STUDY REGARDING THE PRODUCTION PERFORMANCE OF MONTBELIARDE DAIRY COWS IN THE SOUTHERN AREA OF ROMANIA

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Abstract

Generally cattle produce 95% of the total milk from the market, over 33% of meat production, 90% of all raw hides and 75% of the livestock manure. Romania can ensure forage for seven millions cattle. At present, there are 2.162.013 cattle, of which 1.231.857 dairy cows. Based on this situation requires a review of breeding strategies and the distribution of species and breeds in different geographical areas. The preservation of natural resources as a support for biological, social and economic life is the key for sustainable development of society. In last years it has imported and other breeds of cattle. Montbéliarde breed has adapted very well to the climatic conditions and plant resources in our country. In France, the country of origin, it is considered a milk breed with the average milk yield about 7500 kg / normal lactation (305 days),3.8 to 3.9% fat and 3.45% protein. The total number of Montbeliarde dairy cows is at present in Romania over 2000, of which 676 animals in official control of production. The current study was conducted in three farms in the south of Romania. In these farms animals have been brought from France, heifers in pregnancy months IV-VII. After the end of the first lactation, production data were recorded and statistically analyzed. The statistical analysis was performed on a number of 379 primiparous cows. It was noted that the main parameters of production showed variations between farms. Thus, the duration of lactation had values between 314-330 days, with implications on the quantity of milk and the reproduction activity. Regarding the average quantity of milk per cow values were recorded between 5646 and 6320 kg milk and fat percentage of 4.14, respectively 3.80%. The production values are influenced by many factors (conditions of feeding, milking, sheltering) and they influence the total quantity of milk for processing, and quality.

Keywords: breed, dairy cows, fat, milk

INTRODUCTION

The world passes through a phase of economic crisis and also it provides the emergence of a food crisis. Based on this situation requires a review of animal breeding strategies and the distribution of species and breeds in different geographical areas. From the point of economic perspective, the Romanian agriculture makes a contribution of 6% to gross domestic product (GDP). Out of the 23.8 million hectares which represents the total area of Romania, the agricultural land is 14.7 million hectares (61.7%), of which 9.38 million hectares is arable land. Romania has very good agricultural potential and ranks 5th as arable surface after France, Spain, Germany and Poland.
Cattle in Europe are constituted by two species, namely cattle and buffalos the first is the most

important and widespread. Thus, it is found in all European countries, the ratio being 38.24 / 1.00 cattle / buffalos. Regarding cattle farming, Romania currently has 2.162.013 cattle, dairy cows are 123.1857 heads, which means 57%.
At the beginning of 2013, in Romania 93% of cows are in the farms are family type. During the last few decades this species has fluctuated numerous, but downsizing was very important. In Romania the cows in official control of milk production represents 2,1% of the total herd queen .Regarding the structure of cattle breeds, Romanian Spotted breed is owned first position with 30.2%, Romanian Black Spotted 23%, Brown breed 16.7%, Pinzgau breed 0.7% and other breeds 0.6%.
In dairy cattle growth strategy is outlined two fundamental objectives: growing number and improve the quality of the herd queen, increasing and improving the milk

production. For efficient use of raw milk must invest in upgrading work so that to obtain controlled dairy products with high quality and safety.

Cattle ensure workforce stability in rural and mountainous, safe source for trade, better use of feed obtained from natural pastures.

In recent decades, in Romania have brought specialized cattle breeds from different countries. These specialized breeds for milk or meat are brought in Romania, because we need milk and meat on the internal and European market. Montbeliarde breed is a breed imported which meet the needs of farmers to obtain income from multiple sources. The milk quality and quantity are high, the technical indicators of fattening young male are higher than indigenous breeds and disease resistance and adaptability to conditions of farms in Romania are good.

MATERIALS AND METHODS

In Romania there are currently about 2,000 Montbeliarde breed cows. From this herd 676 head of dairy cows are in official control of milk production. This research was conducted in three farms with different capacities in South-Romania. The animals studied are imported from France as heifers with gestation ranging between IV - VII months. They have calved on farms in Romania, which purchased animals. The study was conducted after completion of the first lactation.

