high ventilation rate, they are clayey soils. Turkey corn production in the last 10 years, showing an increase of 68% in 2016 reached to 6.4 million tons [3]. Among the most important reasons for this increase are the widespread use of hybrid seed, new developments in production techniques, irrigation of more areas and increased corn yield due to these reasons. In every region of Turkey maize cultivation can be done. Due to the GAP project, as a result of the increase in the irrigable areas, Southeast Anatolia Region is on the way of being a corn production area in terms of water and soil resources potential.

The Southeastern Anatolia Project (GAP, in Turkish) is a multi-sectoral and integrated regional development project. GAP has a total budget of 32 billion dollars, Turkey's largest, and of the world's largest among the regional development projects [4, 5, 6]. According to the GAP Master plan; The region will be transformed into an export base based on agriculture, and the economic, social and cultural development of the region will be provided mainly by the added value created by the agricultural sector. In this context, agricultural irrigation is planned to be carried out on an area of approximately 1.8 million hectares [7]. Şanlıurfa is located at

GAP Region. Şanlıurfa is the most important province within the scope of the GAP project in terms of its agricultural areas and potential [8, 9]. Maize production areas, varieties, production and average yield values of Şanlıurfa are given in Table 1 [10].

The aim of this study was to determine the socio-economic profile of farmers who planted maize in Şanlıurfa, and to determine their views on the technical support needs of maize plant cultivation.

II. Materials and Methods

The main material of the study is the data obtained from farmers planting maize in Şanlıurfa. The number of farmers registered to the Farmer Registration System in 2017 in Sanliurfa was 54,563 persons. Of these, 4,935 farmers are planting maize. In the 2017 production season, surveys were conducted through face-to-face interviews with 294 farmers who were selected by simple random sampling among the farmers who made maize cultivation. Surveys were conducted with 95 confidence limits and 5 error margins. In the questionnaires, Likert type questions, which are widely used for measuring attitudes and perceptions, were used. [11]. Chi-square and Kruskal Wallis tests were done in SPSS for statistical evaluation of the results. The chi-square test is a non-parametric test and it is commonly used to examine whether there is a statistically significant relationship between two or more categorical groups [12]. The Kruskal-Wallis test is a nonparametric test and is used to investigate whether more than two variables come from the same distribution. At the end of the test, when the difference between the groups appears, that can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable, from which groups [13].

III. Results and Discussions

In the field study, frequency charts were formed for descriptive information of farmers who was participating in the research. In this way, it is aimed to determine the profile of the participants. The youngest of the participants were 19 years old and the oldest was 75 years old. Their average age is 43.41 years. The vast majority of farmers participating in the survey are married by 93.2% and match the pre-study expectations due to the nature of the research area. The household is a community of a person or a group of people who live in the same house or part of the same house, eat in the same house, do not divide their income and expenses and participate in household service and management. The average number of households was 14, which is above expectations. This situation is explained because of the need for labor in corn, especially in irrigation periods. Family structure in the rural area is large, and generally all family members due to economic and social structure, even if they are not the same household, grandfather, grandmother, mother, father, son, bride and grandchildren live together, their livelihood is provided from a single source. Educational status of participants is given in Table 2. Accordingly, 66.4% of the farmers were educated in primary school and lower education.

