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Cost and Marketing Conditions of Broiler Production at Agricultural Plants Operating ın Aşkale and Ilıca Towns of Erzurum Province

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Summary: In this survey, branch of broiler in agricultural enterprises in Erzurum province's Aşkale and Ilıca districts were sampled and the economical situations were determined. This study was conducted on three groups of capacity which consisted production branches of broiler of 36 agricultural enterprises in Aşkale and Ilıca districts of Erzurum. Production status of broiler production branches, gross production value, production costs, net incomes, gross margin, unit body weight costs, marketing situation were determined and evaluated. The unit live weight costs for the groups is 0.222; 0.184; and 0.158 $ respectively. It is observed that the average cost of the capacity groups of unit live weight is 0.188 $. In this frame, presence problems of production of broiler growers in agricultural enterprises in Erzurum province's Aşkale and Ilıca districts were found out exactly and some suggestions to solve the problems were given. In conslusion of this survey, if the problems are solved and exportation is provided, the broiler production in the region will develop and become widespread.

Keywords: Broiler, Economical analysis, Profitability, Cost, Marketing situation

Erzurum İli Aşkale ve Ilıca İlçelerinde Faaliyet Gösteren Tarım İşletmelerinde Etlik Piliç (Broiler) Üretim Dalının Maliyet ve Pazarlama Durumu

Özet: Bu araştırmada Erzurum ili Aşkale ve Ilıca ilçelerinde faaliyet gösteren tarım işletmelerinin etlik piliç (broiler) üretim dalları ele alınmış ve ekonomik durumları ortaya konulmuştur. Erzurum ili Aşkale ve Ilıca ilçelerinde tespit edilen 36 tarım işletmesinde yer alan broiler üretim dallarından oluşan 3 farklı kapasite grubunda yürütülen çalışmada, işletmelerin broiler üretim dallarının brüt üretim değerleri, üretim masrafları, net gelirleri, brüt marjları, birim canlı ağırlık maliyetleri, pazarlama durumu tespit edilerek değerlendirilmiştir. Grupların birim canlı ağırlık maliyetleri sırasıyla; 0.222; 0.184 ve 0.158 $ olarak tespit edilmiştir. Kapasite gruplarının ortalama canlı ağırlık maliyeti ise 0.188 $ dır. Bu çerçevede araştırma yöresindeki tarım işletmelerinin broiler üretim dallarının mevcut sorunları belirlenerek sorunların çözümüne yönelik öneriler getirilmiştir. Bu çalışmanın sonucunda, mevcut problemlerin çözümü ve ihracat olanaklarının sağlanması durumunda bölgede üretimin gelişeceği ve yaygın hale geleceği saptanmıştır.

Anahtar sözcükler: Etlik piliç, Ekonomik analiz, Kârlılık, Maliyet, Pazarlama durumu

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1.INTRODUCTION

While village poultry production in Turkey was carried out for meeting the needs of families until late 1960s, today poultry production is made in commercial poultry plants, which has thus become a commercial sector in the country. This development, beginning in 1970s, increased its pace in mid-1980s and the broiler sector gained a significant infrastructure especially in 1990s. In spite of the fluctuations in the sector, the developments of the sector continue.

The manufacturing technology used for broiler rearing in Turkey is fairly high. 80.0% of broiler produced in poultry sector are produced in modern plants. Most of these plants are newer than the similar ones in developed countries and their standards are higher. However, there are still several problems such as the deficiencies in production materials, hybrid genotype supply, environmental and shelter conditions, animal diseases, food prices and food quality, cold storage depots, technical knowledge, equipments and qualified employees and the problem of the supplying credit because of the high costs. These problems in the country show their effects on Erzurum province, which has 0.50-1.00% of poultry plants and 0.30% of poultry assets. The poultry production in Erzurum is made in village conditions and the poultry meat is produced in order to meet only the family needs. Although this rate was higher in previous years, today it has been reduced because of the suitable climatic conditions of Erzurum for poultry production and the success gained with contract poultry rearing with the establishment of KOYTUR and the number of modern poultry producers in the city has increased. The number of broiler producers which make modern poultry production in Erzurum has increased substantially in 1990s. All of these production branches have been established with the contributions and the credits supplied by the Development Foundation of Turkey. However, the economic crisis occurred in 2001 caused the bankruptcy of KOYTUR and thus resulted in the closure of the plants in study area like in other ones throughout the country. In 2004, the manufacturers established KOYTUR Semi-Integrated Poultry Producers Corp. in order to resuscitate the poultry sector. Today 36 broiler production houses are actively working while 50 production poultry houses are in the process of establishment. All of the plants carrying out broiler production make contract production.

