

PERFORMANCE AND MORPHOMETRIC CHARACTERISTICS OF SANTA INÊS SHEEP AND TEXEL X SANTA INÊS LAMBS ON PASTURE

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ABSTRACT - Brazilian sheep farming has been gaining prominence with the increase in meat production, seeking more efficiency and profitability. Thus, the creation of the Santa Inês breed has stood out, as it is highly adaptable to different types of environments and has potential for meat production. The objective of this study was to evaluate the performance characteristics of the morphometric sheep of the Santa Inês breed, recently-Paris, with their respective lamb Texel x Santa Inês, a paste, in creep feeding system. For this purpose, 30 Sheeps and theirs and the respective lamb were used for natural breastfeeding for 60 days until weaning. The randomized blocks used, with two treatments (absence of the presence of the private feeder), with 10 repetitions, being shadow sheep by repetition municipality or relative lamb. In studies on the termination of two lambs, the bone of heavy animals was measured at the beginning and at the end of the experiments (25 days), using the 30-lambs weaned. The randomized blocks, used with three treatments (0, 400 and 800 g of concentrate/lamb/day). There was no difference in weight between the sheep outside of lamb (supplemented or not). There were no two treatments effect on the morphometric characteristics among the sheep outside between the lamb bone. The use of creep feeding to supplement lambs kept on natural lactation does not provide weight gain in sheep, nor does it provide weight gain in supplemented lambs. Lamb supplementation does not influence the morphometric characteristics of ewes and lambs during lactation. Private supplementation during breastfeeding does not increase lambs' weight gain until weaning, but food supplementation, via creep feeding with 400 g/animal/day, in the finishing phase presents the best results for weight gain.

Keywords: small ruminants, supplementation, weight gain. termination, creep feeding system.

PERFORMANÇAS E CARACTERÍSTICAS MORFOMÉTRICAS DE OVELHAS SANTA INÊS E CORDEIROS TEXEL x SANTA INÊS A PASTO

RESUMO - A ovinocultura brasileira vem ganhando destaque com o aumento da produção de carne, buscando maior eficiência e rentabilidade. Assim, a criação da raça Santa Inês tem se destacado, pois se apresenta altamente adaptável a diversos tipos de ambientes e potencial para produção de carne. Objetivou-se avaliar a performance e características morfométricas de ovelhas da raça Santa Inês, recém-paridas, com seus respectivos cordeiros Texel x Santa Inês, à pasto, em sistema de *creep feeding*, e o ganho de peso dos cordeiros durante a terminação. Para isso foram utilizadas 30 ovelhas e seus respectivos cordeiros em aleitamento natural, durante 60 dias até o desmame. Utilizou-se o delineamento em blocos casualizados, com dois tratamentos (ausência e presença do alimentador privativo), com 10 repetições, sendo uma ovelha por repetição com seu respectivo cordeiro. No estudo sobre a terminação dos cordeiros, os animais foram pesados e mensurados no início e ao fim do experimento (25 dias), utilizando-se 30 cordeiros desmamados. O delineamento experimental utilizado foi em blocos casualizados, com três tratamentos (0, 400 e 800 g de concentrado/cordeiro/dia). Não foi verificada diferença de peso entre as ovelhas e entre cordeiros (suplementados ou não). Não houve efeito dos tratamentos sobre as características morfométricas entre as ovelhas e entre os cordeiros. A utilização de creep-feeding para suplementação de cordeiros mantidos em lactação natural não proporciona ganho de peso em ovinos, nem proporciona ganho de peso em cordeiros suplementados. A suplementação de cordeiro não influencia as características morfométricas de ovelhas e cordeiros durante a lactação. A suplementação privada durante a amamentação não aumenta o ganho de peso dos cordeiros até o desmame, mas a suplementação alimentar, via creep-feeding com 400 g/animal/dia, na fase de terminação apresenta os melhores resultados para ganho de peso.

Palavras-chave: pequenos ruminantes, suplementação, ganho de peso. terminação, sistema creep feeding.

