



Comportamento ingestivo de fêmeas bubalinas suplementadas com torta de palmiste sob condições térmico-hídricas na Amazônia Oriental¹

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¹Parte do trabalho de doutorado do primeiro autor, financiado pelo CAPES.

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Resumo: O objetivo do trabalho foi avaliar a influência da suplementação no comportamento ingestivo de fêmeas bubalinas em pastejo. Foram utilizadas 24 fêmeas com idade e peso médio iniciais de 54 meses e 503,1 kg, respectivamente, distribuídas em delineamento inteiramente casualizado, com quatro tratamentos e seis repetições por tratamento. As observações foram realizadas nos dias 01 e 02/05/2014 com suplementação diária, tendo como base a torta de palmiste, onde os tratamentos foram definidos em relação do peso corporal, ou seja, 0% (controle); 0,25%; 0,5% e 1,0%. Os animais receberam a suplementação uma vez por dia, em cocho individual. As búfalas foram colocadas em pastagem de *Brachiaria brizantha* cv. Marandu em sistema de pastejo rotacionado com livre acesso ao suplemento mineral e água. As observações referentes ao comportamento animal foram feitas de forma visual, pelo método de varredura instantânea com intervalos de cinco minutos, durante 24 horas de avaliação. As variáveis comportamentais foram: Tempo pastejando; Tempo de ruminação; Tempo em ócio. Houve efeito significativo para a variável tempo de pastejo, o tratamento com o nível de inclusão de 0,25% do peso corporal diferiu dos demais tratamentos.

Palavras-Chave: Búfalo, coprodutos, clima, etograma, pastejo, Pará

Feeding behavior of water buffaloe females supplemented with palm kernel cake and observed on thermal-water conditions in eastern Amazon

Abstract: The objective of this study was to evaluate the influence of the supplementation on feeding behavior of female buffalos in grazing. Twenty four females that were 54 months old and had average initial body weight (BW) of 503.1 kg were used. They were distributed in a completely randomized design with four treatments and six replications per treatment. The observations were conducted on May 1st and 2nd, 2014, with daily supplementation based on palm kernel cake. It was made with the inclusion of levels from the BW ratio of 0% (control), 0.25%, 0.5% and 1.0%. The animals were individually supplemented once a day. The buffalos were placed on *Brachiaria brizantha* cv. Marandu pasture in rotational grazing with free access to mineral supplement and water. The observations regarding to animal behavior were done visually by the method of instantaneous scan. It was made every five minutes over 24 hours of evaluation. The behavioral variables evaluated were: grazing time, rumination time, and time in idleness. There was a significant effect for the grazing time variable in which the treatment with an inclusion level of 0.25% of the BW differed from the others treatments.

Keywords: Buffalo, by-products, climate, ethogram, grazing, Pará

Introduction

Pasture production systems exposes ruminants to various restrictions caused by climate, nutritional and handling variations, as well as pasture structure variations or even by animal physiological modifications. In front of these restrictions, the animals tend to modify their behavior to minimize negative effects in the environment where they are handled.

According to Bremm et al. (2005) the use of supplements influence on feeding behavior such as time spent grazing, rumination and idle. Supplementation is a practice used as a management strategy to supply lacks on the pasture quality, increasing the forage availability and the animal performance.

Due to palm production increase in the Pará state, the use of palmist oil by-product in animal feed is an alternative to reduce livestock cost production and give an adequate destination to agroindustrial wastes.



This work aimed to evaluate the use of palm oil kernel cake supplementation in the feeding behavior of female water buffaloes raised on Marandu grass pasture during the rainy season in the eastern Amazon.

Material and Methods

The experiment was conducted at the Animal Research Unit “Dr. Felisberto Camargo”, owned by Embrapa eastern Amazon, in Belém, Pará, Brazil. The study area is influenced by climate typology Af₂ (Martorano et al, 1993). The average rainfall of the less rainy month is superior to 60 mm and the annual precipitation is around 2,900 mm. Twenty four female buffaloes (*Bubalus bubalis bubalis*) corresponding to Murrah and Mediterranean breeds that were 56 months old and had initial average body weight (BW) of 503,1 kg, were utilized. The animals were from an experimental herd owned by Embrapa eastern Amazon. The buffalos were supplemented during June, 2013 to May, 2014. The treatments were the supplementation based on the palm kernel cake with the following inclusion levels related to BW: 0% - 0.25% - 0.5% - 1.0%. Associated with each diet level, 0.15% of the wheat meal was included in all of the diets as a flavor agent. The animals received the supplementation once daily in single trough. The animals were placed on *Brachiaria brizantha* cv Marandu pasture in rotational pasture system with access to mineral mix offered in a covered trough and water in artificial water trough. The forage supplies were homogeneous in all the experimental units, being around 8 kg of DM/100 kg of BW throughout the experimental period.

The data, from the following meteorological variables: Rainfall (mm), air temperature (maximum and minimum), provided by the National Institute of Meteorology (INMET, 2014), were corresponded to the periods between April 15 and May 02, 2014.