The purpose of this study is to determine the current situations, annual activity results, and current problems of production, marketing structure and other problems of broiler production branches of the agricultural plants operating in Askale and Ilıca towns of Erzurum province in Turkey and to seek suggestions for a solution.

2.MATERIAL and METHODS

The data obtained via the questionnaires conducted in the study areas constituted the primary data of the study while the information gathered from various institutions and organizations constituted the secondary data of the study.

Most of the plants dealing with broiler production conduct other agricultural or non-agricultural activities at the same time. However, as the purpose of this study, like the one of other similar studies, is to make the economic analysis of broiler production facilities only the information about the broiler production facilities was focused on and other types of facilities were excluded from the scope of the study.

Thirty-six of broiler production producers in the center and in the villages of Askale and Ilıca towns of Erzurum were determined as the study area and complete inventory method was used in their evaluation.

The annual activity results of the study were comprised of the general averages of 2004-2005 periods which include six production periods. Thus, the average values pertaining to one production period were calculated.

The broiler producers were divided into three groups according to their poultry-house capacity (like the other similar studies) and this was showed in *Table 1.*

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Table 1. Capacity groups

Number	Group	Questionnaire	%
< 5 000	1	18	50.00
5 000- 10 000	2	15	41.67
10 000 <	3	3	8.33
Total		**36**	**100**

The gross production value (the gross output), production expenses, gross margin, net income, unit livestock weight value costs of the broiler production branches of agricultural plants were calculated. The net income pertaining to the broiler production branch was calculated by subtracting the production expenses from the gross output value. The general administrative expenses include the expenses about the administration and management of the broiler producers. The general administrative expenses compose approximately 2.0-5.0% of the total costs. In this study 3.00% of total costs were taken as the general administrative expenses.

The distribution of the facility owner and his family to be analyzed and the labor to be employed in broiler production in terms of age, education and gender will be studied, and labor employed in facilities will be calculated in unit of male labor unit (MLU: Male labor unit. Here, male aged 15-49 is taken as =1, female aged 15-49 is taken as =0.75, male aged >50 is taken as=0.75, female aged>50 is taken as 0.50 and child aged 7-14 is taken as =0.50 male labor unit).

The nourishing periods were taken into consideration in the study area for the calculation of family labor-force.

In the interest expenses, real interest rate was taken into account and was calculated with the formula below:

$$i = \frac{(1+r)}{(1+f)} - 1$$

i = real interest rate

r = nominal interest rate

f = inflation rate

$$i = \frac{1 + 0{,}160}{1 + 0{,}111} - 1 = 0{,}0441\ (\%4{,}41)$$

For the real interest rate calculation of 2004, nominal interest rate was taken as 16% and as the inflation rate 11.1% average wholesale price index for 2004 was taken according to the information obtained from Agriculture Bank of Turkey. The real interest rate found as a result of the calculations (4.41%) was applied to + variable expenses.

3.FINDINGS AND DISCUSSION

All of the producers within the scope of the study are small family producers. These producers conduct broiler rearing in addition to vegetation production and other animal rearing activities. All of the producers gain the whole of their incomes from the operations that they carry out in these producers.

When an evaluation is made according to the groups, the average age of the producers are 35.11; 42.73; and 40.33 in 1st, 2nd and 3rd groups respectively. The general capacity average according to the groups is 39.39. The training durations of the employees in the operation are determined as 5.50; 6.60 and 9.00 years respectively. The general average of training durations is determined as 7.63 years. As the capacity of the production branches increase, the education level is observed to increase, too.