INTRODUCTION

Brazilian sheep farming has been gaining prominence with the rise of meat production, moving towards the search for more efficient and adapted animals, aiming at greater profitability of productive systems

(MANZONI et al., 2017). The cycle of rapid cultivation, with the beginning of “reproductive life” beginning at 10 months and slaughtering before 6 months of age, has been an important feature to boost this growth. In this sense, the creation of the Santa Inês breed has gained increasing

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prominence, because this breed fits well into these characteristics and is highly adaptable to various types of environments (OLIVEIRA et al., 2019). The Santa Inês breed is characterized by its large size and potential for meat production (FURUSHO-GARCIA et al., 2010) being the most effective in the Northeast region of Brazil, in addition to constituting a good part of the herds in other regions such as the Southeast and Midwest.

The use of the predominant sheep breeding system in Brazil is grazing, which when managed intensively can represent an interesting source of income for small, medium and large producers (POLI et al., 2008). In the system for raising sheep, sheep are an animal category that needs special attention in their food (SARTORI and GUARDIEIRO, 2010). The need for criteria in the nutrition of this animal category is due to the influence of the diet on its reproductive performance as well as on the quality of the final product, its offspring destined for slaughter (CARDOSO et al., 2011).

The influence of nutritional management in the postpartum phase of the sheep contributes to its milk production during the breastfeeding phase, noting the fact that in situations of decrease in the availability of energy and protein in the postpartum female's diet there will be a reduction in milk produced by the matrix (ELOY et al., 2011). In addition to nutrition, there are other factors that influence the performance of sheep in the postpartum period. Among them, we can mention the pressure of the feeding exerted on the physiological aspects of the female body. In this phase, the energy spent on milk production and on the sucking, act performed by the lambs, associated with the low quality of the diet, contribute to the weight loss of these breeders during breastfeeding and to the reduction of the quality and quantity of milk produced (OLIVEIRA et al., 2014).

According to Menezes, et al., (2010), lambs destined for slaughter represent the group of animals that most effectively meets the carcass characteristics required by consumers. For this reason, traditional breeding systems, at some point, can be considered inefficient in providing all the necessary nutrients for animals to acquire, at an early stage, ideal body elements for slaughter (OLIVEIRA et al., 2014). Thus, the use of a private "creep-feeding" feeder, intended for the supply of exclusive rations to the lambs, has been used, because in addition to enabling the early reestablishment of the mother in the postpartum period, given its physiological wear, this strategy can enhance the productive performance of lambs, resulting in the production of young with quality and precocity (RIBEIRO et al., 2009).

In this scenario, the objective of this study was to evaluate the performance and morphometric characteristics of Santa Inês Sheeps newly hatched with brood on pasture, the weight performance of lambs supplemented or not in a creep feeding system and to evaluate weight characteristics of lambs finished in an intensive management system and submitted to different levels of food supplementation. optimal well-being, due to the need to produce more spaces in smaller and smaller spaces with the duration of the cycle.

production as little as possible. With that, several problems, especially with regard to the health and well-being of these animals (BRITO et al., 2019).

Therefore, in an attempt to solve the problem of the large production of organic residues and the high cost of feeding the animals, without compromising health, one of the options would be to replace traditional ingredients with alternatives, in an attempt to minimize the final cost of ration. However, it should be noted that, as a pioneer, the technical-scientific feasibility study is extremely important to subsequently carry out an economic feasibility study. Obviously, the assessment of economic viability in aquaculture is important since the focus of fish farming is to produce high quality products at the lowest possible cost. Several studies on the effects of alternative food cite economic concerns as one of the important factors to be analyzed (HAYGOOD and JHA, 2018).

MATERIAL AND METHODS

The experiment was carried out in the goat and sheep sector of the Federal Institute of Education Science and Technology of Espírito Santo, *Campus* Santa Teresa - IFES, in São João de Petrópolis, district of the municipality of Santa Teresa, Espírito Santo State, Brazil (19° 48'28.575"; 40° 41'2.779", 125.9 m altitude), with a tropical Aw-type climate, according to the Koeppen classification, and average annual precipitation of 1,161 mm and the average annual temperature is 24.4°C.