The feeding behavior of female buffalos in grazing was made on May 1st and 2nd, 2014. The observations, referent to animal behavior, were made visually by an instantaneous scan sampling, using five minutes intervals in 24 hours of evaluation (Johnson and Combs, 1991). The observed and registered behavioral variables were: time spent in idleness, grazing and rumination time. The regurgitation, re-mastication and re-deglutition times from the food bolus were added to calculate the rumination time. The grazing time was obtained through the data collected from feed obtainment and feed handling, and by the chewing and swallowing of the food bolus as well. And finally, when the animals were not eating or ruminating, they were in idleness.

The experiment was analyzed in a completely randomized design with four treatments and six replications per treatment, considering the animal as an experimental unit. The statistical analysis was conducted using the GLM procedure of SAS (Statistical Analysis System, version 9.0). The variable dependent data were subjected to Student’s test ($\alpha = 0.05$).

Results and Discussion

In the study area, the climate data reveal that the period of higher rainy frequency was January to May, with monthly rainfall superior to 300mm. In 2014, it was noted that at this period the rainfall quotes were superior to the time series (Figure 1A). However, it is possible to observe that at the month of May, the rainfall starts to decrease in the area. It reinforces why this month was chosen to evaluate the feeding behavior of buffalos.

During the observation days of the animals on the pasture, 23.4mm of rainfall was recorded and the maximum and minimum air temperature of 30.3°C and 23.3°C, respectively (Figure 1 B). Even during the hottest hours of the day, in any observation day, the maximum air temperature exceeded 34.7°C, reported by Titto et al. (1997) as a critical temperature above the buffalo neutrality zone, mainly in research executed in the southeast of Brazil.

In the data relative to time spent in hours per day (h day⁻¹) on the observed activities, the highest time was to the variable related to the rumination, followed by idle, with an average frequency of de 8.43 e 7.58h day⁻¹, respectively.

The times designed to grazing were influenced by the inclusion of Palm kernel cake in the diet. There was significant effect ($P < 0.05$) on the grazing time variable. The treatment with the inclusion level of 0.25% of BW differed from the others treatments by student’s test to $\alpha = 0.05$ (Table 1). The variables of rumination and idle differed among themselves but did not present significant difference among the supplementation levels of water female buffalos on *Brachiaria brizantha* cv Marandu pasture during 24 hours of observation.



Table 1. Behavior characteristics of female buffalos reared on *Brachiaria brizantha* cv Marandu pasture and supplemented with four palm kernel cake levels related to the body weight.

Variable	Treatment				SEM ^a	CV(%) ^b
	0,0%	0,25%	0,5%	1,0%		
Idle	485.83a	413.33a	471.66a	450.00a	27.60	14.85
Grazing	343.33b	398.33a	336.66b	357.50b	10.98	7.50
Rumination	490.83a	508.33a	511.66a	512.50a	23.64	11.45

^aStandard error of the mean.; ^bCoefficient of variation. Means on the same line, in each variable, following by distinct minuscule letters, respectively, differ among themselves ($P < 0.05$) by Student's test

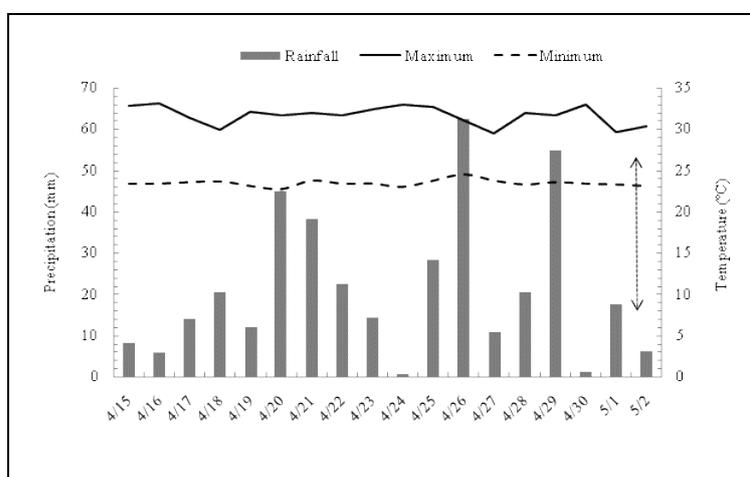


Figure 1 – Rainfall (mm), maximum and minimum air temperature (°C) at the experimental period.

Conclusions

The palm kernel cake supplementation of 0.25 % of the body weight can have an influence on grazing time. Rumination and Idle activities of female buffalos reared in rotational grazing system are independent from the supplementation levels that were offered.

Acknowledgements

The authors thank to Embrapa Amazônia Oriental, through all employees of Animal Research Unit "Dr. Felisberto Camargo" and Marborges Agro SA for palm kernel cake donation used in the experiment. Also, they record their thanks to CAPES/EMBRAPA for the scholarship granted to the first author.

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