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The amount of labor-force used in the production was calculated as 1.22; 1.82; and 2.00 male labor-force unit, respectively. The average of the total labor-force in broiler production branches was found to be 1.68 male labor-force. 56.73% of the labor-force working in the production facilities are formed by the male labor-force whose ages vary between 15 and 49.

All the production facilities in the broiler producers, including the interval between the cutting period of poultry and the beginning of the production, are carried out by family labor-force.

The land assets of the first, the second and the third groups of the producer are 119.28; 145.73 and 187.00 decare. The average land assets of the examined plants are 150.67 decare. It is observed that as the capacity increases, the land assets also increase.

The average gross output value for the capacity groups was calculated as 7 428.24; 13 649.41 and 22 023.45 $ respectively. The average of the gross output value to the capacity groups was determined to be 14 36.03 $. When examined in terms of the groups, the total income per unit poultry-house area was calculated as 25.27; 25.31 and 25.84 $/m^2, respectively. The average gross output value per unit poultry-house area was found to be 25.14 $/m^2. The average gross output value per unit livestock weight in the broiler branches of the plants was 0.138; 0.40 and 0.43 $/kg, respectively. The average gross output value per one unit of livestock weights was calculated as 0.140 $/kg.

The more the capacity increase in the broiler producers, the higher the gross output value of the operations becomes. Depending on this fact, it can be concluded that the plants working with larger capacities are more advantageous and profitable. However, the total income per unit poultry-house area is higher in lower capacity production branches and so the incomes per meter squares reduce as the capacity of the production poultry-houses increases.

However, the total income per one kilogram of live weight is higher in the high-capacity production branches and so the more the capacity is the higher the income per kilogram becomes. This indicates that working with higher capacities is more advantageous especially in broiler production.

The production period was determined as 45 days and annual results were calculated according to six periods in the determination of production expenses of broiler production branches of the plants in the study area. Generally the production period varies between 42 and 47 days. The lengthening of these periods increases the expenses and causes damages on the other hand. In the contractual broiler producing plants, the prices of chicks, food, veterinary facilities, medicines and vaccinations, which are to be deduced from the premiums of producers, are not included in the total expenses as they are given by the firms free of charge.

The average production expenses in the examined production groups was determined to be 18 439.00 $. The production expenses in terms of groups are 12 174.02 and 24 816.48 $ respectively. As the capacity of the broiler producing branches of the plants within the scope of the study increases, the production expenses increase while the expense per unit poultry-house area is reduced as the capacity increases.

All the margins of the broiler production facilities were determined to be 2 042.70; 5 474.96 and 11 442.28 $, respectively. It was observed that as the capacity of the production branches within the scope of the study increased, the production factors were used more effectively and the competitive power increased. (*Table 2*). The average net income obtained by the groups within the scope of the study were -4 745.78; -4 676.95 and -2 793.03 $, respectively. The average of the capacity groups, on the other hand, was found to be -4 071.92 $.

As seen in *Table 2,* All of the broiler producing branches, which were included in the three capacity groups, had negative net income values. Notwithstanding this fact, they continue their production facilities as nominal expenses compose the most of the total expenses. Although these are the elements of the costs, they are not active expenses. On the other hand, they are included in the production expenses. For this reason, the broiler producing branches which are included in the three capacity groups are seen to be in the red.

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Depending on this fact, it can be determined that the net income calculations pertaining to broiler production branches do not reveal the real facts and they do not give correct and stable results.

When *Table 2* is examined, the gross margin values, contrary to the net income application, are observed to be positive in broiler producing branches which are included in the three capacity groups. The reason of this situation is that the fixed expenses are not taken into account in gross margin account. According to the gross margin concept, all the production branches included in the three capacity groups make real profit from the production and they continue producing. This shows that the gross margin concept gives more correct and consistent results. The third group of broiler producing branches has the largest gross margin values. As a consequence of a potential examination, the gross margin value increases when the capacity or the scale of the broiler producing branches increase. In other words, we can conclude that this results in the increase of the competitive power.

