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Zootecnia: Otimizando Recursos e Potencialidades

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Variações no peso de vacas paridas em pastagens nativas do Pantanal¹

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Resumo: Acompanhou-se a variação de pesos de vacas paridas durante a primavera em pastagens nativas do Pantanal. Os lotes foram formados contendo 100 vacas múltíparas e 40 primíparas, submetidas à suplementação proteica (SP) ou energética (SE). As vacas permaneceram em uma área de 596 hectares, divididas em duas invernações com pastagens nativas de médio e baixo valor nutricional. Utilizou-se o delineamento inteiramente casualizado, sendo os resultados comparados tendo como covariáveis a classe (múltíparas ou primípara) e os dias pós parto (pp) (> 60 ou < 60 dias), pelo teste de Tukey a 5% pelo modelo linear misto (procedure MIXED). As vacas múltíparas obtiveram ganho de peso de 26.55 e 36.10 kg no período na suplementação SP e SE respectivamente, enquanto as primíparas SP perderam -6.15 kg e as SE ganharam 4,19 kg, no período estudado de 42 dias. Vacas múltíparas e primíparas com mais de 60 dias pp e suplementadas com energia (SE) tiveram maior ganho de peso ($P < 0.05$) em suas respectivas categorias, demonstrando resposta às melhorias alimentares (pastagens e suplementos) associada possivelmente à saída do período de balanço energético negativo do pós parto imediato, efeito este mais evidenciado na categoria múltíparas. As pastagens nativas de melhor valor nutricional aumentaram em frequência em relação às de menor valor (de 23.45 para 37.66%), assim como foi observada melhoria na composição química das forragens (de 53.40 para 57.37% de nutrientes digestíveis totais).

Palavras-chave: forragens nativas, múltíparas, primíparas, suplementação pós parto

Changes in the weight of calved cows in native pastures in the Pantanal

Abstract: The weight variation of calving cows was followed during the spring in native pastures in the Pantanal. Each lot contained 100 multiparous and 40 primiparous cows submitted to protein (PS) or energy (ES) supplementation. The cows were put in an area of 596 hectares, divided into two paddocks with native pastures of medium and low nutritional value. A completely random manner design was applied. The covariates used for comparing the results were class (multiparous or primiparous) and postpartum days (pp) (> 60 or < 60 days), with the Tukey test at 5% by the mixed linear model (procedure MIXED). The multiparous cows gained 26.55 and 36.10kg in the PS and ES supplementation periods, respectively. Primiparous PS cows lost -6.15kg and primiparous ES cows gained 4.19kg during the study period of 42 days. Multiparous and primiparous cows over 60 days pp and supplemented with energy (ES) had a greater weight gain ($P < 0.05$) in their respective categories, thus demonstrating response to dietary improvements (pastures and supplements), possibly associated with the output of the postpartum negative energy balance, an effect more evident in the multiparous category. The native grassland with better nutritional value increased in frequency in relation to the lower value (23.45 to 37.66%) and improvement was observed in the chemical composition of forages (from 53.40 to 57.37% of total digestible nutrients).

Keywords: native forages, multiparous, primiparous, postpartum supplementation

Introduction

The Pantanal is characterized by vast fields of native pastures with medium and low nutritional value. It is the home of beef cattle extensive breeding. The region is characterized as a nursery of calves, due to its natural adequate conditions for the breeding activity. The frequency of each native forage of Pantanal varies according to soil characteristics (fertility and structure), flood level, waterlogged soil, climate, and herd management, among other natural or anthropogenic factors.

The stocking rate is generally low, in order to allow for the recovery of the main or the most consumed forage, especially during critical periods of feeding cows – during the dry season and during the floods. Productivity levels are



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medium to low because of dietary variability, both in terms of nutritional composition and supply, which can be considered as a window of opportunity for supplementation, field formation or the establishment of specific management and pasture strategies.

The postpartum period and the beginning of the breeding season are considered critical to cow pregnancy, since high weight loss causes a decrease in the pregnancy rate. On the other hand, the diet of the animals may change significantly in this period, because the flooded areas are "down" (dried) but still have good soil moisture and there is a rapid forage recovery with the onset of the rainy season (spring). The objective of the study was to assess the weight change behavior in the period immediately after the breeding season in multiparous and primiparous calved cows submitted to energy and protein supplementation.

Material and Methods

A lot of 280 calving Nelore cows (200 multiparous and 80 primiparous) was divided, taking into consideration the category (primiparous or multiparous) and the class (under or over 60 days postpartum). The cows were allocated into two native pasture paddocks of 298 hectares each, in the sub-region Abobral, on São Bento Farm, in the Pantanal Sul, during the period between 08 Oct and 19 Nov 2012.

Each treatment consisted of 100 multiparous and 40 primiparous cows. One group was offered 300g of energy supplement per cow/day (ES); the other lot was offered 150g protein supplement per cow/day (PS). The supplementation was isoproteic, isophosphor and isomineral, with the only variation in energy consumption in the form of fat (50g protected fat, 50 g cottonseed meal) and carbohydrates (50g of corn grits) in the ES treatment.

