

## **Are Moxotó and Serpetina Similar Breeds? Genetic Relationships and structure based on microsatellite analysis**

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### **Abstract / Resumo:**

Twenty microsatellite markers were used to investigate genetic diversity and relationships in the Portuguese Serpetina (SERP) and the Brazilian Moxotó (MOX) goat breeds, which present a striking resemblance and are believed to have a common origin. A total of 46 animals of the SERP breed were sampled in southern Portugal, and 233 MOX goats were sampled in five different regions of Northeast Brazil. Genetic diversity was high, with a mean number of alleles of nearly 8.7 in both breeds, but expected heterozygosity and allelic richness were higher in SERP. The genetic distance between the two breeds resulted in a global  $F_{ST}$  of 0.16, and a strong deficit in within-breed heterozygosity was observed in MOX, mostly because of population substructuring. The estimated inbreeding was about 0.05 in SERP and ranged from 0.02 to 0.08 in the different MOX subpopulations. These subpopulations showed considerable genetic differentiation from each other, and those sampled in Paraíba and Rio Grande do Norte are the ones with a closer relationship with SERP. The analysis with STRUCTURE confirmed that some MOX subpopulations may share a common, but distant, ancestry with SERP, both having contributions from the same potential ancestral population. Other MOX subpopulations, however, are identified with ancestral populations distinct from SERP. These analyses further confirmed that, with the exception of goats from Rio Grande do Norte, the other MOX subpopulations show very little evidence of admixture among them, which may reflect the typical goat raising system in Northeast Brazil, where herds are usually kept closed and isolated, with little opportunity for gene flow among subpopulations. Our results indicate that SERP is likely a distant ancestor of MOX, but founder effects, genetic drift, selection for different environmental constraints and the possible influence of other breeds in the more recent past, probably lead to a differentiation of MOX subpopulations from their distant ancestor, as well as from each other.

## **Drift across the Atlantic: genetic differentiation and population structure in Brazilian and Portuguese native goat breeds**

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### **Abstract / Resumo:**

Historical information indicates that Brazilian goat breeds derive from animals brought by Portuguese settlers since the 16th century. We used microsatellite markers in a sample of 436 animals to study

genetic variability and differentiation of the six Portuguese and six Brazilian goat breeds which are currently recognized in these two countries. The effective number of alleles and allelic richness were slightly higher in Portuguese breeds, and the expected heterozygosity ranged from about 0.66 to 0.69 in Portuguese breeds, and from 0.59 to 0.67 in Brazilian breeds. The global  $F_{ST}$  was nearly 0.11 when all breeds were considered, and the mean pair-wise  $F_{ST}$  was about 0.02 among Portuguese breeds, 0.06 among Brazilian breeds and 0.15 between Portuguese and Brazilian breeds. The dendrogram illustrating the genetic relationships between populations and the correspondence analysis indicate the existence of two very distinct clusters, corresponding to the countries of origin of the breeds studied. The analysis with STRUCTURE confirmed the separation between Portuguese and Brazilian breeds, but suggests that some Brazilian breeds, especially Graúna and Canindé, may share a common ancestry with Portuguese breeds. Overall, a closer relationship and a higher degree of admixture were found in Portuguese than in Brazilian goat breeds. The divergence observed between Portuguese and Brazilian breeds may be the result of founder effects and genetic drift, but could also reflect selection for adaptation to a new environment, if the markers studied are in any way linked with loci involved in adaptation. Alternatively, it could reflect the introduction in Brazil of goats originating from other parts of the world, e.g., West Africa.

#### **POLYMORPHISM GENETIC OF THE LEPTIN AND RECEPTOR GROWTH HORMONE IN GOATS**

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#### **Abstract / Resumo:**

This study aimed to evaluate the relationship of the polymorphism from the leptin gene (LEP), specifically exon 2, and from the microsatellite of the growth hormone receptor (GHR-SSR) with the growth characteristics of animal breeds Anglo-Nubian, and Boer, to identify useful markers for selecting goats of high genetic merit. Was obtained the allele frequencies and heterozygosity with the Toolkit (Park, 2001). The test for the Hardy-Weinberg equilibrium was performed with GenePop program according to Rousset (2008), and showed that the markers were in disequilibrium in populations. The LEP values for observed heterozygosity were greater than expected and all animals showed the same electrophoretic pattern with two alleles (150 and 152 bp). It was detected with GHR locus five alleles ranging from 90 to 125 bp examined in populations. The genotypes influence of polymorphic fragments of GHR and leptin on animal's development was evaluated using the birth weight (BW) and weaning (PD), by analysis of variance and mean test with the GLM procedure of (SAS, 1999). The genotypes showed a significant effect on birth weight (BW) and weaning (PD). It is necessary to study of these polymorphisms on a larger sample of animals to confirm the effect on growth characteristics.

#### **Goat meat quality. Effects of salting, air-drying and ageing processes**

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**Abstract / Resumo:**

Ten culled goats were slaughtered with a 16.6 to 24.4 kg carcass weight. Effects of ageing (1 and 2), salting and drying on meat color and aW were assessed in m. subscapularis and semimembranosus and pH, color, WHC, texture and heminic pigments were assessed in m. l. dorsi. The boneless meat was salted during 60 hours and 48 hours air-dried at 8-10° C. The pH, WHC and pigments were not affected by ageing which significantly influenced the a\* and b\*meat color parameters and as result the C\* value (76.9 for ageing 2 vs 64.6 for ageing 1). Also during the salting H\* became higher (23.7 to 48.3) and C\* lower (159.0 to 38.7). The parameter most affected by ageing was texture 6.7 and 9.0 kgf for ageing 2 or 1. During salting and air-drying aW dropped from 0.97 to 0.77 and from 0.87 to 0.84.

**Simultaneously Assess Goat Fat Depots using ultrasound technology (RTU) in association with Multiple PLS and ANN Models**

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**Abstract / Resumo:**

A recent development to improve the prediction of goat body or carcass composition in small has been made. With the perspective to use a unique model to estimate body composition, based on a reduced number of predictors a model using artificial neural networks was proposed. On this sense the main objective of the present work will be to demonstrate the necessity to organize a world network to build a great database, covering the most relevant carcass and body compositions data, for the most important goat breeds at different maturity degrees and with carcasses that proportionate the development of general, robust, and more reliable models to swiftly assess goat and carcass body compositions, as well as to implement a modern and objective on-line technique for carcass evaluation and marketing classification.

**Trace mineral requirements for growth of Caninde goats grazing in the semi-arid region of Brazil**

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**Abstract / Resumo:**

The objective of this study was to determinate net requirements of Fe, Zn, Mn, and Cu for growth of forty six male Caninde goat kids (15.69 ± 0.78 kg initial BW), grazing caatinga vegetation the semi-arid region of Brazil. Six kids were slaughtered at the beginning of the experiment (baseline group, 16.17 ± 1.54 kg BW) and the remainders (n = 40) were allocated randomly to one of the four levels of supplementation (0, 0.5, 1.0 and 1.5% BW), and therefore there were ten kids per treatment. The body composition (mg/kg EBW) ranged from 13.54 a 13.77 mg Fe; 8.47 a 9.09 mg Zn; 6.34 a 6.36 mg Mn e 3.78 a 5.10 mg Cu, for Caninde kids at 15 and 25 kg BW. The net mineral requirements (mg/kg empty weight gain; EWG) were determinate by comparative slaughter technique which ranged from 13.96 a 14.20 mg Fe; 9.56 a 10.26 mg Zn; 6.37 a 6.38 mg Mn e 5.86 a 7.90 mg Cu for animals with BW ranging from 15 to 25 kg. In conclusion, the net mineral elements requirements estimated in this

research were different of the recommendations made by international committees.

## **WATER BALANCE IN GOATS OF JENEPONTO – SOUTH SULAWESI UNDER SUNLIGHT EXPOSURE AND WATER RESTRICTION**

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### **Abstract / Resumo:**

Water balance in 5 does of Jeneponto Kacang goat was studied in dry season with 4 consecutive treatments of 10 d with 5 d adjustment period between two treatments: (1) indoor - unrestricted water; (2) indoor-restricted water; (3) 10h outdoor-unrestricted water; (4) 10h outdoor-restricted water. Daily maximum air temperature of outdoor (39.3°C) was higher than that of indoor (30°C). In conclusion, sunlight exposure of outdoor condition with unrestricted water resulted in a positive water balance without a significant change in digestible organic matter. The goat appeared to be able to withstand in the hot environment by expanding plasma volume and increasing body temperature. Water restriction resulted in a negative water balance, reducing the intake and the digestible organic matter.

## **The Multi-faceted Role of Condensed Tannins in the Goat Ecosystem**

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### **Abstract / Resumo:**

What we have reviewed in this manuscript summarizes much but by no means all of what we already know about CT in the wider goat ecosystem. Herbage CT influences much more than simply nutrition. From before the goat ingests the herbage, to what it selects, how it interacts with the rumen environment and the rest of the ruminant GIT, to even the fecal environment and the soil to which it eventually returns, the picture is fascinatingly complex. A decade ago most goat scientists thought we knew all there was to know about CT and the goat; yet today we realize that we learn something new each time we examine both the wider picture as well as the details that comprise that picture. What we have yet to uncover may be vastly more important and involved than what we already know!! The world that herbage CT and goats share is only gradually revealing itself, waiting for scientists of all disciplines to turn the next page in our quest for a complete understanding of the multiple roles CT play in the goat ecosystem.

## **Baseline Scenarios of Smallholder Goat Flock Dynamics in the Northeast of Brazil**

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### **Abstract / Resumo:**

A simple model of goat flock dynamics under unimproved smallholder conditions in the Northeast of Brazil was build using data from literature. The use of low, medium and high performance values was aimed at mirroring the variability of production conditions commonly faced by farmers. The low performance scenario, with a minimum annual off-take of surplus males and culling does, showed no extra average flock growth. The medium scenario showed higher potential outflow which however was thought to be reduced in reality by earlier and more irregular stock off-take. When increasing the initial doe culling rate of 0.2 to 0.3 in the medium scenario, the productive outcome was approximating the low performance scenario, pointing to the low capacity and vulnerability of the current farm systems.

### **MARKER-ASSISTED SELECTION FOR TIANFU MEAT GOATS**

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#### **Abstract / Resumo:**

Tianfu meat goat, an emerging new breed resulted from a 30-year breeding program crossing Chengdu Ma goats, a local breed, with introduced breeds of Nubian, Saanen, Toggenburg and Boer goats. To speed up the breeding process, marker-assisted selection (MAS) was applied. Results indicated that GH gene G<sup>2</sup>A mutation in the 669th base pair resulted in AA, AB, and BB three genotypes, with the body weight and body length of AB genotype being greater ( $P < 0.05$ ) than AA and BB genotypes. POU1F1 gene A<sup>2</sup>G mutation in the 528th base pair resulted in CC, CD, DD three genotypes, with the birth weight of CC genotype being greater ( $P < 0.01$ ) than DD genotype. MyoG gene C<sup>2</sup>T mutation in the 422nd base pair resulted in EE, EF, FF three genotypes, with the body weight, body height and chest circumference of EE and EF genotypes being greater ( $P < 0.05$ ) than the FF genotype. FSH $\beta$  gene A<sup>2</sup>G mutation in 5' regulatory region resulted in GG, GK, KK three genotypes, with the average litter size of GG genotype being larger ( $P < 0.05$ ) than GK genotype. PRL gene A<sup>2</sup>G mutation in 5' regulatory region resulted in MM, MN, NN three genotypes, with the milk production of MM and MN genotypes being higher ( $P < 0.05$ ) than NN genotype. With great advantage of its genetic background, Tianfu meat goats are excellent for meat production and easily adapted to environment in China.

### **GROWTH TRAITS AND GENETIC AND PHENOTYPIC CORRELATION OF TIANFU GOATS**

XU, G.Y.1, LIU, Z.H.1, LU, C.D.2, WANG, D.H.1, LI, T.M.2, ZHAO, W.B.2

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#### **Abstract / Resumo:**

Data from 1287 Tianfu goats, a new emerging meat goat breed, were collected and analyzed to determine growth rates, slaughter characteristics, and estimates of heritability and phenotypic correlation. Body weights (BW) at birth, 2 and 12 month of age, and adult were 3.43, 12.71, 44.60, and 84.24 kg for males; and 3.14, 11.07, 37.05 and 52.39 kg for females, respectively. Body weight, dressed weight and dressing percentage of the females slaughtered at 8 month of age were 28.89 kg, 16.13 kg and 54.38%, respectively. Heritability for BW of the goats at birth, 1, 2, and 12 month of age

and adult were 0.45 to 0.72 ( $P < 0.01$ ) indicating genetic improvement in Tianfu over Chendu Ma goats. For goats at 4, 6 and 8 month of age, heritability was moderate, ranging from 0.24 to 0.38. Genetic correlation coefficient ( $r_A$ ) for BW of the goats from birth to 12 month of age was relatively high, ranging from 0.82 to 0.89. Growth rate of single born kids was faster than twins and triplets ( $P < 0.01$ ), but differences among twin and triplets were less ( $P > 0.05$ ). Growth inflection points of kids appeared about 4 month of age. Kidding rate of Tianfu goats was 183 %, ranged from 140 % (first parity) to 202 % (fifth parity).

### **FATTY ACID COMPOSITION OF LONGISSIMUS MUSCLE IN TIANFU MEAT GOATS**

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#### **Abstract / Resumo:**

With advantages of its genetic background, Tianfu goats have emerged as a new goat breed with excellent performance for meat production and reproductive efficiency. Consistent with the breeding history, a recent published study utilizing microsatellite typing to resolve perplexities for breed identification suggested that Boer goats have a closer genetic distance with Tianfu. The genetic diversity among Tianfu, Chengdu Ma and Nanjiang Yellow goats revealed that Tianfu goats have a significant varietal differentiation. Muscular fatty acid composition in Tianfu goats was measured to assess its nutritional values using gas chromatography and mass spectrometry. The results indicated that there were 23 fatty acids in the longissimus muscle of Tianfu goats, among them were 9 saturated and 14 unsaturated fatty acids. The percentage of saturated fatty acid was 48.06, and that of unsaturated was 51.94. Within the unsaturated fatty acids, the monounsaturated was 40.82 % of total fatty acids and polyunsaturated was 11.12 %. The three main fatty acids were C 16:0, C 18:0, and C 18:1, adding up to 76.03 % of total fatty acids. Muscular fatty acid composition of Tianfu goats compared favorably with major breeds of meat goats.

### **SANITARY MANAGEMENT OF GOATS' BREEDERS IN THE ZONA DA MATA– PE**

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#### **Abstract / Resumo:**

With the increasing number of settlers by various programs of land distribution, there was increase of farmers with little experience and limited access to information on livestock in the Northeast specifically in the municipality of Nazaré da Mata. Among these breeding, goats' farm stands out; goats can be created and managed by small producers who have some facility to purchase such animals as the region has a large number of breeders. This work aimed to study the hygienic measures adopted in animal husbandry, having the primary goal of preventing diseases. Therefore, this work was conducted in the city of Nazaré da Mata, located in Pernambuco state, analyzing creators of small ruminants in accordance with the hygienic measures which they practiced to increase productivity.

Twenty-eight properties were visited from July to September and in addition to the information given to producers about the premises cleanliness, a questionnaire with questions related to property and health care to animals was also applied. We recorded a total of 212 animals studied where in most of farms visited, 70% of farmers were not properly cleaning premises and did not follow the vaccination schedule citing the difficult access and unfavorable financial conditions, 55% of farmers were unaware about some common diseases in the herd, 80% of breeders did not make quarantine, 68% of farmers claimed out to perform laboratory tests only when in the presence of diseases, 12% on the purchase of animals and 20% in any case. In general, what was observed in most farmers was the lack of technical and financial favorable conditions.

### **Sanitary Management of Goats' Breeders in the Zona da Mata – PE**

SILVA, J.C.R.1, OLIVEIRA, W.N.K1,2, SILVA, R.R.P.1,2,3, AGRA, S.A.L.1,2,3

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#### **Abstract / Resumo:**

With the increasing number of settlers by various programs of land distribution, there was increase of farmers with little experience and limited access to information on livestock in the Northeast specifically in the municipality of Nazaré da Mata. Among these breeding, goats' farm stands out; goats can be created and managed by small producers who have some facility to purchase such animals as the region has a large number of breeders. This work aimed to study the hygienic measures adopted in animal husbandry, having the primary goal of preventing diseases. Therefore, this work was conducted in the city of Nazaré da Mata, located in Pernambuco state, analyzing creators of small ruminants in accordance with the hygienic measures which they practiced to increase productivity. Twenty-eight properties were visited from July to September and in addition to the information given to producers about the premises cleanliness, a questionnaire with questions related to property and health care to animals was also applied. We recorded a total of 212 animals studied where in most of farms visited, 70% of farmers were not properly cleaning premises and did not follow the vaccination schedule citing the difficult access and unfavorable financial conditions, 55% of farmers were unaware about some common diseases in the herd, 80% of breeders did not make quarantine, 68% of farmers claimed out to perform laboratory tests only when in the presence of diseases, 12% on the purchase of animals and 20% in any case. In general, what was observed in most farmers was the lack of technical and financial favorable conditions.

### **Some Environmental Effect on Hair Fiber Characteristics in Fars Native Hair Goats**

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#### **Abstract / Resumo:**

Fiber sample was taken from 84 female and male kids and adult goats to study the fleece characteristics of native goats in Fars province. The least square means were generated with two-way

model. Results indicated that significant difference was found between sexes only for fleece weight. Fleece weight in male and female were  $331.74 \pm 29.8$  and  $237.36 \pm 25.7$  g res. Different ages had significant difference on all of the performances except fiber yield, coefficient of variation of hair diameter and hair elongation. Adult goats had more fleece weight, hair fiber diameter, fiber lengths, staple length, breaking force and breaking tenacity than kids. The dark color, low down fiber percentage and long length in Fars goats fleeces introduce them to produce good coarse hair fibers

### **Chemical composition and degradation of grass hay-de-raiz (*Chloris orthonoton*, Doell) in goats**

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#### **Abstract / Resumo:**

The objective was to evaluate the chemical composition and the disappearance of dry matter and neutral detergent fiber of hay-de-raiz (*Chloris orthonoton* Doell) along the incubation time in the rumen of goats. For that he used three adult male goats, without defined breed, with permanent rumen fistula. The animals were housed in individual pens and received a diet composed of Tifton hay and concentrate, keeping the 70:30, more mineralized salt and water at will. The low material degradation in the rumen of goats can be attributed to advanced growth stage of the grass. The results indicated, it is noticed that the maximum disappearance of DM and NDF of grass hay root was achieved in 72 hours of stay in the rumen of goats. Hay Hay-de-raiz (*Chloris orthonoton* Doell) made when in bloom has a high concentration of NDF and low degradability, the limits for appointment as exclusive food in the diet of goats.

### **Effects of ACTH stimulation on production and composition of Saanen goat's milk**

Canaes, T.S.1, Macedo, S.N.2, Emediato, R.M.S.2, Resende, K.T.1, Negrão, J.A.2

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#### **Abstract / Resumo:**

Stress can cause changes in the composition of milk causing decreased mainly in the total solids, protein and fat, and negatively alter the metabolic profile animals, especially the levels of urea, creatinine, glucose and albumin. Exogenous administration of ACTH is an alternative used in the induction of responses triggered by stress in animals. Thus, the objective of this study was to evaluate the influence of intravenous ACTH administration on production, physico-chemical composition of milk and metabolic profile of lactating Saanen goats. Were used 44 Saanen goats, even on the milk production and body condition score in the second lactation, with average milk production of  $2500 \pm 130$  mL and weight of  $55.43 \pm 1.04$  kg. The animals were induced stress by intravenous injection of 0.6 IU/kg BW of ACTH or saline (placebo). To evaluate the metabolic profile of this challenge was determined five times of harvest: - 20 min (before milking), 0 min (immediately after milking was applied ACTH), 60 min, 120 min and 300 min (after application ACTH). Milk production and composition were obtained on the day following the application of ACTH. In blood samples were used vacuum tubes with heparin and dosages for metabolic diseases. The collected blood was stored in refrigerator at 4 °C until centrifugation, which was then centrifuged for 15 minutes at 3000 xg at 15 °C

temperature to obtain plasma. The plasma obtained was stored at - 20 °C for later determination of glucose, urea, albumin and creatinine. Milk production was measured directly on the cylinder of the milking machine. The samples for physico-chemical analysis were obtained from the complete milking of animals. The physico-chemical composition was analyzed by Milkoscope (Ultrasonic milk Analyzer). The meter was calibrated with goat milk before analysis. The results were evaluated by SAS with a significance level of 5%. There were no significant differences ( $P < 0.05$ ) in production and milk composition of goats under the administration of ACTH. The metabolites were significant different ( $P > 0.05$ ) in plasma glucose levels. The immediate production of glucose after stress may result from the enhancement of glycogenolysis, and the moderate decrease in the rate of glucose utilization by the cells, promoting an increase in blood glucose concentration. There was an increase glucose levels significantly different from 120 min after application of ACTH compared with placebo. However, the glucose levels between times 120 and 300 min were not different. Thus, although they were expected changes in levels of urea, since there was an increase in glucose, there were no statistical differences ( $P > 0.05$ ) for this parameter. Significant differences were observed also for the parameter creatinine ( $P < 0.05$ ) but not by the effect of ACTH administration, but probably for individual differences within the two test groups (placebo and ACTH). The values of plasma urea and albumin did not differ ( $P > 0.05$ ) with the use of intravenous ACTH. The results show that the dose used in the application of ACTH caused a momentary increase of glucose, but not enough to induce changes physico-chemical and productive in Saanen lactating goats.

