

COMPARATIVE STUDY ON THE MILK PRODUCTION IN TWO ROMANIAN BLACK AND WHITE COW POPULATIONS FROM WESTERN ROMANIA

STUDIU COMPARATIV AL PRODUCȚIEI DE LAPTE LA DOUĂ POPULAȚII DE VACI DE RAȘĂ BĂLȚATĂ CU NEGRU ROMĂNEASCĂ DIN VESTUL ROMÂNIEI

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The aim of this study was to compare the milk production of the Romanian Black and White cows raised in two counties (Timiș and Caraș-Severin) from the western Romania. Researches were carried out on 3,579 lactations (3,110 from Timiș and 469 from Caraș-Severin) finished in year 2008. Results showed that cows in Caraș-Severin produced significantly more milk per lactation compared to cows from Timiș ($p < 0.05$), except for the butterfat percentage ($p > 0.05$). On average, cows from Caraș-Severin produced 4710.9 kg milk with 3.939% butterfat, 186.13 kg butterfat, 3.337% protein and 156.92 kg protein per normal lactation, while cows from Timiș produced 4216.5 kg milk with 3.948% butterfat, 166.22 kg butterfat, 3.130% protein, and 131.22 kg protein. Differences for milk production per total lactation were lower, but still significantly different ($p < 0.05$). Cows in Timiș had longer days in milk than cows in Caraș-Severin (363.7 vs. 341.2 days, $p < 0.001$).

Keywords: milk production, Romanian Black and White, cows

Introduction

Milk is a universal food, and the most nearly perfect one. The dairy industry in Romania makes efficient use of resources and offers opportunity for profit for those concerned with the production, processing, and distribution of milk and dairy products. Though, there are large differences among areas in our country where milk is produced, related to the natural, economical and social realities.

The aim of the paper was to compare the milk production of Romanian Black and White cows raised in two counties (Timiș and Caraș-Severin) from the western Romania.

Materials and Methods

Researches were carried out on 3,579 lactations from Romanian Black and White cows reared in two counties (Timiș and Caraș-Severin) from the western

Romania. Data were collected from the Office for Genetic Improvement and Reproduction in Animal Production (Oficiul pentru Ameliorare și Reproducție în Zootehnie – OARZ) in each county in year 2008. The production was corrected for age of cows using the standard coefficients for maturity equivalent. The following traits were considered: total days in milk, milk yield, butterfat percentage, protein percentage, butterfat yield and protein yield. The milk production was expressed as per total lactation and normal lactation.

Averages and dispersion indices were calculated for each county and comparison between counties was established using ANOVA analysis.

Results and Discussion

Table 1 presents the averages and dispersion indices for milk production traits per total lactation in the two counties.

On average, the length of the total lactation was 363.7 days in Timiș and 341.2 days in Caraș-Severin. This trait had a higher variability within Timiș County than in Caraș-Severin County (v% 29.5% vs. 21.9%). The difference of 22.5 days that cows in Timiș County had longer lactations was statistically significant (Table 3, $p < 0.001$).

Table 1

Averages and dispersion indices for milk production traits per total lactation in Romanian Black and White cows

Item		Timiș County (n=3110)	Caraș-Severin County (n=469)
Days in milk	X±Sx	363.7±1.929	341.2±3.447
	s	107.59	74.64
	v%	29.5	21.9
Milk yield (kg)	X±Sx	5001.9±34.515	5173.8±66.367
	s	1924.79	1437.29
	v%	38.5	27.8
Butterfat percentage (%)	X±Sx	3.962±0.0056	3.961±0.0146
	s	0.3098	0.3160
	v%	7.8	8.0
Butterfat yield (kg)	X±Sx	198.01±1.389	205.63±2.878
	s	77.479	62.337
	v%	39.1	30.3
Protein percentage (%)	X±Sx	3.141±0.0064	3.342±0.0076
	s	0.3546	0.1653
	v%	11.3	4.9
Protein yield (kg)	X±Sx	156.28±1.108	172.51±2.168
	s	61.779	46.956
	v%	39.5	27.2

Milk yield per total lactation was 5001.9 kg in Timiș and 5173.8 kg in Caraș-Severin County. The difference of 171.9 kg in the favour of cows from Caraș-Severin County was statistically significant (Table 3, $p < 0.05$).