The cows were weighed on day 1 (beginning of experiment) and on day 42. The plots were rotated on day 21 in order to minimize potential environmental effects. The average weight of multiparous cows was 368.69kg; the primiparous cows was 355.49kg. The final weight was 398.90kg and 355.13kg, respectively, for multiparous and primiparous cows.

The pastures were assessed on days 01 (beginning), 21 (rotation) and 42 (final). We applied the method described by Santos et al. (2002), with the main steps in the following order: identification of the main grazing sites of each area (three sites in each paddock); indirect estimate of the frequency of the five main forages, carried out by means of random entries (50x per site) of square (0.5 m²); estimated participation of the main forage species at each site, through the collection and analysis of dry matter (DM); collecting samples of forages for grazing simulation in the squares sampled at each site (the base for the chemical composition of the diet).

In order to compare the data (range of cow weights), we used the completely random manner design, considering as covariates in the model: cow categories (category 1 = multiparous; or category 2 = primiparous) and class (up to 60 days pp = class 1 and 61-120 pp = class 2), by means of the Tukey test at 5% by the mixed linear model

Results and Discussion

Generally speaking, while multiparous cows gained weight during the period, regardless of class pp, primiparous cows had a slight weight gain (ES treatment) or slight weight loss (PS treatment). ES multiparous cows over 60 days pp (Class 2) experienced a greater increase ($P < 0.05$) of weight (41.44 kg) in the period than the others, 30.77kg for multiparous ES Class 1, 28.89kg for multiparous PS class 2, and 24.22kg for multiparous PS class 1 (Table 1).

Table 1. Weight variation of multiparous and primiparous calved cows that received energy supplement (ES) or protein (PS), during the spring in native pastures of South Pantanal.

Category	Multiparous			
	PS		ES	
Treatment	PS		ES	
Class	1	2	1	2
Initial weight	371.79	365.07	380.08	350.35
Final weight	396.01	393.96	409.84	391.79
Weight gain	24.22 ^b	28.89 ^b	30.77 ^b	41.44 ^a
Category	Primiparous			
Initial weight	352.40	356.80	366.82	350.65
Final weight	347.42	351.48	367.08	357.04
Weight gain	-6.98 ^b	-5.32 ^b	2.00 ^{ab}	6.39 ^a

^a Means followed by the same letter are not statistically different $P < (0.05)$.



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Comparing the pp classes within the same treatment and category, for both PS and ES cows, the weight gain values for cows over 60 days pp was higher, though just to ES cows there were significant statistically difference ($P < 0.05$). This difference may have been caused by lower energy expenditure for nursing calves, or best individual conditions of use and diet selection. Similar behavior was observed in the data regarding first calf cows. ES primiparous cows had slight weight gain and PS primiparous cows had mild weight loss (Table 1). Newly calved cows, besides a strong energy deficit, go through a recovery period due to the psychological wear-and-tear related to delivery, the stress with newborn calves, hormonal changes, the beginning of milk production and uterine recovery, which probably causes changes in feeding behavior, consumption reduction and weight loss.

There was an increase in the frequency of better nutritional value forages, as well as improvement in their chemical composition (Table 2), which may have helped in the recovery and weight gain of multiparous cows in general (classes 1 and 2). The best nutritional value grasses were the “mimoso” (*Axonopus purpusii*), “mimosinho” (*Reimarochloa brasiliensis*) and the “carandazal” (*Panicum laxum*); grasses with intermediate value were the “felpudo” (*Paspalum plicatum*) and “mimoso vermelho” (*Setaria geniculata*), and low value grasses were the “fino” (*Axonopus paraguayensis*) and “vermelho” (*Andropogon hypoginus*).

Table 2. Average frequency of the main forages according to nutritional quality and chemical composition of the diet in the grazing sites of the fields.

	Frequency of forages and the chemical composition of the diets		
	Sampling (Day)		
	D01	D21	D42
Better nutritional value (%)	46.2	56.8	66.8
Intermediate nutritional value (%)	15.3	18.5	17.9
Low nutritional value (%)	32.2	20.1	11.9
Other forages (%)	6.3	4.6	3.4
Crude Protein (%)	5.7	5.8	6.0
Neutral Detergent Fiber – NDF (%)	74.3	73.5	72.8
TDN ² (%)	52.8	53.1	53.4

¹ Chemical composition calculated by multiplying the forage frequency adjusted by the chemical composition of the forage in the sampling dates;

² TDN estimated by Cappelle et al. (2001) – $TDN = 83.79 - 0.4171 \times NDF$.

Conclusions

The energetic supplementation allowed higher weight gains than protein supplementation in calving cows consuming native pastures during the study period. The supplemented primiparous cows had lower weight gains when compared with multiparous cows in the postpartum period.

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