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RESEARCHES REGARDING RESTING BEHAVIOUR IN LACTATING DAIRY COWS DURING FIRST HUNDRED DAYS AFTER CALVING

CERCETĂRI PRIVIND COMPORTAMENTUL DE ODIHNĂ LA VACILE DE LAPTE AFLATE ÎN PRIMELE 100 DE ZILE DE LA FĂTARE

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Choices in stabling and management affect the behavior, health, longevity and performance of cows. Resting behavior provides additional information about comfort and health. In the current study were used twenty Romanian Black and White multiparous cows, housed in a tie stall barn 24 hours per day. Experiments were carried out during winter and summer seasons, in February and June 2008. Cows monitored were in their first hundred days of lactation. In our study cows spent resting during winter season on average 379.9 minutes (6.33 hours), value that represents 26.38 % from the day′s interval. During cold season, cows spent resting while standing on average 277.40 minutes, and while lying recumbent, only 97.55 minutes. Time devoted to rest during summer season per 24 hours was on average 613.75 minutes (10.22 hours), value that represents 42.60% from the day′s interval. During summer, position adopted by cows for resting periods was as follows: 453.65 minutes in standing position and 160 minutes while lying recumbent. Differences registered between the two seasons for time spent resting and position adopted during resting periods, were very significantly statistically ($p<0.001$).
Keywords: resting behavior; dairy cows; Romanian Black and White

Introduction

Cows need to spend considerable time lying for maximum feed efficiency (decreased maintenance energy requirements and effective rumination) and for optimum health (prevent lameness). Several indices are used by dairy consultants to evaluate cow comfort in tied stall barns. The purpose of this paper is to compare resting behavior, proportion lying to proportion standing during summer and winter seasons. Cows have a very strong motivation to rest and that this motivation to rest increases the longer the cow is deprived of rest.

Materials and Methods

Experiments were carried out in the Didactical farm of the Banat University of Agricultural Sciences and Veterinary Medicine Timisoara, in two seasons, first experiment, during winter season (February 2008), and second in July 2008 (summer season).

Cows had free access to a water source. Stalls used for housing were made out of concrete, and as bedding material were used straws. For each cow and day were used on average four kilograms of straws during winter season and two during summer season.

Cows were treated as a single group, being slightly isolated by the rest of cows housed in the same shed. Cows were milked twice a day, at approximately 5:00 and 17:00, by the same person, to avoid new stress on the animals.

During winter season, cows received a daily ration consisting in: 20 kilograms of corn silage; 8 kilograms of lolium hay; 3 kilograms of concentrates and 4 kilograms of brower′s yeast.

In summer season, ration offered to cows was: 20 kilograms of alfalfa fresh feed; 4 kilograms of concentrates and 5 kilograms of brower′s yeast.

Rations were administrated in two meals per day, forages and leftovers were measured using an electronically scale.

During our experiments we used 20 multiparous cows, ten cows for each experimental season.

In first experimental group (winter season) cows registered an average body weight of 617 kilograms, with an average daily yield of 15.4 kilograms and the average age of cows of 3.1 lactations (with limits ranging between 2 and 4 lactations).

The second experimental group (summer season) had an average body weight of the cows of 581.6 kilograms, average daily yield by 20.5 kilograms of milk and age of the cows was on average by 2.9 lactations (with limits ranging between 2 and 5 lactations).

Results and Discussion

Tables 1 and 2, show total time the cows spent resting during experiments, in both lying and standing position.

Cows spend resting during winter season per day, on average 379.95 minutes (6.33 hours), value that represents 26.38% of 24 hours. In standing position cows spend resting per day, on average 277.40 minutes and in lying position, spend resting 97.55 minute. From total time spend resting, cows preffered standing position (73% from total resting time) to resting in lying position (only 25.67% from total resting time). In summer season cows studied spent resting on average per day 613.75 minutes (10.22 hours), amount of time that represents 42.62 percents of a days total time. Standing

position for resting was adopted by cows in this season on average in 453.65 minutes, value that represents 73.91 percents of total time allocated to resting behavior per day. In lying position, cows spent resting on average 160 minutes, respectively 26.06 percents of total time spent resting per 24 hours.

Table 1

Resting activity during winter season

Winter season		Total rest	Standing	Lying
7-14^{oo}	$X \pm S_x$	145.05±4.80	110.30±6.41	34.75±5.29
	SD	21.49	28.69	23.69
14-21^{oo}	$X \pm S_x$	137.70±7.33	108.70±9.18	29.00±4.31
	SD	32.78	41.06	19.27
21-7^{oo}	$X \pm S_x$	92.20±10.82	58.40±6.35	33.80±6.16
	SD	48.41	28.42	27.55
On 24 hours	$X \pm S_x$	379.95±15.33	277.40±13.66	97.55±12.17
	SD	68.57	61.12	54.44

Table 2

Resting activity during summer season

Summer season		Total rest	Standing	Lying
7-14^{oo}	$X \pm S_x$	200.25±8.41	159.60±11.12	40.65±8.22
	SD	37.65	49.76	36.77
14-21^{oo}	$X \pm S_x$	182.65±9.46	130.95±11.98	51.70±9.11
	SD	42.34	53.60	40.74
21-7^{oo}	$X \pm S_x$	230.75±14.54	163.10±20.22	67.65±10.84
	SD	65.04	90.44	48.52
On 24 hours	$X \pm S_x$	613.75±19.33	453.65±29.85	160.00±19.83
	SD	86.46	133.53	88.70

Differences registered in between the two seasons for total time spent resting on 24 hours were on average of 233.80 minutes, in favor of the summer season, differences very significantly statistically ($p<0.001$).

Table 3

Significance differences for resting behavior between the two seasons

		Total rest	Standing	Lying
Winter-Summer	Segment I	- 55.20 ***	- 49.30 *	- 5.90 ^{ns}
	Segment II	- 44.95 **	- 22.25 ^{ns}	- 22.70 ^{ns}
	SegmentuIII	- 138.55 ***	- 104.70 ***	- 33.85 *
	On 24 hours	- 233.80 ***	- 176.25 ***	- 62.45 ***

*p<0.05; **p<0.01; ***p<0.001

Conclusions

During winter season, cows spent resting on average 379.9 minutes (6.33 hours), value that represents 26.38 % from the day′s interval. Cows spent resting while standing on average 277.40 minutes, and while lying only 97.55 minutes.

Time devoted to rest during summer season per 24 hours was on average 613.75 minutes (10.22 hours), value that represents 42.60% from the day′s interval. Position adopted by cows for resting was registered as follows, 453.65 minutes in standing position and 160 minutes while lying recumbent.

Differences registered between the two seasons for time spent resting and position adopted during resting periods, were very significantly statistically (p<0.001).

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