Economic performance of agricultural enterprises in Turkey: case study of Konya Province

Reception of originals: 01/29/2024
Release for publication: 01/27/2025

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Abstract

The purpose of this study is to compare the economic performance of mixed farming enterprises in Konya, based on the cost and profitability analyses of their plant and animal production activities. The main material of the study was face-to-face survey data collected from 268 mixed farming enterprises in Konya. The "Neyman Method" was used from stratified sampling methods to select the enterprises. As a result of the study; the average gross production value of the enterprises is $72,481.38, with an amount per hectare of $282.18. The average total production cost of the enterprises is $22,893.01. In plant production, the highest expense item with a share of 33.28% is fertilizer, while in animal production, it is feed costs with 86.14%. The average gross profit of the enterprises is $39,329.44 while the average agricultural income is $29,936.96. As a result of the study, it is seen that enterprises with a larger scale in terms of gross production value, gross profit and agricultural income are more economically successful compared to smaller ones. This result is a sign that larger enterprises are more competitive and more successful in terms of enterprise organization.

Keywords: Agricultural enterprises. Mixed production. Economic performance.

1. Introduction

Agriculture is a sector that does not lose its importance due to both meeting the demand for food items which is a necessity for humankind and contributing to the general economies of countries. Agriculture plays a key role in economic development and in

reducing poverty worldwide (Fusco et al., 2021). In the current century, especially during the pandemic, the economic importance of the agricultural sector has once again been revealed due to increased competition and market conditions. These conditions have reemphasized the strategic importance of the agricultural sector while making it necessary to revise the current status and development trends of the sector. Additionally, its contribution to the country's foreign trade and the employment it creates are also recognized (Erkuş et al., 1995, Kılıçalp et al., 2001).

In the Turkish economy, although its relative importance has decreased, agriculture and its sub-sector animal husbandry have vital importance for our country in terms of ensuring healthy and balanced nutrition for society, developing industries dependent on animal husbandry, creating employment with the most efficient and effective investments in the short term, supporting family economics, developing priority regions for development, improving profitability in agriculture, and ensuring the balance of foreign trade (Bayramoğlu, 2003).

Konya is one of Turkey's most significant centers for agricultural production, trade, and employment. With a well-developed agro-industry and unique climatic conditions, Konya stands out as one of the provinces with the highest agricultural potential. It has the largest land area in Turkey, with 1,859,079 hectares dedicated to agriculture, accounting for 8.04% of the country's total agricultural land. According to data from the Turkish Statistical Institute (TSI), 1,473,258 hectares of this land were used for cereals and other field crops, 30,881 hectares for vegetables, 47,598 hectares for fruits, and 84 hectares for ornamental plants, while 331,608 hectares were left fallow. Based on data from TSI, Konya maintained its leadership in cattle farming in 2020, hosting 5% of Turkey's total cattle population. The number of cattle in Konya increased by 2% compared to 2019, reaching 946,144 heads. Erzurum (869,009 heads) and İzmir (785,608 heads) followed Konya in this regard. Konya also plays a critical role in sheep and goat farming, ranking second in Turkey with 2,843,229 heads in 2020, accounting for 5% of the country's total small ruminant population (Anonymous, 2024).

The aim of this study is to compare the economic performance of agricultural enterprises in Konya, which has an important place in agricultural production in Turkey, in terms of cost and profitability analysis of plant and animal production activities, according to the size of the enterprise.

2. Literature Review

One of the main topics of the agricultural economy is measuring the economic performance of agricultural enterprises. Various economic indicators and financial ratios are used to measure the economic performance of agricultural enterprises. There are various sources on the calculation methods of these economic indicators and financial ratios. In the calculations made within the scope of this study, studies that generally prepared to measure the economic performance of agricultural enterprises were utilized (Açıl and Demirci, 1984, Erkuş et al., 1995, Karagölge, 1996, İnan, 1999, Acar, 2003, Anonymous, 2011, Çetin, 2013, Çelik, 2014, Oğuz and Bayramoğlu, 2015, Koç and Uzmay, 2019, Örs and Oğuz, 2019, Cardone et al., 2021).

