

STUDY ON DAYS OPEN IN A ROMANIAN BLACK AND WHITE COW POPULATION FROM THE WESTERN ROMANIA

STUDIUL DURATEI REPAUSULUI UTERIN LA O POPULAȚIE DE VACI DIN RASA BĂLȚATĂ CU NEGRU ROMÂNEASCĂ CRESCUTE ÎN ZONA DE VEST A ȚĂRII

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The aim of the paper was to study the length of days open in Romanian Black and White cows according to county and parity. Researches were carried out on 3167 lactations obtained from 1200 cows reared in Timiș and Caraș-Severin counties. Average days open was 163.5 days (5 months and 11 days) for cows in Timiș County and 122.7 days (4 months and one day) for cows in Caraș-Severin County. The difference of 40.8 days in the favor of cows from Timiș County was significant ($p < 0.001$). The longest period of days open was obtained in primiparous cows both in Timiș and Caraș-Severin, being 174.6 days (5 months and 22 days) and 139.0 (4 months and 17 days), respectively. The shortest length of days open was obtained for both counties in the third parity, being 150.8 days (5 months and 4 days) and 112.9 (3 months and 21 days), respectively. In Timiș County, primiparous cows had a significantly longer days open ($p < 0.05$) compared to cows in second, third, fourth and seventh and over parities. There were no significant differences ($p > 0.05$) for days open between parities for cows in Caraș-Severin County.

Key words: days open, cows, Romanian Black and White

Introduction

Reproduction is the background of the cattle rearing for livestock number increasing, farm efficiency increase and is a indicator of the health status of the animals. Successful reproduction is very important for the farm profitability because it represents the beginning of all the cattle productions: milk production initiation and a new calf for beef production. The main aim of the dairy cattle farmer is to obtain from a cow every year a calf. This objective means that the gestation length should be 280 days, 85 days open, 305 days in milk and 60 days dry.

The aim of this paper was to study the days open length according to the parity and county where the cows were reared.

Materials and Methods

Researches were carried out on 3167 lactations of 1200 Romanian Black and White cows raised in two counties from the South-Western part of Romania: Timiș and Caraș-Severin.

Data regarding the reproduction was collected from the Official Recording Offices of Timiș and Caraș-Severin counties.

The 1200 Romanian Black and White cows were raised in representative farm from Timiș County (5 farms with 1020 cows accounting for 2686 lactations) and from Caraș-Severin County (7 farms with 180 cows accounting for 481 lactations). The cows were born between January 1, 1990 and December 31, 2004, and performed from January 1995 till February 2007.

In order to quantify the days open according to parity order the averages and dispersion indices were computed for subsequent lactations (1, 2, 3, 4, 5, 6 and 7 and over)

Differences for days open length between the two counties and among parities were tested by using the analysis of variance (ANOVA).

Results and Discussions

In Timiș County farms, the average length of days open was 163.5 ± 2.334 days that are 5 months and 11 days. The variability of this trait was high ($v\% = 73.98\%$).

From parity to parity the days open length was oscillating. Thus, the highest value for this trait was found in primiparous cows with an average of 174.6 ± 4.073 days (5 months and 22 days). This was considered normal for the dairy farms because the primiparous cows need a longer days open interval in order to allow the animals the possibility to grow.

Table 1
Averages and dispersion indices for days open (days) in Romanian Black and White cows from Timiș County

Lactation	n	X \pm SEM	SD	v%
1	1046	174.6 \pm 4.073	131.714	75.422
2	753	158.9 \pm 4.347	119.295	75.090
3	420	150.8 \pm 5.510	112.920	74.866
4	256	156.4 \pm 6.189	99.025	63.318
5	125	158.9 \pm 10.201	114.048	71.771
6	60	170.1 \pm 13.560	105.035	61.737
7 and over	26	134.1 \pm 12.759	65.057	48.508
TOTAL	2686	163.5 \pm 2.334	120.980	73.980

Days open become shorter as animals grew older up to 150.8 ± 5.510 days (5 months and 4 days) in the third lactation. After this age days open increased up to 170.1 ± 13.560 days (5 months and 18 days) in sixth lactation. Cows with 7 parities and over had a very short open period, only 134.1 ± 12.759 days (4 months and 12 days).

Cows from Caraş-Severin County farms had, on average, 122.7 ± 3.915 days open (4 months and 1 day), with a variability of 70 % (Table 2).

Evolution from parity to parity was similar with that observed in Timiş County. Thus, the longest days open period was observed in primiparous cows 139.0 ± 17.694 (4 months and 17 days). Also, these cows had the highest value for variability ($v\%=81.5\%$). The shortest days open was found in the third lactation 112.9 ± 8.252 days (3 months and 21 days).

Table 2

Averages and dispersion indices for days open (days) in Romanian Black and White cows from Caraş-Severin County

Lactation	n	X±SEM	SD	v%
1	41	139.0±17.694	113.296	81.508
2	72	131.4±11.621	98.609	75.051
3	78	112.9±8.252	72.879	64.561
4	77	118.2±9.848	86.415	73.088
5	71	113.2±8.324	70.135	61.943
6	53	135.5±14.035	102.177	75.423
7 and over	89	120.3±7.414	69.942	58.122
TOTAL	481	122.7±3.915	85.865	70.005

ANOVA showed that county had a significant effect ($p<0.001$) on the days open length while there was no significant influence ($p>0.05$) of the parity on the same trait nor there were no interactions ($p>0.05$) between the two studied factors.

