Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other
enterprises: the case of ilgın district of Konya Province, Turkey   63
Oguz, C.

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other enterprises: the case of ilgın district of Konya Province, Turkey

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Abstract

The study was conducted to ascertain the economic activity results and costs of poppy-producing agricultural enterprises in the Ilgın district of Konya province. In the study, face-to-face surveys were conducted with business owners in 87 businesses determined according to the stratified sampling method. The data of the 2019 production season and the surveys were executed by the researchers themselves after the poppy harvest in July, August and September. In the research, population, workforce and land assets, gross production value, variable costs and gross profit analysis of the analysed enterprises were made. 129.84 decares of the lands in the research area are private property and the average land size in the surveyed enterprises is 221.16 decares. According to the results of the research, the cost of poppy production for 1 decare of land was 0.99 \$/Kg, and the poppy capsule yield was 172.93 kg/da. The selling price of poppy is determined as 1.70 \$/Kg. In the average of the enterprises, the total plant gross production value was calculated as 111,067.16 \$ while the gross profit was calculated as 100,082.92 \$. The labor force holds the largest share in the production cost per decare in the enterprises. The relative profitability of poppy plant with other products is 1.70, and it is preferred by the farmers after silage-corn and sugar beet. In addition, the family workforce remains idle during off-peak periods. Therefore, poppy production can be a good alternative for the evaluation of the idle workforce.

Keywords: Poppy. Economic Activity. Ilgın district. Konya.

1. Introduction

It is widely recognized that poppy plant has been grown for ages in Turkey and many parts of the world. Some words such as "opium" in the language used by the Sumerians, who lived in Mesopotamia in 5000 BC, and pictures of poppy were found on some Assyrian reliefs. Poppy has a special place in Turkey, the gene source of many cultural plants. Since the Hittites period, poppy cultivation has been made in Anatolia. Poppy, whose homeland is known as Asia Minor, has been used in the pharmaceutical industry for centuries as a raw material for drugs. Poppy cultivation in the world is carried out in Turkey, India, Australia,

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other 64
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

France, Spain and Hungary as the legal main producer under the supervision of the United Nations. Moreover, it is cultivated for food and ornamental plants in Austria, Germany, Czechia, the Netherlands, Poland and Ukraine. Turkey, on the other hand, ranks first among producer-countries in poppy production. Alkaloids containing narcotic substances are found in the branches and leaves of the poppy, most intensely in its capsule. While the seeds in the capsule do not contain any alkaloids. Two important products are obtained from the poppy; the seed and the capsule shell, which have economic value. Also, plants that have not yet formed alkaloids are considered as green salad, and plant residues are used as fuel.

The medicinal property of the poppy provides its international reputation, originating from the morphine and other alkaloids it contains. The poppy capsule contains about 30 different alkaloids, in addition to the main alkaloids of medical importance such as morphine, codeine, thebaine, noscapine and papaverine. Semi-synthetic active pharmaceutical raw materials with high-added value, which are derivatives of them, are produced. Although morphine, codeine and thebaine from these alkaloids have narcotic properties, noscapine and papaverine do not. In medicine, these substances are used as an analgesic (pain reliever), anaesthetic (drugs) and antitussive (cough reliever). Poppy seeds could be grey-blue, yellow, white, raw coffee and pink. The primary feature of poppy seed is that it has 45-54% oil and 20-30% protein content. The seed is traditionally used in food-grade bread and crushed pastries. The oil collected by squeezing the seed is used in the kitchen and food industry. It is also used in the cosmetics and paint industry. In the international community, opium (poppy) has been defined as one of the banned substances since the beginning of the 20th century due to its addictive properties, and efforts have been made to impose worldwide restrictions on its consumption (Çıtır and Kıranlar, 2015).