There are various studies on the economic analysis of agricultural enterprises in Turkey, which provide valuable insights into the productivity and efficiency levels in the sector. Kizilaslan and Adiguzel (2009) categorized agricultural enterprises in the Turhal district of Tokat province according to their success levels, identified their structural characteristics, and evaluated their performance outcomes. This study explored how the performance of agricultural enterprises varies according to different success criteria and examined the impact of local enterprise diversity on economic success. Similarly, Aydın and Unakıtan (2018) conducted an extensive study to determine the technical, allocative, and economic efficiency levels of agricultural enterprises in the Thrace Region. The study aimed to compare the efficiency performance of enterprises of various sizes and understand the factors affecting economic efficiency. Baser and Bozoglu (2021) used partial budgeting analysis to examine the impact of farm size on cost and economic performance in beef production, based on data from 155 farms in Samsun province. This study emphasized the potential effects of farm size on reducing production costs and increasing profitability. Gül et al. (2023) aimed to estimate the technical, economic, and allocative efficiency levels of tobacco-producing enterprises in Uşak province, using Data Envelopment Analysis (DEA) with data from 71 enterprises. This analysis provided important results on which strategic changes could be made to improve productivity in tobacco production. These types of studies lay an important foundation for identifying the necessary policies to improve the efficiency of agricultural enterprises in Turkey and contribute to the economic sustainability of the agricultural sector.

Evaluation of the Economic Performance of Agricultural Enterprises in Konya, a research area where various studies have been carried out to evaluate the economic performance of agricultural enterprises, has been carried out. In their study, Oğuz and Yener

(2017) conducted a survey using face-to-face interviews with 125 dairy farms and calculated the active and passive capital, operating costs, gross production values, profitability, and unit milk cost. Gunes and Guldal (2019) carried out a data envelopment analysis and efficiency analysis based on the agricultural income of 550 farms in 5 provinces, including Konya. Düğmeci and Çelik (2020) carried out a study in the Çumra district of Konya province with the participation of 62 agricultural enterprises producing safflower oil and calculated operating costs, profitability, and unit cost. Oguz and Diyanah (2021) analyzed the factors that influence the choice of insurance for 66 agricultural enterprises in Konya, taking into account the socio-economic characteristics of the enterprises. Örs et al. (2022) carried out an economic analysis using data collected through surveys from 148 dairy cattle farms and compared these economic analysis results with simulated new results in the case of using a robotic milking system. Agızan et al. (2023) aimed to analyze the efficiency of wheat production activities in Konya province and identify the factors affecting economic efficiency. The data obtained from 165 wheat producers in 2022 were evaluated using Data Envelopment Analysis (DEA). Oğuz et al. (2024) conducted a survey with 151 farms in Konya to analyze the level of knowledge of sheep farmers regarding climate change and the factors influencing it. In this study, they calculated the economic performance of these farms and used the results of these calculations in their analyses along with other factors.

3. Materials And Methods

3.1. Materials

The data used in the study is collected from both primary and secondary sources. The primary data source for this study is the face-to-face survey data obtained from 268 agricultural business owners. The agricultural enterprises operating in the Akşehir, Altınekin, Beyşehir, Bozkır, Cihanbeyli, Çumra, Ereğli, Hadim, Ilgın, Karapınar, Karatay, Kulu, Seydişehir and Yunak districts of Konya province were determined as the main population of the study. The survey data covers the period of October-November 2020. The average exchange rate during these dates is calculated to be 1$=7.92 Turkish Liras.

