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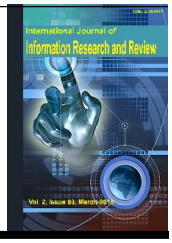

Research Article

EFFECT OF NUTRITION SUPPLEMENTATION ON POST-PARTURITION IN SHEEP FROM THE TOCANTINS REGION OF MARANHÃO STATE, BRAZIL

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ABSTRACT

The production of sheep is an activity of high economic importance in the Brazilian north-east region. However several factors, such as the management, impossibility of high performance, especially in reproduction and the post-parturition in various animals of zootecnic interest. We evaluated different practices of nutrition management to evaluate the effects of post-parturition in sheep, in the southwestern of Maranhão, Brazil. The treatments were analyzed with ANOVA and *Studente-Newman-Keuls* tests (0.05). The treatments demonstrated significant differences, with the treatment by *creep feeding* with high performance decreasing the interval and variations of days between parturitions . There was also an increased estimated reproduction life at 6.26 to 7.75 parturitions in control and *creep feeding* treatments, respectively. The nutrition management in sheep supplemented in conditions of *creep feeding* improves the zootecnics index of reproduction and qualitative management of sheep.

INTRODUCTION

The Brazilian Northeast region stands out in sheep production, with simultaneous exploration of meat and skin, and most animals are of undefined breed (UB) and managed broadly (ANUALPEC, 1999). However, production of beef sheep in the Northeast still has low efficiency due to the limitations imposed mainly by its management, low genetic potential, soil and climatic adversities and also by low socio-economic status of farmers. Therefore, all these conditions influence the reduction of post-parturition days, delaying calving (Siqueira, 1993). In tropical and subtropical regions, the availability of fodder varies annually due to seasonal variations, resulting in variation in nutritional value (Santos *et al*., 2004). Thus, after birth, the sheep, divert nutrients from their food for milk production resulting in weight loss and reduction of organic resistance, adversely affecting their reproductive performance in the next breeding season (Oliveira Filho, 1997). According to Andrigueto (2002a), energy is the main nutrient limiting sheep production, especially in the first eight weeks of lactation when the demands are greater. Therefore, the energy deficiency can result in an impaired quality of food consumed or of low quality. Thus, the objective of this study was to evaluate the effect of food supplementation under different management systems in sheep, and to compare the cost-benefit of feeding management systems and their suitability withinthe conditions in Southern State Maranhão from Brazil.

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MATERIALS AND METHODS

The experiment was carried out on Kateca farm in the municipality of Governador Edson Lobão, located 30 km from Imperatriz in Southern Maranhão State ,Brazil. The animals were raised in four plots of 900 m^2 in the form of rotational grazing, according to the height of pasture and stubble grazing. Each plot had direct contact with the fold and independent, and these dimensions were 10 m x 10 m. The forage in the area was *Brachiaria brizantha*. Measurements for the experiments were performed in a period of 120 days between March and June, starting at the first day of each post-parturition female. We used 45 parous adult sheep of age two to three years in early lactation crossbred Santa Inês breed, divided into three treatments with 15 animals each.

The specimens that were used come from the same parent, identified individually with paste containing a control number, each one carrying a sheet containing data specific to each animal. This identification occurred during the third trimester of gestation, when neckalaces of different colors were placed for easy recognition for identification of estrus of the females we used ruffians, it was free on the picket some moments after the birth of the arrays at a ratio of one for each lot. These had a marked characteristic that identified the expression of estrus in females and 7 days after the heat identification.

The experiments were conducted in three treatments (T): T1 was considered a control, which received only mineral supplementation appropriate and specified for sheep and released to the paddock at 9 h am, grazing until 5 h pm. T2 received additional food supplemented with 12% crude protein and 75% TDN in the amount of 250 grams per animal in the morning and afternoon ,and during the day grazed with their lambs; and T3 was identical to T2, but the lambs were supplemented by *creep-feeding* diet containing 18% crude protein and 70% TDN based on Andrigueto (2002b) (Table 1), during the day, and stayed overnight with their mothers . The diets had commercial mineral salt for sheep with assurance levels (Table 2).

