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Influence of Season and Daily Mating Time upon Sexual Libido of Artificially Phimotic Bull-Teasers

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ABSTRACT

Influence of season and time devoted to daily mating upon sexual libido of artificially phimotic bull-teasers was evaluated in female dairy cattle herds at the Livestock Center "Triángulo 1" in Camagüey, Cuba. To this end, 140 Holstein x Zebu crossbred males at ages between 13 and 75 months old were studied from 2007 to 2010. Samples statistic were estimated. A covariance analysis (ANACOVA) including age as a covariable was performed to evaluate bull-teasers sexual libido as a dependent variable of daily mating time and season. Despite significant differences ($P < 0,000$) in sexual libido concerning restricted daily mating (6,95 points) and free daily mating (5,94 points), none were found for season. These differences in findings are attributable to uncontrolled matings. Rotating bull-teasers and determining male-female rate by the service capacity test are recommended.

Key Words: *auxiliary means, sexual performance, bulls*

INTRODUCTION

Male-female contact in dairy cattle herds under artificial insemination schemes, have been studied by different authors as an auxiliary means to detect estrus, and as an important and irreplaceable biological stimulus to activate and intensify reproduction in females (Holý, 1987; Pérez-Hernández, García-Winder and Gallegos-Sánchez, 2002; de Loyola, 2004; Roelofs, Soede, Voskamp-Harkema, Kemp and Arteaga, 2008). A strong libido is required (Morales, 1996), regardless of the teaser´s genetic features.

Albarrán, González-Rubiera and Calderón (2001) claimed that sexual instinct alterations may depend on various causes, like, body-build, physical, organic, exploitation, and hygienic and nutritional conditions. The fact that mating can be repeated several times during a single estrus when there is free access to females (Bertram *et al.*, 2002) is very important, especially when teaser bulls are used, in the light of physical and sexual exhaustion (Holý, 1987). In that sense, the same author suggested the arrangement of the estrus detection method in such a way that the males accessed the herd in regular shifts, two to four times a day.

It is also known that forage disparity between the two main seasons of the year in Cuba has brought pasture qualitative and quantitative restrictions, which are more remarkable in the dry season (De Loyola, 2010 and Soto, 2010). Furthermore, high temperatures hinder bull sexual behavior intensity (Albarrán *et al.*, 2001). This environmental situation also affects dairy cow herds, with a very high incidence of anestrus in Camagüey, especially when pasture biomass (the main source of nutrition) is decreased (De Loyola *et al.*, 2012).

Variable mounting is generated throughout the year, caused either by seasonal estrus behavior of females, or by the daily male contact with them, depending on local handling. The purpose of this research was to assess the effect of season and daily time of approaching the female herd on sexual libido of teaser bull with surgical phimosis.

MATERIALS AND METODS

The research included dairy cattle herds under an artificial insemination scheme, at Triángulo 1 Cattle Enterprise in Camagüey, Cuba, from 2007 to 2010. A number of 140, 13-75 month old crossbred teaser bulls Holstein x Cebu, used for estrus detection as auxiliary means of insemination personnel was included in the study.

The teasers grazed in the fields, where they took their only food ration in the two seasons of the year; rainy, (April-October), and dry (November-

March). The availability of pasture biomass is lowest in the dry season.

Handling according to the daily approaching time was (I) 90 teasers with limited time of 2-4 h daily at the estrus detection times, (II) 50 males permanently by the females. Male-female proportion did not exceed 1:30, considered as optimum by Holý (1987).

The teasers were unable to achieve penetration (complete service) due to surgical phimosis; so mounting and back beating were regarded as a service.

For libido measuring test, females with naturally produced estrus were used and the teasers were placed near the pen with the cows for 30 min to produce erotization following the model used by Bertram *et al.* (2002). Later, they were allowed contact for 10 min, according to the test for bulls (Chenoweth, 1981), and the results were put in a 0-10 scale (Table 1)

The general statgraphs were calculated and libido was regarded as dependent variable of daily approaching time; and season, through covariance analysis (age used as co-variable), using SPSS, ver. 15.0.1 (2006).

RESULTS AND DISCUSSION

Both the season of the year and its interaction with the kind of handling, were initially calculated with another co-variance model. However, the results are not shown because there were no significant differences.

Table 2 shows that daily approaching time to females, effects on libido, regardless of the season. Table 3 shows that the teasers unable to approach the females had better sexual libido compared with those that had free access.