3.2. Methods

3.2.1. The method used in sampling

The research area has been selected as Konya province. The selection of 14 districts of Konya province was based on data obtained from the Agricultural and Forestry Provincial Directorate, Agricultural and Forestry District Directorates, and other public institutions. Criteria such as applied agricultural techniques, utilized technologies and transportation conditions were considered. These districts are Akşehir, Altınekin, Beyşehir, Bozkır, Cihanbeyli, Çumra, Ereğli, Hadim, Ilgın, Karapınar, Karatay, Kulu, Seydişehir, and Yunak. It was considered that these districts in the Konya region possess the property of representing the research area homogeneously. Primary data was collected by filling out questionnaires with face-to-face interviews with agricultural enterprise owners.

The sample size of the research was calculated using the Neyman Method, one of the stratified sampling methods. The principle of the Neyman Method is to determine a single sample size for the whole by taking into account the average and variance weights of each stratum. If there are significant differences in variation and volume among the selected strata, using the Neyman Method increases the efficiency of the sampling. The sample size was calculated using the formula below (Yamane, 1967).

$$n = \frac{[\sum(N_h S_h)]^2}{N^2 D^2 + \sum[N_h (S_h)^2]} \quad (1)$$

In the formula; n = sample volume, N = total unit number belonging to the sampling frame, D = d / t, d = derivation from the average and t = standard normal distribution value.

The sample size taken from the sampling frame was determined within a %5 error and %99 confidence limits, and the following formula was used to distribute the sample numbers to the strata (Yamane, 1967).

$$n_i = \frac{(N_h S_h) n}{\sum N_h S_h} \quad (2)$$

The distribution and number of agricultural enterprises located in the research area according to their size groups were determined and given in Table 1.

Table 1: Number of sample enterprises by size groups

Enterprise size groups (da)	Nh	Sh	Average	CV	Nh*Sh	Nh*(Sh)2	n
15-50	18.888	9,94	32	31,05	187.654,98	1.864.379	18
51-150	28.873	28,47	91,56	31,09	821.892,08	23.395.788	78
151-500	18.900	81,42	247,08	32,95	1.538.797,84	125.285.651	145

501-+	1.477	195,27	605,56	32,25	288.409,85	56.317.021	27
Total	68.138				2.836.754,75	206.862.839	**268**

The distribution of the number of farms to be surveyed was random in terms of districts. For this, the "k_i" value (randomness coefficient) was determined for each stratum. This coefficient was calculated as follows for each stratum.

$$k_i = \frac{N}{n_i} \quad (3)$$

According to this, the distribution of the number of surveyed enterprises in each district and layer was determined by dividing the number of enterprises in each district by the "k_i" value of the layers (enterprise number/k_i) (Table 2).

Table 2: Distribution of samples by districts and strata

Districts	Total enterprise number	15-50	51-150	151-500	501-+
Ereğli	6813	2	8	14	3
Karapınar	6498	2	7	14	3
Çumra	6330	2	7	13	2
Hadim	1279	0	1	3	1
Bozkır	1268	0	1	3	1
Seydişehir	2609	1	3	6	1
Beyşehir	3597	1	4	8	1
Yunak	5739	2	7	12	2
Akşehir	4347	1	5	9	2
Ilgın	5398	1	6	11	2
Altınekin	3601	1	4	8	1
Kulu	5937	2	7	13	2
Cihanbeyli	7662	2	9	16	3
Karatay	7060	2	8	15	3
Total	**68138**	**18**	**78**	**145**	**27**

In Table 1, the number of enterprise groups was determined based on the total land sizes of the enterprises. A total of 268 enterprises were surveyed, including 18 enterprises with land sizes between 15-50 da, 78 enterprises with land sizes between 51-150 da, 145 enterprises with land sizes between 151-500 da, and 27 enterprises with land sizes of 500 da or more.

3.2.2. The method used in the economic analysis of agricultural enterprises

The gross production value (GPV) in agricultural enterprises is calculated by multiplying the amount of plant and animal production obtained as a result of agricultural

activity by the product prices received by the farmer and adding the productive value increases in the plant and animal capital (Açıl and Demirci, 1984). The by-products such as hay and fertilizer produced by the enterprise are not included in the GPV as they do not recur (Erkuş and Demirci, 1995).

