

Selin Tuba VAROĞLU^{1a*}

Şule TURHAN^{1b}

¹Bursa Uludağ University, Faculty of
Agriculture, Department of
Agricultural Economics

^{1a}ORCID: 0000-0003-1791-1559

^{1b}ORCID: 0000-0001-9155-8170

*Sorumlu yazar:

sbudak@uludag.edu.tr

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Current Status of Agricultural Producers in Iğdır Province

Abstract

The purpose of this study is to determine the current status of producers engaged in agricultural production in Iğdır Province. For this purpose, face-to-face interviews were made with 369 producers selected according to the proportional sample size method. 46 of the producers are women and 323 of them are men. The highest rate of age is between the ages of 41-50 with 35%. Secondary education has the highest share with 46.3% when educational status is examined. Secondary education has the highest share with 46.3% when educational status is examined. The most important goal of the producers in agricultural production has been to achieve the highest profit. Their most insignificant purpose is to try to set an example for the farmers around them. Farmers are aware that they need to protect nature in order to be able to farm in the future. It is seen that the protection of nature for farmers is important in terms of sustainability in agricultural production. Cooperatives should be supported in order to overcome the problems of producers who produce with small capacity in the region. The producers who have understood the importance of the environment should be given technical support and training activities should be intensified.

INTRODUCTION

Agricultural production refers to the production of plant, animal, aquaculture, microorganism and energy using agricultural inputs together with soil, water and biological resources. Agriculture is an indispensable sector in our economy due to reasons such as feeding the population of the country, contributing to the national income and employment, meeting the raw material needs of the industrial sector, transferring capital to the industry, contributing directly and indirectly to exports. Despite the unfavorable conditions in the agricultural sector in Turkey it has a great potential in the development process of the country and are contributing through various channels. The sector employs a significant amount of the country's population, produce essential foodstuffs for the nation's population, providing input to the industrial sector, creates demand for industrial products, contributes to exports through tradable products, It forms a significant part of national income and supports industrial accumulation through relative prices (Yıldız, 2015).

Located on the eastern border of Turkey's Iğdır and shares its borders with three countries is made as intensive agriculture and livestock activities in the province of the agricultural sector provides livelihood in this way. According to TURKSTAT data, the total agricultural area in Iğdır is 970508 decares in 2019 (Anonymous, 2020a; 2020b). Agricultural production is carried out in 658773 decares of these areas, and 217891 decares are left fallow. Vegetable gardens are produced in 34673 decares of the total agricultural lands,

and fruit and spices are produced in 59171 decares (TUIK, 2021).

The main purpose of this research is to determine the current status of producers engaged in agricultural production in Iğdır Province. The results of the survey studies were evaluated and suggestions were made for the agriculture in the region.

MATERIAL and METHODS

Data obtained from primary and secondary sources constituted the material of the study. The data obtained from face-to-face surveys with 369 farmers in Iğdır Province constituted the primary quality data of the study. The data belongs to the 2019-2020 production period. Statistics and reports published by various institutions and organizations such as TURKSTAT, Ministry of Development, TOM, FAO, IISD, articles, papers and theses published in and abroad are secondary sources of the research. Data and reports obtained from the Ministry of Agriculture and Forestry and the Provincial and District Directorates in the study area were also used.

The main mass of the research consists of agricultural producers in Iğdır Province. The Farmer Registration System data was used to determine the number of producers to be surveyed. The number of farmers interviewed was determined according to the proportional sample size formula. (Newbold, 1995; Miran, 2003). In the study, $p: 0.50$ and $(1-p): 0.50$ were taken. There are 947 farmers registered with TURKVET and 6916 registered with ÇKS in Iğdır Province. By using 90% confidence interval and 5% margin of error, the number of producers to be surveyed was found to be 369.

$$n: \frac{Np(1-p)}{(N-1)\sigma^2_{px} + p(1-p)}$$

σ^2_{px} : Variance of the Ratio

n: Sample volume

N: Main Mass

p:Ratio

The data obtained from the questionnaires with the farmers were coded and entered into the computer, and

percentage evaluations were made using the SPSS program (Field, 2009; George and Mallery, 2010; Kayri, 2009; Pallant 2010).

