

THE MECHANIZATION PROPERTIES OF CATTLE FARMS IN DİYARBAKIR PROVINCE, TURKEY

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Abstract

This study was conducted to determine the mechanization features of cattle farms in Diyarbakir province through survey applied in 427 farms selected randomly. We observed that 196 of farms have their own tractor while 231 of them have no tractor. The average number of tractors per farm was 0,46. In contrast, the number of machinery and equipment was 1,23 per farm and this number was quite low.

The numbers of feed dispensers, corn silage, grass silage, and pick-up ballers machines per tractor were recorded as 0,15, 0,10, 0,10 and 0,09 respectively. Besides, we found that the number of machinery-equipment has not proved to meet the farm's requirements. The milk cooling tanks required for dairy farms were found insufficient less as well. However, dairy farms using milking machines are expressed to obtain higher yield of milk.

Key Words: *Cattle farms, mechanization properties, field survey, Diyarbakir*

Introduction

The sufficient and high quality nutrients of mankind required are meet by animal products as much as crop production. For example, dairy cattle are the most important source of meat for milk production in Turkey. Approximately 92 % of the total milk production was obtained from dairy cattle's in Turkey according to data of 2012 (Anonymous, 2012a). This value was calculated as 98% for EU countries and 85% for the worldwide. This situation in meeting the requirements of animal protein reveals the importance of cattle in Turkey. Cattle is not only important for milk production, but also for meat production. According to the statistical data of the end of 2009 approximately 79 % of Turkey red meat production from cattle reported (Anonymous, 2009). Approximately, 78% of this rate in the world and 88% in European Union (EU) countries was found.

Therefore, the need for quality number of animals' demands increase each year as parallel growing population and increasing the demand for food in the world. Products of animal origin for human nutrition as well as national, regional land rural development, ensuring national industrial raw materials plays a very important role in increasing employment. The desired improvement in animal husbandry, productivity and profitability can be achieved; quality breeders, suitable environmental conditions, veterinary health services, evaluation and marketing of products as well as other important factors, together with the mechanization largely depends on the efficient use of tools and applications. It is well know that the, according to crop production, animal production activities are more time-consuming tasks and the need for labor is more as well.

In modern livestock farming, in order to obtain for age the mechanization equipment is used intensively in all stage from production to harvest in forage cultivation. This is due to fact that animal production, both internally and externally, requires daily activities. In extensive animal husbandry, both concentrate and forage are supplied while in intensive animal husbandry, production of concentrate and forage, transportation, preparation,

distribution of feed to animals, shelter, cleaning, milking, disposal of manure on the field activities need tractors and proper equipment (Sessiz et al 2006, Esgici et al 2007).

Whereas energy and manpower saving are ensured by using mechanization, while on the other hand, facilitating amount of daily work, increase the production, maintain quality and reduce the cost of production. Otherwise, the competitiveness of farms will not be expected to performance profitable agricultural production. So, nowadays cattle farms operating in the modern sense of mechanization in the use of tools has become necessary and obligatory.

There are significant differences between the regions of Turkey in cattle farming. Production are performed in modern conditions and intensively in Marmara and Aegean regions where the agriculture developed and using of mechanization at high level largely while the cattle farming are performed in more extensive conditions and as family farms in Eastern and Southeastern Anatolia regions where underdeveloped using of agricultural technologies (Sessiz et al., 2006). In these regions, using and investment of technology is insufficient. This reflected in the amount of production and costs. That is why the production efficiency is low. Production costs are high.

This study was conducted to determine the effects of mechanization on the production process and the mechanization features of the cattle farms having over 25 head cattle in Diyarbakir province where the crop production and animal production has high potential.

Material and method

This study encompassed 427 dairy cow farms which have more than 25 head of cows in 17 central districts of Diyarbakir province during the autumn session (from September to December) of 2013 year. Face to face interviews were conducted with dairy farmers and all answers were recorded.

During the visits to the farms, answer of cattle holding owners for the questions relating to survey were recorded and also made some more observations about the details of farms was noted. Totally 15 questions on business and labor level of mechanization of farms were asked to farm owners. The data obtained from the study was analyzed using Microsoft Excel-XP package.

Results

Tractors on farms

The tractor presence in cattle farms are given in Table 1. We found that 196 (46%) out of total farms (427) have own tractor while other farm (231 or 54%) have no tractors. The average number of tractors per farm was recorded as 0.46. A similar result has been found in the case for machinery-equipment. The numbers of feed dispensers, corn silage, grass silage, and pick-up balers machines per tractor were recorded as 0.15, 0.10, 0.10 and 0.09 respectively.

Table 1. Tractor presence in cattle farms

	Number	Percentage (%)
Farms have own tractors	196	46
Farms have not own tractors	231	54
Average tractor number per farms	0.46	-
Total farms number	427	100

Cattle farms not having tractors use rental or neighboring assistance when they need. We determined that the daily works has been done by people on the basis of manual labor in difficult conditions in the farms not having tractors and equipment. Therefore, the daily works such as; cleaning of shelter, feeding, milking and hygiene were performed under unsuitable conditions. Milk production farms were maintained towards mainly small local

markets. It was stated that the farm owners not have enough budget to buy the machine and therefore they expressed performance non-profitable production.