The increase in productive stock value (PSV) is calculated by taking into account factors such as animal purchase, consumption, changes due to animal movements, birth, and death in the animal production units in agricultural enterprises (Açıl and Demirci, 1984). The following formula is used for this purpose (Kıral et al., 1999, Oğuz and Bayramoğlu, 2015, Örs and Oğuz, 2019).

PSV = (year-end stock value + value of the sold stock + value of dead animals + value of the stock slaughtered) – (value of the stock at the beginning of year + value of the stock bought)

Total operating costs for agricultural activities in the enterprises are composed of fixed and variable expenses. Plant production and animal production costs are calculated separately (Table 3).

Table 3: Fixed and variable costs for plant and animal production

	Variable Costs	Fixed Costs
Plant Production	▪ Seed costs, ▪ Fertilizer costs, ▪ Agricultural pest control costs, ▪ Variable machine-equipment costs (fuel, oil, repairs and maintenance), ▪ Costs of outsourced jobs, ▪ Temporary labor costs, ▪ Water and electricity fees, ▪ Product insurance, ▪ Marketing and transportation costs	▪ Management expenses, ▪ Permanent labor costs (family and foreign labor), ▪ Depreciation expenses (buildings and machinery-equipment), ▪ Building repair and maintenance costs

Livestock Production	▪ Feed concentrates cost, ▪ Roughage feeds (purchased), ▪ Temporary labor costs, ▪ Veterinary costs, ▪ Medicine costs, ▪ Cleaning and material costs (halters, chains, salt, etc.), ▪ Artificial insemination and vaccination costs, ▪ Marketing costs, ▪ Livestock insurance, ▪ Other current expenses.	▪ Management expenses, ▪ Permanent labor costs (family and foreign labor), ▪ Depreciation expenses (buildings, cows and machinery-equipment), ▪ Building repair and maintenance costs.

(Source: Erkuş et al. (1995))

Gross profit is determined by subtracting total variable costs from gross production value, and gross profit is determined by subtracting total operating costs from the gross product (Açıl and Demirci, 1984). Agricultural income is one of the most important criteria used to measure the success level of the farmer. Agricultural income is determined by adding the family labor wages to the pure revenue and then subtracting the land rent and partnership shares, as well as loan interest payments (Erkuş et al., 1995).

4. Results

4.1. Economic performances of agricultural enterprises

The GPV can be calculated by first determining the plant production value (Table 4). The average plant production value per farm is $55,152.66. This value is composed of 21.36% corn, 19.49% sugar beet, and 16.60% wheat, followed by cherry, barley, sunflower, silage corn, millet, hemp seed, and dry beans production values. The plant production values show differences among the farm groups. The average plant production value in the first

group of farms is $4,699.55, in the second group $17,163.53, in the third group $56,569.82, and in the fourth group $191,884.89.

Table 4: Plant production values ($) and rates (%)