### **Effects of ACTH stimulation on milk production and composition of Saanen goats**

Canaes, T.S.1, Macedo, S.N.2, Resende, K.T.1, Negrão, J.A.2

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#### **Abstract / Resumo:**

Stress can cause changes in the composition of milk causing decreased mainly in the total solids, protein and fat, affect the immune system of animals due to the release of cortisol and negatively alter the metabolic profile animals, especially the levels of urea, creatinine, glucose and albumin. Exogenous administration of ACTH is an alternative method for detecting the stress responses in animals. The objective of this study was to evaluate the influence of the intravenous ACTH production on the physico-chemical composition of milk and metabolic profile of lactating Saanen goats. Forty four second lactation Saanen goats of  $55.43 \pm 1$  kg body weight and producing in average  $2500 \pm 130$  mL of milk were used. The animals were experimentally stress induced by intravenous injection of 0.6 IU / kg BW of adrenocorticotropic hormone (ACTH) or saline (placebo). Blood samples to evaluate changes in the metabolic profile were collected at - 20 (before milking), 0 (end of milking and ACTH injection), 60, 120 and 300 min after ACTH administration. Milk production and composition samples were obtained on the day following the application of ACTH. Blood was collected in heparinized tubes, stored in refrigerator at 4°C (no more than 30 min), and then centrifuged at 15°C and  $3000 \times g$  for 15 min. The plasma obtained was stored at - 20°C for later determination of glucose, urea, albumin and creatinine. Milk yield was recorded directly by means of graduated measuring cylinder of the milking machine. Milk samples for physico-chemical analysis were individually obtained from the complete milking of animals. The following measurements were carried out on milk: acidity obtained by titration and expressed in degrees Dornic; density, fat, protein, lactose and total solids were analyzed by Milkoscope (Ultrasonic milk Analyzer, Scope Electric, Regensburg). The meter was calibrated with goat

milk before analysis. The results were evaluated by SAS with a significance level of 5%. There were no significant differences ( $P>0.05$ ) in milk production and composition of goats under the administration of ACTH. In contrast, the results of the effects of ACTH administration and secretion of corticosteroids in dairy goats are scarce and inconsistent. For the metabolites measurements there were significant differences ( $P>0.05$ ) in plasma glucose levels, as previously found in other species. The immediate production of glucose under stress conditions as a result of the enhancement of glycogenolysis, and the moderate decrease in the rate of glucose utilization by the cells, promote an increase in blood glucose concentration. Significant differences were also observed for the creatinine concentrations ( $P<0.05$ ), however, ACTH administration did not affect it probably due to the individual differences within the two test groups (placebo and ACTH). The values of plasma urea and albumin did not differ ( $P>0.05$ ) with the use of intravenous ACTH. The results showed that the ACTH dose used in this study caused a momentary increase of the glucose levels, however, it was not sufficient to induce physico-chemical and productive changes in Saanen lactating goats.

### **Impact of Periparturient in the Helminthiasis of Saanen Goat Raised in Organic Production System**

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#### **Abstract / Resumo:**

The objective was to study the impact of periparturient on gastrointestinal helminthiasis of Saanen goats maintained under organic production system in tropical area. Coprologic tests were realized weekly from 28 animals during the four weeks preceding the parturition, at the time of parturition and four weeks after the parturition. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. The average numbers of eggs per gram of faeces (EPG) before the parturition, at the time of parturition, and after the parturition were respectively: 737, 1300 and 840. The EPG count increased significantly ( $p<0.05$ ) from the second week before the parturition, and showed a decrease from the 3 and 4 weeks after the parturition. During the study, the animals showed a degree of mixed infection ranging from mild to heavy. In the weeks prior to parturition, 20% of goats showed heavy infection, 70% at week of parturition and 50% in the postpartum period. These results suggest the existence of the phenomenon of periparturient relaxation of immunity (PPRI), which notes a reduction of acquired immunity to parasites. Coprologic data revealed the presence of the genera *Haemonchus* (76%), *Trichostrongylus* (12%) and *Oesophagostomum* (2%). The predominance of *Haemonchus* coupled with high EPG during the postpartum, presented as a risk factor for animal health, to the fact that this is a hematophage nematode with great pathogenicity. The periparturient proved to be a period of high risk to the health of Saanen goats maintained in organic system in the tropics, being necessary to implement methods of anthelmintic control, aiming to maintain the parasitary stability of the herd.

### **Seasonal Profile of Gastrointestinal Parasites in Crossbred Goats (½ Saanem x ½ Boer) in Tropical Area**

Silva, J.B., Fagundes, G.M., Fonseca, A.H

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**Abstract / Resumo:**

The objective was to study the seasonal profile of gastrointestinal parasites in crossbred ( $\frac{1}{2}$  Saanen x  $\frac{1}{2}$  Boer) kept under rotational grazing in the tropics. Coprologic tests were realized monthly from 18 female animals with 2 to 4 years of age, between January and December 2007. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. The lower egg count per gram (EPG) was observed in July (200 EPG) and the highest in the month of December (1500 EPG). Mean values of EPG regarding the four seasons were: summer 950, autumn 600, winter 400 and spring 800. Significant difference ( $p < 0.05$ ) between the values of EPG in the rainy season (summer and spring) and dry season (autumn and winter) were observed. During the rainy season, environmental conditions shown to be conducive to the development of nematodes in the pasture, thereby increasing the infection of the herd. In the dry season, poor soil cover, high temperature, low rainfall and low humidity made the environment unsuitable to survival of larvae on pasture, thus reducing the infection of animals. Coprologic data showed the presence of the genera *Haemonchus* (70%), *Trichostrongylus* (27%) and *Oesophagostomum* (3%). During the winter there was an increase in percentages of the genera *Trichostrongylus* and *Haemonchus* reduction, probably due to the second to be less resistant to adverse weather conditions. Thus, it can be concluded that crossbred ( $\frac{1}{2}$  Saanen x  $\frac{1}{2}$  Boer) were satisfactory resistance to gastrointestinal parasites, could be an alternative to dairy goat farming in the tropics.

**Impact of Periparturient in the Helminthiases of Saanen Goat Raised in Organic Production System**

Silva, J. B, Fagundes, G.M, Fonseca, A.H

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**Abstract / Resumo:**

The objective was to study the impact of periparturient on gastrointestinal helminthiasis of Saanen goats maintained under organic production system in tropical area. Coprologic tests were realized weekly from 28 animals during the four weeks preceding the parturition, at the time of parturition and four weeks after the parturition. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. The average numbers of eggs per gram of faeces (EPG) before the parturition, at the time of parturition, and after the parturition were respectively: 737, 1300 and 840. The EPG count increased significantly ( $p < 0.05$ ) from the second week before the parturition, and showed a decrease from the 3 and 4 weeks after the parturition. During the study, the animals showed a degree of mixed infection ranging from mild to heavy. In the weeks prior to parturition, 20% of goats showed heavy infection, 70% at week of parturition and 50% in the postpartum period. These results suggest the existence of the phenomenon of periparturient relaxation of immunity (PPRI), which notes a reduction of acquired immunity to parasites. Coprologic data revealed the presence of the genera *Haemonchus* (76%), *Trichostrongylus* (12%) and *Oesophagostomum* (2%). The predominance of *Haemonchus* coupled with high EPG during the postpartum, presented as a risk factor for animal health, to the fact that this is a hematophage nematode with great pathogenicity. The periparturient proved to be a period of high risk to the health of Saanen goats maintained in organic system in the tropics, being necessary to implement methods of anthelmintic control, aiming to maintain the parasitary stability of the herd.

## **Seasonal Profile of Gastrointestinal Parasites in Crossbred Goats (½ Saanem x ½ Boer) in Tropical Area**

Silva, J.B., Fagundes, G.M., Fonseca, A.H

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### **Abstract / Resumo:**

The objective was to study the seasonal profile of gastrointestinal parasites in crossbred (½ Saanen x ½ Boer) kept under rotational grazing in the tropics. Coprologic tests were realized monthly from 18 female animals with 2 to 4 years of age, between January and December 2007. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. The lower egg count per gram (EPG) was observed in July (200 EPG) and the highest in the month of December (1500 EPG). Mean values of EPG regarding the four seasons were: summer 950, autumn 600, winter 400 and spring 800. Significant difference ( $p < 0.05$ ) between the values of EPG in the rainy season (summer and spring) and dry season (autumn and winter) were observed. During the rainy season, environmental conditions shown to be conducive to the development of nematodes in the pasture, thereby increasing the infection of the herd. In the dry season, poor soil cover, high temperature, low rainfall and low humidity made the environment unsuitable to survival of larvae on pasture, thus reducing the infection of animals. Coprologic data showed the presence of the genera *Haemonchus* (70%), *Trichostrongylus* (27%) and *Oesophagostomum* (3%). During the winter there was an increase in percentages of the genera *Trichostrongylus* and *Haemonchus* reduction, probably due to the second to be less resistant to adverse weather conditions. Thus, it can be concluded that crossbred (½ Saanen x ½ Boer) were satisfactory resistance to gastrointestinal parasites, could be an alternative to dairy goat farming in the tropics.

## **Dinamic of Gastrintestinal Parasitoses in Goats Kept in Organic and Conventional Production System**

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### **Abstract / Resumo:**

The study aimed to know the frequency of gastrointestinal helminths in Saanen goats maintained under organic and conventional production system of milk during pregnancy, parturition and lactation. Two experiments were conducted. In the first experiment were examined 26 animals kept in organic production system. In the second one there were 30 animals kept in conventional production system. Fecal samples were collected and processed biweekly from all goats during the five months of pregnancy, month of parturition and four months of lactation. It was observed that animals kept under organic production system showed EPG counts during the five months of pregnancy and during month of parturition (sixth month) higher than the animals kept in a conventional system. During almost the entire lactation the animals in the conventional system showed higher EPG than the ones in the organic system. During the analysis of the results within groups, the mean values of EPG at parturition differed significantly ( $p < 0.05$ ) from pregnancy and lactation in both groups. When

confronted EPG values of lactation and pregnancy, the first one was significantly higher ( $p < 0.05$ ) only in animals from the conventional system. In the comparison between the farming systems EPG kept under organic production system was higher than EPG in the conventional one during pregnancy and parturition. This situation is inverted during lactation. Saanen goats maintained in organic milk production system were more vulnerable to gastrointestinal parasites when compared to animals kept in a conventional system. The use of monthly prophylactic treatment against helminths did not show effectiveness, as the flock kept in the patterns of conventional management. It remained infested throughout the study. Thus it is necessary further studies aimed at developing methods that employ less pressure treatment, thus avoiding the anthelmintic resistance and being really effective. Both in animals reared under organic and in conventional system parturition presented itself as a period of susceptibility of the animal gastrointestinal parasites. This fact justifies the need to create a treatment program specifically for this animal class, aiming to reduce contamination of pastures and consequently re-infection of other animals in the herd.

### **Influence of Peripartum on the Dynamics of Helminthes in Saanen Goats Kept Under Rotational Grazing System in Tropical Weather**

SILVA, J.B., FAGUNDES, G.M., FONSECA, A. H.

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#### **Abstract / Resumo:**

The objectives of this study were to know the seasonal variation and epidemiological importance of peripartum in the dynamics of gastrointestinal helminthiasis in Saanen goats maintained by rotational grazing on tropical climate region. In this research, two experiments were done. The first one aimed to establish the seasonal distribution of gastrointestinal helminths in adult Saanen goats maintained by rotational grazing. For this, fecal samples were collected biweekly from 32 Saanen goats from April 2007 to March 2008. The second study aimed to evaluate the influence of the periparturient in the count eggs per gram of feces (EPG) and the possible impact of this phenomenon in the epidemiology of gastrointestinal parasites in the herd. For this, fecal samples were collected weekly in the six weeks of pre-partum, in the parturition and in the six weeks postpartum. Finally, were evaluated the difference in the parasite load of primiparous and multiparous goats during the peripartum, 10 goats being studied in the 1st parturition, 10 in the 2nd parturition and 10 in the 3rd parturition. Throughout the study the animals showed a degree of mixed infection ranging from mild to moderate. The lowest counts of EPG were observed in April, May, June, July and August, probably due to unfavorable weather conditions the survival of nematodes in the environment. While the highest EPG counts were in the months of September, October, November and December. The average values of EPG showed a significant increase ( $p < 0.05$ ) after the fourth week of pre-partum until the week of parturition, where it reached the maximum value. During the postpartum there was a reduction in the EPG from parturition until the sixth week, where there was a stabilization of the elimination of eggs. In comparing the three phases of peripartum, the average values of EPG were significantly ( $p < 0.05$ ) higher than the pre-parturition and postpartum. There was no statistical difference ( $p > 0.05$ ) between EPG from the pre-parturition and postpartum. In the present study it was observed a significant difference ( $p < 0.05$ ) between the number of helminth eggs in feces of primiparous and pluriparous goats during the three phases of peripartum, and the highest EPG counts were found in primiparous animals, followed by the ones of 2nd parturition and finally the ones of 3rd parturition. An increase in

egg count per gram (EPG) during the peripartum exists in Saanen goats naturally infected with gastrointestinal helminths. Thus, adequate control of the rate of helminth infections in goats during this period can lead to substantial improvements in dairy herd productivity and significantly reduce of the contamination of pastures and the re-infection of the newborn. Primiparous goats are more susceptible to gastrointestinal parasites than pluriparous during peripartum, requiring a program to control anthelmintic class for this particular animal, to avoid loss of dairy productivity.

### **Goat milk somatic cell count in properties of south Brazil**

Cordeiro, Ana, G,P,C,1, Costa,M.G3, Cordeiro, P.R.C.2,2

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UFRN, Universidade Federal Rio Grande do Norte.

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#### **Abstract / Resumo:**

Payment policies based on goat milk quality standards have been a major subject and of this work to do the raising somatic cells count of the milk goat in properties of the South area of Brazil and that will serve as base for Program of Remuneration for Quality of the milk goat of Celles Cordeiro Alimentos - CAPRILAT®. Bulk tank goat milk samples were collected on a weekly for 32 months, from three goat farms located in the south Brazil, 365 samples of milk goat of the freeze tanks, collected from three different herds, 612 dairy goats, predominantly of the Saanen origin, representing a total size of 1.226.180 liters of milk. The medium value of CCS was  $1,76 \times 10^6$  cel. /mL (S.D. 326,56), with minimum values the months of January and February of 2009 ( $1,14 \times 10^6$  cel. /mL) and maximal in the month of June of 2009 ( $2,21 \times 10^6$  cel. /mL). The data are in agreement with values found in the literature and considered inside of the normality could be used as criterion for payment of goat milk.

### **Analyze of goat milk composition in farms of south Brazil**

Cordeiro,Ana,G,P,C,1, Costa,M.G2, Cordeiro,P.R.C.3

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#### **Abstract / Resumo:**

Payment policies based on goat milk quality standards have been a major subject and of this work to do the raising for percentages of fat, protein, lactose, total solids in properties of the South area of Brazil and that will serve as base for Program of Remuneration for Quality of the milk goat of Celles Cordeiro Alimentos - CAPRILAT®. Bulk tank goat milk samples were collected on a weekly for 32 months, from three goat farms located in the south Brazil, 365 samples of milk goat of the freeze tanks, collected from three different herds, 612 dairy goats, predominantly of the Saanen origin, representing a total size of 1.226.180 liters of milk. The samples were analyzed with relationship to the fat tenors, protein, lactose and total solids. Fat, protein, lactose and total solids showed the same pattern of seasonal variation, with decrease in the months of January and February for fat and protein. Table 1 Mean (%) and standard deviation of the components of goat milk during the period analyzed Fat Proteín Lactose Dry Extract Averege 3,78 3,15 4,17 11,97 Standart deviation 0,20 0,05 0,04 0,39 The values are above the minimum demanded except in lactose by the Brazilian legislation,

(MAPA-Instructors Normative 37 de October 2000) and they can be used as base for the payment program for quality.

### **Sanitary Aspects Associated with Gastrointestinal Helminth Infection on Goat-rearing Farms in the Semi-Arid Region of Pajeú – State of Pernambuco – Brazil**

LIMA, M.M.2, ALENCAR, S.P.1, TEIXEIRA, W.C.1, COELHO, M.C.O.C1, ALVES, L.C.1, FAUSTINO, M.A.G.1  
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#### **Abstract / Resumo:**

The aim of the present study was to assess sanitary aspects associated to gastrointestinal parasites on goat farm properties in the semi-arid region of Pajeú in the state of Pernambuco, Brazil. Fifty-one properties were visited. Fecal samples were collected directly from the rectum of goats for the count of eggs per gram of feces (EPG). A descriptive epidemiological study was carried out with the use of a questionnaire applied during visits to the properties. There was a significant association between the number of samples that tested positive for the presence of Strongyloidea eggs and the following variables: type of exploitation, type of installation, isolation of ailing animals and the source of water used on the properties. Regarding previous use of anti-helminth agents, property owners most often reported using benzimidazole, avermectin and imidazole. Throughout the study period, the agents employed were benzimidazole, avermectin and milbemycin, the latter of which exhibited a significant association to positivity for Strongyloidea eggs. After the analysis of the data, it can be concluded that sanitary aspects affect the prevalence of gastrointestinal helminths in the studied flock, mainly due to inadequate management practices.

### **Milk quality and blood metabolites of lactating creole goats in two different seasons in La Rioja, Argentina**

Varas, MM1, Ricarte, RA2, Chagra Dib, EP1,3

1. UNDeC, Universidad Nacional de Chilecito. 2. INTA EEA La Rioja, Instituto Nacional de Tecnología Agropecuaria.. 3. INTA EEA Cerrillos, Instituto Nacional de Tecnología Agropecuaria.  
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#### **Abstract / Resumo:**

The goal of the present work was to compare the effect of two different seasons on the milk quality and relate with blood metabolites indicators of the protean and energetic metabolism in lactating creole goats. The study was carried out in the experimental field INTA (30°22'S; 66°17'W) La Rioja, ecological district of the Chaco Arid La Rioja, characterized by low rainfall, which are present mainly during summer. The seasonal changes in quality and quantity of food are the main factors that alter or impact the nutritional state of goats and can cause reduction in the production of milk, growth of the kids and changes in the body condition score (BCS). For the experiments, we use 2 year old lactating creole goats, (~40 Kg) maintained to natural pasture without any additional feed supply. We evaluated metabolites in Jugular blood and milk quality in all lactating goats (n=10 each group) at day 30 of lactation of winter (w) and summer (s) seasons. Our results showed a noticeable changes in fat, protein, and total solids content in milk between the seasons evaluated (FAT= 5.08w vs 2.81s, p <0.01;

PROTEIN= 4.75w vs 3.68s,  $p < 0.02$ ; TOTAL SOLIDS= 14.76w vs 11.67s,  $p < 0.02$ ). Blood glucose, total protein, and cholesterol concentrations also showed variations between the seasons evaluated (GLUCOSE= 2.25w vs 1.79s; TOTAL PROTEIN= 62.42w vs 56.56s; CHOLESTEROL= 1.31w vs 1.67s). Only a significant increase in blood urea concentration was observed in summer (UREA= 13.08w vs 19.64s,  $p < 0.02$ ). Increased levels of urea have been found in milk during all metabolic disorders of dairy cows probably attributed to energy deficiency occurring during this period due to a lower feed intake. Our results indicate that, under the specific conditions of this study, lactating creole goats grazing on natural pasture can produce milk with poor quality in summer, which is associated with marked metabolic imbalances. The measurement of blood urea concentration can be used as index of nutritional status during lactation in goats.

### **Blood metabolites in lactating and non-lactating creole goats.**

Varas, MM1, Chagra Dib, EP1,2, Leguiza, D2, Cortez, S2

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### **Abstract / Resumen:**

Goats are important domestic animals in arid livestock production systems. Evidence from the literature suggests that in goats, efficient milk production requires knowledge of the nutritional factors that can limit milk production in an adverse environment. One possible approach to improve the nutritional management of lactating goats could be the use of metabolic profile blood analysis. The goal of this study was to measure some blood metabolites as indicators of nutritional balance in lactating and non-lactating creole goats under intensive conditions. Studies were conducted in "La Forestal" (68° 29'55" O-33° 15'22" S) in north Mendoza, Argentina. The animals were fed with a concentrate ration that contained 1,5 Kg MS/day composed by alfalfa hay and alfalfa fresh cut (60:40 ratio), plus a ration of corn and soybean pellet (75:25 ratio), adjusting the consumption of the same depending on the evolution of lactation (100-500g) with the addition of a mineral vitamin complement (0.02%). For the experiments, we use 1 year old non-lactating and 1-2 years old lactating creole goats. The animals were divided into three groups according to age, lactation state ( $n=10$  each group). We measured Glucose, Cholesterol, Tryglicerides, Urea concentrations in blood samples collected from the jugular vein at day 60 of lactation. The values found are similar among the groups, except to Glucose (non-lactating goats vs lactating goats). We found that glucose concentrations (mmol/L) were significantly higher in non-lactating goats ( $2.40 \pm 0.33$ ) when compared to 1 or 2 years old animals ( $1.93 \pm 0.17$  and  $1.84 \pm 0.22$ , respectively,  $p=0.007$ ). Blood glucose concentration is considered as a useful metabolic energy index that indicates the availability of nutrient in the diet. During energy deficiency due to fasting or low feed intake, plasma glucose decreases whereas the concentration of Cholesterol in blood increases as a result of mobilization of body fat. In addition, increased levels of blood urea have been observed during energy deficiency. These results showed decreases blood glucose during lactation because that during lactation the demand for glucose by the mammary gland increased, however, was not affected the other blood metabolites indicators of energy deficiency. This study shows that in the evaluated period the nutrient intake was adequate in lactating and non-lactating goats under intensive system.