Table 2. Gross margin and net income in broiler production branches ($)

Income and Expense Elements	**Broiler Producer Groups**			**Average**
	1st Group	**2nd Group**	**3rd Group**	
Gross Output Value (1)	7 428.24	13 649.41	22 023.45	14 367.03
Variable Expenses (2)	5 385.54	8 174.44	10 581.17	8 047.05
Gross Margin (1-2)	**2 042.7**	**5 474.96**	**11 442.28**	**6 319.98**
Total Production Expenses (3)	12 174.02	18 326.36	24 816.48	18 438.95
Net Income (1-3)	**-4 745.78**	**-4 676.95**	**-2 793.03**	**-4 071.92**
Net Income / Unit Poultry-House Area ($/m²)	-16.14	-8.67	-3.15	-7.78
Net Income / Live Weight ($/kg)	-0.09	-0.04	-0.01	-0.05

The unit live weight for the groups is 0.222; 0.184; and 0.158 $ respectively. It is observed that the average of the capacity groups of unit live weight is 0.188 $ (*Table 3).* As the capacity size of the broiler producers increases, the unit live weight cost is observed to reduce. Therefore, it can be concluded that the broiler producing branches which have larger capacities have more profit.

Table 3. Unit live weight costs of broiler producing branches ($)

Expenses and Incomes Elements, Unit Live Weight Cost	**1st Group**	**2nd Group**	**3rd Group**	**Average**
1. Production Expenses	12 174.02	18 326.36	24 816.48	18 438.95
2. Incidental Incomes	256.12	388.18	537.40	393.90
- Food Sac Incomes	196.94	338.88	460.76	332.19
- Chicks Consumed at Home	59.18	49.29	76.63	61.70
3. Broiler Expenses (1-2)	11 917.90	17 938.18	24 279.08	18 045.05
4. Annual Live Weight (kg)	39 827.59	72 683.29	113 852.94	75 454.61
5. Live Weight Value per 1kg/$	0.222	0.184	0.158	0.188

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The poultry production in the study area is carried out under village conditions in 60,00% rate and this production is made for meeting the needs of the families there. Although this rate was higher in previous years, the convenience of the climate of the region and the successful application of contractual production method in the area contributed to the growth and development of the broiler production branches there.

Production facilities in 36 broiler producers and poultry houses in the region are conducted via contractual means. Therefore, it is not difficult to market the poultry meat and other poultry products. The live broilers reared in the poultry-houses are collected by the collector firms, treated in the slaughterhouses belonging to the firms and then they are mostly distributed to Erzurum province and then to the consumers in the eastern Black Sea Region.

The integration model applied on the broiler rearing processes in the study area is a contractual system, which purchases the chicks and the food from other firms through semi-integrated companies. This integration model applied in the region is composed of five main units.

As Koylum Pilic, which is a semi-integrated firm operating in the study area does not have the capacity to produce chicks, food and vaccinations etc., which are the main production inputs; it continues its operation as a semi-integrated firm. The firm supplies chicks, food and vaccinations from C.P. company with which it has a full contract. In addition, the contracting firm supplies Koylum Pilic firm with chicks, food, veterinarians, vaccinations and medicine for each production period free of charge and at the end of each production period the contracting firm deducts the costs of these from the premiums which it pays to the producer.

Some of the broiler producers in the region continue their production facilities as a partner of semi-integrated Koylum Piliç firm whereas the others actively work without any partnership, but within the framework of contraction.