Poppy production is carried out by farmers in 13 provinces in Turkey, within the limit of 70,000 hectares determined by the United Nations, with the permission of the Turkish Grain Board (TGB). The purchase of poppy in Turkey is made by the TGB institution, a type of monopsony market. Poppy, which is a medicinal and industrial plant produced in Anatolia for 5 thousand years, is produced on an area of 140 thousand hectares in the world, which means Turkey constitutes 50% of the world's poppy production areas. In the 2018/2019 period, the poppy cultivation area was 678,000 decares depending on the permit. In the purchase period of 2019, 37,621 tons of poppy were purchased at 89 points worth $48,972,920. And in 2020, according to the measurement results, poppy production was carried out on an area of 461,252 decares while the total poppy capsule produced was 21,252 tons. Poppyseed yield per decare is 60 kilograms on average. The quota determined by the

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   65
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

TGB Institution for the producers is determined depending on the stock status in the production of the Opium Alkaloids Factory Operation Directorate, where the poppy plant is processed, the stock status of the finished goods and the stock status of the products that will be sold in the world at the same time. The price policy settled by the countries is also a major factor for the borders of the lands to be produced.

Poppy, which is given special importance all over the world from its cultivation to its production and sale, is an important industrial plant in Turkey in terms of the use of morphine and other alkaloids in its capsule for medical and scientific purposes, traditionally for food purposes because its seed contains oil. Poppy cultivation in Turkey on the Law on Drugs No. 3298 dated 03/06/1986 and Planting, Control, Collection, evaluation, destruction, purchase, sale, export and import of Poppy, dated 18/04/1988 and numbered 88/12850 is done within the framework of the regulation. Regarding the control of poppy cultivation, the production and purchase of poppy capsules, raw opium and medicinal opium, the manufacture of narcotic drugs, their sale and export within the country, carried out with the aforementioned Law and Regulation, the Council of Ministers, dated 13/04/1987, 87/ with the decision numbered 11703, the General Directorate of TGB was assigned. The poppy cultivation area in Konya is 90.155 decares, which constitutes 20% of the poppy production area in Turkey. The production amount is 6,973 tons, which constitutes 32.81% of Turkey's production amount. Poppy production has a significant place in the economy of Ilgın district of Konya, which was elected as the research region. The total poppy cultivation area in the district is 12,242 decares and the production amount is 1,542 tons (TUIK, 2020). Poppy cultivation area in the research area constitutes 13.58% of Konya province cultivation area and 22.11% of production.

2. Literature Review

There exists no study on the cost of poppy production in Turkey and the international literature. There are two postgraduate studies, yet they are related to breeding and its policies. However, there are reports and statistics made by the International Narcotics Control Board. In Turkey, there are reports of the Turkish Grain Board (TGB). Çıtır (2015), in his thesis study *"Opium Cultivation and Its Trade: From the Ottoman Empire to The Republic of Turkey (1900-1939)"*, the author tries to draw a historical portrait of opium agriculture and trade that developed outside the Ottoman Empire, to give information about the method, when and where opium cultivation was carried out both in the empire and in the republican lands. In the study by Clemens, 2008, *"Opium in Afghanistan: Prospects for the Success of Source*

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   66
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

Country Drug Control Policies", the author discusses the place of Afghan poppy production in world poppy production and policies that address the elasticity of supply and demand. Kahraman (2011) in his thesis study *"Poppy Policies in Turkey and the Importance of Poppy for Turkey"*; the state of the poppy, which has an effective place in Turkey's agricultural economy as well as its social and political life, the policies implemented in Turkey, Turkey's position in the world poppy production, its contributions to the country's economy are debated. Oğuz et al.(2020) in their studies, *"Economic activity results of poppy producing enterprises, the case of Ilgın District of Konya Province"*; the gross production value, gross profitability and cost of the enterprises producing poppy are presented from the context of the economic activity results. UNODC (2019) *"Soyo-Economic Analysis, Opium poppy cultivation and sustainable development in Shan State, Myanmar"* is a research report that includes trends and policy analysis of poppy in Myanmar.

