

THE RESULTS OF THE ECONOMIC ACTIVITIES OF DAIRY FARMS IN KONYA-EREGLI PROVINCE

Aysun Yener, Cennet Oguz

Selçuk University Faculty of Agriculture Department of Agricultural Economics, KONYA, TURKEY
aysunyener@selcuk.edu.tr, coguz@selcuk.edu.tr

Abstract- The study which provide the 15 % milk production of Konya province was selecting by judgment sampling method and here also obtained data of Konya Milk Commission report were recorded across the district. In the research area, the dairy farms were classified as Village-based and Qualified dairy farms. The sample size was determined 49 according to the stratified sampling method. A total of 49 dairy farmers were interviewed as a voluntariness. In the research area, population and labour existence, land sizes, gross value of production, variable costs and gross profit analysis were done in the dairy farms.

It was determined that the population existence per farm was 3, 46 person in village-based farms and 5, 50 person in qualified farms. The total labour existence of village-based farms was 2, 66, 87, 79% of the total labour existence was consisted of family labour, 12,21% of foreign labour existence. The total labour existence of qualified farms was 6,65 and 59,85% of the total labour existence was consisted of family labour, 40,15% of foreign labour existence. It was determined that the gross value of production was 34.302,59 \$ in village-based and 242.991,10 \$ in qualified farms per farm. The gross profit was calculated at 11.336,04 \$ in village-based farms and in qualified farms at 163.388,13 \$ per farm. The unit cost of milk production in village-based farms was 0,32\$ and it was 0,24\$ in qualified farms. In conclusion, due to the roughage and concentrate feed was produced by on their own in qualified farms, the unit costs of milk production is %25,39 lower than the village-based farms.

Key Words: Dairy Farm, Gross Profit, Gross Value of Production, Ereğli, Variable Costs

I. INTRODUCTION

Stock breeding has an important activity in Turkey, as in the whole world in terms of ensuring the adequate and balanced nutrition of increasing population and its usage as an industrial raw material in many fields. One of the most important elements for stock breeding is to improve income. Therefore, improvement in milk production has been main objective of stock breeding in dairy houses [4]. Especially, Holstein has a high efficiency in production. However, profitability level has decreased due to the some factors such as high input cost [15], [8], [6]. Amount of milk production per cow, reproduction costs, price are also important in dairy houses [14], [3], [10]. Sustainability of enterprises are also important in stock breeding. Stock breeding activities are insurance of agricultural enterprises and has an important role for increasing the income of producers [12]. This study was conducted to evaluate the economic activity of dairy farming enterprises in Ereğli province of Konya and to give some recommendations for sustainable dairy cow houses.

II. MATERIAL AND METHOD

The main material of this study comprises of the original data collected by survey from the agricultural enterprises engaged in dairy farming in Ereğli county of Konya province that was chosen as the research field. Besides the data obtained from previous researches conducted by related institutions and organizations were used. The study includes 2012-2013 production period and the surveys were filled by researcher himself. Stratified sampling method was used in this research to ensure the representation of different segments in the population sufficiently [15], [7] and to increase the accuracy of collected findings from the establishments. Sample size was calculated 49 and the data were obtained randomly by face to face surveys in line with the voluntariness principle in the establishments within the sample size. The establishments with 1-20 milking animals are defined as "village-based establishments" and the establishments with 20 and more milking animals are defined as "qualified establishments" among the establishments that are in sample size. Every village is considered as an establishment.

The family population structure was analyzed by age groups, sex and educational status. Economic activity results in the establishments were obtained with the estimation of gross value of production, gross income, variable costs, and labor

force costs. The value of productivity increase was estimated with the consideration of the factors such as birth, death, animal purchases, sales and consumption that cause animal mobility. Bovine animal unit (BAU) parameters were used to reveal animal existence [1], [5], [9].