The minimum amount of land in the agricultural production is 1.5 hectares, the maximum amount of land is 250 hectares, the average amount of land is 27.8 hectares and their frequency distributions are given in Table 3. The distribution of land ownership status of farmers is given in Table 4. The 91,8% of farmers are farming in their own property and in a joint family business. This ratio also confirms the reason for the high average household size. The average income of farmers from agricultural production is 131,476 TL/year, the minimum income is 7,000 TL and the maximum income is 1,100,00 TL. The average income per hectare has been calculated as 4,720 TL. One USD was 3.65 TL (Turkish Liras) at 2017 [14]. The average of the farmers' annual experience in maize production was determined as 8.51 years. The most inexperienced farmers have been producing maize for 2 years and the most experienced for 20 years. The frequency distributions of the reasons for farmers' maize production are given in Table 5. Accordingly, farmers prefer to produce maize mostly as the second product by 67.3%. Farmers sow the corn as the second crop and most in June, that is, immediately after the harvest of the first crop. Farmers use the most family workmanship in maize production with 61%. Again, this result confirms the average size of the household. Labor distributions are given in Table 6. About 70% of the farmers use the varieties and choose the most suitable for them. Farmers who produce maize use irrigation water mostly from groundwater wells. Different irrigation systems in agricultural production are effective on yield. On the other hand, the rate of using pressurized irrigation is above both country and region averages, and is unexpectedly high by 42.9%. This situation can be explained by irrigation source. Farmers are more aware of the adequacy of irrigation and generally decide on the adequacy of irrigation by watering based time and controlling the water.

Table 7 presents the distribution of responses to the question asked to determine the technical support needs of farmers during their agricultural activities. Accordingly, the vast majority of farmers need technical support during agricultural activities. This factor was taken as a dependent variable in order to find out the answer to the question of who and what variables are most needed for this technical support. Age, experience, quantity of land, household, income, ownership and education were taken as independent variables. Chi-square and Kruskal-Wallis analyzes were used as hypothesis tests. Analysis results are given in Table 8. According to

the results, in terms of the land variable, a significant difference was determined between the sub-groups of the land amount variable at the significance level of 0.05. In terms of rank average, the group with the most need for support is 30.1 and more hectares of land, whereas the group with the least need is, participants with 1-10 hectares of land. This result is statistically significant and p <5% level. When the table is evaluated in terms of income variable; A significant difference was found between the subscales of the income level variable at 0.05 significance level. In terms of rank averages, those who need support most are participants with 301,000 and above income, while those with the least need are; Participants with 100,001-200,000 income level. This result is statistically significant at level of p <5%. There marginally statistically importance at age variable, too. According to the results of Table 8, there was no significant difference between the experience, household, ownership and education variables and the need for technical support in agricultural subjects at 0.05 significance level.

After that, they were asked who they provided this technical support. According to the results, 61% of farmers receive technical support from marketing companies. This source of support is controversial. Because it is possible for the companies to market their own products, marketing the goods and services that do not meet the needs of the farmer or the individual needs. One of the most striking results is the technical support from the public by 5.4%. This situation has two consequences. Either farmers cannot access public support services, or they do not have sufficient trust the technical support they receive from the public. In both conditions it is undesirable. The rate of solving the problems of these technical supports is yes by 46%, sometimes, 41% and no ,13%. Farmers were asked to determine their willingness to pay of view to the extension and consultancy services. According to the answers received, farmers are expected to pay 57% to an extension and consultancy service that will benefit them and increase their income.

IV. Tables

Table 1. Sanliurfa Province Maize Production Values

Year	Maize Type	Cultivated area (ha)	Production (tons)	Yield (kg/ha)
2012	Grain	84.342	608.991	7,220
	Silage	4.074	121.879	29,920
2013	Grain	95.915	732.125	7,630
	Silage	4.432	205.635	46,390
2014	Grain	80.946	581.560	7,240
	Silage	8.347	386.086	46,250
2015	Grain	84.467	687.598	8,140
	Silage	7.093	336.996	47,510
2016	Grain	68.106	547.715	8,040
	Silage	7.915	349.944	44,210

Table 2. The education level of the participants

Education Level	Frequency (n)	Percentage (%)
Literate	20	6,7
Primary school	176	59,9
Secondary school	38	12,9
High school	42	14,4
University	18	6,1
Total	294	100
Mean: 2.54; Standard Deviation: 1,018		

Table 3. The amount of land of the farmers

Land amount (hectare)	Frequency (n)	Percentage (%)
1-10	116	39,5
10.1-20	87	29,6
20.1-30	32	10,9
30.1 and more	59	20,1
Total	294	100,0
Mean: 2,12; Standard Deviation: 1,139		