	15-50		51-150		151-500		501-+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Grain corn	1.117,49	23,78	3.987,27	23,23	13.735,06	24,28	30.929,67	16,12	11.782,86	21,36
Sugar beet	928,03	19,75	2.113,77	12,32	13.576,48	24,00	27.066,50	14,11	10.749,86	19,49
Wheat	1.485,73	31,61	3.361,63	19,59	9.931,15	17,56	26.861,31	14,00	9.157,55	16,60
Cherry	0,00	-	825,56	4,81	2.039,36	3,61	70.145,90	36,56	8.410,60	15,25
Barley	851,57	18,12	2.406,53	14,02	4.014,04	7,10	9.582,72	4,99	3.894,80	7,06
Oilseed sunflower	173,64	3,69	1.926,44	11,22	4.414,98	7,80	7.059,79	3,68	3.672,30	6,66
Corn for silage	0,00	-	722,45	4,21	2.049,24	3,62	2.291,43	1,19	1.549,85	2,81
Clover	26,66	0,57	277,13	1,61	1.097,88	1,94	5.763,19	3,00	1.257,07	2,28
Poppy seeds	0,00	-	19,43	0,11	1.122,21	1,98	2.296,11	1,20	844,14	1,53
Sunflower	0,00	-	281,51	1,64	850,16	1,50	1.752,48	0,91	718,46	1,30
Haricot bean	0,00	-	228,89	1,33	696,03	1,23	2.020,20	1,05	646,73	1,17
Others	116,44	2,48	1.012,93	5,90	3.043,23	5,38	6.115,60	3,19	2.468,45	4,48
Total	4.699,55	100,00	17.163,53	100,00	56.569,82	100,00	191.884,89	100,00	55.152,66	100,00

Another component of GPV is the value of animal production. The value of animal production was calculated using the production values of milk, meat, PSV, and farm fertilizer (Table 5). The average animal production value per farm is $17,328.72. This value is made up of 83.10% milk, 10.88% PDKA, 3.28% farm fertilizer, and 2.74% meat production. The value of animal production differs among farming enterprises based on the enterprise group. The value of animal production in enterprises in the first group is $1,660.42, in the second group $8,136.38, in the third group $13,947.33, and in the fourth group $45,570.74.

Table 5: Animal production values ($) and rates (%)

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Milk Production Value	1.433,78	86,35	6.857,75	84,28	11.577,88	83,01	37.734,26	82,80	14.400,92	83,10
Meat Production Value	0,00	0,00	225,82	2,78	508,97	3,65	1.162,08	2,55	474,22	2,74
PSV	186,39	11,23	892,83	10,97	1.512,00	10,84	4.952,56	10,87	1.885,95	10,88
Farm Fertilizer Value	40,25	2,42	159,99	1,97	348,49	2,50	1.721,84	3,78	567,64	3,28
Total	1.660,42	100,00	8.136,38	100,00	13.947,33	100,00	45.570,74	100,00	17.328,72	100,00

The GPV was calculated by summing up the animal production value and the plant production value (Table 6). The average GPV for all enterprises is $72,481.38, with an

average GPV per hectare of $282.18. In all enterprises, the predominant production is plant production, with 76.09% plant and 23.91% animal production, on average. In terms of groups, the highest GPV per hectare is seen in groups 4 and 2, followed by groups 3 and 1.

Table 6: Gross production value (GPV) ($) and rates (%)

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Plant Production Value	4.699,55	73,89	17.163,53	67,84	56.569,82	80,22	191.884,89	80,81	55.152,66	76,09
Animal Production Value	1.660,42	26,11	8.136,39	32,16	13.947,34	19,78	45.570,75	19,19	17.328,72	23,91
Total GPV	6.359,97	100,00	25.299,92	100,00	70.517,16	100,00	237.455,63	100,00	72.481,38	100,00
Per decares	189,06		264,17		259,65		299,85		282,18	

The variable costs in the analyzed farming enterprises are divided into two main categories, plant production variable costs and animal production variable costs. The variable costs of plant production in the analyzed enterprises are presented in Table 7. Upon examination of Table 7, the cost item with the highest share in the variable costs is fertilizers at 33.28%. This is followed by irrigation (23.82%), fuel (14.07%), harvest (10.82%), and seeds (9.91%). The average of the variable costs of plant production is $21,256.65 and the average cost per hectare is $82.76. It can be seen from Table 7 that the average cost per hectare decreases as the scale of the enterprise increases.