III. RESEARCH AND RESULTS

A. Land Condition of Analyzed Enterprises

In Table 1, the average width of enterprise land per enterprise is 69.89 da; 77, 72% is property land, 19.67% is rented land and 2, 61% is common land. In the qualified enterprises, the average width of enterprise land per enterprise is 220, 55 da; 69,98% is property land, 26,21% is rented land and 3,81% is common land. The average width of land has decreased whereas number of common and rented lands has increased over the years. In study conducted by Bayaner (1995) in Konya province, the width of enterprise land was found to be 143,41 da; 79,01% of this land was property land, 11,72% was rented land and 9,27% was common land. In another study performed by [11] in Konya province, the width of enterprise land was found to be 263,53da; 95,32% of this land was property land, 3,37% was rented land and 1,31% was common land. This indicates that according to the studies since 1991, the average width of land has decreased while the ratio of property land has reduced.

Population and Labor Force Status in the Analyzed Establishments

The population per enterprise is 3, 46 in village-based enterprises. The male population of enterprises is 62, 21% and the female population is 37, 79. In general, 57, 10% of the population comprises between 15 and 49 age group. In the qualified enterprises, the population per enterprise is 5, 80.

Male population of enterprises is 44, 15% and female population is 55, 85%. In general, 60, 02% of the population comprises of the 15-49 age group. This shows that the labor potential is high. The family labor force is crucial since it is fixed capital. The entire population over age group of 6 is literate in the analyzed village-based and qualified enterprises. Besides, 53, 32% of the population is elementary school graduate while 22, 95% is secondary school graduate, 18, 32% is high school graduate and 5, 41% is university graduate. It is seen that the education level is low in the analyzed enterprises. In the qualified enterprises, 54, 07% population is elementary school graduate while 16,72% is secondary school graduate, 19, 79% is high school graduate and 9,42% is university graduate. The family labor force in village-based enterprises is 2, 33 MLU on average. 1,76 MLU of this is (75,45%) male, 0,57 MLU (24,55%) of this is female labor. In examine age groups, 78,54% of the population is active population having age of between 15-49. This indicates that the analyzed enterprises have labor force potential. The family labor force in the qualified enterprises is 3,98 MLU on average. 1,98 MLU of this is (49,65%) male, 2,00 MLU (50,35%) of this is female labor. In age groups, 74,42% of the population is the active population that is between 15-49. This indicates that the analyzed enterprises have high labor force potential.

Total labor force is 2,66 for village-based enterprises. The 87,79% of the total labor force is family labor force while 12,21% is foreign labor force. Total labor force of the analyzed qualified enterprises is 6,65. The 59,8% of the total labor force is family labor force while 40,15% is foreign labor force.

B. Evaluation of Annual Activity Results of Dairy Farms

The production value of dairy farming per enterprise in the analyzed village-based enterprises is calculated as 25.416,05\$. The 85,77 % of this value is milk production value, 9,08% of it is farm manure and 5,15% of it is the value of productivity increase. The production value of dairy farming per enterprise in the analyzed qualified enterprises is calculated as 219.239,81\$. The 86,95 % of this value is milk production value,

8,62% of it is farm manure and 4,43% of it is the value of productivity increase (Table 3).

The variable costs per enterprise in the village-based enterprises are calculated as 21.005,47\$. Coarse fodder (29,55%) has the greatest share within the variable costs. The total variable cost per enterprise in qualified enterprises in animal production is 73.258,34\$. Coarse fodder (34,93%) has the greatest share within the variable costs (Table 4).

In examine the products grown per enterprise in the village-based enterprises, corn farming is 42,73%, corn farming is 39,12%,wheat farming is 8,53% and clover farming is 2,67%. When looked at the products grown per enterprise in the qualified enterprises, corn farming is 31,88%, barley farming is 26,58%, vetch farming is 13,16% and clover farming is 12,20 % (Table 5).

The variable cost per enterprise in the village-based enterprises in plant production is 1.911,09\$. Repair (25,92%) has the greatest share within the variable costs. The variable costs per enterprise in the qualified enterprises in plant production are 6.344,63\$. Water cost (41,49%) has the greatest share within the variable costs (Table 6).In Ireland, while milk input prices are low, fluctuations in milk prices occur due to the inadequacy of labor force and fertile land [4].

