

THE INFLUENCE OF ADMINISTRATION ORDER OF FORAGES ON THE RESTING BEHAVIOR IN ROMANIAN BLACK AND WHITE PRIMIPAROUS

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Abstract

The study was carried out on 9 Romanian Black and White cows in their first one hundred days of lactation. The aim of this study was to measure the influence of administration order of forages on the resting behavior of the cows in 24 hours that were divided into 3 day periods (intervals): 07:00-14:00 (I1), 14:00-21:00 (I2), 21:00-07:00 (I3). During the experiments, the following resting behavior aspects were determined: number of periods standing, number of periods lying and the length of periods in the fibrous-succulents administration order of forages (O1) and succulents-fibrous order (O2). Data was computed by ANOVA/MANOVA. Results showed that the cows resting on average 597.56 minutes in the first administration order (O1) in 32.22 resting periods and 559.33 minutes in the succulents- fibrous order (O2). in 29.44 resting periods. Between O1 and O2 administration order of forages there were a very significant differences ($p < 0.001$) for number of resting periods and distinct significant differences ($p < 0.01$) for length of resting periods.

Key words: resting behavior, Romanian Black and White Cows

INTRODUCTION

Resting behavior is one of the most important behaviors with a big influence on the animal production. A long time spent resting increases the animal production [1].

Resting is a complex motivated action, manifested during the whole day, cows resting both in standing and lying posture.

It is recommended a strict complying with the resting program of cows, in the way that all the activities within the barn should be carried out at the same time of the day, cows getting used with this program. Also, during the night it is preferred that cow should not be disturbed, because a large part of resting behaviour is taking place during this segment of the day [3].

It is recommended that bedding should be refreshed because the resting length decreases when the bedding is wet and/or dirty [2].

MATERIALS AND METHODS

Investigations were carried out in The Experimental and Didactical Station of the Banat University of Agricultural Sciences

and Veterinary Medicine Timișoara, during the autumn-winter season. The biological material in the study was 9 Romanian Black and White cows at first freshening, in their first one hundred days of lactation.

In our researches we studied some aspects that characterized the resting behavior: number of periods standing out, number of periods lying down, the length of the periods according to administration order of forages.

Ration was made up of concentrates, alfalfa hay, grass silage (grass and leguminous plants mixture). Fodders given in two orders: fibrous-succulents (O1) and succulents-fibrous (O2). The behavior of cows was video recording for two consecutive days, 24 hours/day.

For a better interpretation the recorded material was divided in three periods for every 24 hours of surveillance: 07:00 to 14:00, 14:00 to 21:00 and 21:00 to 07:00.

Data obtained from these observations was processed and statistical interpreted with ANOVA-MANOVA.

RESULTS AND DISCUSSION

Averages and significance of differences for the number of resting periods and their duration, between I₁ (07°-14°), I₂ (14°-21°), I₃ (21°-07°) from standing up and from lying down position and in fibrous-succulents order (O1) are presented in Table 1.

Between interval 1 in the standing posture and interval 1 in the lying posture there were two very significant difference (p<0.001): the number of resting periods was 3.78 higher and the length of resting periods was 64.56 minutes longer in the standing posture than in the lying posture. It is normal that cows are resting in standing position more during in the first interval of a day.

Between interval 2 in the standing posture and interval 2 in the lying posture, very significant differences (p<0.001) was observed for the number of resting periods was 2.33 higher in the standing posture than in the lying posture and for the average length of one resting period being 10.00 minutes higher in lying posture than in standing posture.

During the night, there is quieter, and when cows are not ruminating they are resting in lying posture where the number of resting periods was 3.66 higher and the resting time was 126 minutes longer (p<0.001) than in standing posture. A significant difference (p<0.001) was for the average length of one resting period being 6.16 minutes higher in lying posture than in standing posture.

Averages and significance of differences for the number of resting periods and their duration, between I₁ (07°-14°), I₂ (14°-21°), I₃ (21°-07°) from standing up and from lying down position and in succulents-fibrous order (O2) are presented in Table 2.

Between interval 1 in the standing posture and interval 1 in the lying posture

was a significant difference (p<0.05) for number of resting periods was 1.67 higher in the standing posture. For length of resting periods was a distinct difference (p<0.05) was 27.22 minutes longer than in the lying posture.

Between interval 2 in the standing posture and interval 2 in the lying posture, very significant difference (p<0.001) was observed for the number of resting periods was 2.78 higher in the standing posture than in the lying posture. Where two distinct differences (p<0.01): the length of resting periods was 25.34 minutes longer in standing posture and average length of one resting period being 5.15 minutes higher in lying posture than in standing posture.

During the night, the number of resting periods was 3.78 higher, the length of resting periods was 144.78 minutes longer and average length of one resting period being 10.87 minutes higher (p<0.001) in lying posture than in standing posture.