Agricultural machinery and equipment on farms

One of the most important indicators to determine the level of mechanization of the farms is owned agricultural machinery and equipment. Table 2 presents farms that have only machinery and equipment used for animal production, out of total number of farms (427).

Table 2. Agricultural machinery purchased for livestock on studied farms

Machinery	The number of farm	Machinery-Equipment/Farm (%)
Feed dispensers	31	7.25
Solid+ liquid manure spreaders	4	0.23
Trailer + straw carrier	219	51.28
Corn silage machines	20	4.68
Grass silage machines	19	4.45
Mowers	26	6.08
Rakes	49	11.47
Pick-up ballers	17	3.98
Mills and crushers	73	17.09
Solid manure removing	32	7.49
Fixed milking facilities	18	4.21
Mobile milking machines	27	6.32
Milk cooler tanks	29	6.79
Total number of farms	427	---

Source: Authors' elaboration based on questionnaire results

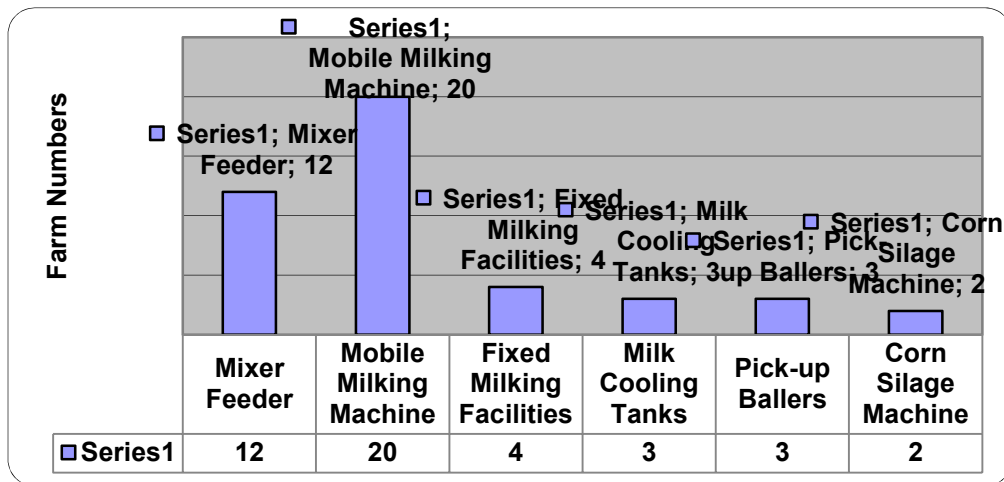
The number and percent of the grass and corn silage machine, balers and rakes, roughage, milking machines, fixed milking facilities, feed crushing and dispersing machines were given in Table 2. Results showed presence of 528 machinery and equipment units used for livestock activities. The total number of machinery and equipment per farm was 1,23. As shown in table 2, agricultural trailers and straw trailers are owned by 219 farms due to intensive use in field crop production as well as in animal production. The average number of trailers was 0,5 units per farm. In addition, the average number of machinery was 0,7 per farm except trailer. According to these data obtained from our study, the level of mechanization is far what is required. Agriculture activities are more oriented to field crop production and animal husbandry lag behind.

Situation of using machinery-equipment grant aid of farms

Turkish Ministry of Food, Agriculture and Livestock has started grant program in 2007 years called the "Rural Development Machinery and Equipment Support" to improve rural development. For this aim, many new generation machines provided to farmers for increasing the crop and animal production each year. The Number of farms have been provided the machine by using government grant support (50 % discount for each machine) are shown in Figure 1. Within the context of grant, rakes, feed dispenser, corn silage, balers,

milk cooling tanks and milking machines were purchased. Totally, 44 farms that surveyed have benefited from the government grant. This constitutes about 10 % of total surveyed ratio and 90% of enterprises have not benefited from the support of this grant. The reason of very limited number grant using was expressed as to be more bureaucratic procedures in the recruitment process and can result from long assumed.

Figure 1. The Number of Farms taken machine by using grant



The milking is often done manually due to high numbers of family members but also due to lack of habits to use milking machine. The milking machine systems are important in dairy cattle farms. 46,5 % of farms in researched region has received different milking machine by using government grant program. Whereas, we obtained that 53,5 % of farms no benefited this grant program of the government. In particular, feed and machines for stability are insufficient. Sessiz et al., (2009) reported that there were a few machine used directly in animal production. The same authors reported that the number of some machines such as; rakes, mixer feeder, corn silage, balers which are necessary for animal production are increasing in new farms in this region. Furthermore, the number of mobile milking machine was recorded as 27 (Figure 2 and Figure 3).



Figure 2. A Viewing from fixed milking facilities



Figure 3. A Viewing of Mobile Milking Machine

Low level of knowledge and education for workers in farms was recorded. We obtained that people works in farms don't have enough technical knowledge for solving machine problems occurred. The farms such as cooperatives and farms body located in organized zone should be encouraged. Therefore, these kind of farms can be executed their daily activities by means of the use of tractors and machinery in common.

In conclusion, results from this study showed that dairy farmers had insufficient machines on the preparation feeds, milking and animal feeding practices.

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