The gross profit per enterprise was calculated to be 11.336,04\$ in the village-based enterprise analyzed. While 66,96% of the gross value of production is total variable costs, 33,04% is gross profit. The gross profit per enterprise is calculated to be 8.453,04\$ in the enterprises which are members of the association of breeding cattle raisers in the province of Amasya. 67,72% of the gross value of production is gross profit and 32,28 % of the gross value of production is variable costs in these enterprises [13]. The gross profit per enterprise is calculated as 163.388,13\$ in the qualified enterprises. While 32.76 % of the gross value of production is total variable costs, 67.24% is gross profit. The gross profit increases with respect to the scope of the enterprises (Table 7).

The average variable cost of enterprises was found as 0,32 \$ in village-based enterprises, the total variable costs per unit production was calculated and the average of enterprise group was determined as 0,24 in qualified enterprises (Table 8).

IV. CONCLUSION AND SUGGESTIONS

Stock breeding has a significant potential for rural development in Turkish agricultural sector. Although productivity in stock breeding has increased in recent years, the numbers of animals have decreased. One of the most important reasons for the decrease in the number of animals is the low milk price due to the market conditions. The decrease in the number of animals has resulted non-sustainable in animal production.

In Ereğli province of Konya, all of milk in the exception of requirement for the producers have sold to unions or cooperatives. Since the milk has produced with high input prices but it is sold with very low prices so that the farmer incomes have decreased. In the qualified enterprises, the population per enterprise is 5,80 and the family labor force is 3,98 MLU with an average. In the village-based enterprises, the population per enterprise is 3,46 and the family labor force is 2,33 MLU as an average. The family labor force is very important role to play through the fixed capital. The average population in the village-based enterprises is 3,46 and the active population has decreased in these enterprises. In order to keep this population, region-based studies that decrease the production costs and increase the incomes should be supported. While the gross profit is 11.336,04\$ in the village-based enterprises, it is 163.388,13\$ in the qualified enterprises. In that regard, the number of milked animals should be increased in the nterprises with the help of development agencies, non-governmental organizations and milk industry. In terms of research, since producers are dependent on the market with respect to coarse fodder or concentrate feed, encouraging incentives should be provided for them to produce their own feed.

Table. 1. Land disposition type in village-based and qualified enterprises (da)

Establishment Groups (number)	Land Disposition Type						Total Land (da)	Enterprise %
	Property Land (da)		Rented Land (da)		Common Land (da)			
	da	%	da	%	da	%		
1-20	54,32	77,72	13,75	19,67	1,82	2,61	69,89	100
21-150	154,35	69,98	57,8	26,21	8,4	3,81	220,55	100
Average of Enterprises	84,94	73,22	27,23	23,47	3,84	3,31	116,01	100

Table. 2. Family labor force, foreign labor force status in village-based and qualified enterprises (MLU)

Establishment Groups (number)	Family Labor Force				Foreign Labor Froce				Total Labor Force			Ratio of Total Labor Force
	M	F	M+F	Ratio of Total Labor Force	M	F	M+F	Ratio of Total Labor Force	M	F	M+F	
	1-20	1,76	0,57	2,33	87,59	0,18	0,15	0,33	12,41	1,94	0,72	
21-150	1,98	2,00	3,98	59,85	1,63	1,03	2,67	40,15	3,61	3,04	6,65	100
Average of Enterprises	1,83	1,01	2,84	73,2	0,62	0,42	1,04	26,8	2,45	1,43	3,88	100

Table. 3. Animal production value in village-based and qualified enterprises (\$)

	Establishment Groups (number)					
	1-20		21-150		Average of Enterprises	
	\$	%	\$	%	\$	%
Value of Milk Production	21.799,25	85,77	190.625,46	86,95	73.480,74	86,70
Value of Productivity Increase	1.309,69	5,15	9.718,17	4,43	3.883,71	4,59
Farm Manure	2.307,11	9,08	18.896,17	8,62	7.384,35	8,71
TOTAL	25.416,05	100,00	219.239,81	100,00	84.749,81	100,00