### **Annual diet of goats grazing in rangelands in the monte region in La Rioja, Argentina.**

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#### **Abstract / Resumen:**

In La Rioja the goat farming system is extensive. The production of goat meats is the main activity developed by farmer in the region because of good adaptation of these animals to arid ecosystems. The feeding base is the native forrage resources. Annual rainfall is seasonal, with dry periods during the winter-spring and wet periods during summer-fall. The goal of this work was to evaluate the annual botanical composition of diets grazing in extensive system in the monte region in La Rioja, Argentina. Studies were conducted in the phytogeographical province of the Monte (29°05'00.02"S and 67°37'59.97"W Chilecito), west of La Rioja. Botanical composition of diet was determined by the analysis of fecal material using a microhistological technique. Fecal samples were collected from the rectum in 20 randomly selected goats (5 compound samples, n=4 each compound sample) at the highest point of the rainy and dry seasons -from April 2009 through March 2010. The botanical composition was determined by quantifying grasses (Gram-C3, C4) and shrubs (Arbu). The results showed that proportion of shrubs and grasses in the goats' diet tended to vary ( $p < 0.05$ ) between groups in the rainy and dry season. During the dry season the goats' diet consists principally in grasses Gram-C3 (Gram C3 Dry=23 vs. Rainy=13 %  $p < 0.01$ ) while Gram-C4, is mainly present during rainy season (Gram C4 Dry=8 vs. Rainy=58 %,  $p < 0.0002$ ). Shrubs were the most important contributors to diets throughout the rainy season (Shrubs Dry=69 vs. Rainy=21 %,  $p < 0.0002$ ). Gram-C3 they are in stage of growth in winter while C4 growth during summer, this would explain because C3 are consumed in dry season and C4 in rainy season. The most of the Shrubs are deciduous in dry season, when were consumed in the greatest amount because grasses were mature. This study showed that the actively growing grasses C4 are heavily used during the rainy season, but the goats can readily switch to shrubs if they are available after the grasses have matured. These results also indicate that high utilization of shrubs appeared to be an adaptive foraging strategy of goats when forage was readily available.

### **Researches Related to Meat Yield Aptitudes of Carpatina Breed Reared in Romania**

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#### **Abstract / Resumen:**

The researches aimed to evaluate the meat yielding capacity of goat youth fattened on pasture. Biological material comprised young goats not used at breeding, from indigenous goat populations, reared in Romanian private farms (N-E area). Fattening lasted 160 days (May-October) and was done in accordance with local traditions. The results revealed different final weight values between groups, within identical husbandry conditions. Better growing capacity was recorded by youth issued from simple parturitions. Thus, although performances were 2.87% better than in the goats issued from double parturitions, no statistical significance occurred for  $p < 0.01$ . The females from simple parturitions presented higher live weights (significant differences for  $p < 5\%$ ).

### **Phenotypic and genetic parameters of growth traits in the Balkan goat**

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#### **Abstract / Resumen:**

The research have been conducted on the Balkan goat breed in the southeastern part of Serbia. Data analysis was performed for a period of ten years. It was found that phenotypic parameters expressed through the body mass of kids vary depending on the year from  $2.32 \pm 0.06$  kg to  $3.03 \pm 0.07$  kg at birth and  $9.80 \pm 0.51$  kg to  $12.97 \pm 0.41$  kg at weaning. In terms of genetic parameters showed that heritability for growth traits observed moving in the range of low values from  $0.102 \pm 0.039$  to  $0.153 \pm 0.041$ . Repeatability of the observed traits varied from low to medium values in the interval from  $0.118 \pm 0.030$  to  $0.528 \pm 0.025$ .

### **Serological Survey of Goat Brucellosis in La Pampa Province, Argentina**

Animal Health Research<sup>1</sup>, Coordinador UEP Caprina La Pampa<sup>2</sup>, Researcher<sup>1</sup>, Researcher<sup>1</sup>, Researcher<sup>3</sup>, Researcher<sup>1</sup>, Researcher<sup>3</sup>, Researcher<sup>3</sup>

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#### **Abstract / Resumen:**

A serological survey of caprine brucellosis was carried out on native goat flocks in the west area of La Pampa province, Argentina. A total of 2229 females and 313 males belonging to 156 and 117 beef flocks respectively were sampled, as well as 287 females from the only dairy goat in the region. Blood samples were taken from the jugular vein and the serum obtained was frozen at  $-20^{\circ}\text{C}$  until processing. Buffer Plate Agglutination Test (BPAT) was used as screening and positive reactions were retested using confirmatory tests: serum agglutination test (SAT) and 2-mercaptoetanol test. Seven (0.31%) samples tested positive by BPAT, all these belong to females beef flocks. However when these samples were retested by confirmatory tests, all of them were negative. These results suggest that flocks of native goats from La Pampa would be free of this disease, although studies with larger number of animals will be necessary to assert such condition.

### **Productive and reproductive evaluation of Anglo Nubian goats and their crossbreeding with Boer into semiextensive production system**

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#### **Abstract / Resumen:**

The following study was to evaluate productive and reproductive behaviour of Anglo Nubian (AN) and

Anglo Nubian x Boer (ANB) belly, under a semi-extensive handled system of meat production Data coming from 65 births (as result of 4 years of measuring in Campo anexo Santa Cruz INTA EEA Catamarca) was analyzed. Reproductive handling was performed during sexual activity season, by means of artificial and check of natural insemination oriented by Boer breed males. The kid goats were located in fitted-out farmyards and they were with the mother 7 days after birth. Milk supply was made before and after goats' shepherding until 60 days (weaning). After this, alfalfa (*Medicago sativa*) and corn was incorporated to the diet. It has been registered: type of birth, sex and weights in kilograms of the goats at birth (BW), 30 (W30D), 60 (W60D) and 90 (W90D) days-old, and with them the total weight birth by female (TWBF), prolificity (PRO) and weight earned daily (WED) was determined. A variance cording to a factorial design analysis was carried out, with year factor (4), biotype (2), type of birth (3) and type of sex (2) and the multiple comparison of the average through Duncan's test. BW was significantly affected ( $p < 0.05$ ) by sex and mother's breed and type of birth, not by year. Males BW was superior to the females in both biotypes. TWBF in kg. was highly superior ( $p < 0.05$ ) in ANB ( $6.03 \pm 0.19$ ) as concerns AN ( $4.92 \pm 0.35$ ). In triple births the ANB's TWBF ( $8 \pm 0.43$ ) was higher ( $p < 0.05$ ) in a 60% as regards AN ( $5 \pm 0.96$ ). PRO values to ANB and AN were  $1.83 \pm 0.10$  and  $1.76 \pm 0.11$  respectively. Double and triple birth's distribution was 97 % and 3% in AN, 56% and 14% in ANB respectively. Type of birth had a significant influence ( $p < 0.05$ ) on animals growing at different ages. ANB kid goats WED at 30 days, coming from single births ( $0.22 \pm 0.02$ ), was highly superior ( $p < 0.05$ ). The same happened in type of birth and mother's biotype had meaningful effects on weaning weight. Single birth kid goats in ANB ( $13.29 \pm 0.6$ ) and AN ( $12.58 \pm 0.9$ ) was superior ( $p < 0.05$ ) to the rest. Males and females ANB W60D ( $11.73 \pm 0.42$  and  $11.20 \pm 0.45$ , respectively) were similar to the AN males ( $11.55 \pm 0.5$ ) and higher ( $p < 0.05$ ) than AN females ( $9.69 \pm 0.49$ ). WED post weaning was superior ( $p < 0.05$ ) in ANB males ( $17.41 \pm 1.11$ ) and ANB females ( $16.85 \pm 1.01$ ) in single births. The obtained results indicate us solid advantages in crossbreeding between both breeds on productive behaviour for meat production. It will be necessary to continue with these evaluations in the search for a biotype that can improve evaluated parameters and could adjust to the environment and to the semiextensive productive systems of arid and semiarid land in Catamarca.

#### **MICROBIOLOGICAL QUALITY OF CHEESE GOAT MILK TYPE CURDLING PRODUCED HANDCRAFTED**

MARINHO, R. M., QUEIROGA, R. C. R. E., COSTA, R. G., SANTOS, M. M., BELTRÃO FILHO, E. M., CRUZ, S. E. S. B. S.

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#### **Abstract / Resumo:**

Goat's milk and derivatives are susceptible to contamination by pathogenic microorganisms and therefore a public health problem. Before this, it aimed to evaluate the microbiological quality of samples of goat cheese. 12 cheeses were produced about 1 kg in 3 different periods and ripened for 10 days, at 10 to 12 °C in the Laboratory of Quality and Food Technology of CCSH / UFPB, Bananeiras-PB. Then representative samples had been taken, which were submitted to quantitative evaluation for enumeration of *Staphylococcus aureus*, total coliforms, *E. coli*, psychrotrophs, molds and yeasts, in addition to qualitative assessment for *Salmonella*. The results were evaluated by descriptive statistics, using a range of values established according to law. The artisanal cheese type curdling goat milk products were obtained for the microbiological quality acceptable with regard to legislation. The use of Good Manufacturing Practices in the production of cheese from goat's milk curdling type

represents action fundamental quality of the final.

#### **MICROBIOLOGICAL QUALITY OF CHEESE GOAT MILK TYPE RENNET PRODUCED HANDCRAFTED**

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#### **Abstract / Resumo:**

Goat's milk and derivatives are susceptible to contamination by pathogenic microorganisms and therefore a public health problem. Before this, it aimed to evaluate the microbiological quality of samples of goat cheese. 12 cheeses were produced about 1 kg in 3 different periods and ripened for 10 days, at 10 to 12 °C in the Laboratory of Quality and Food Technology of CCSH / UFPB, Bananeiras-PB. Then representative samples had been taken, which were submitted to quantitative evaluation for enumeration of *Staphylococcus aureus*, total coliforms, *E. coli*, psychrotrophs, molds and yeasts, in addition to qualitative assessment for *Salmonella*. The results were evaluated by descriptive statistics, using a range of values established according to law. The artisanal cheese type curdling goat milk products were obtained for the microbiological quality acceptable with regard to legislation. The use of Good Manufacturing Practices in the production of cheese from goat's milk curdling type represents action fundamental quality of the final.

#### **EFFECTS OF MINERAL SUPPLEMENTATION ON REPRODUCTIVE ACTIVITY IN PREPUBERAL NUBIAN GOATS.**

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#### **Abstract / Resumo:**

The early onset of sexual maturity represents an economical advantage since it increases both productive life and reproductive life. The present work was designed to evaluate the effect of a mineral-supplemented diet around the age of puberty and the reproductive activity in pre-puberal goats. For the experiment, 12 female criollas inbreeding 7/8 with Nubian breed, which were seven months old at the beginning of the experiment were used. The animals were divided into two different groups: 1) treated goats and 2) control goats. The treated group was fed a diet of fresh lucern ad libitum and 400 g. of concentrated with 15% of protein plus an added mixture of minerals every day; the control group received the same diet except for the mineral mixture. The mineral mixture was added to the concentrated at a rate of 20 Kg. per Ton and its composition is: calcium 130 g; phosphorus 50g; sodium 109 g; chlorine 200 g; iron 4.3 g; magnesium 3.33g; manganese 200 mg; copper 80 mg; cobalt 66.6 mg; selenium 70 mg; iodine 4 mg and zinc 80 mg. All animals was recorded weekly from birth to puberty. Blood samples were taken from each goat, once a week. The blood sample was centrifuged at 3000 rpm for 15 minutes, then, 5 µl of sodium azide were added to the serum as preservative; the serum was the frozen at -20° C until detection of progesterone levels by radioimmunoanalysis. Percentage of births was 66.6 for both groups, no significant difference (P>

0.05) was found; also, no significant difference was found for the litter size. The goats that received minerals were expected to have a higher ovulation rate and, as a result, a higher number of kids was also expected; however, there might have been a flushing effect. For the period from the start of treatment to parturition, there was a significant difference ( $P < 0.06$ ) of 25 days in the treated group. The number of estrous cycles previous to pregnancy was reduced from 2.50 in the control groups to 1.75 in the treated group ( $P < 0.06$ ). Live weight was significant, and although the control group had a higher weight ( $P < 0.0001$ ), this weight difference was not enough to improve ovarian activity, which can be attributed to the fact that the goats had the same number of corpus luteum identified as the number of born kids, and the bleeding was suspended in the first month of pregnancy. Based on these results, we can conclude that supplementation with minerals besides constituting a flushing, improved the ovarian and genital tract efficiency by shortening the age at conception in Nubian goats.

### **Estrous synchronization in dairy goats: effect of the time of cloprostenol injection on fertility during anestrus season**

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#### **Abstract / Resumo:**

The study was carried out to verify if increasing the interval from cloprostenol injection to estrous onset would decrease the deleterious effect on fertility rate after an estrous synchronization treatment. One hundred and ninety Alpine and Saanen goats received intravaginal sponge impregnated with 45 mg of fluorogestone acetate (Chrono-gest<sup>®</sup>, Intervet, Angers, France) for 11 days and 400 or 500 IU eCG (Chrono-gest<sup>®</sup>, Intervet, Angers, France) administered 48 h before sponge removal. The goats were treated with 50 µg cloprostenol (Estrumate, Pitman-Moore, Meaux, France) at 7 (Day 7 group) or 9 days (Day 9 group) after sponge insertion. Blood samples were collected for progesterone assay one week before and at sponge insertion to confirm the anovulatory status and 5/6 days after estrus to assess the induction of ovulation. Goats were inseminated with frozen/thawed semen 24 h after the onset of estrus. The interval (mean  $\pm$ 177 SD) from sponge removal to onset of estrus was 23.3  $\pm$ 177 6.5 h and 24.0  $\pm$ 177 6.9 h for Day 7 and Day 9 group ( $P > 0.05$ ), respectively. No significant difference was detected between groups for any other evaluated parameters (percentage of goats ovulating, pregnant and kidding as well as prolificacy rate). The results of the present study suggest two different alternatives. First, the mechanism by which cloprostenol injection decreases the fertility in goats is still functioning 5 days after injection. Second, increasing the time elapsed between cloprostenol injection and progestagen removal did not improve fertility. Finally, the time of cloprostenol injection seemed to be optimized for estrous synchronization in dairy goats. Key-Words: goat, fertility, cloprostenol, estrous synchronization. Financial Support: CNPq, CAPES.

### **Plasma Progesterone Concentrations in Toggenburg Goats Submitted to Estrous Induction Reusing Intravaginal Autoclaved Progesterone Devices**

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#### **Abstract / Resumo:**

The aim of this study was to evaluate plasma progesterone (P4) concentrations in 30 Toggenburg goats receiving autoclaved progesterone devices during the seasonal anestrus period at the City of Piau-MG, Brazil (latitude 21°35' S and longitude 43°15' W). Goats received new intravaginal progesterone devices (CN, CIDR-G®), autoclaved devices (121°C, 1 atm, 15 min) used previously during six days (C6) or 12 days (C12). Dinoprost (5 mg; Lutalyse®) latero-vulvar was administered on the day of device insertion and eCG (200 UI; Novormon 5000®) latero-vulvar was done 24 h before its removal. Devices remained for six days in all treatments. The small initial P4 concentrations (ng/mL) in all treatments seven days before ( $0.12 \pm 0.21$ ) or immediately before device insertion ( $0.23 \pm 0.20$ ) may be interpreted as a consequence of reproductive seasonality. Six hours after its insertion, goats from CN showed higher ( $P < 0.05$ ) P4 concentrations ( $7.16 \pm 3.64$ ) when compared to C6 ( $4.66 \pm 2.13$ ) or to C12 ( $4.34 \pm 1.85$ ) and these values remained greater in size up to four days. All goats had concentrations superior to 1 ng/mL at the moment of device removal. On the following day, P4 concentrations fell sharply to subluteal levels in all treatments ( $0.13 \pm 0.12$ ). There was a category effect ( $P < 0.05$ ) with nulliparous presenting higher P4 concentrations when compared to lactating goats. It can be concluded that the autoclaving process maintains sufficient P4 at the time of device removal, being able to efficiently induce estrus. Financial Support: Pfizer Animal Health, CNPq, Embrapa Dairy Cattle, Embrapa Goats and Sheep. Keywords: Caprine, CIDR, Reproductive Efficiency, Steroid Hormone.

#### **Effects of bypass lipid supplementation in the transition period on milk yield in dairy goats after parturition**

CARNEIRO, C.1, SOUZA, J.M.G.1,3, TORRES, C.A.A.1, CASTRO, M.V.A.1, MARCONDES, M.I.1, BRUSCHI, J.H.2, VELOSO, C.M.1, FONSECA, J.F.3

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#### **Abstract / Resumo:**

Studies have reported the effects of flushing for dairy cattle but this kind of information for goats is incipient. The aim of this study was to evaluate the use of bypass lipid in the transition period on the milk yield in the beginning of lactation. This study was conducted from March to May 2009, in Piau/MG (21°35' S latitude and 43°15' W longitude), Brazil. Nineteen Toggenburg goats were allocated into four treatments in a randomized block design with body weight and parity as blocks: animals received 2% dry matter of fat supplementation (Megalac® Arm and Hammer, Church & Dwight Company, Princeton, NJ, USA) 21 days before and after parturition (T1), only before parturition (T2) or only after parturition (T3); the control group received no supplemental fat (T4). Goats were fed a complete mixture of napier grass and corn silage in a 50:50 forage/concentration ratio four times daily. After parturition, goats were milked twice daily and the milk was evaluated for its constituents. Statistical analysis was performed using all tests at the 95% confidence interval with a SAEG® program (Funarbe, Viçosa, Brazil). The average daily milk yield (Kg) for T1, T2, T3 and T4 was, respectively, in

the first week (2.19, 1.91, 2.07, 1.96), second (2.62, 2.29, 2.52, 2.23), third (3.14, 2.81, 3.14, 2.47), fourth (3.22, 3.16, 3.41, 2.72), fifth (3.33, 3.30, 3.43, 2.88), sixth (3.33, 3.28, 3.38, 2.80), seventh (3.14, 3.26, 3.17, 2.72) and eighth (3.19, 3.19, 3.26, 2.60). There were no differences ( $P>0.05$ ) among all treatments for fat, lactose, protein or dry extract contents. It can be concluded that the concentration used (2%) of fat supplementation was not enough to promote differences on milk yield or composition. More studies could evaluate a higher concentration of this supplementation in the dairy goat diet. Keywords: Fat Supplementation, Megalac, Toggenburg. Financial Support: FAPEMIG, EMBRAPA Goats and Sheep, EMBRAPA Dairy Cattle.

### **Productive Performance of Goats fed with Leaves of Banana Tree in the Semi-arid Region of Brazil**

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#### **Abstract / Resumo:**

The production of forage to feed animals in the semi-arid region is seasonal. During the dry season, it is observed a low quality and amount of feeding resources; in addition, the productive performance of animals is very poor. This work aimed to evaluate the productive performance of goats kept in the Caatinga vegetation and fed with leaves of banana tree in the dry season of the year. Twenty-four adults crossbred goats were allocated in three homogeneous groups: 1) Control (they had exclusive access of Caatinga); 2) Leaves 1x (they were fed with leaves of banana once a week) and 3) Leaves 2x (they were fed with leaves of banana twice a week). Goats were kept in the Caatinga vegetation during the all day. Leaves of banana tree were offered to groups Leaves 1x and Leaves 2x before letting them to go to native pasture. All animals were weighted, every 14 days, making a total of 98 days of evaluations. It was used a random experimental design, with three treatments and eight repetitions per treatment. It was observed that all groups showed loss of weight (3.8, 2.6 and 1.8 kg, respectively to Control, Leaves 1x and Leaves 2x). The Control group, which was kept exclusively in the Caatinga, lost a little more weight. However, there were no significant difference ( $P>0.05$ ) between groups. The leaves of banana tree were not enough to supply the nutritional demand of animals. The consumption of leaves of banana tree did not influence the productive performance of goats. In case of reduction or lack of forage, the leaves of banana tree can be an alternative to reduce the loss of weight of goats kept exclusively in the Caatinga during the dry period of the year.