3. Material and Method

3.1. Material

The main material of the study is the primary data collected from the poppy-producing enterprises in the Ilgın district of Konya and the villages of the district. In the preparation of the survey forms applied in the enterprises, the survey forms used in various researches were used, taking into account the subject of the research and the characteristics of the agricultural enterprises in the region. The data used in the study refer to the 2019 production period, and the questionnaires were filled in by the researchers themselves. The surveys were conducted in July, August and September. The distance of the research area to the city centre of Konya is 89 km. The average elevation of the district above sea level is 1,030 meters. The district is surrounded by Yunak in the north, Derbent, Beyşehir and Hüyük districts in the south, Akşehir, Doğanhisar and Tuzlukçu districts in the west and Kadınhanı district in the east. Poppy production is carried out in all of these districts. The area of the district is 1,655.7 km². Due to the mountainous nature of the district, which is located on the high Central Anatolian plateaus, the settlement area is concentrated in the plain. The main streams of Ilgın are Bulasan and Ilgın Stream. Sivri Mountain is located in the east of the district as the highest peak and Sultan Mountains stretch from northwest to southeast (Ilgın District Report 2019). (1 US Dollar was noted as 5.65 TL in September 2019).

3.2. **Sampling method**

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   67
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

In the research, the stratified sampling method was used to enhance the accuracy of the findings to be reached with the information that will be collected from the enterprises and to ensure adequate representation of different sections in the population (Güneş and Arıkan, 1985). The Neyman method was used to manage the sample volume. In the study, considering the land size of the enterprises, the number of enterprises to be surveyed was determined as 87 with a 10% margin of error at the 90% reliability limit.

$$n = \frac{\sum(Nh * Sh)^2}{N^2 * D^2 + \sum(Nh * Sh^2)} \qquad D^2 = \frac{d^2}{z^2}$$

In the formula

n: number of samples,

N: number of businesses in the main audience,

Nh: the number of enterprises in the hth layer,

Sh: variance of the hth layer,

d: allowable margin of error from the population mean,

z: expresses the z value in the standard normal distribution table according to the error rate. From the main frame, 87 sample enterprises were determined according to the poppy production areas within the limits of 5% error and 99% confidence, and the following formula was used to distribute the sample volume to the strata (Yamane, 1967; Oğuz and Karakayacı, 2017).

$$n = (N_h S_h * n) / \sum N_h * S_h$$

The sample enterprises are divided into layers according to their poppy cultivation areas. The distribution of the sample volume according to the land size groups is given in Table 1. A survey was conducted with a total of 87 poppy-producing agricultural enterprises, 15 of which are with 4-11 decares of enterprise size, 42 with 11-30 decares of enterprise, and 30 enterprises of 31 decares and above. Sample businesses were arranged randomly and a survey was conducted with volunteer farmers.

Table 1: Distribution of sample volume by land size groups

Farm size group (da)	Distribution of total unit number to strata (Nh)	Standard Deviation (Sh)	Nh.Sh	Nh.(Sh)²	Sample Volume (n)
4-10	502	1,96	983,92	1.928,48	15
11-30	536	5,34	2862,24	15.284,36	42
31-+	146	13,79	2013,34	27.763,96	30

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other enterprises: the case of ilgın district of Konya Province, Turkey

Oguz, C.

68

Total	1184		5859,50	44.976,80	**87**

3.3. The method used for economic analysis

Population and workforce, land assets, gross production values, variable costs of the enterprise, and gross profit were calculated in the enterprises analysed in the research. In calculating the workforce in the examined enterprises as Men Power Units (MPU), the workforce in the 7-14 age group was calculated with a coefficient of 0.50, the workforce in the 15-49 age group with a coefficient of 1.00 for men and 0.75 for women, and the workforce in 50 and older group with a coefficient of 0.75 for men and 0.50 for women. The coefficients obtained here were multiplied by the number of days served by the workforce in the enterprise and the Men Power Day (MPD) was calculated. In the calculation of the economic activity results of the examined enterprises; Gross Production Value (GPV) was calculated by adding the increase in field fixtures in plant production to the value of the products manufactured in the enterprise, which is evaluated with the farmyard prices. Gross Profit (GP) was calculated by subtracting GPV-Variable Costs (VC), (Açıl and Demirci, 1984; Ramsbottom et.al., 2015)). A simple cost calculation method was used in the calculation of poppy production costs; variable costs and fixed costs (FC) were calculated separately in the calculation of production costs. Absolute Profit (AP) = GPV-Production Costs, Relative Profit = GPV/Production costs in the analysed enterprises (Kıral et.al., 1999; Getha and Lavanya, 2013; Oğuz and Bayramoğlu, 2018; Tapki, 2019). In the calculation of variable costs; seed, fertilizer, water, pesticide, transit labor and other material costs used in poppy production are calculated. In the calculation of fixed costs; Total Fixed Costs = General Administrative Expense + Land Rent + Building Capital Depreciation + Building Capital Interest + Family Labour Wage Reserve + Permanent Labour Wage + Tool-Machine Depreciation + Tool-Machine Depreciation Interest is calculated according to the formulas below:

General Administrative Expenses (GAE) = Total Variable Expenses * 0.03

Building Capital Depreciation = (Building Value * 0.02)

Building or Tool-Machine Capital Interest = (Total Value/2) * 0.05

Tool-Machine Depreciation = (Machine's New Value- Scrap Value) / Economic Life (years)

Total Production Costs = Total Variable Costs + Total Fixed Costs

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other 69
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

Unit Poppy Cost = Total Production Costs ($/Da) / Production Amount (Kg/Da)

4. Research Findings And Discussion

The land-use status of the enterprises analysed in the research area is given in Table 2.

Table 2: Land Use Status by Enterprise Groups (da %)

Farm size group (da)	Owned Land		Rented Land		Shared Land		Total Operating Land	
	Area (da)	%	Area (da)	%	Area (da)	%	Area (da)	%
4--10	61.47	56.08	43.33	39,54	4,80	4.38	109.60	100.00
11--30	126.83	60.98	51,57	24.79	29,60	14.23	208.00	100.00
31-+	168.23	56.96	87,33	29.57	39,80	13.47	295.37	100.00
Business Average	129.84	58.75	62,48	28.98	28,84	12.27	221.16	100.00

The average amount of land per enterprise is 221.16 decares. The share of property land within the operational land, land leased and land cultivated by sharecropping is 58.75%, the share of rented land is 28.98%, and the amount of land cultivated by sharecropping is 12.27%. The land is extremely important in terms of creating the production areas of the agricultural enterprises, and the total land size of the poppy-producing enterprises was calculated in the research. The distribution of the farmland according to the products grown in the research area is given in Table 3.

Table 3: Distribution of the Land by Crop Planting by Enterprise Groups (da, %)

Products	4-10		11-30		31-+		Averages of the Farms	
	da	%	da	%	da	%	da	%
Wheat	22.60	20.62	64.36	30.94	62.07	21.01	56.37	25.49
Barley	34.67	31.63	46.31	22.26	42.60	14.42	43.02	19.45
Sugar beet	9.60	8.76	29.95	14.40	64.63	21.88	38.40	17.36
Poppy	7.80	7.12	22.24	10.69	59.00	19.98	32.43	14.66
Sunflower	12.33	11.25	22.64	10.89	22.80	7.72	20.92	9.46
Silage Corn	9.73	8.88	4.10	1.97	22.63	7.66	11.46	5.18
Chickpeas	6.53	5.96	3.48	1.67	4.87	1.65	4.48	2.03
Oat	-	-	5.74	2.76	3.50	1.18	3.98	1.80
Vetch	4.33	3.95	0.60	0.29	6.33	2.14	3.22	1.46
Clover	1.00	0.91	1.50	0.72	6.40	2.17	3.10	1.40
Safflower	-	-	3.57	1.72	0.47	0.16	1.89	0.85
Grain Corn	1.00	0.91	2.02	0.97	-	-	1.15	0.52
Courgette	-	-	1.31	0.63	-	-	0.63	0.29
Haricot bean	-	-	0.19	0.09	0.07	0.02	0.11	0.05

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   70
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

| Total | 109.60 | 100.00 | 208.00 | 100.00 | 295.37 | 100.00 | 221.16 | 100.00 |

The main products widely grown in the region are wheat, barley, sugar beet, and poppy production is cultivated under the permission of TMO. Wheat is grown at a rate of 25.49%, barley 19.45%, sugar beet 17.36%, poppy 14.66%, sunflower 9.46%, silage corn 5.18% within the total farmland in the analysed enterprises.