Table. 4. Variable costs in animal production in village-based and qualified enterprises (\$)

Expenses	Establishment Groups (number)					
	1-20		21-150		Average of Enterprises	
	\$	%	\$	%	\$	%
Concentrate Feed	2.621,04	12,45	14.187,39	19,37	6.161,76	16,64
Coarse Fodder	6.222,73	29,55	25.592,58	34,93	12.152,28	32,81
Temporary Employment	2.473,17	11,75	5.811,17	7,93	3.495,01	9,44
Veterinary+Medicine	4.660,48	22,13	11.859,75	16,19	6.864,33	18,53
Insemination	4.281,72	20,34	15.032,03	20,52	7.572,64	20,45
Other	796,32	3,78	775,42	1,06	789,92	2,13
Total Variable Costs	21.005,47	100,00	73.258,34	100,00	37.035,94	100,00

Table 5. Plant production value in village-based and qualified enterprises (\$)

	Establishment Groups					
	1-20		21-150		Average of Enterprises	
	\$	%	\$	%	\$	%
Corn	3.476,77	39,12	7.572,51	31,88	6.784,78	41,10
Barley	3.797,58	42,73	6.313,54	26,58	4.944,92	29,96
Wheat	757,65	8,53	1.586,67	6,68	1.421,69	8,61
Clover	237,56	2,67	2.896,92	12,2	1.095,61	6,64
Vetch	165,31	1,86	3.126,72	13,16	1.190,32	7,21
Oat	200,71	2,26	406,56	1,71	319,11	1,93
Rye	30,16	0,34	1.358,97	5,72	436,94	2,65
Sugar Beet	197,44	2,22	443,08	1,87	272,63	1,65
Fruit	23,36	0,26	46,32	0,2	41,73	0,25
Total	8.886,54	100,00	23.751,30	100,00	16.507,73	100,00

Table 6. Variable costs in plant production in village-based and qualified enterprises (\$)

	Establishment Groups (number)					
	1-20		21-150		Average of Enterprises	
	\$	%	\$	%	\$	%
Labor Cost	477,11	24,95	880,34	13,88	600,55	18,38
Repair	495,62	25,92	1.194,87	18,83	709,68	21,71
Seed	267,30	13,98	520,00	8,2	344,66	10,55
Fertilizer	44,77	2,34	320,82	5,06	129,28	3,96
Medicine	170,89	8,94	465,81	7,34	261,19	7,99
Water	385,40	18,74	2.632,48	41,49	1.054,54	32,27
Other	96,99	5,07	330,21	5,2	168,38	5,15
Variable Costs (D2)	1.911,09	100	6.344,63	100	3.268,26	100

Table 7. Gross profit per enterprise in village-based and qualified enterprises (\$)

	Establishment Groups (number)					
	1-20		21-150		Average of Enterprises	
	\$	%	\$	%	\$	%
Gross value of production	34.302,59	100	242.991,10	100	101.257,54	100
Total Variable Costs	22.966,56	66,96	79.602,97	32,76	40.304,20	39,8
Gross Profit	11.336,04	33,04	163.388,13	67,24	60.953,34	60,2
Bovine Animal Unit	459,65		1.741,51		554,55	
Dekara	162,18		740,82		252,64	

Table 8. Total variable costs per unit production in village-based and qualified enterprises (\$)

	Enterprise Groups		
	1-20	21-150	Average of Enterprises
Milk Production Costs (\$)	18.059,28	63.698,13	32.109,78
Milk Production Amount (kg)	28.491,67	134.616,41	85.594,21
Total Variable Costs per Unit Production (\$)	0,32	0,24	0,28