The charts prepared in this way were interpreted and information was given about the demographic structure and current status of the producers.

RESULTS and DISCUSSION

The data used in the study were obtained by face to face interviews with 369 farmers. 46 of the 369 farmers participating in the study are women and 323 are men. When the education levels of 369 farmers who participated in the study are examined; 40.1% of primary education, 46.3% of secondary education; It was determined that 11.4% were undergraduate and 8% were graduate. The majority of producers participating in the study are between the ages of 31-40 (22.8%) and 51-60 years (21.1%) (Table 1). In addition, 31.5% of the producers have been producing for 10-19 years and 29.6% for 20-29 years.

In 2016, in the study conducted by Shakiru with 173 farmers in Gisagara, Musanze and Kirehe Districts of Rwanda, 32.9% of them had a farming experience of less than 10 years and 5.2% of them found a farming experience between 32-41 years. 79 of the farmers, 21.4% between 0-10 decares, 184 of them, 49.9% between 11-50 decares; It was determined that 64 of them 17.3% of them are between 51-100 decares and 42 of them are 11.4% of agricultural production in an area of 101 and above.

When the annual incomes of the producers participating in the survey are examined, it is seen that 32.2% of them have an income of 25001-50000TL, which is the middle income group (Table 1).

Table 1. Demographic characteristics of the producers

Gender	Frequency	%	Average	Standard deviation
Male	323	87.5	1,8753	0,33078
Female	46	12.5		
Age	Frequency	%	Average	Standard deviation
18-25	15	4.1	3,9322	1,21953
26-30	25	6.8		
31-40	84	22.8		
41-50	129	35.0		
51-60	78	21.1		
61-	38	10.3		
Education	Frequency	%	Average	Standard deviation
Primary education	148	40.1	1,7561	0,7373
Secondary education	171	46.3		
Undergraduate	42	11.4		
Graduate	8	2.2		
Income	Frequency	%	Average	Standard deviation
-7500 TL	47	12.7	2,7967	1,08066
7501-25000 TL	101	27.4		
25001-50000 TL	119	32.2		
50001-100000 TL	84	22.8		
100001 TL -	18	4.9		

In Table 2, the fragmentation of the land cultivated by the producers participating in the survey is given. The majority (62.1%) has between 10-19 parcels. Also, when the quality of the agricultural land used by the producers is evaluated; It has been determined that 83% of them are their own

property. In the study conducted by Aydın and Kılıç with 77 enterprises in Samsun in 2018, the average size of the land per enterprise was 84.16 decares and the size of the enterprise land was 46.08, 59.73 and 146.42 decares, respectively.

Table 2. The fragmentation of lands

Number of Parcels	%
0-9	13.1
10-19	62.1
20-29	18.6
30 ve üzeri	6.2

Considering the membership status of the 369 farmers participating in the study in any cooperative; 83.4% of the farmers are members of the Chamber of Agriculture,

28.4% of the Agricultural Credit Cooperative, 20.0% of the Cattle Breeders Association, 18.9% of the Irrigation Cooperative (Table 3).

Table 3. Membership of producers' cooperative

Cooperative	%
Chamber of Agriculture	83.4
Agricultural Credit Cooperative	28.4
Cattle Breeders Association	20.0
Irrigation Cooperative	18.9
Doesn't have any membership	6.2

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agricultural sales cooperatives with a rate of 21.21%, 59.5% of the producers participating in the study use the state irrigation canal as the source of irrigation water. 7.1% declared that they use artesian water source, and 33.4% use both sources. Only one farmer cannot irrigate his land. 91% of the producers use the release system as the irrigation method. Only 10.2% of the producers are in crop production. 89.8% of them make both vegetable and animal production. Apricot, forage crops, alfalfa, wheat, barley are among the most produced products (Table 4).

Table 4. Herbal products produced in the research field

Product	%	Product	%
Apricot	36.5	Wheat	16.0
Forage Crops	27.4	Silage Corn	12.5
Corn	24.3	Barley	12.2
Clover	19.5	Cotton	4.0

57.5% of the producers are engaged in bovine production, 28.0% of sheep and

16.0% of poultry, 15.2% of beekeeping (Table 5).