The climatic data for the experimental period were obtained at the Meteorological Station of the IFES *Campus* Santa Teresa, in which the maximum temperature recorded was 30.01°C ± 0.51, the minimum temperature was 18.06°C ± 0.38, relative humidity of 55.41% ± 1.28, radiation was 219.04 W m⁻² ± 8.19, the wind speed was 2.89 m s⁻¹ ± 0.15 and rainfall was 0.19 mm ± 0.11. The pasture soil (0 to 20 cm) before the beginning of the study had the following chemical composition: pH = 5.0, Al = 0.3 cmolc dm⁻³, Ca = 1.7 cmolc dm⁻³, Mg = 0.6 cmolc dm⁻³, P = 11 mg dm⁻³, K = 30 mg dm⁻³, organic matter = 2.6% and V% = 43. The animals used were Santa Inês sheep (30) and their lambs, crossbred, Santa Inês x Texel, from the herd of the goat and sheep sector of IFES, *Campus* Santa Teresa. To determine pregnancy, abdominal ultrasound was performed with a Chisson equipment (Mod. 6600, China; 5.0 Mhz linear transducer), 70 days after observation of the natural mount performed in the field. Right after delivery, the sheep and their respective young were weighed, examined clinically and dewormed by administering an oral dewormer (Monepantel), at a dose of 1.0 mL 10 kg⁻¹ body weight. The animals were vaccinated, subcutaneously, against rabies and against clostridiosis.

The experimental design was a randomized block, with two treatments (control and using creep feeding) and 10 repetitions, one sheep per repetition. For the distribution of the sheep in the blocks, the date of birth, body weight, age and blood level were considered. The experimental treatments were: (1) control group: sheeps with lambs kept on natural suckling under grazing accompanied by their respective mothers, (2) supplemented group: sheeps with

lambs, in which the lambs were kept on natural suckling and subjected to the private feeder (creep feeding), receiving ad libitum concentrate supplementation, quantifying the supply and surplus, daily, during the experimental period.

The trial period started in October 2016 and ended in February 2017. *Panicum maximum* cv. Mombaça was established in an area of 0.31625 ha, divided into 92 paddocks. Then, the sheep, accompanied by their respective lambs, were distributed in two covered stalls (25m²), with a clay floor with colonial clay tile, for adaptation of living and diet, a period that lasted 25 days. After the adaptation phase, sheep and lambs were weighed, after a 12-h fast, and distributed in their respective treatments. The sheep from both treatments were supplemented in the trough, through the supply of concentrate, with the following composition offered in two treatments per day (at 6:00 am and 12:00 pm). The concentrates supplied to sheep and lambs were formulated according to NRC recommendations (NRC, 2006).

The percentage composition of the ingredients of the concentrate supplied to the sheep is shown below: corn = 43.24%, low tannin sorghum = 43.24, soybean meal (46% CP) = 6.9%, soy oil = 3.40%, calcitic limestone = 2.50%, dicalcium phosphate = 0.33% and sodium chloride = 0.2% and the chemical composition of the concentrate: DM = 88.54%, CP = 10.30%, TDN = 73.58% and NDF = 10.49%, total phosphorus = 0.3215%, sodium = 0.1179%; 0.0% magnesium and calcium = 1.0929%.

The percentage composition of the concentrate ingredients supplied to the lambs is shown below: corn (7.5%) = 43.24%, low tannin sorghum = 43.24%, soybean oil = 3.45%, soy (46%) = 6.92%, calcitic limestone = 2.56%, dicalcium phosphate (18%) = 0.33% and sodium chloride = 0.25%, with chemical composition: DM = 89.67%, PB = 17.93%, TDN = 76.79% and NDF = 39.14%. In addition, all animals in the experiment were supplemented ad libitum with mineral salt (chloride of sodium) in the trough. In addition to the nutrient supplementation provided to all sheep and lambs, all animals had unrestricted access to *Panicum maximum* cv. Mombaça, the average chemical composition of the evaluations performed, before the entry of the animals in each paddock of the system, for *Panicum maximum* cv. Mombaça was: 21.03% = DM, 14.24% = CP, 11.45% = ashes, 0.385 = Ca, 0.31% = P, 63.28% = NDF and 55.31% = TDN.