REFERENCES

- [1] Açıl A. F., Demirci R., 1984. Tarım Ekonomisi Dersleri, Ankara Üniversitesi Ziraat Fakültesi Yayınları No:880, Ankara.
- [2] Bayaner, A., 1995, "Konya İli Buğday Yetiştiren Tarım İşletmelerinin Ekonomik Analizi ve Bu İşletmelerde Buğday Üretiminde Gübre Kullanımının Fonksiyonel Olarak Araştırılması", A.Ü.Fen Bilimleri Enstitüsü, Tarım Ekonomisi Anabilim Dalı, Doktora Tezi, Ankara.
- [3] Dijkhuizen A. A., Renkema J. A. and Stelwagen J., 1985. Economic aspects of reproductive failure in dairy cattle. I. Financial loss at farm level. American Journal of Preventative Veterinary Medicine 3 265-276.
- [4] Dillon P., Hennessy T., Shalloo L., Thorne F., and Horan B., 2008. "Future outlook for the Irish dairy industry: a study of international competitiveness, influence of international trade on form and requirement for change" Vol 61, No 1 February 2008 International Journal of Dairy Technology.
- [5] Erkuş A. ve Ark., 1995. Tarım Ekonomisi Ders Kitabı, Ankara Üniversitesi Ziraat Fakültesi Eğitim, Araştırma ve Geliştirme Vakfı Yayınları, Ankara.
- [6] Evans R. D., Dillon P., Buckley F., Berry D. P., Wallace M., Ducrocq V. and Garrick D. J., 2006. Trends in milk production, fertility and survival of cows in 14 Irish dairy herds as a result of the introgression of Holstein-Friesian genes. Animal Science 82 423-433.
- [7] Güneş T., Arıkan R., 1985. Tarım Ekonomisi İstatistiği A.Ü. Ziraat Fakültesi Yayınları, Yayın No:924, Ankara.
- [8] Horan B., Mee J. F., Rath M., O'Connor P. and Dillon P., 2004. The effect of strain of Holstein-Friesian cow and feed system on reproductive performance in seasonal calving milk production systems. Animal Science 79 453-469
- [9] Kırıl T. ve Ark., 1999. Tarımsal Ürünler İçin Maliyet Hesaplama Metodolojisi ve Veri Tabanı Rehberi, Tarım Ekonomisi Araştırma Enstitüsü, Ankara.
- [10] Lopez-Villalobos N., Garrick D. J., Holmes C. W., Blair H. T. and Spelman R. J. 2000. Profit abilities of some mating systems for dairy herds in New Zealand. Journal of Dairy Science 83 144-153.
- [11] Oğuz, C., 1991, "Konya İlinde Kuru Şartlarda Tahıl+Mercimek Yetiştiren Tarım İşletmeleri İle Tahıl Yetiştiren Tarım İşletmelerinin Ekonomik Faaliyet Sonuçlarının Değerlendirilmesi", Ç.Ü. Fen Bilimleri Enstitüsü, Tarım Ekonomisi Anabilim Dalı, Doktora Tezi, Adana.
- [12] Öztürk D. ve Karkacı O., 2008. "Süt Sığırcılığı Yapan İşletmelerin Ekonomik Analizi (Tokat İli Yeşilyurt İlçesi Örneği)". GOÜ. Ziraat Fakültesi Dergisi, 2008, 25 (1), 15-22
- [13] Özüdoğru T. ve Tatlıdil F., 2012. "Amasya Damızlık Sığır Yetiştiricileri Birliğinin Yöre Çiftçilerine Ekonomik Etkilerinin Analizi" Teppe Yayın NO: 208 ISBN: 978-605-4672-09-7
- [14] Plaızier J. C. B., King G. J., Dekkers J. C. M. and Lissemore K., 1997. Estimation of economic values of indices for reproductive performance in dairy herds using computer simulation. Journal of Dairy Science 80 2775-2783.
- [15] Pryce J. E. and Veerkamp R. F., 2001. The incorporation of fertility indices in genetic improvement programmes. In Fertility in the High Producing Dairy Cow. Disk in M G ed. Midlothian, Scotland: British Society of Animal Science, Occasional Publication 26 237-249.
- [16] Yamane, T., 1967. "Elementary Sampling Theory Prentice", Hall Inc., Englewood Cliffs, N.J., USA.