The farm no. 1 is located in Prahova county and has a herd of 580 heads brought from France of which 232 dairy cows. The farm is currently in the process of certification as organic farm.

The farm no. 2 is located in the Teleorman county, in the most southern part of Romania, near Zimnicea city. This farm has a herd of 1,000 head of two breeds Prime Holstein and Montbeliarde. The study was conducted on a total of 125 heads Montbeliarde breed cows which have completed first lactation.

The farm No. 3 is located near Bucharest in Ilfov county and belongs to the University of Agronomical Sciences and Veterinary Medicine Bucharest. Animals have been imported from France in 2010. Total number of animals on the farm is 59 heads, of which 22 heads of dairy cows.

The data necessary for the study resulted from consultation records of livestock farms studied. The production data resulted from periodicals official controls production.

In terms of quality milk we conducted analyzes on milk fat and protein content using EcoMilk portable device. It was created a database, the date were statistically processed by known methods and were compared with those from the literature, in especially those in the country of origin.

Figure 1. Picture of Montbeliarde cows in Romania

RESULTS AND DISCUSSION

The duration of total lactation is the time between the day of calving and cow's weaning. The duration of lactation is particularly important indicator that influences productive performance in the direction of milk production and reproduction activity. The factors that have significant influence on the total lactation period are: the order of lactation, the genetic structure of the population, age of first calving and calving season, individual variability and conditions for exploiting.

In dairy cows of Montbeliarde breed from southern Romania it observed that duration of

the first lactation had average 324.4 days, with a low coefficient of variation (7.21%).

From Table no. 1, that the longest duration of lactation was recorded in the farm no. 1, situated in the Teleorman county (330.12 days). Primiparous cows from the farm no. 2 had an average value of 329.5 days, with 35 days longer than their mothers in France (Vidu, 2011).

The high value o of the first lactation at primiparous cows indicates a good precociousness of dairy cows lactation and good persistence.

By applying the test of significance between the averages of three farms there are not differences (p <0.05).

To cows of Montbeliarde breed imported from France in Moldova area average value of total lactation period was 309.60 days (Buceag et al., 2013).

The comparative analysis with other breeds in Romania showed that Romanian Spotted breed had an average between 332 days (Georgescu et al., 1988) and 341.87 days (Reman, 2004). For Brown breed duration of total lactation was between 317-357 days (Alexoi, 1983). For Romanian Black Spotted breed Murat (1995) determined an average of 357.9 days.

The milk quantity of total lactation is the most important parameter of milk production that underpins economic hierarchy of animals, genetic improvement and is the main result of using modern technologies. The analysis of 379 lactations completed was obtained an average of 5977 kg milk with high variability (23.11%). The highest milk production was recorded in farm no. 2 -6320 kg, but dairy cows are very heterogeneous (32.9%) in the genetic aspect.

On the farm no.1 average production was 6086, 8 kg milk and on the farm no.3 quantity of milk was 5524 kg. The results on the farm no.1 are similar to those found by Bugeac et all (2010) in farms in Moldova in Montbeliarde cows imported from France. At these dairy cows average production was 6036, 12 kg, with a 47% greater heterogeneity. Vidu (2011) calculated for Montbeliarde cows in the farm of University of Agronomic Sciences Bucharest an average value of 6921.47 kg milk at equivalent of maturity. The statistical data recorded after performing official control of production have shown that the national averages for milk production is 7947 kg milk Romanian Black Spotted breed and 6151 kg milk Romanian Spotted breed. The average value recorded at Montbeliarde cows in southern Romania placed this breed to the position third in the performance structure.