### **Productive Performance of Male Kids Kept in Buffel Grass pasture and Supplemented with Fruits of Umbuzeiro**

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#### **Abstract / Resumo:**

The Brazilian goat herd is estimated in 11.2 million animals, where approximately 90% are raised in the Northeastern region. However, the productive performance of animals raised here is low due mainly to poor feeding management. This work aimed to evaluate the productive performance of goats kept in Buffel grass pasture and supplemented with fruits of Umbuzeiro (*Spondias tuberosa*

Arruda) in the semi-arid zone of Pernambuco, Brazil. Twenty-four castrated and crossbreed goat kids were used; they were 9 months old and 17.0 kg of body weight at the beginning of experiment. The animals were homogeneously allocated into three treatments: 1) Control (n=8) animals were fed exclusively with Buffel grass; 2) Umbu 1x (n=8) they received fruits of Umbuzeiro once a week and 3) Umbu 3x (n=8) they received fruits of Umbuzeiro for three times a week. Four observations of corporal weight were accomplished in 14 days intervals, making a total of 56 days of experimentation. The consumption of dry matter intake (total DMI) was estimated by total collection of feces. It was used a random experimental design, with three treatments and eight repetitions per treatment. There was no significant difference ( $P > 0.05$ ) among the treatments. The total weight gain (TWG) were 6.54 kg, 6.25 kg and 6.09 kg, and average daily weight gain (DWG) were 116.79 g/day, 111.61 g/day and 108.7 g/day, respectively, for groups Control, Umbu 1x and Umbu 3x. Similar results were found for the total DMI (547.04g, 544.89g and 568.08g, respectively, for the experimental groups). These results can explain the absence of significant difference ( $P > 0.05$ ) for TWG and DWG among the treatments. However, these results are considered very good for goats kept under Buffel grass pasture. The high quality of Buffel grass was enough to supply the nutritional requirements of kids. In conclusion, the supplementation with fruits of Umbuzeiro did not influence the productive performance of kids

### **Estrus activity in Boer goats submitted to two estrus synchronization treatments in semi-arid of Northeastern Brazil**

Nogueira, D.M.1, Lopes Júnior, E.S.3, Sousa, P.H.F.2, Nascimento, T.V.C.3

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#### **Abstract / Resumo:**

An efficient artificial insemination program requires the use of estrus synchronization treatments that assure acceptable pregnancy rates with very low variation in the response between flocks. The objective of the present study was to evaluate the estrus activity of Boer goats submitted to long and short-term synchronization treatments in the semi-arid region of Northeastern Brazil. Forty-two Boer goats were homogeneous allocated and submitted to two estrus synchronization treatments. First, 6-days protocol (n=21): vaginal sponge containing 60 mg medroxyprogesterone acetate (MAP) for 6 days. At moment of sponge insertion (day 0), it was administrated 75 ug cloprostenol and, at the sponges withdrawal (day 6), 300 UI equine chorionic gonadotrophin (eCG). Second, 11-days protocol (n=21): the same hormones and doses were used for the first treatment, but sponges were maintained for 11 days and 48 h before sponge removal (day 9) was administered d-cloprostenol and eCG. Percentages of animals in estrus did not differ ( $P > 0.05$ ) between 6-days (90.5%) and 11-days protocols (95.2%). In addition, interval from sponge removal and the onset of estrus did not differ between protocols (19.4 „b 5.4 h vs. 19.8 „b 11.4 h). The hormonal treatments showed a short dispersion and, therefore, a strong synchrony for the exhibition estrus, because 87.2% of goats had already exhibit signs of estrus within 24 h after sponge removal. However, it was found significant difference ( $P < 0.05$ ) in the duration of estrus between 6-days (48.0 „b 10.7 h) and 11-days protocols (33.0 „b 12.1 h). One possible explanation for this is the greater progesterone levels at the sponge removal in 6-days protocol. Six days protocol showed as effective as 11 days protocol for estrus synchronization in Boer goats. The great synchrony of estrus shows that both protocols can be used for fixed time artificial inseminations. Keywords: Goat, hormonal treatment, protocols, reproduction

## **Effect of mating season and type of breed on the productive performance of goats agroecologic production system in the Northeastern Brazil**

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### **Abstract / Resumo:**

The Brazilian goat herd is estimated in 11.2 million animals, where approximately 90% are raised in the Northeastern region. This work aimed to evaluate the effect of mating season and type of breed on the reproductive performance of goats raised in an agroecologic production system in the semi-arid region of Northeastern Brazil. This production system is based on the techniques recommended by organic certification rules which are characterized by elimination of chemical products to obtain a meat with better sanitary quality and using a proper stocking rate for the biome of Caatinga. An average of 47 goats were evaluated for three mating season (EM) during two years, as following: EM1 (March/April), EM2 (November/December) and EM3 (July/August). There were three types of breeds: Boer, Anglo-nubian and Caninde. It was used a factorial random design 3x3 (three mating seasons x three breeds). Significant difference was not observed ( $P>0.05$ ) among mating seasons on parturition rate and prolificity. It was found an average of 62% for parturition rate, 1.3 for prolificity and a kidding interval of 10 months (1.2 kids/ parturition). The born weights of crossbreed kids from Boer were significantly higher ( $P<0.05$ ) than Caninde (3.3 kg vs. 2.0 kg, respectively). The same happened to the weight at weaning (90 days old). The crossbreed kids coming from Boer or Anglo-nubian were heavier ( $P<0.05$ ) than Caninde (13.0 vs. 8.0 kg, respectively). The kids born in the dry period of the year (from EM1 and EM2) had loss of weight. Compared to the typical extensive production system in the semi-arid region, the goat agroecologic system showed a similar productive performance. The introduction of an exotic breed can be an alternative to improve the productive performance of goats raised in the semi-arid area of the Northeastern Brazil. Keywords: animal performance, ecological goat, Caatinga, sustainable environment.

## **ALTERNATIVE FOOD FOR SMALL RUMINANTS IN SEMIARID ZONES, THE CASE OF MESQUITE (*Prosopis laevigata* spp) AND *Opuntia ficus indica*.**

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### **Abstract / Resumo:**

This work was carried out in order to propose alternative food for goats in semiarid zones, using regional products. This is a summary of the results obtained in our laboratory, on nutritional characterization of mesquite pods (*Prosopis laevigata*) and nopal (*Opuntia ficus indica*) as alternative supplements. First evaluations in Opuntias were based in comparing the size (or maturity) of cladodes of *Opuntia ficus indica* var. Copena; It was chemically characterized, so as different wild varieties of *Opuntia* (*O. megacantha*; *O. hyptiacantha*; *O. robusta*; *O. estrepocantha*) *Opuntia* showed a low DM content from 8 to 15%, CP content from 5 to 7%/DM, CP-ADF representing 10 to 30% of CP and ash

content was from 13 to 25% of DM. On the other hand, between wild Opuntias, *O. robusta* had the highest protein content ( $P < 0.001$ ) (7.23%/DM). *O. estreptocantha*, had the highest content of Ca ( $P < 0.001$ ). The matures cladode had the highest OM digestibility ( $P < 0.01$ ). The use of *Opuntia* cladode decreased drinking water consumption ( $P < 0.01$ ), but increased the total water consumption (drinks and food water). Small cladode had higher effective degradation of DM ( $P < 0.001$ ), but less effective degradation of CP and NDF. Mesquite pod shows a high content of soluble protein and antinutritional factors. Roasting can reduce those contents. In this experimen the pod was roasted to 150C/45min. Comparing the raw mesquite pods with the roasted ones results were: roasting changed ( $P < 0.01$ ) the content of OM, CP, NDF and ADF; the increase of fiber due the formation of coplexes between protein and carbohydrates. The CP content was 12%, calcium and phosphorus had a low concentration, and like *Opuntia*, the content of Se and Co are poor. Roasting decreased effective degradation ( $P < 0.05$ ) of DM, CP and NDF. Digestibility of DM, OM, CP and fiber content are found in values obove 60%, Roasting didn't show effects on digestibility ( $P > 0.05$ ), and modified the content and activity of antinutritional factors. In conclusion, *Opuntia* and mesquite pods roasting can be good source of supplementation for goats in the semiarid regions by nutritional characteristics and its capacity to dapt to water-deficient regions. Keywords: *Prosopis laevigata*, *Opuntia ficus*, Digestibility, degradability, chemical characteristics, alternative supplements in semiarid zones. Aknowledge: This work was supported by SEP-PROMEP by the project PROMEP/103/07/2518 and CONACYT-SAGARPA project 2004-CO1-121.

### **Morphometry of non components of carcass on goats in early growth**

SOUZA, S.F.1,2, OLIVEIRA, D.2, Boaventura Neto, O.2, Mendonça, A.N.2, Fernandes, N.P.2, Bompadre, T.2, Teixeira, I.A.M.A.2

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### **Abstract / Resumo:**

The slaughtering of animals, besides the housing is obtained by-products (the non members), which generate income for the refrigerators. Even if the producers do not receive remuneration for these components, they are very important for its direct relation to nutritional requirements and net energy for maintenance, since demand much of the available energy in the body to perform their metabolic functions. Another important factor is that the proportions of the gastrointestinal tract from the carcass directly influence the carcass of slaughtered animals. The importance of non-carcass components not only refers to income housing and energy expenditure for maintenance, but also refers to an alternate protein source for human population. Thus, obtaining information on the factors influencing the non-carcass components may assist in achieving greater economic goat's activity. A better understanding of the different sources of variation in body organs can also develop strategies to assess the effects of nutrition on growth of animals. In addition to the nutritional factor, race and sex are the major sources of variation that affect the body composition of animals, where sexual dimorphism in relation to body weight is observed in many species, males in most cases heavier than females. These differences can be attributed in part to different growth patterns observed between females and males, usually associated with physiological and anatomical adaptations, in particular the digestive system. The aim of this study was to evaluate the sex effect on morphometry of digestive tract in goat kids, slaughtered with 15 kg of body weight. The treatments were defined from the

sexual group (females, males and castrates) and some characteristics were studied: Rumen-reticulum (g), omasum (g), abomasum (g), duodenum (g), jejunum (g), ileum (g), cecum (g), colon (g); and duodenum length (cm), jejunum (cm), ileum (cm), cecum (cm) and colon (cm). The male cecum length was higher than females and castrates. No significant differences were observed for the others characteristics. It follows therefore that the development of the gastrointestinal tract of goats in the initial stage of growth is not affected by sexual conditions of animals.

### **Effect of castration and slaughter weight on carcass dressing in young goats of breed Saanen**

SOUZA, S.F.1,2, OLIVEIRA, D.2, Boaventura Neto, O.2, Fernandes, N.P.2, Mendonça, A.N.2, Bompadre, T.2, Resende, K.T.2

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#### **Abstract / Resumo:**

In the southeastern region of Brazil for a dairy goat developed, conducted intensively, where it is common practice to sacrifice the goats males shortly after birth in order to eliminate spending on handling these animals. However, studies show that the use of these animals can generate additional income to farm, slaughtering them just after weaning, thus conforming with production systems in a short time and at low cost, producing quality carcasses. Studies have been conducted aiming to evaluate factors affecting carcass characteristics of goats, among which the age and sex were listed as factors strongly influencing. In order to evaluate the effect of castration and body weight were used 68 Saanen kid goats, being 34 whole males and 34 castrated males, assigned to a factorial arrangement 2x3 (2 treatments and 3 groups). The animals were divided into 3 groups, with Group 1 animal in the strip of 9 kg, Group 2 in the strip of 12 kg and Group 3 in the strip of 15 kg body weight at slaughter, so that within each group, 50% of whole animals were castrated and 50%. The diet was formulated to meet the nutritional requirements of growing animals, according to NRC (2006) and calculated for a gain of 150 g/day/animal. The mean body weight between whole males and castrated males within each group did not differ, but differ when compared between different groups, a factor that led to the achievement of groups of animals at three different stages of body development. In none of the groups was no effect of castration on the carcass hot or cold. Moreover, the weight of slaughter animals influence the hot carcass, where the animals in group 3 had higher incomes than those in Group 1 and the cold carcass yield, with the animals in group 3 higher values than the other groups. Therefore, it is concluded with this study that the castration of young goats at 9, 12 or 15 kg of body weight is not recommended and should be chosen for the slaughter of whole animals with higher body weights, thus aiming higher dressing.

### **Performance of Dairy Goats Fed Diet with Dry Yeast as Protein Source**

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#### **Abstract / Resumo:**

Eighteen primiparous Saanen goats randomly distributed in a factorial arrangement 3 (three diets) x 2

(two ages at the first kidding) fed rations containing dry yeast (*Saccharomyces cerevisiae*) of sugar cane as protein source, were used to evaluate feed intake and milk yield. Does one year old ( $n=3$ ,  $45.72 \pm 2.03$  kg) and two years old ( $n=3$ ,  $56.41 \pm 2.03$  kg) fed each diet were used. Experimental period was composed of 90 days (since day 60 of milking). Rations were composed of soybean meal (SB), soybean meal plus dry yeast (SBDY) or dry yeast (DY) as protein source, ground corn, corn silage (40%) and mineral supplement. The diets were formulated to contain 15.0% crude protein and 2.7 Mcal of ME/kg DM. Goats were fed for ad libitum intake at 0900 and 1600 h and milked twice daily (0730 and 1500 h). The milk yield of individual goats was recorded at each milking. Orts were weighed and recorded daily before the 0900 h feeding and samples of food and Orts were taken fortnightly to analyses (dry matter, ash, crude protein, ether extract and neutral detergent fiber). Dry matter and organic matter intakes was lower ( $P < 0.05$ ) to DY diet than SBDY (1.72 vs. 1.97 kg/day) but these diets did not differ ( $P > 0.05$ ) compared to SB (1.93 kg/day). Crude protein, ether extract and neutral detergent fiber intakes were lower ( $P < 0.05$ ) for DY diets than other diets. There were no differences ( $P > 0.05$ ) among diets to total carbohydrates intake. Animals two years old at first kidding had higher ( $P < 0.05$ ) dry matter (1.67 vs. 2.07 kg/day) and nutrient intakes. Interaction effect was observed for milk yield and milk yield efficiency (kg milk/kg DMI). Goats one year old who fed SB and SBDY diets had lower ( $P < 0.05$ ) milk yield and milk yield efficiency than animals two years old at first kidding (1.79 kg/day and 0.91 vs. 2.51 kg/day and 1.27, respectively). Similar values were observed ( $P > 0.05$ ) to goats fed DY diet in both ages at first kidding (2.23 kg/day and 1.13). In conclusion, dry yeast of sugar cane can be fed to milking goats without changing milk yield. Primiparous goats with one year of age have lower milk yield than primiparous goats with two years of age at first kidding.

### **Milk Quality of Dairy Goats Fed Diets with Dry Yeast as Protein Source**

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### **Abstract / Resumo:**

Eighteen primiparous Saanen goats randomly distributed in a factorial arrangement 3 (three diets) x 2 (two ages at the first kidding) fed rations containing dry yeast (*Saccharomyces cerevisiae*) of sugar cane as protein source, were used to evaluate feed intake and milk yield. Does one year old ( $n=3$ ,  $45.72 \pm 2.03$  kg) and two years old ( $n=3$ ,  $56.41 \pm 2.03$  kg) fed each diet were used. Experimental period was composed of 90 days (since day 60 of milking). Rations were composed of soybean meal (SB), soybean meal plus dry yeast (SBDY) or dry yeast (DY) as a protein source, ground corn, corn silage (40%) and mineral supplement. The diets were formulated to contain 15.0% crude protein and 2.7 Mcal of ME/kg DM. Goats were fed for ad libitum intake at 0900 and 1600 h and milked twice daily (0730 and 1500 h). The milk yield of individual goats was recorded at each milking to calculate yield of fat-corrected milk (3.5%). Milk samples were taken to evaluate milk composition (fat, protein, lactose and total solids) and milk quality (acidity, somatic cell counts and milk urea nitrogen). Diets did not influence ( $P > 0.05$ ) milk yield fat-corrected (2.14 kg/day), but goats with one year of age at the first kidding showed lower ( $P < 0.05$ ) milk yield than does with two years of age (1.78 vs. 2.50 kg/day). Acidity, somatic cell counts and milk urea nitrogen did not change ( $P > 0.05$ ) among treatments. Does fed the SBDY diet had higher ( $P < 0.05$ ) fat content (3.55%), fat yield (81.06 g/day) and total solids content (11.22 g/day) than those fed DY diet (2.81%, 62.36 g/day and 10.26 g/day, respectively).

Goats two years old showed higher ( $P < 0.05$ ) fat yield than goats one year old (83.11 vs. 59.41 g/day). The protein and lactose contents did not differ ( $P > 0.05$ ) among diets (2.71% and 4.04%, respectively). Interaction effect was observed for protein, lactose and total solids yield, where goats one year old who fed SB and SBDY diets had lower ( $P < 0.05$ ) values than those two years old at first kidding. Similar values were observed ( $P > 0.05$ ) to goats fed DY diet in both ages at first kidding. In conclusion, dry yeast of sugar cane can be fed to milking goats without changing milk quality. Primiparous goats with one year of age at first kidding have lower milk yield fat-corrected than goats with two years of age but milk quality is not altered by age at first kidding.

### **Chemical composition, density, pH and protein profile of goat milk and goat cheese whey elaborated with 3 different fat contents.**

Sánchez-Macías, D.1, Morales-de la Nuez, A.1, Moreno-Indias, I.1, Fresno, M.2, Álvarez, S.2, Argüello, A.1, Castro, N.1

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#### **Abstract / Resumen:**

Majorera goat milk with three different fat content (5%, 1.5% and 0.4% fat) were obtained using a skimmer and goat cheese were prepared by traditional method from Canary Islands (Spain) with these 3 types of milk. Milk and cheese whey samples were analyzed for: pH, gross chemical composition and density; percentage of proteins was determined with electrophoresis in SDS-PAGE gel. It was observed that milk pH decreased as fat content was lower. However cheese whey pH decreased slightly as milk fat content was lower but no statistically significant differences between the three types of whey were observed. The remaining fat percentage in cheese whey was significantly lower as milk fat content was reduced (remaining 10, 4 and 0% cheese whey fat content from full-, reduced- and low-fat milk, respectively). The protein in milk decreased slightly as fat is removed by centrifugation. Protein content in whey was 3 times lower than in milk but no significant differences were found between the three types of cheese whey. Lactose in milk ranged from 4.5 to 5%, increasing significantly as fat content decreased. However the whey obtained from the three cheese making process showed similar lactose content. Lactoferrin, serum albumin, beta-lactoglobulin and alpha-lactalbumin passed without changes of concentration from the milk to the whey and no significant differences were found in these proteins. Moreover, no significant differences were found in the percentage of these proteins between the 3 different types of milk used, so the protein profile of cheese whey have not been modified by the centrifugation. After skimming beta-casein showed a statistically significant increase although it was shown a slightly increase in the alpha<sub>2</sub>-casein concentration. A difference of whey proteins, alpha<sub>2</sub>-casein, beta-casein and kappa-casein were not detected in cheese whey. The 2% of alpha<sub>1</sub>-casein was detected in all types of cheese whey of total milk protein, thus, part of this protein was lost with the cheese whey. In conclusion: as it was expected, all whey proteins were detected on whey after cheese making. There was also evidenced a small proportion of alpha<sub>1</sub>-casein independent of the treatment of the milk. Cheese producers must take account of the important losses they are having in cheese whey. Whey chemical composition, specially in the full-fat milk cheeses, had relative high total solids so it can be used to produce ricotta or other milk product. The optimum milk fat content should be established in order to minimize fat losses in the cheese whey however it is also possible to reuse the cheese whey when cheese are

elaborated with high fat milk.

**Correlation between protein profile and chemical composition, pH and texture parameters in cheese elaborated with three fat contents milk ripened at 28 days.**

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**Abstract / Resumen:**

72 goat's raw milk cheeses were elaborated according to the traditional hand-made cheese practices in Canary Islands (Spain), cheese were made with three different fat content milk: full-fat milk cheese (FFC, 5% fat in milk), reduced-fat milk cheese (RFC, 1.5% fat in milk) and low-fat milk cheese (LFC, 0.4% fat in milk). At 28 days of ripening, the gross composition, pH and texture profile analyze were analyzed and water-soluble proteins were extracted. Protein extract was separated on SDS-PAGE gel by duplicated. Person's correlation analysis was performed between the electrophoretic bands values (intensity x area) and chemical composition (moisture, protein, fat and fat in dry matter), pH and texture profile analysis. alphas2-casein, peptides 2 and 3 showed significant correlations with all chemical parameters (moisture, protein, fat and fat in dry matter content), and the &alphas1-casein was correlated with pH and total protein percentage. Intensity x area value of alphas2-casein was positive correlated with moisture and total protein (0.60 and 0.64, respectively), and however showed negative correlation with cheese fat and fat on dry matter (-0.63 and -0.64), and it is according to the less rate of degradation of this casein. Also high correlations were found between peptides 2 and 3 and chemical parameters, those correlations were much higher with peptide 3. Positive correlation was observed between internal and external pH and alphas1-casein (0.58 and 0.53) and alphas2-casein (0.65 and 0.57) and negative with peptides 2 and 3. It's known that as cheese fat content decrease, pH is higher and the casein rate of degradation is less. Fracturability, hardness, cohesiveness and gumminess correlated positively (0.65, 0.67, 0.62 and 0.62, respectively) as well adhesiveness and elasticity showed a negative correlation (-0.53 and -0.68, respectively) with alphas1-casein and alphas2-casein. Similar correlations were found between peptides 2 and 3 and the texture parameters studied, although the correlations were higher with peptide 3. In conclusion, the main correlation observed was that when pH increased, the percentage of casein increased too, and concomitantly, the proportion of peptides 2 and 3 decreased. At day 28 of ripening is possible to establish a stronger relationship between the electrophoretic bands profile on SDS-PAGE and texture parameters in goat cheese elaborated with raw milk.