Table 5. Livestock production in research area

Product	%
Cattle	57.5
Small cattle	28.0
Poultry	16.0
Apiculture	15.2

The total is 3.5 million hectares of fallow land in Turkey (TUIK, 2021). 137 of the 369 farmers participating in the study stated that their agricultural land fallowed 332 of them stated that they did not leave their agricultural land fallow. Many factors affect the crop rotation system to be applied in a region. These;

- a. Climate of the region
- b. Soil structure of the land
- c. Irrigation possibilities
- d. Plant species that can be grown
- e. Spreading status of weeds, diseases and pests
- f. Economic conditions such as transportation, storage and marketing (İşler, 2020).

293 of the 369 farmers participating in the study stated that they made alternation in their agricultural products, in other words product changes; 76 of them declared that they did not alternate. Again, 209 of the farmers stated that they grow two crops on the same land in the same production year; 81 of them grow three crops; 79 of them stated that they only grow one crop. Fertilizers mostly used by the 369 farmers participating in the study in agricultural production; It was determined that 75.61% farm manure, 60.43% DAP, 55.56% urea, 30.89% composite 20-20, 23.04% ammonium sulphate, 21.95% compound 15-15-15 (Yıldırım (2020) As in the world, the most fertilizer consumption is seen in nitrogenous fertilizers, followed by phosphorus and potash fertilizers respectively (Sağlam 1991). Indeed Karaşahin (2014) of approximately 65% of total fertilizer consumption in Turkey report that consists of nitrogen fertilizer.

The amount of pesticide consumption increased 3.4% between the years 1983-1993 in Turkey between 1993 and 1995 rose to 18.5%. annual pesticide consumption in Turkey has increased by 270% between the years 1979-2007. This value corresponds to 9.64% annually. Pesticide consumption was 12,199 tons in 2002, 18,258 tons with an increase of 50% in 2006 and 22,681 tons in

2007 with an increase of 24.22% (Durmuşoğlu et al., 2010).

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In almost all economic activities, there is risk and uncertainty at every stage of life, as the results of previous decisions are not completely certain (Birinci and Tümer, 2006). Considering these risks and uncertainties, farmers who start agricultural production have to determine their agricultural production goals and act in line with these goals. According to economists, the most important goal of businesses is to maximize profit or minimum expenses. (Tümer, 2004; Türer, 2019). However, while aiming for profit maximization or cost minimization, many operators may give priority to increase the living standard of their family or to ensure the continuity of the business. In agricultural production, farmers may desire to achieve more than one goal at the same time (Birinci et al., 2011; Van Kooten et al., 1986; Basarir and Gillespie, 2003). İlk et al. Presented a total of seven goals to the farmers in their survey study conducted in Erzurum Province in 2011 and asked them to make paired comparisons between these goals. They calculated the weights of each of the objectives with the help of Fuzzy Paired Comparison method.

It has been determined that these farmers firstly used the aim of "reducing debts" while making agricultural production. Then

come the aims of "Meeting the needs of the family", "Protecting the land", "Ensuring maximum profit", "Transferring the business to the next generation" and "Growing the business". Farmers finally give place to the purpose of "producing with the least risk" while doing agricultural production. In the survey study, six goals were directed to the farmers in order to determine the purposes of the farmers in agricultural production (Akçaöz et al. , 2005). These;

Objective 1: I try to set an example for the farmers around me with the applications I do.

Objective 2: I am trying to grow my business further.

Objective 3: I make an effort to keep the land to my grandchildren.

Objective 4: I am trying to produce without harming the environment.

Objective 5: I'm trying to produce better quality.

Objective 6: I'm trying to get the highest profit.

Farmers were asked to list their agricultural production purposes as 1 most important and 6 least important and the results obtained are summarized in Table 6..