Table 7: Plant production variable costs ($) and rates (%)

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Seed	371,69	11,60	914,23	10,75	2.293,81	10,02	5.704,19	9,31	2.106,77	9,91
Fertilizier	1.031,34	32,20	2.469,52	29,04	7.664,52	33,47	21.232,82	34,64	7.073,99	33,28
Pesticide	128,16	4,00	400,32	4,71	792,56	3,46	1.297,00	2,12	684,59	3,22
Irrigation	670,35	20,93	1.980,57	23,29	5.420,50	23,67	14.979,72	24,44	5.063,34	23,82
Labor	89,95	2,81	260,72	3,07	705,47	3,08	1.948,12	3,18	659,88	3,10
Fuel	441,74	13,79	1.194,96	14,05	3.129,03	13,66	9.139,57	14,91	2.991,18	14,07
Harvest	305,84	9,55	1.080,07	12,70	2.497,36	10,90	6.092,09	9,94	2.299,83	10,82
Transport	164,18	5,13	204,54	2,40	398,69	1,74	901,25	1,47	377,06	1,77
Total	3.203,24	100,00	8.504,93	100,00	22.901,93	100,00	61.294,77	100,00	21.256,65	100,00
Per decares	95,22		88,80		84,32		77,40		82,76	

The variable costs of animal production in the analyzed farming enterprises are given in Table 8. The average variable costs of animal production in the analyzed farming enterprises have been calculated as 11,895.30$. Feed costs account for the largest share of

variable costs in animal production. The proportion of feed costs in variable costs in animal production is 86.14% in total, 58.24% for concentrated feed and 27.90% for roughage. When the distribution of variable costs in animal production is looked at according to the groups of enterprises, the variable production costs per enterprise in the first group were calculated as $999.48, in the second group as $6,329.63, in the third group as $13,128.97, and in the fourth group as $28,612.52

Table 8: Animal production variable costs ($) and rates (%)

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Concentrate Feed	861,78	86,22	3.542,34	55,96	7.691,24	58,58	16.652,02	58,20	6.927,79	58,24
Roughage	91,40	9,15	1.742,46	27,53	3.578,56	27,26	8.629,07	30,16	3.318,78	27,90
Water-Salt-Vitamin	0,00	0,00	822,14	12,99	1.382,58	10,53	2.239,26	7,83	1.212,91	10,20
Electricity-Heating	4,21	0,42	35,56	0,56	123,15	0,94	413,39	1,44	118,91	1,00
Veterinary-Pharmaceutical-Vaccination	36,48	3,65	120,27	1,90	250,83	1,91	539,66	1,89	227,53	1,91
Artificial Insemination	5,61	0,56	26,39	0,42	59,47	0,45	135,62	0,47	53,90	0,45
Animal Insurance	0,00	0,00	40,47	0,64	43,15	0,33	3,51	0,01	35,48	0,30
Casual laborer	0,00	0,00	6,48	0,10	0,00	0,00	0,00	0,00	1,88	0,02
Total	999,48	100,00	6.329,63	100,00	13.128,97	100,00	28.612,52	100,00	11.895,30	100,00

The total changing costs have been calculated by adding the changing costs in plant production and the changing costs in animal production (Table 9). The average of the total changing costs for enterprises is $33,151.95. When looking at the distribution of total changing costs, 64.12% is in plant production and 35.38% is in animal production.

Table 9: Total of the variables costs ($) and relevant rates (%)

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Plant Production Variable Costs	3.203,24	76,22	8.504,93	57,33	22.901,93	63,56	61.294,77	68,18	21.256,65	64,12
Animal Production Variable Costs	999,48	23,78	6.329,63	42,67	13.128,97	36,44	28.612,52	31,82	11.895,30	35,88
Total Variable Costs	4.202,72	100,00	14.834,56	100,00	36.030,90	100,00	89.907,29	100,00	33.151,95	100,00

Fixed costs are presented by enterprise groups in Table 10. The total average fixed cost for enterprises is $10,997.71. When the results of the enterprise groups are analyzed, it is seen that as the enterprise scale grows, fixed costs also increase in proportion. The top three

fixed cost items in enterprises are 59.07% depreciation, 32.24% family labor force, and 8.26% building repair and maintenance costs. Family labor is primarily used in enterprises and the contribution of foreign labor to fixed costs is a very low percentage, 0.44.