Chemical-bromatological analyzes of *Panicum maximum* cv. Mombaça and the concentrate were carried out according to the methodology described by Silva and Queiroz (2002). The grazing system established in the experimental area was carried out in four modules, each with 23 paddocks of 34.375 m², managed in rotated capacity, with one day of occupation and 45 days of rest. Each group of sheep and lambs, from each treatment, had access to two modules, throughout the study. After grazing, the paddocks were mechanically brushed with a brush cutter and subjected to nitrogen fertilization (200 kg of N ha⁻¹ in urea form).

The low pressure fixed sprinkler irrigation system was used, in which approximately 100% of the experimental area was irrigated. The sprinklers used were those with full rotation (360°), with a range of 12 m, moved by the impact of the swing arm. The management of the irrigation system was carried out using the daily data from the IFES Santa Teresa meteorological station as a reference, according to the observed needs of ET₀ reference evapotranspiration, corrected by the height coefficient K_c, calculating the pasture water demand (ET_{pc}) and the time needed for irrigation, according to Pereira et al. (2002).

The lambs were weighed at the beginning of the experiment and every 14 days and the sheep at the entrance and exit of the paddocks. Every 14 days, a coproparasitological exam was performed to control verminosis. When the animals presented OPG above 500, they were “de-wormed” with the active ingredients based on nitroxinil and moxidectin, whose association has proven effectiveness in the herd.

Biometric characteristics of sheep and lambs were carried out by measuring at the beginning and at the end of the lactation phase, following the methodology recommended by (YÁÑEZ et al., 2004), taking into account the height of the withers (distance between the withers and the distal end of the forelimb) and height of the substernal void (distance between the ground and the sternum), obtained using an ovimetric ruler, body length (distance between the cervicothoracic joint and the base of the tail in the first intercoccygeal joint) and perimeter thoracic (perimeter based on the sternum and withers), measured with a tape measure.

These measurements were made in order to create data that assist in determining the ideal moment for the slaughter of the animal, by demonstrating the individual's nutritional status, as well as his carcass characteristics (SANTOS et al., 2013). Lambs were weaned at 60 days of age, according to Peruzzi et al. (2015), since animals weaned at this age show the best feed conversion in confinement and the best daily weight gains, from birth to weaning and from birth to slaughter. The average daily gain of lambs and Sheep was calculated by the difference between the weight of the animals on the day of weaning the lambs and the weight on the first day of the experiment divided by the number of days of the experiment, in the lactation phase.

The results were analyzed using the computer program Statistical Analysis System. The analysis of variance was performed using the general linear model (GLM) and the means were compared by the Tukey test, at 5% significance (FERREIRA, 2014)

At 60 days of age (average) the lambs were weaned, weighing 23.12 kg, and were separated from their respective mothers and distributed in three treatments, with different levels of concentrate supply. The treatments were: 1) control group, with lambs kept only in *Panicum maximum* cv. Mombaça; 2) group 400, in which the lamb's received supplementation with concentrate, 400 g/animal/day, offered at 6:00 am and 12:00 pm and 3) group 800, in which

the lambs received supplementation with concentrate, 800 g/animal/day offered at 6:00 am.

In the “400” and “800” groups, the offer and leftovers were quantified daily during the whole experiment period. The percentage composition of the concentrate ingredients supplied to the lambs is shown below: corn (7.5%) = 43.24%, low tannin sorghum = 43.24%, soybean oil = 3.45%, soy (46%) = 6.92%, calcitic limestone = 2.56%, dicalcium phosphate (18%) = 0.33% and sodium chloride = 0.25%, with chemical composition: DM = 89.67%, PB = 17.93%, NDT = 76.79% and NDF = 39.14%. The experimental period for this phase was 25 days.