**Gross chemical composition and texture profile analysis of full-fat, reduced-fat and low-fat goat cheese elaborated with raw milk using traditional procedures in Canary Islands (Spain).**

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**Abstract / Resumo:**

Three different milk fat contents were used to elaborate 72 goat's raw milk cheeses according to traditional hand-made cheese practices in Canary Islands: full-fat cheese (FFC), reduced-fat cheese (RFC) and low-fat cheese (LFC) with 5, 1.5 and 0.4% fat in milk, respectively. At 1, 7, 14 and 28 days of ripening, cheese samples were taken to analyze chemical composition, pH and texture profile. The cheese fat content, as expected, was higher in FFC (18.5%) than in RFC and LFC (9.4 and 1.2%, respectively), at day 1. At the end of this study, fat in dry matter values were 48%, 26% and 18%, FFC, RFC and LFC, respectively. At day 1, protein content was higher in LFC (22.8%) than in RFC (21%) and FFC (19%). Throughout maturation, protein percentages were increasing over time, showing values of 33%, 25% and 20%, LFC, RFC and FFC, respectively at day 28. Moisture was 47% in FFC, 52% in RFC and 56% in LFC at 1 d of maturation, dropping until 40%, 50% and 51%, respectively at 28 days. The average of external and internal pH value at 1 day was similar in all groups (6.6). During the first two weeks of ripening, external and internal pH values decreased, but at day 28, the external and internal pH increased slightly. pH values were significantly higher in LFC than in RFC and FFC in all ripening times. Values of fracturability and hardness of LFC and RFC were significantly higher than FFC throughout the 28 days of ripening. At day 28 both parameters increased significantly for all cheeses, 190, 83 and 38 N for fracturability, and 193, 106 and 51 N for hardness, in LFC, RFC and FFC, respectively. The cohesiveness was higher in LFC than in the other groups. Adhesiveness increased in all cheeses until day 14, dropping significantly at 28 days of maturation in RFC and LFC. Elasticity dropped slightly over the 28 days on the FFC, but in the RFC and LFC decreased significantly, and presented differences between the 3 types of cheese in all times of the ripening. Gumminess was constant over the 28 days of ripening in FFC. But for the RFC and LFC, gumminess increased during the experiment, and also remained significant differences among the 3 types of cheese in the four times when the measures were made, with higher values in the LFC. In conclusion: fat reduction resulted in lower fat and fat/dry matter content, and higher protein and moisture content. Fracturability, cohesiveness, masticability and hardness increased as fat decreased in cheese, while elasticity and adhesiveness decreased.

**Adaptation of traditional kid's rennet pastes to handmade goat's cheese making.**

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**Abstract / Resumo:**

The use of natural kid rennet has been progressively reduced due to difficulties in cheese making standardization and health regulation. As result, cheeses are losing many of the traditional sensory characteristics. In this experiment 23 abomasums of lactating kids of  $35 \pm 5$  days were obtained from licensed abattoir, 13 were with suckling milk (PSM) and 10 were washed and refilled with goat's raw milk (PRM). They were dried and the paste was prepared by grinding with 23 % of NaCl. Microbiological analysis showed that all stomachs were available for rennet paste preparation. Pastes were prepared and preserved at 4°C during 1 year without statistics variations in coagulating time. Experimental cheeses were made with PSM paste, PRM paste and commercial Chymax® rennet (CC) as control; type of rennet was the only variation factor. Cheeses were analyzed at 7, 30 and 60 days of

ripening. Microbiological analysis results for all cheeses were according to sanitary regulation. Colour was determined with a Minolta CR-400, according to CIELCH colour space; texture was analyzed with a Texturometer TA-Xt2i for TPA analysis. Sensory analysis was performed by 7 trained judges for cheese sensory profile and differentiation test. Consumer's panel (100 judges) and also trained judges performed preference tests. Descriptive statistics and ANOVA with two factors were done with SPSS, 15.0. Rennet and ripening time had a significant effect on texture parameters; fracturability, hardness and gumminess were lower in cheeses made with natural rennet paste and also in fresh cheeses. Cheese paste colour was also affected by both factors: lightness decreased along maturation and PSM cheeses were lighter. Rennet had a significant effect in odour and aroma characteristics, PSM and PRM cheeses showed rennet, pungent and butyric profiles, but PSM cheeses intensity was higher probably related with pre-gastric lipase in PSM paste. Triangular test showed a high differentiation in all cases. Consumers panel preferred PSM>PRM>CC for fresh cheeses and the best scores were for PRM>PSM>CC for semi-hard cheeses. PSM fresh or semi-hard cheeses received the highest scores from expert judges. As a conclusion, traditional rennet pastes can be used by handmade cheese producers without sanitary risk and using simple technology. Consumer's preferences were carried out in cheeses manufactured with natural rennet pastes. PSM cheeses recovered the traditional flavours in descriptors profiles and intensities values; PRM cheeses can be an alternative for consumers that prefer artisan cheeses but with softer intensities. Acknowledgements: E. Díaz had a contract from ACIISI with FSE funds. This study was supported by Quesería de Tindaya and ICIA's funds.

### **Effect of supplementation with dried cashew apple bagasse during the Anglo-Nubian goat post-partum on the kids in vivo performance from the birth to the weaning**

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#### **Abstract / Resumo:**

In the northeast of Brazil, there is a growing interest of cashew byproducts originating from the processing of tropical fruit juices, since this fruit is harvested in the dry period of the year. Thus aim of this work was to evaluate the effect of supplementation with dried cashew apple bagasse (DCAB) during the goat post-partum on the kids in vivo performance. Twenty-eight Anglo-Nubian goat with similar body weight and body condition score, were kept during the post-partum period on pasture and supplemented with sorghum silage (75%) + concentrate (25%) (n = 16) or DCAB (55%) + elephant grass (20%) + concentrate (25%) (n = 12). Kids (n = 49), were weighted every fifteen days and weaned at 42 days aged. The birth weight was similar between groups ( $2.91 \pm 0.08\text{kg}$ , DCAB vs.  $3.06 \pm 0.12\text{kg}$ , silage). The results of ANOVA (GLM procedures), showed that only the type of parturition (single vs. multiple), affected significantly ( $p < 0.001$ ) the kids live weight and daily weight gain, while the type of supplementation did not influence both parameters of kids performance. At weaning, the kids recorded a mean live weight of  $7.86 \pm 0.36\text{kg}$  for DCAB group and  $8.20 \pm 0.34\text{kg}$  for silage group ( $p > 0.05$ ) with a daily weight gain respectively of  $109.87 \pm 7.47\text{g}$  and  $114.45 \pm 6.19\text{g}$  ( $p > 0.05$ ). Therefore DCAB can be considered a suitable option for supplement ration in goats reared at pasture in northeast of Brazil.

#### **Performance and biometric traits of goats fed different hays.**

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**Abstract / Resumo:**

The objective of this study was to evaluate performance and biometric traits of goats fed with four different hays (alfalfa, mulberry tree, Tifton 85 and corn plant). Forty Saanen male goat kids were used from birth to 16.5 kg of body weight (BW). Experimental diets, which contained 50% hay and 50% concentrate, were offered individually ad libitum from the 10th day of life. Diet intake was daily measured, and animals were weaned at 50 days old. Kids were weighed weekly and at the end of the experiment body weight and biometric traits (body length, leg length, thigh girth, height at withers, height at rump, heart girth, pelvic width and width at shoulders) were recorded. The study was designed as randomized blocks and the means were compared using the Tukey test at 5% probability. There was no statistical differences between treatments ( $P > 0.05$ ) for weaning BW and average daily weight gain (ADG) from birth to weaning. After weaning, feed conversion of the animals fed the diet with mulberry tree hay was better ( $P > 0.05$ ) than others diets. Animals fed mulberry tree hay diet were younger at 16.5 kg of BW (63.5 days old) than those fed diet with corn plant hay, alfalfa hay and Tifton 85 hay (76.4, 79.8 and 82.4 days old, respectively). Among biometric traits, there was observed statistical difference only for thigh girth, in which the lowest measurement was found in animals fed diet with Tifton 85 hay. Given the results, is concluded that the goats kids fed hay of mulberry tree showed better performance after weaning, and did not have difference to the biometric traits for the animals fed with different hays, except for thigh girth from the kid goats fed tifton 85 hay.

**Effect of feed restriction and sex on internal fat deposition in Saanen goat kids.**

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**Abstract / Resumo:**

The objective of this study was to evaluate the effect of sex (intact male, female and castrated male) and nutritional level (0, 25 and 50% of feed restriction) in non-carcass fat of 47 goat kids with 5 kg of initial body weight. The animals were individually fed goat milk and total diet. They were slaughtered when the animals under 0% feed restriction reached 15 kg. After the slaughter and evisceration weights of mesenteric, omental, pericardial, kidney and abdominal fat were recorded and expressed in g/kg empty body weight. The experiment was performed in a completely randomized design in 3 x 3 (three sex and three levels of feed restriction) factorial. There was not influence of sex in the deposition of internal fat, but the food restriction reduced significantly deposits of omental fat, mesenteric fat, kidney fat, cardiac fat and abdominal fat in Saanen goat kids.

**EFFECT OF rBST ON MILK PRODUCTION AND CONSTITUENTS OF GOATS**

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**Abstract / Resumo:**

Twenty-four Saanen goats were divided into two equal groups and one group was treated with four doses of 250mg of rBST (Boostin®) and the control group treated with saline both in the 9th, 11th, 13th and 15th weeks of lactation. Physical evaluation of milk, milk weighing and sampling for chemical tests and somatic cell count - CCS were performed weekly until the 19th. week. The results showed that the production of goats' milk treated with rBST significantly increased (more than 50%) after the third application and remained higher until one week after the 4th. dose treatment compared with untreated goats. There was little influence and even then transitional treatment on milk constituents evaluated and no effect on CCS.

**Phenotypic markers to identify resistant and susceptible crossbreed goats to gastrointestinal nematodes infection**

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**Abstract / Resumo:**

Phenotypic markers can be used to determine the response to gastrointestinal nematodes infection. The present study aimed to characterize 60 crossbreed goats (1/2 Anglo-Nubian x 1/2 Saanen) naturally infected by gastrointestinal nematodes using phenotypic markers (parasitological, hematological and production) to identify the most resistant and the most susceptible animals from the herd. Until the beginning of the experimental period the animals were free from worms and kept on pasture (*Panicum maximum* cv. Tanzania) during 97 days. Each seven days they were weighted, submitted to body conditional score and to Famacha method to worm control and blood samples were collected to determined eosinophil counts (EOS), the packed cell volume (PCV) and total serum protein levels (TSP) and feces to determine the EPG (eggs per gram) counts and the infective larvae. During this period, when the EPG means was 800 eggs / g (42 days), animals were wormed and relocated in the same experimental area until the EPG means reached 800 eggs / g again (90 days). At this time, based on the EPG means, the animals were classified as resistant and susceptible and slaughtered to recover the gastrointestinal nematodes for subsequent count and species identification. The results were submitted to variance analysis and the correlations among variables were obtained by Pearson's correlation. On feces cultures, *Haemonchus* sp. (67%) was the predominant genus, followed by *Trichostrongylus* sp. (32.6%) and *Oesophagostomum* sp. (0,4%). The EPG means of susceptible group was higher than resistant group. (4.8 fold) (3653.5 eggs / g and 758.5 eggs / g;  $P < 0.0001$ ). This one presented higher PCV means (26.4%) and TSP levels (6.32 g / dl) than susceptible animals (24.0% and 6.0 g / dl, respectively;  $P < 0.0001$ ). Differences were observed regarding to Famacha degree (1.8 and 2.2;  $P < 0.0001$ ), body score conditional (2.7 and 2.5;  $P < 0.001$ ) and weight (22.9 kg and 19.7 kg;  $P < 0.001$ ) between resistant and susceptible groups, respectively. The correlation between OPG x VG, VG x Famacha degree, OPG x weight were negatives ( $r = -0.57$ ,  $r = -0.35$ ,  $r = -0.22$ ;  $P < 0.0001$ ), and between VG x PPT and Famacha degree x OPG were positives ( $r = 0.53$ ,  $r = 0.28$ ;  $P < 0.001$ ). It can be inferred that was possible to identify resistant and susceptible goats using phenotypical markers, verifying a better performance of resistant animals when infected by

gastrointestinal nematodes.

### **Variation in retinol content of caprine milk and yoghurt**

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#### **Abstract / Resumo:**

This study aimed to investigate the effect of processing by evaluating the variation in retinol content of caprine milk and yoghurt. Three experimental groups of goat milk from different caprine breeds were analyzed (1 - Saanen, 2 - Toggenburg and 3 - Murciana) from animals in good health conditions and submitted to identical management systems. Yoghurt was made from caprine milk samples by applying sequentially the processing steps heat treatment, inoculation, incubation and refrigeration. Retinol was measured using high-performance liquid chromatography (HPLC). Retinol mean and standard deviation results for caprine milk and yoghurt expressed in  $\hat{\mu}\text{g}/\text{dL}$  were respectively, Saanen -  $21,30 \hat{\pm} 2,6$  and  $17,15 \hat{\pm} 0,58$ ; Toggenburg -  $13,70 \hat{\pm} 2,5$  and  $7,91 \hat{\pm} 0,29$  and Murciana -  $28,76 \hat{\pm} 4,4$  and  $24,49 \hat{\pm} 4,4$ . Although the animals included in this study have been under similar management systems and the yoghurt elaboration procedure was identical for all experimental groups, a greater retinol loss was observed for the Toggenburg milk (42.26%) when compared to the other two breeds 1 (19.48%) and 3 (14.85%). The yoghurt elaboration process itself can lead to important retinol losses, considering that retinol is good candidate for oxidation due to its light-sensitivity and can be affected by thermal processes and exposition to acid environment, which are conditions observed during the heat treatment and fermentation steps of yoghurt manufacture. Thus, the retinol concentration was different between the breeds studied, as well as the loss during processing. The greater or lower retinol loss of a particular type of milk coming from a different breed source can be a consequence of the milk chemical composition, mainly its lipid fraction.

### **EFFECT OF EXOGENOUS FIBROLYTIC ENZYME ON RUMINAL FERMENTATION AND in vitro DEGRADABILITY OF *Pithecellobium dulce* USING GOAT RUMEN FLUID INOCULUM**

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#### **Abstract / Resumo:**

The productivity of ruminant livestock in the tropics and sub-tropics is constrained by the shortage of good quality feed. Tree and shrub leaves can be an important component of goat diets. Improvements in ruminant production with supplemental fibrolytic enzymes are generally attributed to increased ruminal fiber digestion. The objective of this study was to evaluate the effects of exogenous fibrolytic enzymes on the in vitro ruminal fermentation of *Pithecellobium dulce*. To achieve these aim three different levels of fibrolytic enzyme preparation containing xylanase and cellulase activities were tested: 0.0, 3.5 and 7.0 mg g<sup>-1</sup> of dry matter (DM) of *Pithecellobium dulce*. *Pithecellobium dulce* is a tree species with high protein content (219 g kg<sup>-1</sup> DM) and low cell wall content (Neutral Detergent Fiber: 435 g kg<sup>-1</sup> DM, Acid Detergent Fiber: 306 g kg<sup>-1</sup> DM, Hemicelluloses' content: 129 g kg<sup>-1</sup> DM),

else showed a moderate secondary compounds content (Total Phenols: 52 g kg<sup>-1</sup> DM, Saponins: 17 g kg<sup>-1</sup> DM Aqueous Fraction: 157 g kg<sup>-1</sup>). Enzyme addition (7.0 mg g<sup>-1</sup> DM) increased (P <0.05) Rate of gas production at 4 and 6 h, gas production at 24 and 96 h, potential gas production (fraction B) and rate of gas production (k), Metabolizable Energy and Short Chain Fatty Acids, but not differences were observed for in vitro dry matter degradability and lag phase (L). Under the conditions of the present experiment, the treatment of *Pithecellobium dulce* with fibrolytic enzyme preparation containing xylanase and cellulase activities seemed to stimulate their in vitro ruminal fermentation.

### **Nutritional quality indices for milk fat of goats supplemented with different roughages**

OSMARI, E.K1, CECATO, U.2, MACEDO, F.A.F.,2, SOUZA, N.E.2

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#### **Abstract / Resumo:**

The experiment was conducted to evaluate the nutritional indices of milk fat of 1/2 Boer × Saanen goats supplemented with three roughages. Eighteen goats on semi-intensive system were distributed in three stalls, according with ad libitum supplement (SUP): sorghum silage treatment (SST), with corn silage (CST) and with mulberry hay (MHT). To nutritional indices analysis, three milk samples were regrouped in two periods (PER): the winter, in August (PERI) and spring-summer, contained means of November and December (PER II). With mixed models, the animal error was computed as a random effect, period and supplement as the fixed. The winter period was markedly better for all variables (P = 0.000001), except for short-chain fatty acids (P value not significant). Interactions occurred only to thrombogenic index (TI) and C12:0:C10:0, where higher values and potentially more harmful to human health, were obtained in the PERII to the corn silage treatment, followed by the averages of other treatments in the same period. The values for unsaturated fatty acids, atherogenic index (AI) and TI indicated differences between supplements, with better values for goats feeding with sorghum silage and mulberry hay. Boer × Saanen goats grazing with supplementation of mulberry hay or sorghum silage provided milk with better lipids indices to prevention human coronary diseases.

### **Nutritional quality indices for milk fat of goats supplemented with different roughages**

OSMARI, E.K1, CECATO, U.2, MACEDO, F.A.F.,2, SOUZA, N.E.2

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elisazootecnista@yahoo.com.br

#### **Abstract / Resumo:**

The experiment was conducted to evaluate the nutritional indices of milk fat of 1/2 Boer × Saanen goats supplemented with three roughages. Eighteen goats on semi-intensive system were distributed in three stalls, according with ad libitum supplement (SUP): sorghum silage treatment (SST), with corn silage (CST) and with mulberry hay (MHT). To nutritional indices analysis, three milk samples were regrouped in two periods (PER): the winter, in August (PERI) and spring-summer, contained means of November and December (PER II). With mixed models, the animal error was computed as a random effect, period and supplement as the fixed. The winter period was markedly better for all variables (P =

0.000001), except for short-chain fatty acids (P value not significant). Interactions occurred only to thrombogenic index (TI) and C12:0:C10:0, where higher values and potentially more harmful to human health, were obtained in the PERII to the corn silage treatment, followed by the averages of other treatments in the same period. The values for unsaturated fatty acids, atherogenic index (AI) and TI indicated differences between supplements, with better values for goats feeding with sorghum silage and mulberry hay. Boer × Saanen goats grazing with supplementation of mulberry hay or sorghum silage provided milk with better lipids indices to prevention human coronary diseases.

### **Estimative of potential for cheese yield of Boer x Saanen goats based on formulas of milk composition**

OSMARI, E.K2, CECATO, U.1, FAVERI, J.C.1, SOUZA, N.E.1, ROMA, C.F.C1, MACEDO, F.A.F.,1, DAMASCENO, J.C.1

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#### **Abstract / Resumo:**

The experiment was performed to estimate the cheese yield potential through predictive formulas based on the milk composition of ½ Boer × Saanen goats supplemented with three roughages. Eighteen goats on semi-intensive system were distributed in three stalls, according with ad libitum supplement (SUP): sorghum silage treatment (SST), with corn silage (CST) and with mulberry hay (MHT). To milk composition analysis, three milk samples were collected in three periods (PER) post-parturition. It was analyzed monthly fat composition (F), protein (CP), lactose (LAC), total solids (TS) and somatic cells count (SCC), to correlate with formula of cheese yield (CY), based in milk composition. It was estimated the potential yield of cheeses with one formula for hard cheese ( $CY = 0.73TS - 0.4CP + 1.92$ ) and two formulas for yield predicting for soft cheeses yield,  $CY = 5.94F + 0.87$  and  $CY = 5.67F + 0.13TS + 0.25$ , respectively, all based on milk composition. With mixed models, the animal error was computed as a random effect, period and supplement as the fixed. The one period was markedly better for all yields ( $P < 0.01$ ), and two and three periods were statistically similar. Interactions not occurred between SUP and PER, neither supplement effect was detected. The main factors correlated with the potential cheese yield were fat milk, for both formulations for soft cheese, and total solids, for hard cheeses ( $P < 0.0001$ ). Due to the correlation between SCC and soft CY ( $r = -0.32$ ;  $P = 0.0211$  and  $r = -0.32$ ;  $P = 0.0197$ ), and between SCC and hard CY ( $r = -0.42$ ;  $P = 0.0016$ ), further studies are recommended with and without the inclusion of SSC on the prediction formulas, since it has a significant negative impact. The early period of lactation was estimate potentially more profitable for dairy products of goats.