The butterfat percentage per total lactation was similar between counties, 3.962% in Timiș and 3.961% in Caraș-Severin, and there was no statistical difference (Table 3, $p > 0.05$).

Because of the higher milk yield the butterfat yield was significantly higher in Caraș-Severin County compared to Timiș County (205.63 kg vs. 198.01 kg, $p < 0.05$, Table 3).

The protein percentage of milk was 3.141% in Timiș and 3.342% in Caraș-Severin, the difference of 0.201 percentage point was statistically significant (Table 3, $p < 0.001$).

Also, the milk protein yield was 16.23 kg higher ($p < 0.001$, Table 3) in Caraș-Severin County than in Timiș County (172.51 kg and 156.28 kg, respectively).

Although the number of studied lactations was higher in Timiș than in Caraș-Severin County, the variability was higher in the first than in the later (V5 took values of about 39% vs. about 30%, respectively).

In Table 2 the results of milk production per normal lactation in the two counties are presented.

Table 2

Averages and dispersion indices for milk production traits per normal lactation in Romanian Black and White cows

Item		Timiș County (n=3110)	Caraș-Severin County (n=469)
Milk yield (kg)	X±Sx	4216.5±23.838	4710.9±50.076
	s	1329.41	1084.47
	v%	31.5	23.0
Butterfat percentage (%)	X±Sx	3.948±0.0054	3.939±0.0101
	s	0.3040	0.2182
	v%	7.7	5.5
Butterfat yield (kg)	X±Sx	166.22±0.945	186.13±2.148
	s	52.700	45.528
	v%	31.7	24.5
Protein percentage (%)	X±Sx	3.130±0.0060	3.337±0.0079
	s	0.3341	0.1714
	v%	10.7	5.1
Protein yield (kg)	X±Sx	131.22±0.741	156.92±1.651
	s	41.347	35.748
	v%	31.5	22.8

The situation is somehow similar to that of milk production per total lactation. Thus, except for the butterfat percentage that was practically the same

between the two counties (difference 0.009, $p > 0.05$, Table 3), all the milk production traits were significantly higher ($p < 0.001$, Table 3) in Caraş-Severin than in Timiş County.

Cows raised in Timiş County produced per normal lactation 4216.5 kg milk with 3.948% butterfat and 3.13% protein. The butterfat yield per normal lactation was 166.22 kg and the milk protein yield was 131.22 kg. Cows from Caraş-Severin County produced 4710 kg milk with 3.939% butterfat and 3.337% milk protein per normal lactation. The butterfat yield was 186.13 kg and the milk protein yield 156.92 kg.

Table 3

Differences and their statistical significances for milk production traits between Timiş and Caraş-Severin counties

Trait	Differences Timiş – Caraş-Severin	
	Total lactation	Normal lactation
Days in milk	22.5***	-
Milk yield (kg)	-171.9*	-494.4***
Butterfat percentage (%)	0.001 ^{ns}	-0.009 ^{ns}
Butterfat yield (kg)	-7.62*	-19.91***
Protein percentage (%)	-0.201***	-0.207***
Protein yield (kg)	-16.23***	-25.70***

***- $p < 0.001$, *- $p < 0.05$, ns- $p > 0.05$

Conclusions

There were significant differences regarding the milk production traits between Timiş and Caraş-Severin counties, both for total and normal lactation, except for the butterfat percentage.

Cows from Caraş-Severin County produced more milk, butterfat yield and protein yield and had higher protein content of the milk ($p < 0.05$) than cows from Timiş County.

Differences between counties for milk production traits were higher for the normal lactation than for the total lactation. Thus, per normal lactation, the milk yield was 11% higher in Caraş-Severin County than in Timiş County, the butterfat yield 12% higher, the protein percentage 7% higher and the protein yield 20% higher.

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