The average daily gain of the lambs was calculated by the difference between the weight of the animals performed: after 25 days of weaning and on the first day of the experiment divided by the number of days of the experiment. The experimental design was randomized blocks. For the distribution of lambs in the blocks, the initial body weight was considered. For statistical analysis, the data were subjected to analysis of variance, followed by an adjustment in linear regression, using alpha error 5%.

TABLE 1 - Initial weight, final weight and average daily weight loss of Santa Inês sheep in the postpartum period.

Variables	Treatments		CV (%)
	Without creep feeding	With creep feeding	
Initial weight (kg)	64.340a*	63.290a	15.54
Final weight (kg)	60.710a	61.40a	14.38
Average daily weight loss (kg)	0.172a	0.089b	16.87

*Means followed by different letters, on the same line, differ by the F test, at the 5% probability level.

The daily supplementation of the sheep associated with the reduction of the intensity of the feeding through the supplementation of the lambs in the private feeder, were probably sufficient to supply the maintenance needs of the sheep. Silva et al. (2013) observed a negative linear effect ($p < 0.05$) for Sheeps, which their respective lambs received private food supplementation or not, characterizing the decrease in weight of the Sheeps and the production of β -hydroxybutyrate, which is a product derived from the breakdown of fatty acids in the liver during periods of low food intake, during lactation. Higher values of β -hydroxybutyrate at the end of pregnancy, followed later by a decrease in the lactation phase, were also observed by Cardoso et al. (2010) in Santa Inês Sheeps, suggesting the probable mobilization of nutrients to meet the energy needs of the Sheeps that normally occur in the period preceding farrowing.

Despite the increased nutritional requirement of pregnant ewes, highly energetic diets can cause accumulation of body fat and difficulties in childbirth. On the other hand, energy-deficient diets cause problems in

RESULTS AND DISCUSSION

Table 1 shows the results obtained for the variable initial weight and final weight of the sheep, showing that there was no difference for the productive characteristic evaluated between treatments. However, less weight loss was observed in the Sheeps in which their respective lambs received private feed supplementation in creep feeding system.

The data regarding the average daily weight loss of the sheep in the present study corroborate the results described by Poli et al. (2008), that when studying Suffolk Sheeps kept in Tifton 85 grass pasture with and without the presence of creep feeding, for lamb supplementation, the Sheeps showed weight loss of 0.31 and 0.05, respectively. Despite the critical period, it was found that in Sheeps, with lambs receiving private food supplementation (presence of creep feeding), nutritional replacement was greater, with a possible reduction in weight loss or even a small weight gain. in relation to sheep in which their lambs did not receive private food supplementation.

gestation in sheep, with consequent production of fragile lambs and below average weight (MACEDO JUNIOR et al., 2012). These results can be explained, probably, by the postpartum period of the sheep, phase in which, naturally, the females are in a situation of negative energy balance (RESENDE et al., 2008), but which, however, was mitigated the food supply allowed by the high quality of the pasture.

The present study revealed results similar to those registered by Ribeiro et al. (2009), when examining Suffolk ewes in four different feeding systems, observed that there was no difference ($p > 0.05$) for average ewe weight gain between treatments, however, there was no reduction in ewe weight in none of the treatments, what the authors attributed to the fact that, for the entire experimental period, the forage in quantity and quality was sufficient. Table 2 shows the results of the morphometry performed on the sheep, and it can be seen that there was no effect of the treatments on the evaluated characteristics, thus demonstrating body homogeneity among the sheep under study.

TABLE 2 - Initial height at withers, final height at withers, initial height at rump, final height at rump, initial body length, final body length, initial thoracic perimeter and final thoracic perimeter in Santa Inês sheep in the postpartum period.