Table 6: Frequency distribution of farmers' purposes in agricultural production

Objectives/ Significance	1	2	3	4	5	6
Objective 1	%10.03	%6.23	%4.61	%10.03	%9.76	%59.35
Objective 2	%16.26	%21.14	%23.58	%15.99	%19.78	%3.25
Objective 3	%10.84	%16.80	%16.26	%19.51	%27.10	%9.49
Objective 4	%10.57	%13.82	%17.34	%30.08	%23.31	%4.88
Objective 5	%14.91	%27.37	%27.10	%15.18	%11.38	%4.07
Objective 6	%37.40	%14.91	%10.84	%9.21	%8.67	%18.97

* Farmers have listed their agricultural production objectives as 1 most important 6 least important.

As a result of the ranking given in Table 6, the most important purpose with 37.40% is "goal1-I try to get the highest profit.", The second important goal is "goal5- I try to produce better quality." is coming. The third important goal is "goal2- I'm trying to grow my business even more." is coming. The fourth important purpose is "goal4- I try to produce without harming the environment." is coming. Fifth, the most important goal is "goal3- I make an effort to keep the land to my grandchildren." is coming. The most insignificant aim for farmers is "goal1-I try to set an example to the farmers around me with the practices I do." is coming. These results show that making a profit is more important for farmers.

CONCLUSION and RECOMMENDATIONS

In this study conducted with Agricultural Producers in Iğdır Province, a total of 369 farmers were interviewed and general evaluations were made with the data obtained. 46 of the 369 farmers

participating in the study are women and 323 of them are men. The average age of the farmers in the research area is between the ages of 41-50 with a ratio of 35%. Their education level is secondary education with 46.3%, and their farm experience is 10-19 years with 31.4%. 83.47% of the farmers are members of the chamber of agriculture, 28.46% to the credit cooperative, 20.05% to the breeding cattle breeders union, 18.97% to the irrigation cooperative. 6.23% of them do not have any cooperative membership. 49.9% of the farmers have a land size between 11-50 decares. 62.1% of the land is between 2-5 pieces. 83.20% of the land belongs to him. The rate of those with non-agricultural income is 59.6%. The income of 32.2% of the farmers varies between 25000-50000 TL. The first goal of the enterprises in agricultural production is to obtain maximum profit. The highest cost item of farmers in a production period was diesel with 59.62%. Opened a total of 4.9 million hectares of land under irrigation in the year 2006, Turkey is irrigated by 2.9

million hectares constituting 57% of general directorate for state hydraulic works (DSI). 1.1 million hectares have been put into operation by the abolished General Directorate of Rural Services (KHGM). In addition, public irrigation is carried out on an area of approximately 1.1 million hectares. In 2030, 6.5 million hectares of the economically irrigable 8.5 million hectares of land are aimed to be put into operation by the General Directorate of DSI. It is aimed that the remaining 1.5 million hectares will be put into operation by the General Directorate of DSI. It is predicted that the remaining 1.5 million hectares will be put into operation by other public institutions and 0.5 million hectares will be irrigated within the scope of public irrigation (Çakmak et al., 2009).

7% of the farmers stated that they use the existing water source, 59.3% the state irrigation canal, and 33.3% both. Farmers mainly produce apricots, vegetable varieties, fruits, and fodder crops and breed cattle (57.45%), ovine (27.91%), poultry (15.99%) and bees (15.18%). In a production period, 56.6% of farmers grow a second crop, 22% a third crop, and 21.4% grow a crop.

Farmers use (91.06%) flood irrigation, (11.11%) sprinkler irrigation and (5.9%) drip irrigation as irrigation methods. Atılğan et al. In 2010, they conducted a study to evaluate the experiences of farmers about water use and irrigation methods used in fruit growing practices in Isparta region. According to the results of the study; It has been determined that farmers are interested in new irrigation methods, but they do not have enough information about new irrigation methods. It was concluded that pressurized irrigation methods are preferred more due to limited water resources. Özkan et al. In their 2012 study, they discussed the importance of water management in the sustainable use of water resources. The biggest duty and responsibility in the protection and sustainable use of water resources falls on those who use and manage these water resources. In this

context, the results of a study conducted on the irrigation dams and irrigation ponds in Edirne, Kırklareli, Tekirdağ and Çanakkale provinces on the basis of full count and face to face survey method were used. According to the results of the research; In the evaluations made in terms of management for the sustainable use of water, it is understood that a better management is shown in irrigation cooperatives in general. For the producers, the management skills of irrigation unions follow the cooperatives. Irrigation management shown by municipal and village legal entities is considered as the most unhealthy by the producers.