Table 4. Land ownership status of farmers

Property status	Frequency (n)	Percentage (%)
Own property	180	61,2
Partnership	11	3,7
Common family business	90	30,6
Renter	13	4,4
Total	294	100,0
Mean: 1,78; Standard Deviation: 1,025		

Table 5. Why farmers do maize production

Why maize is produced	Frequency (n)	Percentage (%)
Due to agricultural support payment	11	3,7
Workmanship is less than the others	62	21,1
Short-term 2nd product	198	67,3
Other farmers in the vicinity have also sown for maize	2	0,7
More profitable than other products	21	7,1
Total	294	100
Mean: 2,86; Standard Deviation: 0,798		

Table 6. Labor resources used in maize production

Labor resources used in production	Frequency (n)	Percentage (%)
Family (household)	178	60,5
Seasonal worker	83	28,2
Daily worker	10	3,4
Foreign worker	23	7,8
Total	294	100,0
Mean: 1,59; Standard Deviation: 0,885		

Table 7. Need for technical support during agricultural activities

Does he need technical support?	Frequency (n)	Percentage (%)
No	24	8,2
Some times	39	13,3
Yes	231	78,6
Total	294	100,0
Mean: 1,70; Standard Deviation: 0,611		

Table 8. Hypothesis testing of the need for technical support on agricultural issues

Groups		N	Mean Value
Age	18-29	28	116,64
	30-39	90	151,40
	40-49	76	146,73
	50-59	63	154,07
	60 and above	37	151,76
Experience	1-5	84	151,04
	6-10	159	147,95
	11-15	37	134,61
	16 and above	14	155,21
Land Amount	1-10	116	134,74
	10.1-20	87	147,45
	20.1-30	32	162,13
	30.1 and above	59	164,74
Household	1-9	130	145,98
	10-19	106	146,44
	20 and above	58	152,85

Income (TL/year)	1-100000	214	143,88
	100001-200000	31	131,39
	200001-300000	18	171,50
	301000 and above	31	174,65
Ownership	Own property	180	153,13
	Partnership	11	124,18
	Common family business	90	139,40
	Renter	13	145,42
Education	Literate	19	139,79
	Primary school	176	153,25
	Secondary school	38	137,08
	High school	42	136,32
	University	18	139,39

Test Statistics

	Age	Experience	Land Amount	Household	Income	Ownership	Education
Chi square	8,502	2,179	11,692	0,563	11,905	4,766	4,729
Df	4	3	3	2	3	3	4
p value	0,075**	0,536	0,009*	0,755	0,008*	0,190	0,316

V. Conclusion

The increase or decrease of maize production areas is directly related to demand. On the other hand, the most important factors affecting the supply due to demand are profitability as a result of production, in other words, prices. Input prices and sales prices are directly related to the increase or decrease of cultivation areas. On the other hand, livestock activities can be determinant on maize production areas and quantities. Silage production is another reason for increasing the cultivation areas of maize plant which is used in many different directions. Maize is preferred due to the high efficiency of the unit area, the suitability for the silage production and the high nutritional value in the animal feed. According to the results of the study, those who have 30 hectares and above of land need more technical supports. As the amount of land decreases, the demand for technical support decreases, too. As producers' income levels increase, the need for technical support in agricultural issues is also increasing, too. Producers with low income have little need for support due to less land level. When the need for technical support is examined in relation to age, experience, households, ownership and education, it is revealed that it is related to land, income and age. Willingness to pay for a consultancy service which will be useful and increase their incomes is related to experience. Those with less experience are more likely to have willingness to pay to counseling. As the experience increases, the willingness to pay decreases, too. While primary school graduates have more pay fees to consultancy, university graduates have little pay. On the other hand, as the amount of land increases, willingness to pay is increasing, too. This results are excepted before the research. This research is one of the first of its type for GAP-Şanlıurfa, Turkey and results will be helpful for decision and policy makers.

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