In the farms, the workforce assets of each farmer family vary between 2.05, 2.65, 3.28 MPU and 574, 743.33, 917 MPD depending on the farm groups, while the average of all farms is 2.76 MPU and 774.02 MPD (Table 4). With an annual average of 774.02 MPD, 87.07 MPD (11.25%) of the potential workforce is used in agricultural activities, 3.25 MPD (0.42%) in non-operational activities, 5.66 MPD (0.73%) in non-agricultural activities, a total of 456.66 MPD (59%) is used in production activities. An average of 317.36 MPD (41.00%) idle labor force is formed in enterprises.

Table 4: Employment of Labor in Enterprises (MPD)

Farm Size Groups (da)	Family Labor Potential		Family Labor Use			Total Family Labor Force Used	Enterprise's	
	MPU	MPD	In business	Non-Business Agriculture	Non-Agriculture		Foreign Workforce MPD	Total Workforce MPD
			MPD	MPD	MPD	MPD		
4-10	2.05	574.00	93.33	1.5	18.17	113.00	102.80	215.80
11-30	2.65	743.33	78.04	2.74	-	80.77	266.60	347.37
31-+	3.28	917.00	96.58	4.83	7.33	108.75	621.33	730.08
Aver. of the Farms	2.76	774.02	87.07	3.25	5.66	95.98	360.68	456.66

Since the idle workforce is the family workforce, it would be beneficial to incorporate activities such as animal husbandry that will utilize this workforce in the enterprise as there is no such thing as dismissing the family workforce. In processes such as harvesting, irrigation, hoeing, poppy crushing, where the work is intense, temporary labor is employed from outside.

4.1. Gross production value in plant production

Total plant production value is 111,067.16 dollars, 66.73% of which is sugar beet, 10.77% is corn for silage, 9.09% poppy, 5.38% wheat, 2.84% barley, 2.65% sunflower, 0.97% clover, 0.62% chickpea, 0.30% vetch, 0.29% oat, 0.21% grain corn, 0.08% safflower, 0.07% pumpkin, 0.02% dry beans. In agricultural income, sugar beet takes the first place in

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.
71

terms of production value, followed by silage corn and poppy production value. The plant production value was obtained by multiplying the number of products grown in the enterprise with the unit prices. Plant production value increases as the size of the enterprise increases.

Table 5: Plant Production Value in the Analysed Enterprises

Products	4-10		11-30		31-+		Averages of the Farms	
	$	%	$	%	$	%	$	%
Şugar Beet	3.023.75	18.74	84.743.82	75.69	94.774.93	60.26	74.113.16	66.73
Silage Corn	2.314.75	14.35	4.673.83	4.17	26.987.38	17.16	11.961.42	10.77
Poppy	1.871.67	11.6	6.499.85	5.81	19.236.76	12.23	10.093.92	9.09
Wheat	2.683.84	16.64	6.502.43	5.81	6.882.08	4.38	5.974.97	5.38
Barley	3.094.15	19.18	3.472.07	3.1	2.730.23	1.74	3.151.10	2.84
Oil Sunflower	1.971.27	12.22	2.756.69	2.46	3.676.68	2.34	2.938.51	2.65
Clover	122.64	0.76	1.741.42	1.56	626.95	0.4	1.078.02	0.97
Chicpeaa	658.41	4.08	307.31	0.27	1.251.71	0.8	693.50	0.62
Vetch	187.91	1.16	11.06	0.01	842.18	0.54	328.15	0.3
Oat	-	-	501.62	0.45	234.63	0.15	323.07	0.29
Grain Corn	203.54	1.26	402.44	0.36	-	-	229.38	0.21
Safflower	-	-	158.03	0.14	20.65	0.01	83.41	0.08
Courgette	-	-	167.51	0.15	-	-	80.87	0.07
Haricot Bean	-	-	30.34	0.03	8.85	0.01	17.70	0.02
Total	16.131.91	100	111.968.42	100	157.273.03	100	111.067.16	100