Table 1. Composition of feed consumed by adult animals and *creep-feeding* lambs

Food	Quantities (Kg)	
	Adults	*Creep-feeding* lambs
Corn	87	70
Soybean meal	9	26
Mineral salt for sheep	1.5	1.5
Calcitic calcarium	1.5	1.5
Common salt (NaCl)	1	1
TOTAL	100	100

Table 2. Safety levels per kg of product (mineral salt for sheep)

Macro and micronutrients	Quantities (g)
Calcium	140
Phosphorus	65
Sulfur	15
Magnesium	15
Zinc	3.5
Manganese	3
Iodine	0.06
Selenium	0.01
Cobalt	0.1
Fluorine (maximum)	0.65

The descriptive statistics were established and the treatments were tested by analyses of variance (ANOVA) with significance set at 0.05. Averages were tested by *Student-Newman-Keuls* (*SNK*) (0.05). The Box-plot graphic was generated to compare the performances of the averages, with standard deviations between treatments. BioStat 5.0 software was used to calculate (Ayres *et al*., 2007)

RESULTS AND DISCUSSION

The analyses of variance were significant and the coefficient of variation of 20.52%. The animals under condition of *creep-feeding* (T3) had the best performance for sheep, decreasing the time interval between parturitions (Table 3).

Table 3. Descriptive statistics of payback period of reproduction activity for sheep under different treatments

Parameteres	Treatments		
	T1	T2	T3
Average (days)	88.00[a]	49.33[b]	38.33[c]
Standard deviation	18.94	7.38	4.44

[abc]Average followed the same letter P>0.05 by *SNK* test

An aspect observed for the animals of T2 and T3 is the dispersion of variance because there was a high concentration of new occurrence of estrus in a short time. The opposite was observed in T1, where the occurrence of new estrus was between 60 and above 100 days without uniformity (Figure 1).

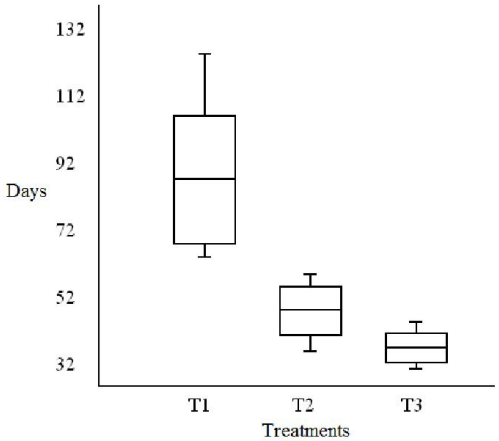

Fig 1. Average of days of puerperiun on treatments.

Our results corroborate the work of Bellavar and Nunes (1982), who, working with native goats of undefined breed, recorded a shorter period of post-parturition interval nursing their offspring twice a day than when were subjected to continued nursing. Maia and Costa (1998) working with goats of Canindé breed and initiating the treatments (continued and control breastfeeding), after 15 days of age the offspring, found an average interval between calving and first post-parturition estrus of 35.87 (± 1.97) days with a significant difference between treatments. Villa Boas *et al*. (2003) observed that creep-feeding provides the best performance for the lambs, especially in their weaning weight, and does not cause significant losses of the matrices. Eloy and Souza (1999) worked with Santa Ines sheep in northeastern Brazil and found that the first post-parturition estrus occurred on average at 37.7 (± 3.37) days for the group with continued nursing and 26.77 (± 6,6) days between calving and first estrus for the nursing group controlled (twice a day). Our results also indicate that the ingestion of food in the trough of lambs caused less wear of the females due to the reduction in the number of feedings, thus reducing energy expenditure and reducing the stress caused by nursing itself. This is supported by Mitchell *et al*. (1998), who concluded that post-parturition ewes submitted to less stress and higher nourishment show the reappearance of post-parturition estrus. Comparing with the results obtained by Sá (2002), sheep generally have a single calve during the year, with an interval of 12 months. Thus, under normal conditions, it is more difficult to get six to seven parturitions during the reproductive life of a sheep. Under the rearing conditions of the southwestern region of Maranhão, the influence of photoperiod cannot be taken into account, especially considering that Santa Inês is not seasonal (Sá *et al*., 2005).

Therefore, under the conditions of northeastern Brazil, nutrition seems to be the determining factor on the estrus activity of sheep (Perez, 2003). The suppressive effect of the stimulus of nursing on ovarian activity during the postpartum period is less pronounced in animals with moderate body condition at calving or in animals that do not have drastic weight loss after delivery (Montielahuja 2005). Mitchell *et al*. (1998) concluded that among the factors inhibiting the release of LH (luteinizing hormone) after birth, nursing includes the associated metabolic demands of lactation and inadequate nutrition.

Conclusion

Supplementation of lactating females with food enabled the reduction of the period of post-parturition and milk production, reflecting a better performance of the lambs. This is also due to the use of *creep-feeding* system. Feed management systems, both supplementation of matrices as well as the *creep-feeding* are economically viable. They reduce the interval between births and consequently increase the time of lactation and promote an even greater weight gain of lambs. Thus, thus less time passes to slaughter and there is accelerated weight gain.

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