### **OUTBREAK OF CAPRINE LEPTOSPIROSIS BY SEROVAR ICTEROHAEMORRHAGIAE**

Martins, G.1, COSENDEY, R.I.J1, SILVA, A.F1, Brandão, F.Z.1, OLIVEIRA, F.C.R.2, Ferreira, A.M.R.1, Lilebaum, W.1

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#### **Abstract / Resumo:**

Knowledge on caprine leptospirosis, specially the reproductive pathogenesis of the disease, is still limited. The leptospiral infection on small ruminants has been associated to abortions and other reproductive disorders. Serological surveys showed that the disease occurs worldwide, but the predominant serovars of *L. interrogans* in different regions may vary. Although the prevalence of leptospiral infection in caprines due to Hardjo or Pomona is well documented, reproductive problems due to infection with *Icterohaemorrhagiae* is not frequently reported. The aim of this study was to report, based on serological and clinical findings, an outbreak of caprine leptospirosis with reproductive failure determined by serovar *Icterohaemorrhagiae* in Rio de Janeiro, Brazil. A herd of 124 goats presented a high level of abortions (26%), embryonic death (12%) and neonatal deaths (9%). Microscopic agglutination test (MAT) revealed 16.2% of animals reactive with high titres ( $\geq 800$ ) and other 17.7% with titres of 200 or 400. *Icterohaemorrhagiae* was by far the predominant serovar (80% of reactivities) but seroreactivity against Hardjo (16.2%) and Bratislava (3.8%) were also observed. A control program based on rat control (mainly based on the careful storage of food), vaccination with specific bacterins and antibiotic therapy (dihydrostropmycin 25 mg/kg in single dose) was employed. Environmental changes reducing the access of the animals to flooding areas were also adopted. After the adoption of the control program, reproductive failure rapidly decreased, reaching the acceptable rate of 2% of abortions. In our opinion, a broad approach, including simultaneous vaccination, antibiotics and the management of some environmental aspects were mandatory for the successful control of the leptospiral outbreak. Noteworthy observe that infection due to *Icterohaemorrhagiae* is not frequent in goats or in rural areas; nevertheless, the herd was located in a region very close to the urban area, what probably facilitated the dissemination of rats and the occurrence of the outbreak.

#### **STUDY OF *Neospora caninum* IN GOAT OF THE STATE OF RIO DE JANEIRO, BRAZIL**

Silva, A.F.1, COSENDEY, R.I.J1, Martins, G.1, Brandão, F.Z.1, OLIVEIRA, F.C.R2, Ferreira, A. M. R.1, Lilenbaum, L.1

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#### **Abstract / Resumo:**

*Neospora caninum* is a protozoan recently recognized, also causing reproductive abnormalities in goats, but there are few studies. However, the rates of *N. caninum* infection and the significance of the disease in this species have been poorly investigated. Studying the distribution of *N. caninum* infection in dairy goat populations is an initial step to evaluate the importance of neosporosis in goats, as well as to investigate their role in transmitting the parasite to other animals. The aim of this study was to determine the occurrence of antibodies against *N. caninum* in dairy goat herds and the risk factors associated with this infection in some regions of the state of Rio de Janeiro. Sera from dairy goats in four herds from Rio de Janeiro, Brazil, in the regions north, metropolitan and southeast were assayed for *N. caninum* antibodies using an Enzyme Linked Immunosorbent Assay (ELISA). Antibodies against *N. caninum* were found in 3,61% (6/166) of goats in only one herd. Among the risk factors associated with the infection of *N. caninum* can list the sex of the animal, the water source, the presence of dogs and hygienic handling. The water source and the presence of dogs on the property were not associated with the infection, since all four properties had dogs in direct contact with water and food for goats. Only one property had problems in the hygienic handling of animals, which may have contributed to infection of *N. caninum* in six animals. This study documents for the first report on the occurrence of *N. caninum* infection in goats Rio de Janeiro and the results demonstrate that *N.*

caninum infection in goats from the state. Therefore, health education would be the best way to avoid infection of neosporosis in goats in Rio de Janeiro state.

### **Hydrometra and Ovarian Cyst in Dairy Goats**

SOUZA, J.M.G.1,2, SILVA, W.J.2, FIGUEIRA, L.M.4,3, CARDOSO NETO, B.M.3, DUTRA, P.A.3, BRANDÃO, F.Z.4, BRUSCHI, J.H.3, FONSECA, J.F.2

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#### **Abstract / Resumo:**

Hydrometra is considered a very important pathology as it represents one of the main causes of subfertility or infertility in dairy goats. The aim of this study was to evaluate a hormonal treatment for hydrometra and ovarian cyst in 11 adult Toggenburg (n=9) and Saanen (n=2) goats and their subsequent reproductive efficiency at the City of Piau-MG, Brazil. Ovarian cyst was detected in one goat concomitantly with hydrometra. Goats received two doses of 5 mg dinoprost (Lutalyse®) via intravulvosubmucosal 10 days apart associated to 500 IU hCG (Vetecor®) seven days after treatment began. Ultrasound exams were performed on days of dinoprost and hCG administrations and during the following three days. Goats were monitored for estrus and were mated with fertile males after the second dose of dinoprost. Ten of the eleven goats lost weight after the first dose of dinoprost, due to uterine discharge. In eight of them (72.7%) complete drainage of uterine fluid was observed by ultrasound from 48 to 72 h after the first dinoprost. Following the second dose, two of the three remaining goats showed normal uterine imaging and in only one goat (9.1%) uterine fluid did not drain completely after both prostaglandin doses. After uterus drainage it was possible to diagnose one more goat with ovarian cyst. The use of hCG was not effective to induce luteinization of ovarian cysts detected in both goats. After the first dose of dinoprost, 45.4% (5/11) of the goats were in estrus and after the second one, 72.7% (8/11). The three goats which did not show estrus were both that had ovarian cyst and the one which did not have her uterus emptied. Only two of the eight goats (25.0%) mated became pregnant after treatment. It can be concluded that hydrometra and ovarian cyst may affect goat reproductive performance. Keywords: Caprine, Infertility, Pseudopregnancy, Ultrasonography. Financial Support: CNPq, Embrapa Goats and Sheep, Embrapa Dairy Cattle.

### **Relationship between fertility and performance of bucks submitted to a competitive serving capacity test**

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#### **Abstract / Resumo:**

This investigation measured the kidding rate achieved by high-performance ranked bucks after evaluation in a competitive serving capacity test (SCt). The study was conducted at Embrapa Caprinos e Ovinos and Fazenda São João, semi-arid region of Northeastern Brazil. Six Anglo-nubian bucks were ranked as top (TOP) and above average (ABO) after a SCt and then individually joined over a 63-day

period to six mating groups with different male: females ratio (M:F; 1:30 or 45 or 60). Kidding rates did not differ between ranks but tended ( $P < 0.10$ ) to differ among ratios and varied from 72.4% to 93.0%. Disregarding the rank of males, kidding rate observed up to 21 days of the season was unaffected by M:F, which affected cumulative kidding rate up to 42 days ( $P < 0.05$ ) and 63 days ( $P < 0.01$ ) of the season. Kidding rate varied throughout the kidding season regardless rank of the buck or M:F ratio. Ranking males into TOP and ABO categories was not efficacious to detect differences in breeding performance at tested M:F ratios. Therefore, SCt was capable to indicate males able to mate, but it did not accurately predict the fertility of individual bucks.

### **Relationship between sexual drive of bucks and their performance as semen donors**

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#### **Abstract / Resumo:**

Buck fertility is affected by numerous factors, including sexual drive and semen quality and quantity). This investigation measured the degree of association between sexual drive and some attributes of goat semen, including the ones related with freezability. A total of 341 ejaculates were processed and evaluated and a multi-buck serving capacity test was applied five times to 20 growing bucks. There was moderate to high degrees of association ( $0.51 < r < 0.78$ ) between number of mounts (NM), number of services (NS) and NM/NS ratio and biochemical composition (i.e., contents of fructose, citric acid and protein) of the seminal plasma. Quantitative attributes of semen presented low association with sexual drive and qualitative attributes of the ejaculate were not related with behavioral traits assessed

### **In vivo performance of F1 crossbred lambs Morada Nova v. branca x Santa Inês fed with dried cashew apple bagasse**

ALVES, A.H.A., SILVA, L.M., LEMOS, J.C., ARRUDA, I.J., SOUSA, M.W.P., ARAUJO, A.A., RONDINA, D.  
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#### **Abstract / Resumo:**

The aim of this work was verify the effect of dried cashew apple bagasse (DCAB) on fattening lambs reared in northeastern Brazil. Fourteen weaned lambs F1 Morada Nova v. branca x Santa Inês, with similar weight ( $11.85 \pm 0.83$  kg) and 60 days aged were fed during 90 days with a concentrate offered at 2% of body weight and sorghum silage or dried cashew apple bagasse ad libitum. Every fifteen days the rations were corrected, animals were weighted and measured body length, hearth girth, depth and length of thorax. The results of ANOVA (GLM procedures) showed that nutritional treatment did not affect the parameters evaluated. At 5 month of age the mean live weight was  $21.28 \pm 1.87$  kg in silage group and  $20.74 \pm 1.24$  kg in DCAB group. The daily weight gain was also similar between groups ( $118.45 \pm 11.10$  g vs.  $118.25 \pm 7.15$  g;  $p > 0.05$ ). In conclusion the utilization of dried cashew apple bagasse for lambs fattening achieve similar performance that other traditional source of forage usually used in the region.

### **Effectiveness of luteolytic activity of reduced doses of cloprostenol in cyclic goats.**

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#### **Abstract / Resumo:**

The aim of this study was assess the effectiveness reduced doses of Cloprostenol (using intramuscular route) in cyclic crossbreed Canaria goats. Twenty does were grouped to the follows treatments: H (n = 7), M (n = 6) and L (n = 7) groups, which were treated with highest (87.5µg; 1ml), medium (43.75µg; 0.5ml) and lowest (26.25µg; 0.3ml) doses of cloprostenol, respectively. Scanning was done at Days 0 (day of injection), 3 and 7 to determine the presence or absence of corpus luteum, number of corpora lutea and area of luteal tissue. All does responded to cloprostenol. Size of luteal tissue and number of corpora lutea (Day 7) for H, M and L groups were:  $93.0 \pm 16.1\text{mm}^2$  and  $1.6 \pm 0.2$ ;  $87.0 \pm 17.4\text{mm}^2$  and  $1.7 \pm 0.3$ ; and  $90.8 \pm 17.4\text{mm}^2$  and  $1.3 \pm 0.3$ , respectively. These results demonstrated that the lowest dose of Cloprostenol is capable to induce luteolysis in goats. (Founded by CDCH-UCV).

### **Goat's Coalho cheese with oil of Pequi, a fruit available in Brazilian biodiversity**

BENEVIDES, S.D.1, SANTOS, K.M.O.1, BURITI, F.C.A.1, VIEIRA, A.D.S.2, VASCONCELOS, A.S.E.1

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#### **Abstract / Resumo:**

To diversify and add value to the goat's milk products, a new variety of cheese type "Coalho" was developed adding the oil of "Pequi" ( *Caryocar brasiliense* ), a fruit existing in the Brazilian cerrado. The fruit has many nutritional properties, antioxidant activity, besides its peculiar and typical flavor, with high contents of vitamins, proteins, minerals, sugars, carotenoids, especially  $\beta$ -carotene, vitamin C and essential fatty acids like oleic and palmitic. Currently one option of its industrialization is the oil extraction by traditional families that make the "Pequi" a way of survival, and represents a potential source of food for a great number of people. Two formulations were developed, one incorporating/adding the oil of "Pequi" in the curd and the other one by submerging the fresh cheese in the oil of "Pequi" during a precise time. Fifty consumers evaluated the formulations by the Paired Comparison Test and the results showed that the preferred was the oil of "Pequi" incorporated in the curd. The data were analyzed by the chi-square distribution with a significant difference ( $p < 0.05$ ). The intention of buying these cheese was evaluated on a scale ranging from "definitely would buy" to "certainly would not buy" resulting in 92.31% of the consumers who said that they would probably buy the cheese goat's milk added oil of "Pequi", showing that the products available in the Brazilian biodiversity can be used as a good option to diversify the goat's milk products. Currently this cheese is being analysed for the physico-chemicals, microbiologicals, sensorial, biochemical and instrumental parameters during 45 days of ripeness.

### **INTAKE AND DIGESTIBILITY OF ORGANIC MATTER AND CRUDE PROTEIN OF GOATS FED WITH DIETS CONTAINING BOVINE WHEY AT INCREASING LEVELS OF INCLUSION**

Araújo, A. R1, Freire, A. P. A1, Barbosa, J. S. R1, Silva, V. L2, Leite, E. R1, Rogério, M. C. P1

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**Abstract / Resumo:**

The aim of this experiment was to determine intake and digestibility of organic matter and crude protein of goats fed with diets containing bovine whey at increasing levels of inclusion. Twenty male goats without defined breed with approximately five months of age and average body weight of 17 Kg were used. Diets were composed of Aruana hay, corn, soybean, limestone and bovine whey at levels: zero, 1.5, 3.0 and 4.5% of inclusion in dry matter. According to data obtained from analyses of organic matter (OM) and crude protein (CP) of food, leftovers and feces, the determinations of intakes of OM and CP, as well as digestibility, were made. The experimental design was completely random with four treatments and five replications. The comparison of averages was done by Student "t" and SNK tests ( $P < 0.05$ ). Higher intakes of organic matter and crude protein were found in animals which received bovine whey. The digestibility coefficients of the analysed nutrients were not affected by the inclusion of bovine whey, once they were similar for all treatments ( $P > 0.05$ ). Diets containing bovine whey can be provided to goats without affecting their intake.

**NITROGEN BALANCE IN GOAT DIETS CONTAINING INCREASING LEVELS OF INCLUSION OF BOVINE MILK WHEY**

Araújo, A. R, Freire, A. P. A, Barbosa, J. S. R, Leite, E. R, Rogério, M. C. P  
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**Abstract / Resumo:**

The aim of this experiment was to determine nitrogen balance of goats fed diets containing bovine milk whey at increasing levels of inclusion. Twenty male native goats with approximately five months of age and average body weight of 17 Kg were used. Diets were composed of Aruana hay, corn, soybean, limestone and bovine milk whey at levels: zero, 1.5, 3.0 and 4.5% of inclusion in dry matter. According to data obtained from analyses of nitrogen of food, food leftovers, feces and urine, were done the determinations of nitrogen intake, fecal nitrogen, urine nitrogen, nitrogen balance and nitrogen retention. The experimental design was completely random with four treatments and five replications. The comparison of averages was done by Student "t" and SNK tests ( $P < 0.05$ ). There were no significant differences between diets on the evaluated parameters. Thus, the use of bovine milk whey in diets at levels as those studied in this work ensures goats enough nitrogen for their physiological function and reserve.

**Intake and Digestibility of Ether Extract by Goats Fed Diets Containing Bovine Milk Whey at Increasing Levels of Inclusion**

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**Abstract / Resumo:**

This work had as objective to determine intake and digestibility of ether extract by goats fed diets

containing bovine milk whey at increasing levels of inclusion (zero, 1.71; 3.51 and 5.28% of DM). Twenty native male goats with five months of age and 17 kg BW were set in metabolic cages. The experimental diets consisted of Aruana (*Panicum Maximum* cv. Aruana) hay, corn, soybean, limestone and bovine milk whey, formulated to meet nutritional requirements for finishing goats with an average of 15 Kg/BW and average weight gain of 25 g/day, according to NRC (2007). Analysis of ether extract (EE) of feed supplied, feed leftovers and feces were done according to AOAC (1980). The data obtained with analysis were used to determine intake of EE in g/day (IEE), %BW (IEEBW), %Kg0.75 (IEEKg0.75), intake of digestible EE (IEEDIG) and EE digestibility (DIGEE). The experimental design was completely randomized with four treatments and five replications. The averages of values obtained for the experimental treatments were compared with Student t and SNK tests ( $P < 0.05$ ), by using the statistical software SAEG 8.0. Animals fed with bovine milk whey with 3.51% and 5.28% of inclusion showed higher intake of ether extract than treatment without inclusion of this ingredient in relation to IEEBW and IEEKg0.75. Higher intakes also observed in IEEDIG for 3.51% of inclusion compared with the treatment without inclusion of bovine milk whey. No differences were obtained for IEE and DIGEE in the treatments used in this study. It was concluded that bovine milk whey can be used in goat diets because it does not affect ether extract intake.

### **Serological Study of Caprine Arthritis Encephalitis in different Mesoregions of Pernambuco**

VASCO NETO, H. L. S., SILVA, T. I. B., SILVA, D. D., REVOREDO, R. G., FERNANDES, A. C. C., MELO, L. E. H.  
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#### **Abstract / Resumo:**

Among the many obstacles in goat breeding, problems concerning sanitary management are the main causes of the poor performance of livestock herds. The Caprine Arthritis Encephalitis – CAE - is a multisystemic syndrome that is characterized by arthritis, mastitis and pneumonia in adult animals, and leukoencephalomyelitis in young animals. The CAE is primarily transmitted to young animals through milk and colostrum during the breastfeeding. Aiming to identify outbreaks in different regions of the State of Pernambuco, a serological evaluation was performed in eight herds, located in the Pernambuco Mesoregions Forest Zone, Wasteland and Backwoods, by using the Agar Gel Immunodiffusion technique – AGID - in the Virology Laboratory, Department of Veterinary Medicine of UFRPE. Also, by applying a social-cultural questionnaire, the sanitary profile of the breeders was outlined. Previous studies have shown that, in Pernambuco, 17.6% of the goat herds were positive for CAE. This research showed that 27.9% of the 43 goats from the Forest Zone and 20% of the 35 goats from the Backwoods were seropositive. However, it was noticed that out of the 25 animals from the Wasteland herds, only 8% were diagnosed as positive. Therefore, an increase of 2.78% in the state average of positive animals occurred. Based on the data obtained with the questionnaire, it was concluded that the high infection rates observed in the Forest Zone and Backwoods cattle are related to the inadequate implementation of sanitary management, for the adoption of good management practices by the breeders of the Wasteland, as well as the employment of technology in breeding facilities, is strongly related to the low rate of the disease in that region.

### **Evaluation of the anthelmintic control adopted by goat breeders in Ipojuca Valley/ PE**

VASCO NETO, H. L. S., SILVA, T. I. B., SILVA, D. D., CUNHA, W. R. X., MELO, A. F. L., MELO, L. E. H.

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**Abstract / Resumo:**

One of the serious problems concerning goat breeding is strongly influenced by climatic aspects and sanitary conditions of the livestock, as well as gastrointestinal helminthes infection. Goats are often affected by worms, especially young animals. The main damage caused is the hampering of animal growth and production, as well as the increase in the number of deaths in the herds. This study aimed to evaluate the sanitary management adopted by breeders of six properties located in the Ipojuca Valley, Arcoverde city, in the backwoods of Pernambuco, with emphasis on the control of gastrointestinal helminthes. Fecal samples were collected from goats of both sexes and of different ages and races, which were subjected to the same sanitary, reproductive and nutritional management. The samples were collected at a ratio of 10% of each herd studied and then sent to the Laboratory of Parasitary Diseases, Department of Veterinary Medicine of UFRPE, for parasitological examination of faeces (eggs per gram - EPG). Meanwhile, the owners received a questionnaire related to the administration of anthelmintics and its frequency. It was noticed that they don't take in account the periods of rain or the worming schedule, instead using the animals' body condition, appearance of the hair (stubble and matted) and noticeable worm infestation as a parameter for drug administration. Thus, only animals showing these signs are wormed. After performing the parasitological exams of the assisted herds, the results showed that the average parasitary load varied from 280 to 7350 EPG of faeces, and the main parasites detected were Strongyloidea , Strongyloides and Eimeria . Considering the results achieved, it was recommended that the owners periodically worm the whole herd in order to prevent the contamination of the fields with eggs that might exist in the non-medicated animals' faeces, which could cause a whole new cycle of infestation. This way, a larger number of worming throughout the year could be avoided, and as a result, the helminth resistance in the herds would decrease.

**Chemical-Physical, Microbiological and Organoleptic Characteristics of Goat Milk**

VASCO NETO, H. L. S., SILVA, T. I. B., SILVA, D. D., FERNANDES, A. C. C., MELO, A.F.L., ALMEIDA, W.N.L., LINS, C.R.B., PAULA JUNIOR, A.R, BAPTISTA FILHO, L.C.F., MELO, L. E. H.

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**Abstract / Resumo:**

The semi-arid region of Northeast Brazil is suitable for dairy goat breeding. Its milk is an important tool in the politics of food production. However, some of the mammary gland diseases affect the animal's performance, making it necessary to observe the herd with regard to the sanitary quality of milk. For this study, milk samples were collected from a goat that lived in the Backwoods of Pernambuco. The animal was part of a herd of milk suppliers for the local dairy. With the use of biosecurity materials, cleaning of the udder was performed. The first streams of milk were discarded and the samples were homogenized and stored in sterilized jars. The milk was sent for microbiological and chemical-physical analysis in specialized laboratories, which used blood agar culture medium and the Somacount 300, Bentley and 2000 Bactocounter equipments, respectively. During organoleptic assessment, no changes were noticed. However, microbiological examination revealed the presence of *Corynebacterium pseudotuberculosis* and bacilli suggestive of *Mycobacterium* sp . As for chemical

composition, the following values were found: fat - 2.8%, protein - 12.13%, lactose - 0.65% and total solids - 15.05%. The somatic cell count was 5602 x 10<sup>3</sup>. Thus, the relation between the chemical composition of the milk and the microorganisms identified suggests that the product came from a goat who suffered from subclinical mastitis, as the increased somatic cell count, increased levels of serum proteins and reduced levels of lactose and fat usually point to this condition. The presence of Mycobacterium in the milk is a serious public health problem due to the spread of human tuberculosis, especially among people who regularly consume raw milk. Therefore, caution is needed during the clinical examination of the udder and during milk analysis, for the conditions may appear to be normal, but there might be severe inflammatory changes in the mammary gland and involvement of important agents. Performing regular tests is essential in order to fight this problem.