4.2. **Gross profit in analysed enterprises**

Gross profit is a value calculated by subtracting variable costs from the gross production value. This value represents an interest for the capital invested by business manager, labor compensation for the business manager and family members, and a possible profit (Oğuz and Bayramoğlu, 2018; İnan, 1994). Gross profit can usually be calculated for each production activity separately. The gross profit of poppy-producing enterprises in the research area is 100,082.92 $ and it is calculated as 452.53 $ per decare. Gross profit is also important for businesses in terms of showing the success of the business organization. Gross profit per business rises as business groups grow.

Table 6: Gross Profit by Business Groups ($)

	4-10	11-30	31-+	Business Average

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

72

	$	$	$	$
Gross Production Value	16.131,91	111.968,42	157.273,02	111.067,16
Total Variable Costs	6.371,83	9.610,33	15.213,94	10.984,25
Gross profit	9.760,08	102.358,10	142.059,08	100.082,92
Gross Profit per Decare	89,05	492,11	480,96	452,53

4.3. Poppy cost elements

The factors that constitute the cost in poppy production are field rent, seed price, labor, machine power, fertilizer, water, fuel, and, of course, agricultural struggle costs. The major cost element in poppy cultivation in the research area is labor cost. Crushing and hoeing works are executed separately in poppy production. For this reason, there are various costs for both applications. In poppy production, the labor cost for decimation was calculated as $35.98/da, and the labor cost for hoeing was calculated as $70.43/da. Hoeing and crushing operations are done manually in the enterprises. While fertilization takes the second place in poppy production inputs and costs, irrigation costs is in the third place. As a result of the reduction in water supplied by the Irrigation Unions, the problem of irrigation arises in poppy production in the region.

In poppy cultivation, all processes from seed planting to sale (till delivery to the Turkish Grain Board) are carried out by the producer. Generally, three ploughs are executed in poppy cultivation. The labor cost in soil preparation and planting is $1.83/da and 0.56 hours/da. Equipment used in soil preparation is the ploughing, blasting, tapestry, harrow, disc harrow, crowbar, grate, roller, capsizing. The field rent in the research area is $9.48/da. Fixed costs total is $42.25/decare. The yield of poppy capsules per decare is 172.93 kg, and the selling price is 1.70 dollars per kg. As a result of these data, the cost of 1 kg of poppy was calculated as 0.99 dollars (Table 7). In the economic analysis made by Uşak Provincial Directorate of Agriculture and Forestry in 2010, the cost of poppy capsules in Uşak was calculated at 0.54 $/da for 1 decare. (Gaytancıoğlu and Kahraman, 2011). Although the cost of a product is key in terms of keeping the product in the region, the relative profitability of the product should also be recognized in terms of competition. While the cultivation of the poppy crop is subject to permission, its relative advantage over other crops is critical.

Table 7: Poppy Physical Production Inputs and Costs

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   73
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

Production Operations	Total Cost Amount $
1.Soil Preparation	6.47
2.Maintenance (Fertilization, Hoeing, pesticide, irrigation)	78.79
3. Harvest-threshing	36.83
4. Revolving Fund Interest	8.54
A-Total of Variable Costs	**130.63**
General Administrative Expenses (AX%3)	3.92
Land Rent ($/Da)	9.48
Building Capital Depreciation	12.08
Interest on Building Capital	0.30
Family Labor for Wage	0.29
Permanent Labor Wage	0.16
Tool-Machine Depreciation	15.62
Tool-Machine Capital Interest	0.40
B-Total of Fixed Costs	**42.25**
C- Total Production Costs (A+B)	**172.88**
E- Poppy Yield (Kg/da)	**172.93**
F- Poppy Sale Price ($/Kg)	**1.70**
G-Gross Production Value ($/da)	**293.98**
Production Cost of 1 Kg Poppy Capsule ($/Kg)	**0,99**

