

Milk production in relation to farm organization

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Abstract

In recent years, dairy production has been considered to be the most profitable farming activity in Poland. This study focuses on a sample of 40 randomly selected dairy farms from the north-eastern part of the Lublin province and compares their technical results. The research was completed in 2012 with a questionnaire containing 18 questions sent to the farm managers. The farms were classified into five production groups according to their annual milk sales. The largest research group accounted for 37.5% of farms; this group produced 100-250,000 litres of milk, with the average area of 47 ha and the average number of 30 cows. A large share of permanent grassland as a proportion of the agricultural area, and high stocking density on grasslands in the north-eastern Lublin province, indicate a change in the direction of grassland management.

Keywords: milk production, farm, barn type

Introduction

Poland is a country with a large number of dairy farms. The main source of success in this type of production is the right organization and management (Jankowski *et al.*, 2013). The effectiveness of milk production depends primarily on the direct costs and the milk-selling price. In addition, high dairy production results in the use of modern feeding systems (Jankowski *et al.*, 2014; Sosnowski *et al.*, 2014). The aim of this study is to evaluate the organization and management of dairy farms in relation to the production volume.

Materials and methods

The study was conducted in 40 farms located in the Lublin region in 2012. The farm owners answered a questionnaire containing 15 questions. The research subject was the volume of milk production per farm, the farm size and the available resources. Based on the average annual milk production per farm, the sample was divided into five groups: (1) producing less than 50,000 litres (15% of farms); (2) 50-100,000 litres (22.5%); (3) 100-250,000 litres (37.5%); (4) 250-500,000 litres (12.5%); and (5) above 500,000 litres (12.5%).

Results

In the studied farms, the average agricultural and grassland areas increased with the increase in milk production (Table 1). In the feeding of dairy cows, fodders produced on permanent grassland were essential. On farms that produced up to 250,000 litres of milk the grazing system was only used, while on those with more than 250,000 litres of milk the cow-shed feeding system was mainly applied.

Stalls for cows (Table 2) in the studied dairy farms were not fully utilized; therefore, there was a possibility of increasing the number of cattle and milk production. It was observed that with the increase in annual milk sales, the number of stalls used also increased. Some stalls were not fully used so as not to exceed milk quotas. In all farms with up to 250,000 litres of milk, the barns were in a good condition (Table 3) while farms with annual sales of over 250,000 litres of milk had a barn in a very good condition; these

Table 1. Relationship between the farm and grassland area and the annual sales of milk.

Specification	Annual sales of milk in thousand litres				
	<50	50-100	100-250	250-500	Above 500
Average agricultural area of farm (ha)	24	33	47	74	102
Average area of grassland (ha)	10	13	23	27	50

Table 2. Relationship between the number of cows and the annual sales of milk.

Specification	Annual sales of milk in thousand litres				
	To<50	50-100	100-250	250-500	Above 500
Average number of stalls used	17	23	30	57	86
Average number of unused stalls	2	4	10	20	32
Stocking density (LU per 100 ha of grassland)	170	177	130	211	172

Table 3. Number of farms in relation to the cowshed state and the annual sales of milk.

Cowshed state	Annual sales of milk in thousand litres				
	<50	50-100	100-250	250-500	Above 500
Very good	0	0	3	4	5
Good	6	9	12	1	0

were newly built and automated barns. Farms with a smaller milk production did not have modern and large cowsheds. The number of supporting buildings increased with the increase of milk production.

In the bigger farms the number of existing silage silos and slurry tanks increased (Table 4). The predominant type of barn in the studied farms is the tie-up type on shallow litter (Table 5). Farms with different amounts of annual milk sales had different types of barn. In large barns technical installations were operated by different automatic devices. In farms with up to 50,000 litres of milk all milking was done at a bucket parlour (Table 6). In farms in the range 250-500,000 litres of milk and above 500,000 litres of milk milking machines, such as 'herringbone' parlour were used (Table 6).

Conclusions

Large dairy farms have unoccupied stalls, which indicates a possibility for increasing the milk production. Milk production is dependent on many factors, including the herd size and the milk yield per cow. Most farmers benefit from European funds, enabling farms to modernize with new equipment. Grasslands provide roughage, such as hay, silage or haylage, but do not supply all the nutritional needs of the animals.

Table 4. Additional buildings in farms in relation to the annual sales of milk.

Additional buildings	Annual sales of milk in thousand litres				
	<50	50-100	100-250	250-500	Above 500
Tank for liquid manure	6	8	14	3	1
Slurry tank	0	1	2	3	4
Farmyard manure plate	6	9	13	5	5
Silage/grain silo	1	1	5	4	5

Table 5. Number of farms in relation to barn functional type and annual sales of milk.

Barn type	Annual sales of milk in thousand litres				
	<50	50-100	100-250	250-500	Above 500
Tie-up cowhouse	6	9	11	2	0
Box cowshed	0	0	0	1	1
Free-stalls	0	0	4	2	4
Litterless	0	0	1	2	4
Shallow litter	6	9	13	3	1
Deep litter	0	0	1	0	0

Table 6. Number of farms in relation to the milking type and the annual sales of milk.

Milking system	Annual sales of milk in thousand litres				
	<50	50-100	100-250	250-500	Above 500
Wired	0	3	13	2	0
Bucket parlour	6	6	1	0	0
Herringbone parlour	0	0	1	3	5

Therefore, in all dairy farms maize for silage is grown. Crop production provides the basic feed for animal, so farmers increasingly try to intensify it.

References

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