2019 According to Turkstat, Turkey's total agricultural area of 37.8 million hectares, while the total sown area of 15.5 million hectares of fallow and the total area is about 3.5 million hectare. 90% of the farmers stated that they did not leave their agricultural land fallow. 79.4% of the farmers stated that they make alternation, ie product change, in agricultural products, and also that they cannot receive support if they do not change the product.

Kılıç et al. In 2018, they conducted a study in order to reveal the environmental sensitivity of the hazelnut producers in the use of agricultural pesticides in the districts of Giresun City Center, Bulancak, Espiye, Görele, Keşap and Tirebolu. According to the results of the study; Although the producers are not at a sufficient level, it has been determined that they visit agricultural establishments and 66% of these producers use their pesticides by consulting dealers, 18% by asking the agricultural engineer who is their consultant, and 1% by consulting their neighbors. The majority of the farmers (83%) stated that the chemical pesticide residues remaining on the plants are harmful for human health, but they also stated that they do not have sufficient information. 5.4% of the farmers interviewed stated that they do not use chemical drugs. Those who use chemical pesticides stated that they followed the instructions for use (54.2%), followed the

disinfection announcements (42.55%), followed the time between pesticide and harvest (39.30%) and read the instructions for use (30.8%). Chemical drugs also have disadvantage effects such as causing environmental pollution and threatening human health by leaving residues in natural balance and products. In 2019, Yüzbaşıoğlu conducted a study on the tendencies of producers to have soil analysis in the rural of the Central District of Tokat Province. According to the results of the study; 80.68% of 88 producers do not have soil analysis done. Producers generally think that soil analysis is useful, but this research has shown that they rely on their own experience instead of having soil analysis for their own land. The most important aim of the interviewed farmers in agricultural production has been to achieve the highest profit. Their most insignificant purpose is to try to set an example for the farmers around them. Farmers are aware that they need to protect nature in order to be able to farm in the future. It is seen that the protection of nature for farmers is important in terms of sustainability in agricultural production. Farmers stated that they used animal manure (4.6287%), followed the recommendations of agriculturalists (4.4065%), followed the recommendations in the use of chemicals (4.4038%), and paid attention to the use of pastures (4.2934%). Farmers stated that they do not have regular soil analysis and do not have the right amount of irrigation at the right time. As a result of this study, it was determined that the most produced product in the region was apricot, followed by forage crops, corn and alfalfa. Cattle breeding has an important place in the region, followed by sheep and goat breeding.

Farmers in the production of agricultural products in Iğdır Province have various problems from the first stage of production during the harvesting and marketing activities and the delivery of the product to the consumer. There are developments in cooperatives in the region in order to eliminate the production and marketing

problems of the products. Only 6.2% of the producers are not members of any cooperative. In order to develop the cooperative system, meetings should be held with relevant public institutions and organizations, and studies should be carried out on the system to be made together with field investigations. In addition, it is also important for the farmers in the production of agricultural products in Iğdır to know and develop the cultivation techniques applied during the harvesting and marketing activities and the delivery of the product to the consumer from the first stage of production.

REFERENCES

- Anonymous, 2020a. <https://www.istatistik.gen.tr/p=29> (Erişim tarihi :27.09.2020)
- Anonymous, 2020b. <https://dijilopedi.com/spss-ile-veri-analizi-normal-dagilim-testleri/> (Erişim tarihi:05.09.2020)
- Akçaöz, H., Özkan, B., Kızılay, H. (2005). Farmers' Attitudes and Behaviors in Agricultural Production (FOS) Anatolia, J. Of AARI 15(2): 104-125.
- Aydın, E., Kılıç, G.O. 2018. Determining the change in the income of enterprises that have adopted good agricultural practices and the level of adequacy of good agricultural support. Mediterranean Agricultural Sciences. 31(2): 123-127.
- Basarır, A., Gillespie, M.J. 2003. Goals of beef cattle and dairy producers: A Comparison of the Fuzzy Pair Wise Method and Simple Ranking Procedure. Selected Paper Prepared for Presentation at the Southern Agricultural Economics Association Annual Meeting, Mobile, AL February 1-5.
- Birinci, A., Tümer, E.İ. 2006. The attitudes of farmers towards agricultural insurance: The Case of Erzurum, Turkey. Die Bodenkultur Austrian Journal of Agricultural Research, 56(2): 41-47.
- Birinci, A., İkikat, T.E., Miran, B. 2011. Determination of farmer goals using fuzzy paired comparison method: The Case of Erzurum Province. 21(2):32-39.

