

Cost and Productivity Analysis for Puppy Production in Kangal Race Dog Production Companies in Sivas

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Abstract: The objective of the present study was to assess the cost of production, the proportion of the cost components in the total cost and profitability of puppy production enterprises producing Kangal race dog in Sivas province of Turkey. The proportion of labour costs, depreciation of livestock, depreciation of building and machines and feed costs in the total costs accounted for 46.7, 10.9, 10.7 and 8.9%, respectively. Benefit-Cost Ratio was found to be 1.37.

Key words: Benefit-cost ratio, Kangal dog, production cost

INTRODUCTION

Sheep husbandry in Turkey lost its popularity and sheep population notably decreased mainly due to inappropriate livestock policies of Turkish governments. As a result of this, numbers of Kangal dogs, which is mainly used to protect the sheep herd, decreased (Atasoy and Kanlı, 2005). Today, efforts are being made to protect the race of Kangal dogs, which is one of the important domestic genetic sources of Turkey, by few state organizations, together with several non-governmental organizations for animals, volunteered academic institutions, private farms and concerned fans of Kangal dogs.

In the last 15 years, public interests in Kangal race has increased. There are many published scientific reports on continuation and development of generations of Kangal dogs (Atasoy *et al.*, 2004; Tepeli, 1996; Tepeli and Çetin, 2003). However, according to our literature search, there is no scientific study investigated the economic aspects of the Kangal dog production in Turkish field conditions. Private Kangal production farms are livestock companies and they should be operated under the principles of Economics to maintain the profitability and continuation to animal production activities.

This study was undertaken to investigate the cost, cost structures and the profitability of Kangal Dog production enterprises in Sivas.

MATERIALS AND METHODS

The material of the study was composed of the records of seven companies in Kangal dog production business raising at least 10 breeding dogs in Sivas and surrounding towns. The data covered the production season between May 2004 and May 2005 (Aras, 1985). The data were obtained by interview survey.

Cost components considered were feed, labor, medical expenses, fuel-energy expenses, purchased-breeding dog expenses, maintenance cost, overhead cost, livestock depreciation and building and machinery depreciation.

Building depreciation cost was calculated based on the purchasing or instruction value of the buildings (Erkuş *et al.*, 1995). Livestock depreciation was calculated by dividing economical value of the dogs to the economical life of the dogs (Açıl, 1997). Economical life of the breeding dogs was 8 years for females and 10 years for males (Kartay, 2001). Livestock depreciation was taken into account for dogs older than 1.5 years. Average values of current market prices were used in the valuation of animal assets.

Change in the inventory value was calculated for dogs older than 3 months old and younger than 1.5 year old. For dogs younger than 3 months old were not included in inventory valuation. For these dogs dog income were calculated instead. The following formula was used for calculation of inventory valuation (Cevger, 1997; Günlü, 2001).

$$IVE = HVEY + VAS + VAD - (HVBV + VAP)$$

- HVEY : Herd value at the end of the year.
- VAS : Value of animal sold.
- VAD : Value of animal died.
- HVBV : Herd value at the beginning of the year.
- VAP : Value of animal purchased.

When the result of this equation was positive, it was considered as income for the enterprises and when outcome of the equation was negative, it was considered as a cost. Overhead expenses was assumed to be 3% of the total production cost (Cevger, 1997).

Cost of a Kangal puppy was obtained by dividing the difference between sum of outcomes and change in inventory value which is considered as income from by product to the number of marketable dogs obtained by the end of production season (Erkuş *et al.*, 1995). Number of marketable dogs is the difference between the numbers of puppies borne in a production

season plus numbers of dogs purchased and number of dead dogs. Main income is from dog sale. Benefit-cost ratios obtained dividing income from dog sale plus income from inventory value increase by total production cost. Profit was the difference between total income from dog sale and total cost of production (Cevger, 1997).

RESULTS AND DISCUSSION

The results of each of seven enterprises regarding the production cost and its components, profit and several technical and financial information are presented in Table 1 (New Turkish Liras, NTL).