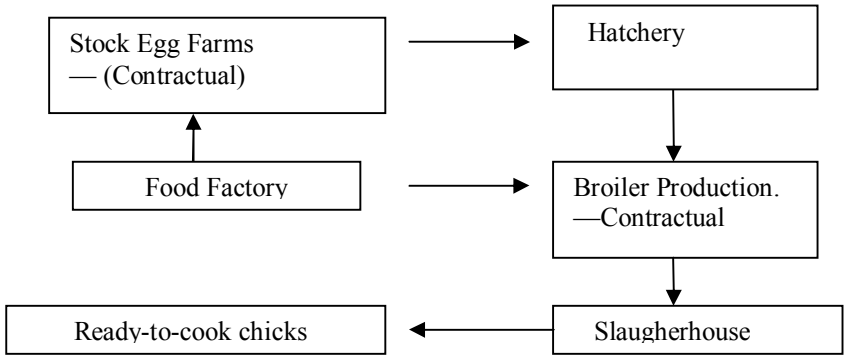

Figure 1. Broiler integration model in the study area

In this model shown in *Figure 1*, the eggs obtained from the stock poultry-houses are sent to hatcheries and they are prepared for hatching in these hatcheries for a period of twenty one days. At the end of the twenty first day, they are taken as chicks from the eggs and then they are distributed to the poultry-houses which deal with boiler production. There, they are nourished for an average of 45 days and are prepared for cutting. Then they are cleaned and processed in the slaughterhouses and then sent to branches and markets in the form of ready-to-cook. In the meantime, the food factories send food to poultry-houses for the regular nourishment of stocks and broiler chicks.

There are several ways in distribution of the produced products to the consumers. After the live chicks are treated in the slaughterhouses of broiler live poultry houses, the chicks and the other manufactures are reached to consumers in several ways. All of these ways are named as “Poultry Meat Marketing Channels”. The poultry and poultry meat marketing determined in the study area with the help of questionnaires are given below:

Producer → Collector → Slaughterhouse → Retailer (markets etc) → Consumer

The producers in the first stage of the poultry meat marketing in the study area market the live broiler that they produce through the contracting firms. On the other hand, the collectors, who are the second stage of the marketing process, include the contracting companies. The producer gives the broiler to the collector which has a contraction with the firm. After this stage, the live broilers are slaughtered. The capacity of the slaughterhouse belonging to the contracting firm in the study area is 2 450 number/hour. However, packaging techniques of the slaughterhouse are not sufficient and there is no rendering unit in it. Yet, according to the results of the study, this slaughterhouse plans to increase its capacity and establish a rendering unit in the following production period.

After the preparation of the product for consumption, the products are sent either to the sale depots of the marketing units of the firm or to the branches or directly to the to the retailer or to the consumer.

4.RESULTS

As a result of this study, it was determined that broiler production is a quite profitable production branch especially in larger capacities for Erzurum province. However, the problems that the producers are facing should not be ignored.

One of the unique problems of broiler production in Erzurum province is the high fuel costs because of the heavy winter conditions of the region. It is thought the fuel premium applications of the contracting firm may reduce the problems arising out of climatic conditions. As the firms dealing with broiler production do not have an organizational structure, they face an obligatory situation of taking credits when they are in dire straits. The high interest rates are another problem of the broiler producer in the region and reduce the profit margin of the producer more. For this reason, lower interest rates for eastern regions than the other parts of Turkey will be able to reduce the difference of costs to some extent. In addition, as there is a difference in terms of distance to the market and main inputs between eastern and western provinces of Turkey, the poultry production costs in eastern provinces are higher.

On the other hand, the problems of poultry meat marketing are the lack of information about the markets, not having a right to speak against the firms that are supplied with inputs, technical insufficiencies of slaughterhouses and not making use of the cutting wastes of the poultry. These problems are valid in Erzurum province in micro-scale and for overall Turkey in macro-scale in production branches in the study area these problems can be overcame by informing producers and contracting firms about the marketing conditions, increasing their right to speak, improving the production and process technologies of slaughterhouses in study area and establishing a rendering facility.

In conclusion, broiler production facilities in the region restarted after the bankruptcy of KOYTUR were adopted by the producers whose agricultural incomes were too low because of the heavy climatic conditions of the region in spite of the mentioned problems. It is thought that if the problems are solved and exportation is provided, the broiler production in the region will develop and become widespread.

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