### **Clinical-Epidemiological Tracking of Goats Bearing *Corynebacterium pseudotuberculosis* in the State of Pernambuco**

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#### **Abstract / Resumo:**

Caseous Lymphadenitis is an infectious and chronic disease, transmitted by *Corynebacterium pseudotuberculosis*, which affects goats in several countries. It is characterized by expressing an inflammation of the lymphatic system, forming caseous and purulent abscesses. This research aimed to clinically and epidemiologically track the presence of goats bearing the *C. pseudotuberculosis* in herds in the State of Pernambuco. With that in mind, nine dairy farms located in the cities of Recife, Jaboatão dos Guararapes, Pombos, Nazaré da Mata, Gravatá and Arcoverde were visited, in order to perform clinical and hematological examinations, collection of exudates and autopsies in suspect animals. Puncture of abscesses was carried out and biological samples were submitted to microbiological culture. Seeding was performed on plates containing blood agar, the system was incubated at 37°C for 48h, and blades were produced after that. About 20% (16/80) of the animals from the researched farms showed clinical syndrome and/or consequences associated with Caseous Lymphadenitis: low appetite, weight loss, mastitis and numerous superficial abscesses, scars and/or granulomas, mostly found in palpable lymph nodes. During the puncture of the abscesses, a yellowish, cheesy-looking substance was drained. The original consistency was pasty, becoming even more resistant as time went by. The autopsy findings revealed the presence of suppurative lesions in the internal lymph nodes, parietal pleura, mesentery and part of the bowels, and there were fibrinous lesions in joints. In the bacteriological examination of these samples, Gram positive bacilli characteristic of *Corynebacterium* were found. As for hematology, anemia, neutrophilia and high fibrinogen levels were detected. Thus, considering the connection between clinical symptoms, suppurative lesions, hematological and morphological characteristics of the bacteria grown in culture medium, it's possible to conclude that the syndrome present in the flocks concerned high prevalence situations of Caseous Lymphadenitis. The disease is related to inadequate management practices, especially the introduction and maintenance of infected animals in herds, often subjected to ineffective treatments of soft tissue wounds.

### **Radical Mastectomy in Dairy Goats**

SILVA, T.I.B., SIQUEIRA FILHO, R. S., NASCIMENTO, H.B., QUEIROZ, R. A., VASCO NETO, H. L. S., ALMEIDA, E. L.

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**Abstract / Resumo:**

Mastitis is the inflammation of the mammary gland related to the level of exposure to pathogens from the ceiling by injuries, improper management or milking problems. The affected animals are surgically treated by mastectomy, favoring the recovery of the animal. This study aims to present the technique of radical mastectomy in a goat with gangrenous mastitis. A five year old female Saanen goat, weighing 60kg, was examined at the Large Animal Clinic of the Veterinary Hospital/ UFRPE. The animal had severe edema in the right udder, granulomas and fetid secretions in the left udder. The gangrenous mastitis was diagnosed and radical mastectomy was suggested. The animal was taken to the Surgical Block, where basic materials of general surgery were used. Atropine sulfate was administered at a dose of 0.022 mg/kg, combined with subcutaneous xylazine at 0.1 mg/kg. After antisepsis, local blocking was made by infiltrating lidocaine at 2%, without vasoconstrictor, in the region to be operated. Drapes were put up, delimiting the operation area. During the radical mastectomy a wide elliptical incision was made, safely exposing the glandular tissue. Mammary arteries and veins were clamped, sectioned and tied with blue polypropylene. Cleavage was performed, with the excision of breast tissue and supramammary lymph node, in block. The supernatant liquid was removed with surgical dressing. The drop dead space was reduced with simple stitches, using chromed catgut and the skin margins were approximated with stitches using Donatti Mononylon. The animal was sent for observation at the Clinic, where it remained for two days and then was discharged. As postoperative treatment, gentamicin (3mg/kg/IM/BID), dexamethasone (20mg/animal/EV) and topical Silver bactrovet, applied at the operated site, were prescribed. Mastitis proved to be very aggressive in the animal, and the total weight of the extracted udder was about 5.1 kg. In the bacterial culture of samples from the milk obtained in the pre-operative period, microorganisms coccobacilli Gram Negative Bacillus and Corynebacterium sp. were identified. These findings highlight the possible poor medical hygiene of the place where the animal lived, or even the lack of guidance of the owner or milker as risk factors for infection through the ceiling of the milk during milking.

**Clinical-epidemiological, Hematological and Etiological Monitoring related to Differential Diagnosis between Caprine Tuberculosis and Caseous Lymphadenitis**

SILVA, T.I.B., VASCO NETO, H. L. S., SILVA, D.D., FERNANDES, A. C. C., MELO, A.F.L., MELO, A.C.C., MENEZES, T.M., CHAVES, R.A.H, REVORÊDO, R.G., MELO, L.E.H.

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**Abstract / Resumo:**

Tuberculosis Tuberculosis is an infectious disease caused by a bacillus of the genre Mycobacterium, whose species have been grouped under the "Mycobacterium tuberculosis Complex". Until not long ago, it was believed that goats were resistant to the infection. Nowadays, this theory is no longer supported, for, besides Robert Koch's mention, many countries (Gutiérrez et al. (1998) have registered cases of the disease. Tuberculosis can express itself through the typical lung form, or through the extra-pulmonary form. Biologic materials, such as sputum, nasal fluid, milk and urine are considered

to be sources of infection, especially when it comes to animal caretakers, slaughterhouse or dairy factory employees and people who regularly consume raw milk or dairy products that didn't go through previous thermal treatment. Thus, in face of the close relationship between men and animals, a zoonotic cycle takes place (Melo et al. (2005). An important factor of transmissibility of the disease to goats is the proximity with dairy cows and the habit of feeding milk from likely contaminated cows to goats as a prophylactic measure against Caprine Arthritis-Encephalitis. In Brazil, Caprine Tuberculosis still isn't considered important enough from the Public Health point of view, for the clinical-epidemiological context of the disease and its consequences for the population are yet to be entirely known (MAPA (2001). That is probably due to the absence of more precise data on its prevalence, which could result in the implementation of diagnostic, inspectional and preventive measures. Caseous Lymphadenitis is a chronic infectious disease that affects goats. It's caused by *Corynebacterium pseudotuberculosis* and characterized by inflammation of the lymphatic system, forming caseous and purulent abscesses in lymph nodes and viscera. Diagnosis is performed based on the animal's previous history, clinical examination (with emphasis on the lymphatic system and the presence of suggestive scar tissue), compatible necropsy findings and draining of the abscesses, analyzing the aspect of the exudates. Microbiological examination is a confirmatory test of great help to the clinical findings. Thus, Caseous Lymphadenitis and Caprine Tuberculosis can show similar clinical syndromes, resulting in frequent doubts concerning the diagnosis. With that said, it's necessary to perform an appropriate clinical-laboratorial evaluation that supports the differential diagnosis between the diseases (Pugh (2004), aiming to contribute to the public health measures in the country, which are reflected in the human population's quality of life.

### **Gastrointestinal Helminths in Lacaune Sheep Confined in Tropical Area**

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#### **Abstract / Resumo:**

The sheep industry in tropics is severely limited by the helminthes parasitism, causing reduce in the productivity, mortality and economic losses. Although Lacaune sheep showed higher milk production around 200 kg lactation, are not adapted to conditions of climate and parasites in the tropics. Thus the study aimed to ascertain the population of gastrointestinal nematodes in Lacaune sheep kept in confinement during the winter of 2007. Coprologic tests were realized weekly from 15 Lacaune ewes with a mean age of two years. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. Mean values of EPG ranged from 191.6 to 2100, featuring degree of infection mixed ranging from mild to heavy. The high degree of infection of these animals is probably due to poor adaptation to climate and parasites in the tropics, since it is a race typical of temperate climate. The identification of third stage larvae showed the presence of four genera of helminths: *Haemonchus* (74%), *Trichostrongylus* (16%), *Oesophagostomum* (3%) and *Cooperia* (7%). The predominance of genera *Haemonchus* presented as a risk factor for the health of animals, although there were no overt signs of clinical disease, can lead to reduced productivity. The results show that Lacaune breed, even in confinement system was vulnerable to helminthiasis.

## **Gastrointestinal Parasites in Crossbred Sheep (Dorper x Santa Inês) Kept in Confinement Systems**

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### **Abstract / Resumo:**

The objective was to study the population of gastrointestinal nematodes in crossbred sheep (Dorper x Santa Inês) kept confined. The study was conducted in Miguel Pereira, Rio de Janeiro, Brazil. Fifteen animals with a mean age of two years were used. Coprologic tests were realized weekly of animals throughout the winter season of 2007. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. Helminth eggs were observed of the genera: *Haemonchus*, *Trichostrongylus*, *Oesophagostomum*, *Cooperia*, *Strongyloides*, *Trichuris*, *Moniezia* and *Eimeria*. The average values of the egg per gram of faeces (EPG) to the superfamily *Trichostrongyloidea* helminths ranged from 100 to 500, characterizing the degree of infection mixed of the light to moderate throughout the study. The animals were infected throughout the study by *Strongyloides*, but with a low degree of infection, being less than 200 EPG. The genera *Trichuris* and *Moniezia* were observed sporadically in some animals and does not constitute a health risk to the herd. Only a few animals presented elimination of *Eimeria* oocyst, which was low in quantity, however these values become significant for being a source of infection to newborns. The identification of third stage larvae showed the presence of four genera of helminths: *Haemonchus* (71%), *Trichostrongylus* (23%), *Oesophagostomum* (2%) and *Cooperia* (5%). Crossbred sheep (Dorper x Santa Inês) showed low infection by gastrointestinal parasites. Thus, these animals are a viable breed for production of mutton, without which the animals suffer yield losses due to helminthes parasitism.

## **Helminthiasis in Santa Ines Sheep Kept in Confinement System in Mountainous Region of Rio de Janeiro, Brazil**

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### **Abstract / Resumo:**

The study investigated the population of gastrointestinal nematodes in Santa Ines ewes kept confined during the winter in the mountain region of Rio de Janeiro, Brazil. Coprologic tests were realized from 13 adult animals with a mean age of two years. The animals were fed with elephant grass (*Pennisetum purpureum* Schum cv. Camerom) and concentrate with 18% protein. The bed of the stalls consisted of *Brachiaria decumbens* dry and chopped, being changed every 20 days. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. Mean values of EPG ranged from 50 to 300, featuring degree of infection of mixed to light. The low EPG in Santa Ines sheep observed in this study can be explained by the fact, it is quite hardy animals, well adapted to tropical conditions. Even the bed of the stalls being changed every 20 days, there was enough time to close the cycle of helminth studied; emphasizing the importance of monitoring parasitologic in the herd, even when confined in the tropics. The identification of third stage larvae showed the presence of four genera of helminths: *Haemonchus* (66%), *Trichostrongylus* (24%), *Oesophagostomum* (3%) and *Cooperia* (8%). Therefore, one may

conclude that Santa Inês ewes kept under confinement system were parasitized by gastrointestinal helminths throughout time, being necessary to maintain a condition of alert for possible outbreaks.

### **Evaluation of Physiologic Performance of Goats Treatment with Homeopathic in Baixada Fluminense in the Estate of Rio de Janeiro**

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#### **Abstract / Resumo:**

Homeopathy can be used as a control of tool, capable of producing in animals a better level of vigor and vitality, enhancing its ability to resist infection and metabolic disorders. This alternative form of animal treatment is successfully used in animal production in several countries, and shows an appropriate therapy, since it leaves no residues in food. Therefore, the experiment was carried out at the Goat sector/UFRRJ, located in Seropédica, state of Rio de Janeiro, Brazil. Eighteen crossbreed animals (Boer x Saanem) were used, with 6 months of age. The experimental design was completely randomized with 6 replicates and 3 treatments. There were no significant differences ( $P > 0.05$ ) between treatments, and the values of rectal temperature, withers height, chest girth and heart rate were 38.80°C, 67.82 cm, 82.89 cm and 93, 68 beats/minute, respectively. For respiratory rate there was significant difference ( $P < 0.05$ ) between the control group (69.22) and the two treatments Sulphur C12 e Arsenicum album C12, 62.47 and 58.90 movements/minute, respectively. Concerning the heart rate there was significant difference ( $P < 0.05$ ) between morning and afternoon periods. There since the afternoon respiratory movements of the treatments with homeopathy were lower compared to the control. However, in assessing the heart beats were observed more in the afternoon for homeopathic treatments when related to control. In general, it is believed that homeopathy provides greater welfare for animals, because the rectal temperature remained stable throughout the period analyzed.

### **Productive Performance of Goats Kept under Buffel Grass pasture and Supplemented with Umbuzeiro Fruits**

NOGUEIRA, D.M.1, NASCIMENTO, T.V.C2

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#### **Abstract / Resumo:**

The Brazilian goat herd is estimated in 11.2 million animals, where approximately 92.2% are raised in the Northeastern region. However, the productive performance of animals raised here is low due mainly to poor feeding management. This work aimed to evaluate the productive performance of goats kept under Buffel grass pasture and supplemented with umbuzeiro fruits (*Spondias tuberosa* Arruda) in the semi-arid zone of Pernambuco, Brazil. Twenty-four castrated and crossbreed kids were used; they were 9 months old and 17.0 kg of body weight at the beginning of experiment. The animals were homogeneously allocated into three treatments: 1) Control (n=8) animals fed exclusively with Buffel grass; 2) Umbu 1x (n=8) they received umbu fruits once a week and 3) Umbu 3x (n=8) they received umbu fruits for three times a week. Four observations of corporal weight were accomplished

in intervals of 14 days, making a total of 56 days of experimentation. We estimated the consumption of dry matter intake (total DMI) by total collection of feces. There was no significant difference ( $P > 0.05$ ) among the treatments. The total weight gain (TWG) were 6.54 kg, 6.25 kg and 6.09 kg, and average daily weight gain (DWG) were 116.79 g/day, 111.61 g/day and 108.7 g/day, respectively, for groups Control, Umbu 1x and Umbu 3x. Similar results were found for the total DMI (547.04g, 544.89g and 568.08g, respectively, for the experimental groups). These results can explain the absence of significant difference ( $P > 0.05$ ) for TWG and DWG among the treatments. However, these results are considered very good for goats kept under Buffel grass pasture. The high quality of Buffel grass was enough to fulfill the nutritional requirements of kids. In conclusion, the supplementation with umbu did not influence the productive performance of goats.

### **Corporal weight variation and reproductive parameters of goats raised under different alimentary regimes in the Northeast of Brazil**

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#### **Abstract / Resumo:**

The Brazilian goat herd is estimated in 11.2 million animals, where approximately 92.2% are raised in the Northeastern region. However, the productive performance of animals raised here is low due mainly to poor feeding management. This work aimed to evaluate the effect of different alimentary regimes over the dry matter intake, corporal weight variation and reproductive parameters of goats raised in the semi-arid region of Northeastern Brazil. Fifty-six goats were distributed into four treatments: Diet 1 ( $n = 14$ ), Caatinga vegetation and palm forage; Diet 2 ( $n = 14$ ), Caatinga, palm forage and concentrate supplementation; Diet 3 ( $n = 14$ ), Buffel grass and palm forage; Diet 4 ( $n = 14$ ), Buffel grass, palm forage and concentrate supplementation. For the concentrate supplementation there was soybean, bran and corn, all together with, 73% of total digestive nutrients and 18% of crude protein. It was measured the corporal weight and the percentage of females in estrus, the last was done with the aid of vasectomized bucks. It was observed a greater ( $p < 0.05$ ) daily weight gain and total weight gain in the goats kept under pasture of Buffel grass or Caatinga receiving concentrate supplementation (Diets 2 and 4). The alimentary regimes could reduce the loose of weight or promoted the weight gain of 16 g/animal/day during the dry period. During the experimental period, the goats showed a total number of estrus of 33, 33, 48 and 40 for Diets 1, 2, 3 and 4, respectively. The highest percentage of estrus was observed at the beginning of the experimental period and in the beginning of the rainy season. The reproductive performance was not influenced ( $p > 0.05$ ) by the alimentary regimes. In conclusion, the supplementation with palm forage and concentrate increased the goat's weight gain. The concentrate supplementation might be necessary to increase the weight of goats during the dry period.

### **Dietary energy intake and sexual behavior of Toggenburg goats.**

Oliveira, J.S.K.1,2, Esteves, L.V.1,2, Magão, J.V.P.1, Féres, L.F.R.1, Torres Filho, R.A.1, Rodrigues, C.A.F.1, Fonseca, J.F.2, Brandão, F.Z.1

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**Abstract / Resumo:**

In order to evaluate the sexual behavior of Toggenburg goats fed with different dietary energy, 32 kids in reproductive age and free of any reproductive pathology were divided in 3 groups according to the dietary treatment. Group 1, maintenance (M) (n=11); Group 2, supplied energy 1.5 times energy maintenance (1.5M) (n=10); and Group 3, supplied energy 2.0 times energy maintenance (2.0M) (n=11). The estrus cycles of all kids were induced and synchronized by insertion of an intravaginal sponge impregnated with 60mg Medroxyprogesterone Acetate. An ultrasound scanner fitted with an 8.0-MHz linear transducer, adapted for small ruminants was used to determine ovulation time and females were tested for estrus twice daily after sponge removal by the use of a male goat. Time between sponge removal and beginning of estrus and from beginning of estrus until ovulation, as well as estrus length were measured. Results were analyzed by the Duncan test employing a significance level of  $P < 0.05$ . All animals from groups 1 and 2 (100%) had signs of estrus while one goat from group 3 did not show signs (9.10%). Estrus length had no differences between groups (Group 1:  $31.63 \pm 12.32$  hours; Group 2:  $43.20 \pm 12.90$  hours; Group 3:  $40.80 \pm 14.08$  hours –  $P > 0.05$ ). Time between sponge removal and beginning of estrus also did not differ (Group 1:  $28.00 \pm 12.00$  hours; Group 2:  $32.80 \pm 11.59$  hours; Group 3:  $30.40 \pm 14.08$  hours –  $P > 0.05$ ) but time from beginning of estrus until ovulation was substantially shorter in group 3 ( $15.13 \pm 8.63$  hours –  $P < 0.05$ ) than other groups (Group 1:  $28.28 \pm 12.57$  hours; Group 2:  $27.00 \pm 14.40$  hours). We conclude that animals fed with high energy diet ovulates faster than others after the onset of estrus.

**Dietary energy intake and reproductive performance of Toggenburg goats.**

Oliveira, J.S.K.1,2, Esteves, L.V.1,2, Magão, J.V.P.1, Féres, L.F.R.1, Torres Filho, R.A.1, Rodrigues, C.A.F.1, Fonseca, J.F.2, Brandão, F.Z.1

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**Abstract / Resumo:**

In order to evaluate the reproductive performance of Toggenburg goats fed with different dietary energy, 32 kids in reproductive age and free of any reproductive pathology were divided in 3 groups according to the dietary treatment. Group 1, maintenance (M) (n=11); Group 2, supplied energy 1.5 times energy maintenance (1.5M) (n=10); and Group 3, supplied energy 2.0 times energy maintenance (2.0M) (n=11). The estrus cycles of all kids were induced and synchronized by insertion of an intravaginal sponge impregnated with 60mg Medroxyprogesterone Acetate. The pattern of follicular development was examined daily from day 1 to 6 of the synchronized estrus cycle using an ultrasound scanner fitted with an 8.0-MHz linear transducer, adapted for small ruminants. After sponge removal the examinations were made twice daily to determine time of ovulation. Animals ovulating, time between sponge removal and ovulation, ovulation rate and ovulatory follicle diameter were measured. Results were analyzed by the Duncan test. Groups 1 and 3 had all animals ovulating (100%) while group 2 had 9 kids ovulating (90%). Time between sponge removal and ovulation was similar ( $P > 0.05$ ) in groups (Group 1:  $56.28 \pm 12.58$ ; Group 2:  $57.66 \pm 8.7$ ; Group 3:  $45.22 \pm 7.96$  hours). Ovulation rate had no difference ( $P > 0.05$ ) between groups (Group 1:  $1.27 \pm 0.47$ ; Group 2:  $1.00 \pm 0.47$ ; Group 3:  $1.18 \pm 0.40$ ). High energy level group (group 3) had ovulatory follicle diameter smaller ( $62.64 \pm 7.43$  X  $63.18 \pm 6.31$  mm –  $P < 0.06$ ) than low energy groups (group 1:  $72.64 \pm 7.61$  X  $73.54 \pm 8.88$  mm; group 2:  $69.29 \pm 14.01$  X  $68.11 \pm 12.26$  mm) that had no difference between results ( $P > 0.06$ ). We

conclude that animals supplied with high energy diet ovulates faster after sponge removal and therefore follicles of smaller sizes.