The relative profitability of the poppy plant is given in Table 8. The foremost purpose of agricultural enterprises is to maximize their profits while minimizing their expenses. The most consequential problem of Turkish agricultural enterprises is that accounting records are not kept in most of the enterprises. This problem negatively alters the ascertainment of the profitability of the enterprises and the sustainability of the enterprises. In addition, the inability to compare the profitability of the production lines in the enterprises negatively affects the enterprises in terms of production planning while they tend to different products. Calculating the production costs in the agricultural sector will not only be limited to the benefits it will provide to the decision mechanisms in agricultural enterprises, but will also be a resource for policymakers in determining the amount of support to be provided by the state and on issues such as price and income.

Table 8. Relative Profitability and Competitive Advantage of Poppy Plant

Cost Elements	Poppy	Grain Corn	Silage Corn	Sugar Beet	Barley	Wheat	Oil Sunflower
Total GPV ($/da)	293.98	292.04	291.15	450.27	147.79	105.95	187.61
Total Production Costs ($/da)	172.88	178.93	149.23	247.73	99.12	69.03	135.07
Absolute Profit ($/da)	121.10	113.11	141.92	202.54	48.67	68.03	52.54

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   74
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

Relative Profit ($/da)	1.70	1.63	1.95	1.82	1.49	1.53	1.39

The most favoured products for the farmers in the research area are silage-corn and sugar beet, and they have a high competitive advantage over other products. In other words, the relative profitability of silage-corn is 1.95 and the relative profitability of sugar beet is 1.82. Ater these two products, the product with the highest competition in the region is obviously poppy. However, as poppy is planted with the permission of Soil Crops Office (TMO), it is not widely cultivated. If the permits expand in this direction, farmers will fancy the poppy plant because it is easy to grow and leaves good soil for the next plant. To increase the income of the regional farmer, the state can offer the poppy plant as an alternative product to the regional farmer in a controlled manner, among other products.

5. Conclusion and Recommendations

Turkey is one of the leading poppy-producer countries in the world with its proper soil structure and tens of thousands of producers with years of experience in poppy production. Statistics showing the world's poppy cultivation areas also support this judgment. Turkey, on the other hand, does not excel in terms of productivity when compared to other legal producer countries in morphine and seed yield. Poppy is a plant with high added value. As the capsule and seed are marketed directly, morphine and its derivatives received from the capsule and oil of the seed are also utilized in the industrial sectors. Since poppy production necessitates intensive use of labor, it offers a seasonal employment alternative for citizens in rural areas. In addition, social duty has been imposed on the prevention of migration from rural to urban areas with the stay of the producer who cultivates his land. It was observed that the producers using TMO seeds in the research region were quite satisfied with both the wages they receive and the yield of their seeds as a result of the high morphine ratio of the seed. The total amount of land used in the research area is 221.16 decares on average and 129.84 decares of this area consist of property, 62.48 decares of rent, and 28.98 decares of shared cultivated lands. The average of GPV businesses from this area is $111,067.16, with a gross profit of $100,082.92. Producers of poppy express that they are satisfied with this income, adding that they have a big problem in finding a labor force in poppy production. As a matter of fact, most of the enterprises examined in the research area state that the production costs of the products are high due to the high labor costs, the inability to find workers to be employed, and the

Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   75
enterprises: the case of ilgın district of Konya Province, Turkey
Oguz, C.

irrigation problem. The relative profitability of the poppy plant with other products is 1.70, and it is favoured by the farmers after silage-corn and sugar beet. In addition, the family workforce remains idle during off-peak periods. For this reason, poppy production can be a good alternative for the utilization of the idle labor force. It is asserted by the farmers that poppy production has decreased as a result of the state's quota and alternating cultivation control. It is also thought that poppy production will increase if the cultivation area is released by the TGB, the labor cost is reduced by introducing new pesticides in agricultural struggle, and the support given by the state to oilseed plants is built.

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Cost analysis of poppy-producer agricultural enterprises and competitive advantage with other   76
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