Çakmak, B., Yıldırım, M., Aküzüm, T. 2009. Irrigation management in Turkey, problems and solutions. TMMOB 2. Water Policies Congress.

Durmuşoğlu, E., Tiryaki, O., Canhilal, R. 2010. Pesticide use in Turkey ruins and durability problems. Turkey Agricultural Engineering 7. Technical Congress, 11-15 January, Ankara Proceedings Book 2, p.589-607.

Esgilli, Ü. 2019. Sosyo-Economic analysis of the adoption of sustainable agricultural production technologies by farmers. Master Thesis. Konya Food and Agriculture University.

Field, A. 2009. Discovering Statics Using SPSS (3rd Ed.). London: SAGE Publications Ltd. George, D. Mallery, M. 2010. SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update (10a ed.). Boston: Pearson.

Kayri, M. 2009. Multiple Comparison (post-hoc) Techniques to Determine the Difference Between Groups in Research . Fırat University Journal of Social Sciences, 19(1): 51-64.

Karaşahin, M. 2014. Nitrogen uptake efficiency in crop production and negative effects of reactive nitrogen on the environment. APJES II-III: 15-21.

Kılıç, B., Uzundumlu, S.A., Tozlu G. 2018. Investigation of the use of chemical drugs in hazelnut production in terms of environmental sensitivity: The Case of Giresun Province. 5(4): 396- 405.

Miran, B. 2003. Basic Statistics. Ege University Press, Bornova İzmir.

Özkan, E., Aydın, B., Hurma, H., Aktaş E. 2012. Importance of water management in sustainable use of water resources. Turkish Journal of Scientific Reviews 6(1):150-153.

Pallant, J. 2010. SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS. (2010). Open University Press.

Sağlam, M.T. 1991. Unbalanced farming system and problems caused by fertilization

in thrace region. II. National Fertilizer Congress Ankara. p. 682-689.

Tas, L. 2019. Organic beekeeping situation in Turkey. ISPEC Journal of Agricultural Sciences, 3(1): 65-72.

Türer, H. 2019. Determination of total cost, labor requirement and business success in paddy production in bafra district of samsun province. Master Thesis. Nineteen May University. Samsun.

Tümer, E.İ. 2004. A Research on agricultural insurance tendencies of farmers in Erzurum central district villages. Atatürk University Institute of Science, Master's Thesis, Erzurum.

Newbold, P. 1995. Statistics for Business and Economics. Prentice-Hall International, New Jersey

Shakıru, M. 2016. Farmer perceptions and determinants of sustainable agriculture at the farm level: A Case Study of Musanze, Kirehe and Gisagara Districts of Rwanda. Master Thesis. 19 Mayıs University Institute of Science, Department of Agricultural Economics.

Yıldırım, U. 2020. Agricultural Fertilizer Usage Analysis in Thrace Region. Master Thesis.

Yıldız, Ö. 2015. Contribution of Agricultural Extension and Producer Trends to Sustainable Agriculture in Aegean Region. Doctoral dissertation. Ege University Institute of Science, Department of Agricultural Economics.

Yüzbaşıoğlu, R. 2019. Tendency of Producers to Make Soil Analysis in Rural of the Central District of Tokat Province. Bahri Dağdaş Journal of Herbal Research. 8 (1): 163-169.

Van-Kooten, G.C., Schoney, R.A., Hayward, K.A. 1986. An Alternative Approach to the Evaluation of Goal Hierarchies among Farmers. Western Journal of Agricultural Economics, 11(1): 40-49.

TUIK, 2021. www.tuik.gov.tr (Erişim tarihi: 02.01.2021)