Table 10: Total fixed cost ($) and relevant rates (%)

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Depreciation Costs	1.868,27	56,35	3.335,54	50,15	7.033,70	58,38	15.822,48	68,70	6.495,87	59,07
Building Repair-Maintenance Costs	453,32	13,67	701,93	10,55	962,47	7,99	1.514,57	6,58	908,07	8,26
Permanent Labor Force	0,00	0,00	0,00	0,00	88,82	0,74	0,00	0,00	48,06	0,44
Family Labor Force	993,97	29,98	2.613,36	39,29	3.963,79	32,90	5.695,15	24,73	3.545,72	32,24
Total	3.315,55	100,00	6.650,83	100,00	12.048,78	100,00	23.032,20	100,00	10.997,71	100,00

Production costs are presented by enterprise groups in Table 11. The total average production cost for enterprises is $22,893.01. While 51.96% of the total production costs are variable costs, 48.04% are fixed costs. When Table 11 is examined, it is observed that the share of fixed costs in total production cost decreases as the scale of the enterprise increases.

Table 11: Total production costs ($) and relevant rates

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
Variables Costs	4.202,72	55,90	14.834,56	69,04	36.030,90	74,94	89.907,29	79,61	11.895,30	51,96
Fixed Costs	3.315,55	44,10	6.650,83	30,96	12.048,78	25,06	23.032,20	20,39	10.997,71	48,04
Total Production Costs	7.518,27	100,00	21.485,39	100,00	48.079,68	100,00	112.939,49	100,00	22.893,01	100,00

Gross profit is calculated by subtracting the total variable costs from the GPV and is presented in Table 12. The average gross profit for enterprises is $39,329.44. Looking at the enterprise groups, they are respectively $64.13, $109.28, $126.98, and $186.32 per acre. Profitability increases as the scale of the enterprise grows.

Table 12: Gross profit ($) and relevant rates (%)

	15-50		51-150		151-500		501+		Farms Average	
	$	%	$	%	$	%	$	%	$	%
GPV	6.359,97	100,00	25.299,92	100,00	70.517,16	100,00	237.455,63	100,00	72.481,38	100,00
Total Variable Costs	4.202,72	66,08	14.834,56	58,63	36.030,90	51,10	89.907,29	37,86	33.151,95	45,74
Gross Profit	2.157,25	33,92	10.465,36	41,37	34.486,26	48,90	147.548,35	62,14	39.329,44	54,26

per Decares	64,13	109,28	126,98	186,32	153,12

The agricultural income of the enterprise groups is calculated and presented in Table 13. The average agricultural income for enterprises is $29,936.96. The average agricultural income per hectare is $97.30 and per capita is $7,533.43. Based on the evaluation of the size of the agricultural income, it can be said that large-scale enterprises are more successful in resource management and breeding compared to other enterprises.

Table 13: Agricultural income ($)

	15-50	**51-150**	**151-500**	**501+**	**Farms Average**
	$	**$**	**$**	**$**	**$**
Gross Revenue	146,77	6.129,38	25.670,06	128.564,00	28.634,78
Debit Interests and Rental	151,52	695,66	2.043,98	9.181,54	2.243,54
Family Labor Cost	993,97	2.613,36	3.963,79	5.695,15	3.545,72
Agricultural Income	989,22	8.047,08	27.589,87	125.077,61	29.936,96
per decar	29,41	84,02	101,59	157,94	97,30
per family population	335,96	2.342,06	6.547,51	25.391,70	7.533,43

5. Conclusions

The average GPV of the enterprise groups is $72,481.38, and the average GPV value per acre is $282.18. When the plant and animal production values of mixed production farms are examined, it is observed that they mainly engage in plant production with a high average of 76.09%, and they also engage in animal production with an average of 23.91%. When comparing the GPVs of enterprise groups, it is observed that the GPV increases as the scale of the enterprise grows.

