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An analysis of goat breeding on dairy farm

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Abstract

The objective of this work was to evaluate zootechnical conditions in a selected goat dairy farm and subsequently focusing on the processing of goat milk. Czech White Shorthaired Goats (n=87) and Czech Brown Shorthaired Goats (n=6) are bred on this particular farm. Goats are in the pasture during the summer and in the stable during the winter, respectively. The basis of the feeding ration is consisted of pasture, with the addition of oats, during the summer period. A hay, turnip, and production mixture is fed during the winter period. The fertility of the goats is about 180%, and the share of reared goatlings is 170%. The daily milk yield of the entire herd was 51 lts, ranging from 38 kg to 56 kg in individual months. The daily average milk yield per goat was 1.5 kg, while the highest daily milk yield was 4.3 kg. The average milk production per lactation was 406 kg of milk with a content of 3.09% fat, 2.73% protein, and 4.8% lactose in Czech White Shorthaired Goats and 471 kg of milk with content of 2.93% fat, 2.63% protein, and 4.7% lactose in Czech Brown Shorthaired Goats. From 70 to 100 kg of milk products – especially fresh cheese, goat milk, and kefir – are produced from the milk during one week.

Introduction

Breeding of goat is nearly maintenance-free in requirements for stabling and nutrition. Goats present ecological type of farm animal suitable for pasture breeding. Goat breeding is presently focused to original breed with milk production and its processing directly in farms.
Number of goats bred in the Czech Republic was 17 000 in 2008. Mainly two breeds - Goat Shorthaired White (GSW) and Brown (GSB) are bred in the Czech Republic. The average of milk production was from 680 kg to 759 kg on GSW, respectively from 776 kg to 909 kg in GSB from 2003 to 2007.

Objective of this work is to analyse system of breeding and production results in one selected goat farm in the Czech Republic.

Material and methods

Goat dairy farm specializes to subsequent processing of goat milk on milk products. Both original breeds (Goat Shorthaired White (GSW) and Brown (GSB)) and their crossbreds are bred in this farm. Total number of animals is 100. Total number of workers is 8 (3 stable workers, 2 technical workers, and 3 producers of milk products). Whole area of agricultural land represents 70 ha of meadows and grassland. Stables are old cow-barnes reconstructed for requirements of goats. Two stables are used, the first for goat during lactation and the second for young goats, goatlings, and bucks stabled in individual boxes. Other animals are stabled in free- group-box technology with straw as a litter. The manure is removed once per week.

Manger for hay or grass (during summer) is accesible permanently. Goats are in pasture area whole day and they return to stable only for milking. Nutrition is based on pasture. The basis of the feeding ration is consisted of pasture, with the addition of oats, during the summer period. A hay, turnip, and production mixture is fed during the winter period. Mineral lick is accesible ad-libitum. The natural mating is used for reproduction of goats. Four bucks act in herd. Mating season begins in the half of August and ends during September. Parturitions take place from the end of January to March. Goatlinks stay with goat approximately 2 months and they are reared to live weight from 12 to 20 kg. Part of young goats ensure herd turnover and the rest of animals is fattened for slaughtering. Goats are milked twice a day, at 5 o´clock and at 15 o´clock. Milk is filtered and stored in cooling reservoirs. The processing of milk concurs and the milk is pasteurized at 72°C.

Results and discussion

Interbreed differences were determined in utility traits of evaluated goats. Fantová et al. (2000) mentioned that differences in production can be evoked by conditions of breeding environment, level of nutrition and care of animals. Observed farm offered completely comparable the breeding condition for both breeds. Milking is performed twice a day in this farm, but irregular period persist between milkings. Period from mening milking to mening milking is unnecessarily long, because milk production stops after filling of udder. Spät and Thume (1996) stated that milk yield increases in relation to higher milking frequency. Change of milking time or higher frequency of milking can increase milk yield per lactation. Feeding and nutrition is the most important factor affecting level of milk production. Concentrated feeds affect especially level of production, but fat and protein content as well (Malá, 2002). According to the results of Spät and Thume (1996) the content of fat in milk is affected by level of energy and dry matter. It is necessary to care of diversity of feeding ration for goats, because goat is very sensitive for low-quality feeds (Maturová, 2006). The basis of the feeding ration is consisted of pasture, with the addition of oats, during the summer period. But hay should be accesible ad-libitum. Intensive breeding, when goats are stabled during the entire year and feeding ration is optimalised in relation to age, milk production, and physiological status, can lead to high milk yield. While lower milk production is achieved in pasture system of breeding.

Results of reproduction are on the good level compared to average level in the Czech Republic. Goats mated during autumn have available feeds of higher quality in comparison with goats mated in subsequent periods. Goats with parturitions from October to December achieve by 200 kg higher milk yield per lactation then goats parturited traditionally during spring (Fantová et al., 2000). Ciappesoni (2002) pointed that seasonal character of goats´ production is their specific capability, because parturions of goats take place in winter and spring months.

Conclusion

The breeding of goats in the Czech Republic is concentrated especially in small herds, which specialize to individual dairy breeds of goats and to their milk production with subsequent processing of milk to regional milk products. However, goat milk and milk products are only supplement of milk market in relation to the most important share of cow milk. Milk production of goats should be oriented to pasture breeding of goats or to ecological farms eventually. The objective of goat herds should be high quality of milk, milk products, and meat also. Observed farm fulfils requirements for breeding of goats in condition of the Czech Republic.

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Table 1 Results of milk yield

Breed	Total milk yield (kg)	Fat (%)	Fat (kg)	Protein (%)	Protein (kg)	Laktose (%)	Laktose (kg)
GSW	**406**	**3,09**	**12,5**	**2,73**	**11,1**	**4,8**	**19,3**
Population	759	3,14	23,8	2,81	21,3	4,51	34,2
GSB	**471**	**2,93**	**13,8**	**2,63**	**12,4**	**4,7**	**22,3**
Population	806	3,42	27,5	2,88	23,2	4,52	36,5
Crossbreds	**394**	**3,34**	**13,2**	**2,96**	**11,6**	**4,7**	**18,4**
Population	618	2,92	18,1	2,91	18,0	4,55	28,1

Table 2 Reproduction results of Goat Shorthaired White breed

	GSW		GSB		crossbreds	
	farm	**population**	**farm**	**population**	**farm**	**population**
Reproduction (%)	180,0	176,5	166,7	171,9	133,3	175,8
Rearing (%)	176,8	159,4	166,7	156,6	133,3	150,0
Pregnancy loss (%)	0,0	0,2	0,0	0,0	0,0	0,0
Hermaphrodite (%)	0,0	1,3	0,0	0,8	0,0	0,9