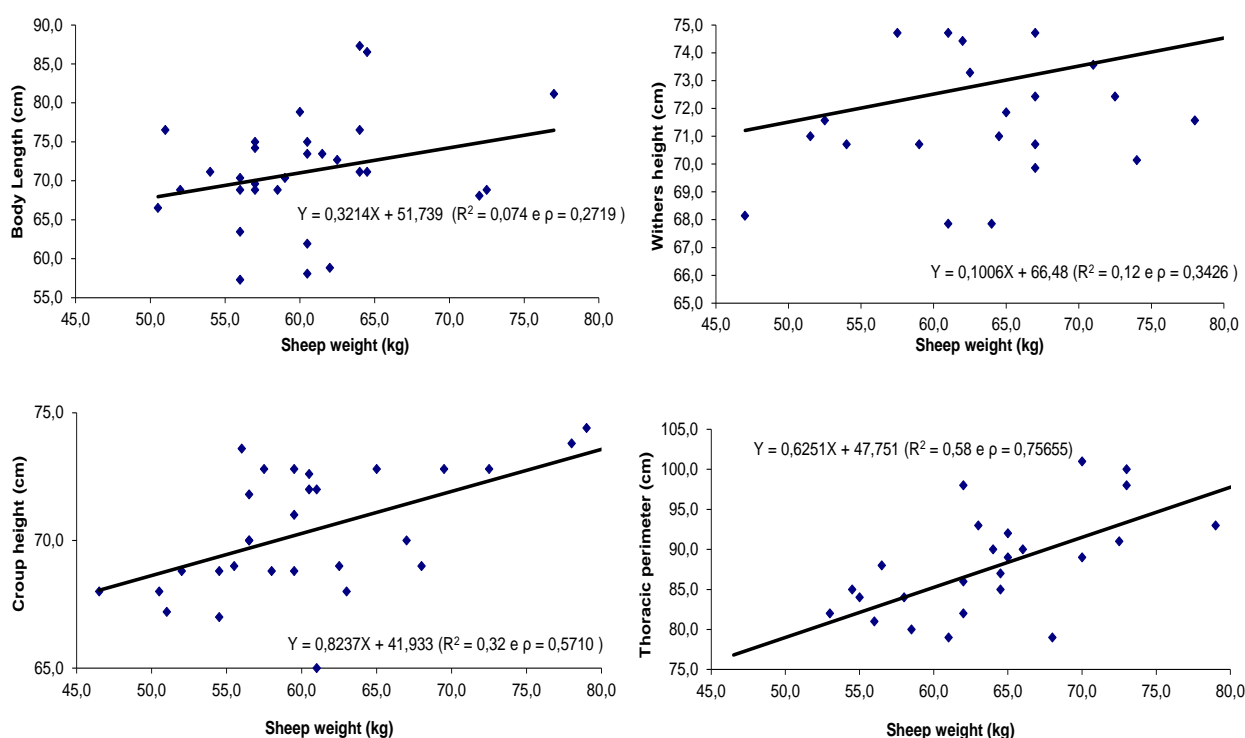
Variables	Treatments		CV (%)
	Without creep feeding	With creep feeding	
Initial height at withers (cm)	69.70a*	70.50a	2.53
Final body length (cm)	68.20a	66.70a	3.64
Initial height at rump (cm)	71.80a	70.90a	3.92
Final height at rump (cm)	71.20a	70.60a	2.87
Initial body length (cm)	62.90a	63.10a	5.12
Final body length (cm)	61.60a	63.60a	5.46
Initial thoracic perimeter (cm)	97.50a	99.10a	7.23
Final thoracic perimeter	97.80a	100.00a	8.14

*Means followed by different letters, on the same line, differ by the F test, at the 5% probability level.

Pinheiro and Jorge (2010) described that the high similarity in body measurements guarantees great accuracy in performance evaluations, as well as in internal carcass measurements. The thoracic perimeter is a characteristic that has a high correlation with the animals' body weight and can, therefore, serve as a selection criterion, precisely because it is possible to attribute an increase in food consumption in animals with a larger thoracic perimeter, due to the greater breathing capacity (SILVA et al., 2007).