In the examined agricultural enterprises, variable expenses are separated into two main categories: variable expenses in plant production and variable expenses in animal production. The highest cost item in the variable costs of plant production is fertilizer with a rate of 33.28%, followed by irrigation (23.82%), fuel (14.07%), harvesting (10.82%), and seed (9.91%). In the variable costs of animal production, feed costs take the largest share, with a total of 86.14%, consisting of 58.24% concentrated feed and 27.90% roughage. The top three fixed costs of production are amortization (59.07%), family labor wages (32.24%), and building maintenance (8.26%). Since the enterprises mainly engage in plant production, they use family labor, and the expenses for foreign labor (%0.44) are very low.

The average gross profit of the enterprises is $39,329.44, and the gross profit per acre is $153.12. When looking at the business groups, these values are $64.13, $109.28, $126.98, and $186.32 per acre, respectively. Profitability increases as the scale of the business grows. In terms of agricultural income, the average agricultural income per capita in the enterprises is $7,533.43, and the agricultural income per acre is $97.30.

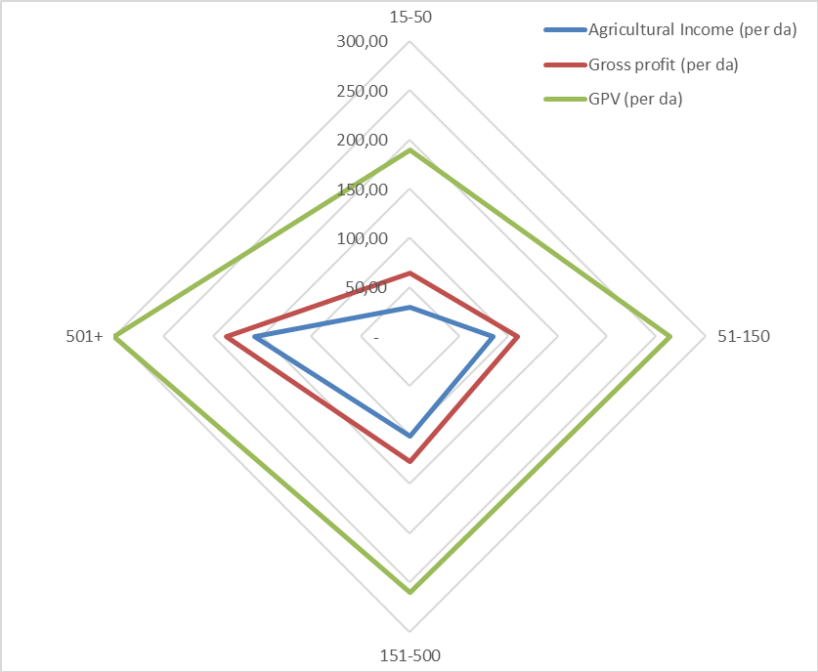

Figure 1: Agricultural income and gross profit ($/decar)

When Figure 1 is examined, it is seen that larger enterprises, in terms of scale, are more economically successful in terms of gross profit and agricultural income compared to smaller ones. This is an indication that expanding enterprises are more competitive and successful in terms of enterprise organization. The results of the study show that as the size of the land the enterprises operate on and the number of animals they raise increase, the proportion of fixed costs in total enterprise costs decreases, leading to increased profitability and agricultural income. Smaller enterprises can improve their economic performance if financial support is provided for their expansion.

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7. Acknowledgements

This article has been prepared by using the PhD dissertation entitled "Innovation Perception of Agricultural Enterprises and Determination of Innovation Level for Sustainability". This study was supported by the Scientific and Technological Research Council of Turkey (TUBITAK) project numbered 120K774. We would like to thank TUBİTAK for their financial support of this project.