Figure 1 shows that Timiş County cows had longer open days than Caraş-Severin County cows. On average, Caraş-Severin County cows had a 40.8 days shorter ($p<0.001$) open days period than Timiş County cows (Table 3).

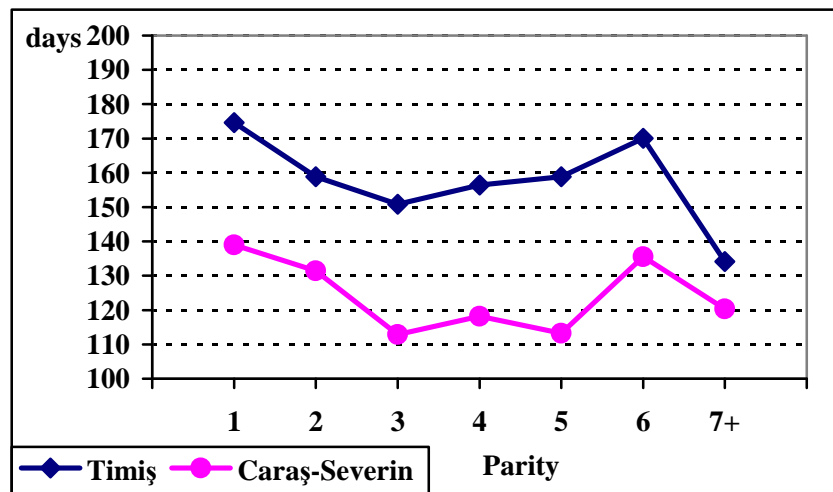


Figure 1. Days open evolution according to parity and county

The largest difference between the two counties was observed in the fifth parity, when cows from Timiș County had over 1.5 months longer days open than cows from Caraș-Severin County (45.7 days, $p < 0.001$, Table 3). In the second parity the difference was only 27.5 days ($p < 0.05$) in the favor of cows from Timiș County. For the other parities cows from Timiș County had about 35 days longer days open ($p < 0.05$) than cows from Caraș-Severin County. Cows older than 7 parities had similar days open in both counties (Table 3).

Table 3

Differences between counties and their statistical significance for open days (days) in Romanian Black and White cows

Lactation	TM-CS
1	35.6*
2	27.5*
3	37.9**
4	38.2*
5	45.7**
6	34.6*
7+	13.8 ^{ns}
TOTAL	40.8***

ns = $p > 0.05$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Table 4 presents the differences for days open from parity to parity within Timiș County. Differences varied from zero (L2-L5) to 40.5 days (L1-L7+).

Days open period was significantly longer in primiparous cows compared to that of the second parity (15.7 days, $p<0.01$), third parity (23.8 days, $p<0.001$), fourth parity (18.2 days, $p<0.05$), and seventh and over parities (40.5 days, $p<0.05$). The other differences did not reach the statistical significance level ($p>0.05$), probably because of the high variability within groups.

Table 4

Differences from parity to parity and their statistical significance for days open (days) in Romanian Black and White cows from Timiș County

Lactation	L7+	L6	L5	L4	L3	L2
L1	40.5*	4.5 ^{ns}	15.7 ^{ns}	18.2*	23.8***	15.7**
L2	24.8 ^{ns}	-11.2 ^{ns}	0	2.5 ^{ns}	8.1 ^{ns}	-
L3	16.7 ^{ns}	-19.3 ^{ns}	-8.1 ^{ns}	-5.6 ^{ns}	-	-
L4	22.3 ^{ns}	-13.7 ^{ns}	-2.5 ^{ns}	-	-	-
L5	24.8 ^{ns}	11.2 ^{ns}	-	-	-	-
L6	36 ^{ns}	-	-	-	-	-

ns = $p>0.05$; * = $p<0.05$; ** = $p<0.01$; *** = $p<0.001$

For Caraș-Severin County, there were no significant differences among parities for days open ($p>0.05$), even the values of differences were high. The reason for this could be that the variability within parity groups was high and the number of individuals in each group was low.

Conclusions

Average days open was 163.5 days (5 months and 11 days) for cows in Timiș County and 122.7 days (4 months and one day) for cows in Caraș-Severin County. The difference of 40.8 days in the favor of cows from Timiș County was significant ($p<0.001$).

The longest period of days open was obtained in primiparous cows both in Timiș and Caraș-Severin, being 174.6 days (5 months and 22 days) and 139.0 (4 months and 17 days), respectively.

The shortest length of days open was obtained for both counties in the third parity, being 150.8 days (5 months and 4 days) and 112.9 (3 months and 21 days), respectively.

In Timiș County, primiparous cows had a significantly longer days open ($p<0.05$) compared to cows in second, third, fourth and seventh and over parities.

There were no significant differences for days open between parities for cows in Caraș-Severin County.

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