As seen in Table 1, average production cost per puppy was found to be 363 NTL (varying from 70-775 NTL). The production cost per puppy was higher than average market price in companies 1, 2 and 7. The lowest production cost was found in company 6. The benefit-cost ratios for the companies were vary between 0.711

Table 1: The results of each of seven enterprises regarding the production cost and its components, profit and several technical and financial information

Cost (NTL)*	1. Company	2. Company	3. Company	4. Company	5. Company	6. Company	7. Company
Feed expenses (NTL)	1,404	3,750	2,500	1,170	1,748	1,200	5,820
Labor expenses (NTL)	22,000	12,000	12,000	9,800	14,309	6,000	17,000
Medical expenses (NTL)	160	2,000	250	700	840	600	1,700
Fuel-energy expenses (NTL)	868	800	400	1800	1,040	400	1,595
Cost of dog purchasing (NTL)	0	0	0	14,000	3,350	250	0
Cost of Maintenance (NTL)	250	500	0	1,000	500	300	600
Sum of expenses (NTL)	24,682	19,050	15,150	28,470	21,787	8,750	26,715
Management expenses (NTL)	740	572	455	854	654	263	801
Building depreciations	3,000	3,000	2,000	5,000	3,000	2,000	3,000
Livestock depreciations	6,250	2,000	2,750	4,000	2250	2,250	750
Decrease in Inventory value	1,000	0	0	4,000	0	0	14,500
General Sum of expenses (NTL)	35,672	24,622	20,355	42,324	27,691	13,263	45,766
Income from dog sale (NTL)	31,050	4,500	27,600	97,500	19,500	16,200	42,800
Secondary incomes	0	13,000	7,000	0	11,000	9,500	0
Numbers of puppies survived	54	15	92	98	11	49	91
Numbers of puppies purchased	0	0	0	227	54	5	0
Profit (NTL)	- 4,622	- 7,122	14,245	55,176	2,809	12,437	- 2,966
Benefit-cost ratio	0.870	0.711	1.700	2.304	1.101	1.938	0.935
Unit product. costs (head/ NTL)	661	775	145	130	257	70	503

* 1 US Dollar: 1.3550 NTL 1Euro: 1.6742 NTL

Table 2: The proportion of cost components in the total cost

Costs (%)	1. Company	2. Company	3. Company	4. Company	5. Company	6. Company	7. Company	Average of the enterprises
Feed cost	3.94	15.23	12.28	2.76	6.31	9.05	12.72	8.90
Labor cost	61.67	48.74	58.95	23.15	51.67	45.24	37.15	46.65
Medical expenses	0.45	8.12	1.23	1.65	3.03	4.52	3.71	3.24
Fuel-energy expenses	2.43	3.25	1.97	4.25	3.76	3.02	3.49	4.87
Dog purchasing expenses	0	0	0	33.08	12.09	1.88	0	6.72
Maintenance expenses	0.70	2.03	0	2.36	1.81	2.26	1.31	1.50
Other overhead expenses	2.07	2.32	2.24	2.02	2.36	1.98	1.75	2.11
Building and mechnes, depreciations	8.41	12.18	9.83	11.81	10.83	15.08	6.56	10.67
Livestock depreciations	18.52	8.12	13.51	9.45	8.13	16.96	1.64	10.90
Inventory valuation	2.80	0	0	9.45	0	0	31.68	6.28
Total production costs	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

NTL and 2.304 NTL averaging 1.366 NTL. Based on these results, the average return from every 1.0 NTL was calculated as 1.366 NTL in the enterprises whose production periods were not resulted with loss.

Distribution of cost components in the total cost in Kangal production companies in Sivas is presented in Table 2.

Labor costs had the largest share in the total production costs in Kangal production companies, which were varying between 23.15 and 61.67% (46.65% on average). Depreciation for building, machinery and livestock had the second largest shares in the total cost. Proportion of feed cost in the total cost varied between 3.94 and 15.23% and it was on average 8.90%. The proportion of dog purchasing expense, change in the inventory, fuel and energy expenses, medical expenses other overhead expenses and maintenance expenses in the total cost accounted for 6.72, 10.9, 4.87, 3.24, 2.11 and 1.50%, respectively.

In Kangal dog production establishments, the income from dog sale was the main income source with 76.06% in total incomes followed by the income from inventory value increase with 23.94%.

It is seen that the second largest expenses after labor expenses in the establishments were fixed cost. Therefore, studies are warranted to decrease the production cost and to increase the numbers of puppies borne for increasing the income from sale.

CONCLUSION

Kangal is a native dog race of Anatolia. It is essential to breed this race as preserving the race characteristics. Based on the scale of establishments, structure and properties of companies exist in Turkey for Kangal production and demand for this dog race should be determined. Furthermore, dog production using scientific methods might be help preservation of race characteristics as well as help Kangal dog production companies increase their profit.

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