Figure 1 shows the correlation graphs of the two variables studied, noting that the characteristic thoracic perimeter showed a greater correlation with the weight in the matrices. The results of the present study corroborate the

results measured by Magiero et al. (2020) studying the correlation between thoracic perimeter and body weight in Saanen and crossbred Saanen-Boer goats observed a high positive correlation between the animal's live weight (kg) and the thoracic perimeter and that the use of the barometric tape presented 97% of efficiency for the estimation of the weight of the animals. Pinheiro and Jorge (2010) studying Santa Inês ewes slaughtered in different physiological stages, did not observe any difference between the physiological stages in most of the morphometric characteristics, however, they registered that the thoracic perimeter presented a high correlation with body weight.

**FIGURE 1** - Regressions and correlations between weight and morphometric measurements in Santa Inês sheep in the postpartum period.

The results obtained for the lamb's weight variable (Table 3) demonstrate that there was no effect of the treatments on birth weight, weaning weight and average

weight gain in lambs during lactation. Thus, as observed in the sheep, there was no difference in lambs' weight gain between the two treatments studied. These results suggest

that the supply of nutrients provided to the lambs during lactation, via creep feeding, was not sufficient to provide a higher average weight gain than animals that did not receive private food supplementation. Ribeiro et al. (2009) evaluating the performance of Suffolk lambs, found that there was no effect of treatments, production systems, on

the average weight gain in lambs kept on natural feeding and supplemented on creep feeding. Similar results were found by Poli et al. (2008), who attributed this occurrence to the chemical composition and the availability of forage, which, as in the present study, were similar in both treatments.

TABLE 3 - Initial weight, final weight and average weight gain in suckling lambs, supplemented or not through creep feeding.

Variables	Treatments		CV (%)
	Without creep feeding	With creep feeding	
Initial weight (kg)	3.14a*	3.21a	18.60
Final weight (kg)	18.88a	19.36a	28.07
Average weight gain (kg)	0.225a	0.230a	19.12

*Means followed by different letters, on the same line, differ by the F test, at the 5% probability level.

Catto et al. (2019) evaluating the effects of supplementation in the lactation phase on the weight performance of lambs in confinement or semi-confinement, during the lactation phase, observed that supplemented lambs consumed, on average, 2.5% of live weight and that private supplementation influenced weight and weight gain in the breeding and finishing phases. At weaning, supplemented lambs weighed an average of 16.4 ± 0.4 kg and non-supplemented 14.3 ± 0.4 kg, with daily gains of 166 g/day and 140 g/day, respectively.

Table 4 summarizes the results of the lambs' morphometric measurements until weaning. With regard to withers height, croup height, body length and chest

circumference, there was no difference ($p > 0.05$) between the averages of animals that received food supplementation via creep feeding and those that did not. It can then be said that the measures were not affected by the different supplements used, respecting a common growth pattern. These results corroborate those obtained by Fernandes Júnior et al. (2015) who, studying the performance, consumption and in vivo morphometry of Santa Inês lambs fed diets containing sunflower cake instead of cottonseed meal, did not verify the effect of experimental diets on the thoracic perimeter, croup height, leg length, leg perimeter and chest width.

TABLE 4 - Withers height, croup height, body length and chest circumference of suckling lambs, supplemented or not by creep feeding.

Variables	Treatments		CV(%)
	Without creep feeding	With creep feeding	
Withers height (cm)	49.80a*	50.90a	7.53
Croup height (cm)	51.10a	52.20a	7.76
Body length (cm)	77.40a	47.10a	13.91
Chest circumference (cm)	62.60a	63.00a	11.31

*Means followed by different letters, on the same line, differ by the F test, at the 5% probability level.

Table 5 summarizes the results for body weight in lambs finished on pasture, with different levels of concentrate supply. There was a significant effect ($p < 0.05$)

of the level of concentrate supply between treatments on the variables final weight and average daily gain (Figure 2).

TABLE 5 - Initial weight and final weight of lambs finished with different levels of concentrate supply.