This mean libido value in males with limited approach is generally considered very good (Chenoweth, 1981 and Chenoweth, 1997), where the teaser would only provide one service, which according to Araujo, Borgwartd, Sween, Yelich and Price (2003)— allows them to detect 96-100 % of estrus females; a more intense libido would help increase the herd´s estrus activity (Pérez-Hernández *et al.*, 2002; Fabre-Nys and Gelez, 2007; Roelofs *et al.*, 2007 and Roelofs *et al.*, 2008). In that sense, it would be useful to single out males, and it is recommended to conduct another important test (service capacity) to determine the number of females that can be served in 20-30 min, then perform more accurate calculation of female-male proportion (Montes, Martínez, Scull, Hernández and Benítez, 1998).

When quite a few animals are in estrus at the same, mating is more frequent, different than when there is only one animal in estrus (Roelofs *et al.*, 2008). For these authors bull-cow contact through a fence does not improve estrus production behavior. However, Roelofs *et al.* (2007) demonstrated that LH pulses significantly increase acutely, suggesting that the permanent presence of the teaser in the herd is not necessary; a sudden approach (for the limited males) has a positive effect on estrus producing behavior. Holý (1987) and Molina *et al.* (2000) recommended rotating the bulls.

The more a male mounts, the sooner fatigue may appear, which should be given a great deal of attention (Holý, 1987). This effect demonstrates that the significant reduction of libido in freely approaching males, is also justified by findings of Molina *et al.* (2002), season does not seem to have an important influence on sexual libido in Camagüey The bulls may, at times, decrease mounting activity because the waste of energy is high when trying to service anestrous cows, which are very commonly observed in Camagüey (De Loyola *et al.*, 2012).

For their part, teasers with limited approaching were kept in separate stables under different conditions than the rest of the herd. In addition, their energy waste was lower during the two seasons, due to the common practice of withdrawing the estrus females to perform artificial insemination. Also, high anestrus incidence prevailing in Camagüeyan dairy herds, described by De Loyola, *et al.* (2012), shows a little probability of recurring sexual fatigue.

The males that remained in the female herd permanently could not have significant energy waste from mounting, particularly in the dry season, when anestrus is incremented. Even when teasers may mount some anestrus females (Molina *et al.*, 2002), the biological factors of the species, like osmium inhibitors described by Albarrán *et al.* (2001), which are repulsive substances given off by gestating or lactating animals, reduce that possibility. Nevertheless, they are more prone to sexual fatigue as they are free to mount females during the estrus period.

CONCLUSIONS

Sexual libido is lower in the teasers that remained by the females all the time, regardless of the season, which may be caused by physical exhaustion from uncontrolled mounting.

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Table 1. Sexual libido classification scale in bulls (Chenoweth, 1981)

Points	Attitude
0	The bull is not aroused
1	The bull was aroused only once
2	Positive sexual interest in the female more than once
3	Active attention to the female with persistent sexual interest
4	One mount or attempt of mount, without service
5	Two mounts or attempt of mount without service
6	More than two mounts or attempt of mounts without service
7	One service without persistent sexual interest
8	One service followed by sexual interest with mounting or attempt of mounting
9	Two services without persistent sexual interest
10	Two services followed by sexual interest, mounting attempt, or service

0-3, the bull classifies as bad; 4-6, the bull classifies as good; 7-8, the bull classifies as very good; 9-10, the bull classifies as excellent

Table 2. Results from inter-individual effect tests (libido, season, handling kind)

Source	Sum of squares type III	gl	Quadratic mean	F	Significance
Corrected model	218.14(a)	2	109.07	71.90	.000
Intersection	448.29	1	448.29	295.51	.000
EA	2.34	1	2.34	1.54	.216
TM	217.69	1	217.69	143.50	.000
Error	207.83	137	1.52		
Total	6498.00	140			
Corrected total	425.97	139			

Dependent variable: sexual libido
R square = .512 (R corrected square = .505)
EA: season; TM: handling type

Table 3. Marginal means of libido for two types of handling

Handling type	Mean	Typical error	Intervalo de confianza al 95 %	
	Lower cut off	Higher cut off	Lower cut off	Lower cut off
Permanently	5.94(a)	.175	5.60	5.94(a)
Limited	6.95(a)	.117	6.72	6.95(a)

Dependent variable: sexual libido
a: co-variables in the model are assessed in these values: teaser bull age = 39.76