Table 3 presents averages and significance of differences for the total number of resting periods and their total duration I₁+ I₂+I₃, from standing up (O) and I₁+ I₂+I₃ from lying down position (D), in fibrous-succulents order (O1) and succulents-fibrous order (O2).

Results showed that the cows resting on average 597.56 minutes in the first administration order (O1) in 32.22 resting periods and 559.33 minutes in the succulents-fibrous order (O2). in 29.44 resting periods.

Between the two administration order of forages (O1 and O2) has resulted a very significant difference (p<0.001) for number of resting periods being higher in O1 order than in O2 order by 2.78 and a distinct significance (p<0.01) for length of resting periods, difference being 38.23 minutes higher in O1 order than in O2 order.

Table 1. Averages and significance of differences for the number of resting periods and their duration, between I₁ (07°-14°), I₂ (14°-21°), I₃ (21°-07°) from standing up and from lying down position and in fibrous-succulents order (O1)

	Standing position			Lying position			Differences and significance		
	I ₁ O	I ₂ O	I ₃ O	I ₁ D	I ₂ D	I ₃ D	I ₁ O- I ₁ D	I ₂ O- I ₂ D	I ₃ O- I ₃ D
Number of resting periods	6.11	5.44	5.78	2.33	3.11	9.44	3.78^{***}	2.33^{***}	-3.66^{***}
Duration (min.)	107.67	92.89	70.44	43.11	87.00	196.44	64.56^{***}	5.89 ^{ns}	-126.00
Average length of one resting period (min.)	17.62	17.07	14.80	18.50	27.07	20.96	-0.88 ^{ns}	-10.00^{***}	-6.16^{**}

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

Table 2. Averages and significance of differences for the number of resting periods and their duration, between I₁ (07°-14°), I₂ (14°-21°), I₃ (21°-07°) from standing up and from lying down position and in succulents-fibrous order (O2)

	Standing position			Lying position			Differences and significance		
	I ₁ O	I ₂ O	I ₃ O	I ₁ D	I ₂ D	I ₃ D	I ₁ O- I ₁ D	I ₂ O- I ₂ D	I ₃ O- I ₃ D
Number of resting periods	4.22	5.78	5.11	2.55	3.00	8.89	1.67[*]	2.78^{***}	-3.78^{***}
Duration (min.)	83.78	84.78	65.00	56.56	59.44	209.78	27.22^{**}	25.34^{**}	-144.78^{***}
Average length of one resting period (min.)	19.85	14.66	12.72	22.18	19.81	23.59	-2.33 ^{ns}	-5.15^{**}	-10.87^{***}

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

Table 3. Averages and significance of differences for the total number of resting periods and their total duration I₁+ I₂+I₃, from standing up (O) and I₁+ I₂+I₃ from lying down position (D), in fibrous-succulents order (O1) and succulents-fibrous order (O2).

	O1	O2	Differences and significance
			O-D
Number of resting periods	32.22	29.44	2.78^{***}
Duration (min.)	597.56	559.33	38.23^{**}
Average length of one resting period (min.)	18.54	18.99	-0.45 ^{ns}

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

CONCLUSIONS

- In both administration order of forages (O1 and O2), hour interval had and influence on the resting length, in the way that the resting periods and resting time in standing posture decrease from interval 1 till interval 3, that from morning until night, while the resting periods and resting time in lying posture increase from interval 1 to interval 3. Results of our researches are comparable with data of speciality literature. [4]

- Administration order of forages that influences resting behaviour, the cows resting on average 597.56 minutes in the first administration order (O1) in 32.22 resting periods and 559.33 minutes in the succulents-fibrous order (O2). in 29.44 resting periods.

- Number of resting behavior was higher by 2.78 in O1 than in O2 order (p<0.001) and for length of resting periods, difference being

38.23 minutes higher in O1 order than in O2 order (p<0.01).

BIBLIOGRAPHY

Journal article:

[3] Metz, J, H.M (1985) – The reaction of cows to short-term deprivation of lying. Appl. Anim. Behav. Sci. 13:310.

Book:

[1] Batcheder, T. L. (2000) – The impact of head gates and overcrowding on production and behavior patterns of lactating dairy cows. In Dairy Housing and Equipment Systems, Managing and Planning for Profitability. Natural Resource, Agriculture, and Engineering Service Publ. 129.Camp Hill, PA.

[2] Grant, R. J. (2003) – Taking advantage of dairy cow behavior. In Proc. 2003 Cornell Nutr. Conf For Feed Manufac. October 21-23. Cornell University. Wy ndham Syracuse, NY.

[4] Stanciu, G. (1999) – Tehnologia cresterii bovinelor, Ed. Brumar, Timisoara.