Levels of concentrate supply	Variables		CV(%)
	Initial weight (kg)	Final weight (kg)	
0 (g)	25.30a	26.97c	4.43
400 (g)	25.19a	28.93b	5.97
800 (g)	25.04a	31.15a	3.86

*Means followed by different letters, on the same line, differ by the F test at the 5% probability level.

The AWG of lambs fed only with pasture and with mineral supplementation (specific salt for sheep) was 0.096 g/day, whereas the groups supplemented with 400 g/animal/day and 800 g/animal/day were, respectively, 232 g and 198 g. This difference in gain between treatments can be explained by the different levels of protein and energy in the diet, resulting in an increase in the deposition of muscle and fat tissue, especially in lambs that received a higher

level of insertion. Geron et al. (2012) found higher values for AWG in the group of lambs kept in Marandu grass pasture, without food supplementation. These authors reported 0.09 kg/day in mixed breed lambs.

Increased body weight of lambs supplemented in pasture was also observed by Ribeiro et al. (2012), who studied lambs finished on ryegrass pasture submitted to concentrated supplementation, concluded that for each

additional percentage in supplementation, sheep presented a gain of 1.24 kg in body weight. In the present study, animals that received concentrated supplementation presented body weight at the end, with an average age of 85 days, 26.97, 28.93 and 31.15 kg, respectively, in 0, 400 and 800 g of concentrate/day. Garcia et al. (2003) lambs when they reached the pre-established weight of 31 kg, normally present body characteristics essential for slaughter.

For Barros et al. (2009), this precocity of finishing that the supplemented animals present, generally allows the use of this system, even though the expenses are higher than those with the grazing system, since the finishing time is shorter. Fernandes et al. (2011) concluded that Suffolk lambs kept on Tifton-85 pasture and supplemented in a creep feeding system showed a difference ($p < 0.05$) of 3 kg more in body weight, when compared to animals without supplementation.

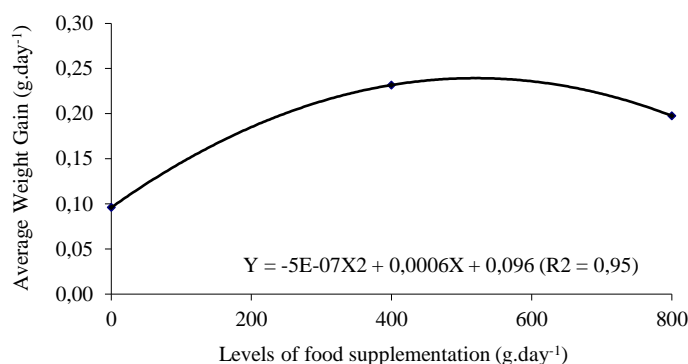


FIGURE 2 - Average gain (g/day) in relation to the different offers of concentrated supplement (g/day) of daily lambs kept in pasture.

Catto et al. (2019) observed that lambs supplemented during termination weighed 27.6 ± 0.6 kg and those not supplemented with 24.4 ± 0.7 kg, with gains in the period of 11.2 ± 0.4 kg and 10.1 ± 0.4 , and 171 g and 153 g daily, respectively.

Fernandes et al. (2022) studying an influence of small amount of complement on the characteristics of carriage and long muscle cuts of Suffolk lambs bound on Tifton 85 (*Cynodon* spp.) pasture. Weaning led to an increase in weight, while supplementation led to an increase in carcass cut weights, that the supplemented lambs had the lowest yields of neck and uncovered, and the highest yields of breast + drumstick and loin, and in this way, they concluded that lambs with their mothers and restriction offer until slaughter are recommended for the maintenance of more cars, with greater muscularity and fat content.

CONCLUSIONS

The use of creep feeding to supplement lambs kept on natural lactation does not provide weight gain in sheep, nor does it provide weight gain in supplemented lambs.

Lamb supplementation does not influence the morphometric characteristics of ewes and lambs during lactation. Private supplementation during breastfeeding does not increase lambs' weight gain until weaning, but food supplementation, via creep feeding with 400 g/animal/day, in the finishing phase presents the best results for weight gain.

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