Table 1 The average values of production parameters at the primiparous of Montbeliarde breed in southern Romania

The farm	n	The statistical parameter	The parameter			
			The duration of total lactation (days)	The quantity of milk (kg milk per total lactation)	Fat (%)	Protein (%)
1	2	3	4	5	6	7
1	2	3	4	5	6	7
Far no.1	232	$X \pm s_X$	314±4.81a	6320±78.16a$_1$	3.86±0.02a$_2$	3.42±0.01a$_3$
		V%	4.78	32.9	16.11	17.05
Farm no.2	125	$X \pm s_X$	330.12±3.62b	6086.8±262.11b$_1$	3.80±0.02b$_2$	3.55±0.04b$_3$
		V%	6.19	18.6	7.11	8.12
Farm no.3	22	$X \pm s_X$	329.5±3.63c	5524±191.12c$_1$	4.18±0.09c$_2$	3.61±0.04c$_3$
		V%	10.5	21.2	3.21	4.16
Total	**379**	**$X \pm s_X$**	**324.4±3.91**	**5977±182.16**	**3.95±0.08**	**3.53±0.05**
		V%	**7.21**	**23.11**	**9.81**	**9.98**

The level of significance: a,b,c,a$_1$,b$_1$, a$_2$,b$_2$,c$_2$, a$_3$,b$_3$,c$_3$ (p<0.05); b$_1$,c$_1$, b$_2$, c$_2$ (p<0.01)

The milk quality. Milk fat and protein content represents important criteria in the selection, the share of over 80%, depending on the country. The importance of the fat and protein content consists of the following: it provides a certain biological value of milk (1 gram of fat provides for human body 9 calories and a content of 20 amino acids plus the macro-and oligoelements); the milk protein have a role plastic, the main component of cell and genetic role, the support material of heredity; the content odoriferous substances in fat provides of the milk flavor and aroma volatile special; fat influences the efficiency in obtaining dairy fat; the content of casein at protein (over 80%) affects the yield of the cheese (Reman, 2004). The Table 1 can see that the percentage of fat varied between 3.80% and 4.18% with an average 3.95% fat. It is noted that in farm no. 3 recorded a value of 4.18%, with low variability. The average content of protein is 3.53%, with average limits between 3.42% and 3.6%.

The phenotypic correlations between milk production characters. The knowledge of the correlations between milk production characters is very important to establish of objectives and improvement method. Correlations between characters are given by the intensity the relationships between genes or blocks of genes with pleiotropic action. Analysis of two or more characters show that between them there is interdependence due to the direction of phenotypic expression. The study correlated character of particular interest for improving methodology because it provides the possibility of establishing the causes which causes correlation and to assess the extent to which improving a character will cause simultaneous changes in other characters (Reman, 2004).

The correlation between the quantity of milk and duration of lactation. The average value is 0.46, which represents a mid-correlation, but very significant statistical (table 2).

The correlation between the quantity of milk: fat percentage, protein percentage. Between quantity of milk and fat content (-0.031), and the milk quantity and protein percentage (-0.044), the correlation is not significant and negative, which means that the selection of one of the two characters is accompanied by unfavorable response to another but little. For these couples of characters at Romanian Spotted breed other authors have found the following: Petre (1988) quantity of milk: - fat% 0.08 ... -0.10, Alexoiu (1983) -0.21. It is noted that the value found by us is the lowest. To the Brown breed, Alexoiu (1988) established the weakly positive correlation between the quantity of milk and fat percentage respectively 0.01. Between milk quantity and fat content at Romanian Black Spotted breed were established values between -0.15 and -0.315 (Murat, 1995).

Table 2 Correlation analysis between the characters of milk production for total lactation at Montbeliarde cows in southern Romania

Specification	The duration of total lactation (days)	The quantity of milk (kg milk per total lactation)	Fat (%)	Protein (%)
The duration of total lactation (days)	1			
The quantity of milk (kg milk per total lactation)	0.460±0.011 ***	1		
Fat (%)	0.037±0.020 NS	-0.031±0.03 NS	1	
Protein (%)	-0.130±0.04 ***	-0.044±0.03 NS	0.480±0.016 ***	1

CONCLUSIONS

Montbeliarde breed was imported in the last decades in Romania. This breed has adapted very well to the climatic conditions of our country and gives good productions. From our research that has been done in three farms in southern Romania the production obtained from cows that have completed the first lactation were similar to those obtained in France. We consider that Montbeliarde breed can be raised successfully in many farms in Romania, in the submontane, hill and plain areas.

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