### **Timed hormonal treatments in induction and synchronization of Saanen goats estrus during nonbreeding season.**

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#### **Abstract / Resumo:**

With the aim to evaluate reproductive performance of Saanen goats among different timed hormonal protocols during nonbreeding season, 30 females had the estrus cycles induced and synchronized by insertion of an intravaginal sponge impregnated with 60mg Medroxyprogesterone Acetate. All goats received 200 IU eCG and 37.5 µg PGF2α analog 24 hours prior to sponge removal. After 5 days of mating, all animals received 250 IU hCG. Animals were divided in 3 groups: Group 1 (G1) – vaginal sponge remaining for 6 days (n=10); Group 2 (G2) – vaginal sponge remaining for 9 days (n=10) and Group 3 (G3) – vaginal sponge remaining for 12 days (n=10). An ultrasound scanner was used to determine time of ovulation and animals were tested for estrus by the use of a buck. All animals (100%) from G2 and G3 had signs of estrus while one goat (10%) from G1 did not show signs. Estrus length had no difference between groups (G1: 34.66 ± 22.80; G2: 30.00 ± 12.96; G3: 37.20 ± 19.14 hours, P>0.05). Time between sponge removal and beginning of estrus (G1: 20.66 ± 16.73; G2: 20.40 ± 7.59; G3: 19.20 ± 10.51 hours) and time from beginning of estrus until ovulation (G1: 26.40 ± 5.37; G2: 30.00 ± 12.96; G3: 34.28 ± 8.28 hours) also did not differ (P>0.05). G2 had all animals ovulating (100%) while G1 had 8 and G3 had 7 (80% and 70%, respectively). Time between sponge removal and ovulation differ between G1 and G3 (39.00 ± 5.55 and 55.71 ± 12.83, hours respectively, P <0.05), but G2 didn't differ of the others (50.40 ± 13.91 hours). Ovulation rate (G1: 1.50 ± 0.97; G2: 1.50 ± 0.53; G3: 1.00 ± 0.82) as well as ovulatory follicle diameter (G1: 1.00 ± 0.82 X 5.48 ± 0.62mm; G2: 5.68 ± 0.85 X 5.72 ± 1.13mm; G3: 5.77 ± 0.87 X 5.35 ± 0.69mm) had no difference between treatment protocols (P>0.05).

### **Protein profile is affected by milking frequency in dairy goats**

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#### **Abstract / Resumo:**

Ten Majorera breed dairy goats during the early lactation were used to determine the protein profile in milk at three different milking frequencies. The goats were machine milked during 5 weeks using different milking frequencies, at week 1 and 5 of the experiment, goats were milked once daily, at week 2 and 4 the animals were milked twice daily and during the week 3 goats were milked 3 times a day. Every week, milk samples (50 ml) from the whole removed milk were collected from each goat after the first morning milking. The samples were aliquoted and storage at -80°C until SDS-PAGE

electrophoresis protein profile analysis. After SDS-PAGE electrophoresis, the gels were scanned and band intensities measured. Particular protein profile was calculated as percentage of each protein over total protein bands intensity. Three groups of proteins were observed. Lactoferrin, Serum Albumin, IgG (heavy and light chains), Kappa Casein and Alfa Lactoglobulin decreased as milking frequency increased in a 30.4, 17.6, 30.2, 54.8, 19.7 and 16.2 %, respectively. After the milking frequency was reduced protein profile values increased at initial values. Beta Casein and Alfa s2 Casein increased as milking frequency increased in a 19.7 and 16.2 %, respectively. After the milking frequency decreased protein profile values decreased at initial values. A third group of proteins (Alfa s1 Casein and Beta Lactoglobulin) remained without changes. In a preliminary conclusion, milking frequency displays an effect on milk protein profile, these changes might be considered when a discussion about increase milking frequency will be stated.

### **Evolution of immune colostrum components during the first 10 hours after partum**

I. Moreno-Indias<sup>1</sup>, D. Sánchez-Macías<sup>1</sup>, J. Capote<sup>2</sup>, M.D. Ruiz-Díaz<sup>1</sup>, N. Castro<sup>1</sup>, A. Morales-delaNuez<sup>1</sup>, A. Argüello<sup>1</sup>

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#### **Abstract / Resumo:**

The aim of present study was to investigate the early evolution of immune parameters on colostrum during the first 10 hours after delivery and in colostrum fractions. Ten Majorera breed dairy goats were milked at partum, and after that an intravenous injection of 2 IU of Oxytocin was administered for recovery the residual colostrum. Animals were milked every hour during 10 hours postpartum. Colostrum samples were obtained from each milking, and IgG, IgM and Chitotriosidase activity (ChT) were measure using ELISA for immunoglobulins and Fluorimetric assay for ChT. IgG colostrum concentration was the highest in the first milking (40.0 mg/ml), in the residual colostrum (39.7 mg/ml) and in milking at 1 hour after partum (37.2 mg/ml), dropping sharply until get 3.8 mg/ml at 10 hours postpartum. IgM colostrum concentration was higher in the first milking (1.8 mg/ml), in the residual colostrum (2.1 mg/ml) and milking at 1 hour after partum (2.0 mg/ml), dropping fastly until get 0.2 mg/ml at 10 hours postpartum. Similar evolution was developed by ChT colostrum activity. ChT colostrum activity was higher in the first milking (9302 nmol/ml/h), in the residual colostrum (9287 nmol/ml/h) and in milking at 1 hour after partum (9123 nmol/ml/h), dropping fastly until get 3250 nmol/ml/h at 10 hours postpartum. In a preliminary conclusion, the extended management practice that get the first and second colostrum milking to store for the offspring might be wrong due to fastly drop of immune components in the first 10 hours after delivery.

### **Cloning and Sequence Analysis of Hormone-sensitive Lipase (HSL) Gene in Xinong Saanen Dairy Goats**

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#### **Abstract / Resumo:**

Mammary glands are not only one of the tissues in the body with the highest lipid content, but also one of the most active metabolic tissues in the body during pregnancy and lactation (Lopez-Luna et al., 1991). The product of lipid metabolism in rat mammary gland adipocytes is an important source of both calories and essential fatty acids for newborn and drinker (Martin-Hidalgo et al., 2005). During lactation, a woman could secrete 800 mL of milk per day, about 32 g milk lipid, with the main components is triglycerides (TGs) and some fatty acids (FAs), the lactating mouse mammary gland secretes 5 mL of milk per day with 30% lipid (Rudolph et al., 2003), which suggest that mammary glands have the ability to produce a remarkable amount of lipid. Hormone-sensitive lipase (HSL), originally described in the early 1960s, was regarded as the key enzyme releasing the first and the second FAs from TGs, and it also exhibited substrate specificity capable of hydrolyzing diacylglycerol (DG) and monoacylglycerol (MG), cholesterylester, retinylester, and numerous water soluble esters (Kraemer et al., 2006). HSL is an intracellular neutral lipase found in a variety of tissues (Kraemer, et al., 1993), and was manifested existing in cytoplasm of both alveolar epithelial cells and adipocytes of rat mammary gland. Studies have shown that HSL is closely related with milk lipid synthesis and metabolism. Although studies have shown that the presence of HSL activity in mammary glands of lactating rats (Tavares do Carmo et al., 1996) and the mRNA of it is also existed in human and bovine mammary glands (Yonezawa et al., 2008), the function and sequence of HSL gene in goat mammary gland is unknown, therefore, to attain the goat HSL sequence and prepare for further function research in milk lipid synthesis of mammary gland, we isolated and cloned the whole cDNA of the HSL gene of Xinong Saanen Dairy goat with the methods of RT-PCR (reverse transcription PCR) and RACE (rapid amplification cDNA ends), and conducted the structure analysis and function prediction using bioinformatics software.

### **Screening miRNA Regulating Fatty Acid Metabolism in Mammary Gland of Xinong Saanen Goats**

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#### **Abstract / Resumo:**

MicroRNA(miRNAs) are 18-23 nucleotide RNAs that regulate gene expression post transcriptionally by base pairing with complementary sequences in the 3' untranslated regions (3' UTR) of mRNA. This interaction leads to translational repression (mostly in animal) and, in many cases, to decreased mRNA levels. The miRNA research has been focused on new miRNA finding, target genes identification, miRNA function research of human diseases and ontogenetic process and so forth, which is far beyond the work done in metabolism field. The regulation of lipid metabolism by miRNAs is only partly understood (Krutzfeldt et al., 2006). Also, there isn't revelation of the role miRNA played in fatty acid metabolism in goat within incompleteness genome sequence given. So, it is slight to screen miRNA by computational identification and clone intronic miRNA selectively. The objective of this study is to detect the miRNA regulating the fatty acid synthesis in mammary gland of Xinong Saanen dairy goats and express miR-103-1 in epithelial cell of mammary gland by recombinant adenovirus vectors, which will provide the information on determining the function of miRNA in the fatty acid metabolism.

#### **Wattle cysts – Prevention through Early and Precise Diagnosis**

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**Abstract / Resumo:**

Wattle cysts are tumefactions of liquid content, located in the base of goats' wattle, and they occur unilaterally or bilaterally. These cysts, common in the Anglo-Nubian race and its crossbreeds, are not rare, even though they are scarcely mentioned in related literature. Due to the lack of a precise diagnosis, some cases may be mistaken by lymphadenitis. Clinical, bacteriological, histological and cytological findings of these tumefactions were analyzed in two goats, Capr1 e Capr2, originated from Saanen and Anglo-Nubian crossings, respectively. The goats presented vital functions within normality and good nutritional status. During clinical examination it was observed that the tumefactions were spherical, diameters ranging from 3,0cm to 5,0cm, and they were indolent to palpation and of flaccid/floating consistency. The liquid punctured from the cysts presented: watery aspect, slightly milky coloration, absence of bacterial agent and evidence of morphologically preserved epithelial cells. Histologic examination of the tissue removed by surgery, from Capr1, evinced stratified squamous epithelium with no evidences of malignity. The innocuousness of the wattle cyst to the goats' general health does not discard the need of an early diagnosis that avoids the dissemination of this disease. Because wattle cysts have genetic origin, sterilization of the affected animals is indispensable to its eradication.

**A proposal of breeding system for goats and sheep in the semiarid area of Pernambuco**

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**Abstract / Resumo:**

With the objective of establishing a management that makes it possible to maximize the productivity of goats and sheep in tropical regions, a proposal breeding system is being developed at Cachoeira Farm of the Agronomic Institute of Pernambuco-IPA, located in the city of Sertânia. To achieve such objectives, female goats of the Anglo Nubiana (40), Moxotó (7) and Mixed (30), and nulliparous Santa Ines ewes (12), totaling 89 females are being used in the controlled and continued breeding season in four sections along a breeding cycle. The breeding system is constant and the females have the estrous identified by a vasectomized animal allowing the choice of the desired reproducer. Four lots were made (A, B, C and D) identified by a colored collar. The breeding period corresponded to 60 days and the extent that the females entered into estrus, which formed the lots that varied in number from 21 to 33 females. This experimental model permits to register, pre-define and visualize in spreadsheets the breeding periods, the supplementation periods, parturition periods, weaning periods, motherhood occupation periods besides other zotechnical notes contributing to the zotechnical control of livestock. Eighty-five breedings were done during a breeding cycle of eight months. The A, B and C lots have already passed the parturition period and 41 females kidded producing 63 offsprings (prolificacy of 1.54).

## **The effects of diet and addition of Conjugated Linoleic Acid (CLA) on goat kid complement system activity.**

Morales-delaNuez, A.1, Moreno-Indias, I.1, Castro, N1, Sánchez-Macías, D1, Capote, J.2, Ruiz-Díaz, M.D.1, Argüello, A.1

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### **Abstract / Resumen:**

40 newborn goat kids of Majorera breed (20 males and 20 females) were used for evaluating the effect of Conjugated Linoleic Acid (CLA) milk replacer addition in Complement System Activity (CSA). The animals were separated of their dam's immediately after birth and were randomly distributed in four groups. Goat kids were fed with frozen-thawed goat colostrum by bottle-feeding at 2, 14 and 26 hours of life. After colostrum feeding period, the control group (MR) received a commercial milk replacer, the MG group was fed with milk goat, the CLA-2 group received milk replacer plus 2 ml of CLA-60 and the CLA-4 group received milk replacer plus 4 ml of CLA-60. All animals were fed twice daily until day 60 after birth. To determine the CSA effect, blood samples were collected every 24 hours from day 1 to day 5 and at day 10, 20, 30, 40, 50 and 60 of life. Blood samples were centrifuged and the blood plasma fraction was frozen at -80°C until analysis. The CSA was measured using DGHB++ buffer (Dextrose, Gelatin, Hepes) to evaluate total CSA and Mg-EGTA-DGHB buffer to determine CSA alternative pathway. Alternative and total CSA did not differ in our study and increased throughout the experimental period in all groups. MR goat kids showed the lowest threshold CSA until 40 days of life (by 0-15%), while threshold values in MG group was observed until day 10; for the CLA-2 this threshold was found until day 5 of the experiment; nevertheless in the CLA-4 group the activity increased at day 3 of life. In all experimental groups the highest values were observed at 50 and 60 days of life. CSA did not differ significantly at 1, 2, 3, 4, and 10 days of life in all groups; however at day 5, CSA was significantly higher in CLA-4 than in control goat kids. MG had significantly higher CSA at day 50 than MR, CLA-2 and CLA-4. The CSA reached similar values at 2 months of life for MG, CLA-2 and CLA-4 groups; however MR group presented lower CSA at this time. In conclusion, the CLA addition to goat milk replacer improves the complement system activity in goat kids in a similar way that animals fed with goat milk after 2 months of development.

## **Effects of Sodium Selenite addition to goat colostrum on IgG immune passive transfer. Preliminary results**

Morales-delaNuez, A.1, Moreno-Indias, I.1, Ruiz-Díaz, M.D.1, Argüello, A.1, Torres, A.2, Sánchez-Macías, D.1, Castro, N.1

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### **Abstract / Resumen:**

According to previous studies in calves, selenium addition increased the absorption of IgG from colostrum. The present study tests the potential effect of selenium addition to goat colostrum on goat kid passive immune transfer. For the development of the experiment, 20 newborn Majorera goat kids were used. Animals were separated from their dams and dried immediately after birth. Their umbilical

cords were disinfected, and they were weighed and randomly distributed into two groups (n=10) according to the treatment. Control goat kids group (CG) was fed with frozen-thawed goat colostrums, receiving a total of 150 ml per kg of birth weight by bottle-feeding at 2, 14 and 26 hours of life. The experimental group (Se-G) was fed with colostrum plus 3 ppm of sodium selenite following the same management than CG. From 36 hours of life all animals received milk replacer twice daily until the end of the experiment. Blood samples were obtained from the jugular vein every 24 hours from day 1 to day 5 of life. After centrifuged, blood plasma was frozen at -20°C until subsequently analysis. Blood plasma IgG concentration was determined by using a commercial goat IgG ELISA kit . No significant effect of the sodium selenite addition on blood plasma IgG concentration was found. IgG concentration ranged from 14.34 to 9.57 and 11.80 to 7.11 in CG and Se-G respectively. IgG concentration peaked at day 2 of life in both groups (14.34 and 11.80 in CG and SE-G, respectively) decreasing after that until the end of the experiment (9.57 and 7.11 in CG and SE-G, respectively). Increase in hydration animal status and physiological degradation of colostrum IgG and the fact that goat kids are unable to produce immunoglobulins by themselves may explain the decrease of IgG levels throughout the experiment. In conclusion, according to our preliminary results, the addition of 3 ppm of Sodium Selenite to goat colostrum did not improve the newborn goat kids IgG immune passive transfer; however more experiments should be necessary.

### **The use of Glycerol and Propylene glycol as additives during pasteurization reduce the microbial population in colostrum goats.**

Morales-delaNuez, A., Ruiz-Díaz, M.D., Moreno-Indias, I., Sánchez-Macías, D., Hernández-Castellano, L.E., Castro, N., Argüello, A.

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#### **Abstract / Resumen:**

The aim of this study was to evaluate the use of Glycerol (Gli) and Propylene Glycol (Pro) at different concentrations as additive during goat colostrum pasteurization. Eleven goats of Majorera breed were milked, using a bucket milker, immediately after partum. After removed the whole available colostrum, that was aliquoted (50 ml) and subsequently frozen at -20°C until treatment. Sampled colostrums were allotted into nine different groups according to treatments with different additives. In control group (CG) 14% of Phosphate Buffer Saline (PBS) was added to colostrum, while in experimental groups colostrum was complemented with different doses of PBS plus diverse percentages of Glycerol or Propylene Glycol. All additions to colostrum were standardized to 14%. After each addition, colostrum samples were heated in a water bath until reach 56°C; after that, the samples remained for 1 hour more into the water bath at 56°C. Subsequently samples were transferred to ice water for fast cooling and storage at 4°C until microbiological analyses were performed later on. Colostrum microbiological population was quantified according to standard procedures on Plate Count Agar. No significant differences between Glycerol and Propylene glycol addition were found at any concentration tested. However, colostrum microbial population was significantly higher in CG samples than in all Glycerol and Propylene glycol groups. As Glycerol or Propylene glycol concentration added was increasing a significant reduction of the microbial population was observed, although no significant differences between groups were observed when 10 or 14% of Glycerol or Propylene glycol was added. In conclusion, according to the preliminary results, the addition of Glycerol or Propylene Glycol before goat colostrum pasteurization is an effective

method to reduce the colostrum micro biota. Further studies on the effect of these additives on the different microbial populations will be necessary.

### **Morphological measurements as a tool to support molecular genetic analyses: a field study**

Morales-delaNuez, A.2, Castro, N.,2, Hernández-Castellano, L.E.2, Moreno-Indias, I.2, Santana-Cruz, M.M. Reyes-Chacon, R.J.2, Niño, T. Rodriguez, C.2, Argüello, A.2, Capote, J.3

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#### **Abstract / Resumen:**

In order to complement DNA previous studies, 81 domestic goats, belonging to Majorera Breed (MB) and 31 Feral Goats (FG) were used, both populations coexist in the same area (Fuerteventura, Canary Island, Spain). These two populations were previously differentiated using microsatellites analysis. In the present study, 13 morphological measurements were recorded, zoometric indexes and correlations were calculated and profile and coat colour evaluated through the side picture. According to morphological measurements such as weight (23.52 and 55.62 Kg, FG and MB respectively) and height at end of neck (54.42 and 70.94 cm, FG and MB respectively) FG were significantly smaller than MB. Zoometric indexes showed that FG were lighter and shorter in relation to the thoracic circumference and height, suggesting an environmental adaptation long time ago. In general, correlations between morphological measures were higher in FG than in MG goats, as between height at end of neck and height to the croup (0.880 and 0.740 respectively), probably indicating a superior body balance to adapt to ultra extensive conditions with higher natural selection. With respect to the frontal profile, the most FG goats presented a subconcave profile (66.7%) on the contrary only 6.8% of MG goats presented this profile. Finally, FG coat colours presented a higher frequency of colour combination of black and white hair and less combination of black, white and red hair than MB. In conclusion, morphological measurements could be a tool in order to complement molecular genetic studies

### **Influence of seaweed addition in the dairy goats diet on milk chemical composition.**

Torrez-Pizarro, C.M.3, Hernández-Castellano, L.E.1, Moreno-Indias, I.1, Argüello, A.1, Morales-delaNuez, A.1, Sánchez-Macías, D.1, Castro, N.1

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#### **Abstract / Resumen:**

The effect of *Chlorella pyrenoidosa* seaweed inclusion in the dairy goat diet on milk fatty acid composition, atherogenicity index, fat and protein percentage were evaluated in the present study. For the development of the experiment, 10 pregnant goats belonging to Majorera breed were used. The animals were fed with corn, soy 66, dehydrated Lucerne, dehydrated beetroot, wheat straw and vitamin-mineral corrector in accordance with the guidelines issued by L'Institut de Recherche Agronomique. Goats were allotted into two groups (n=6) based on the diet; the control group received a standardized diet (0 g *Chlorella pyrenoidosa*) and animals of the experimental group (seaweed

group) received the standardized diet plus 5 g *C.pyrenoidosa* from 15 days before partum to day 40 of lactation. Goats were milked by machine milking once a day and milk samples (100 ml) of each goat were collected after milk removal at partum and 1, 2, 3, 4, 5, 10, 20, 30 and 40 days later. Milk samples were divided into two aliquots, 50 ml of each were used to measure the basic chemical composition (fat and protein) immediately after sampling and 50 ml were maintained at -80°C until fatty acid composition was analyzed. The saturated, polyunsaturated and monounsaturated fatty acids percentage (SFA, PUFA and MUFA) was determined by using a gas chromatograph. The atherogenicity index (AI) was calculated as  $C12:0 + (4 \times C14:0) + C16:0 / MUFA + PUFA$ . There was no significant effect of seaweed addition on milk fat percentage (8.87 vs 8.70% at partum and 5.20 vs 5.81% at day 40, seaweed and control group, respectively). In addition, fat percentage decreased throughout the experiment in both groups, ranged from 8.87 to 5.20% and 8.70 to 5.81%, seaweed and control group, respectively. Milk protein percentage decreased throughout the experiment in both groups, ranged from 20.28 to 3.10% and 21.53 to 3.88%, seaweed and control group, respectively) being milk protein significantly higher at first day of lactation in the seaweed group (13.20 vs 8.30%, seaweed and control group, respectively). No significant effects of seaweed diet addition were observed in SFA, MUFA and PUFA percentages and AI. Both groups displayed similar values until day 5 of lactation. However, there was a trend of raising the SFA percentage and AI and decreasing the MUFA and PUFA percentages in both groups from day 10 to day 40 of lactation. In conclusion, the addition of *C. pyrenoidosa* increases the milk protein percentage at first day of lactation.

### **Effect of milking frequency on milk immunoglobulin concentration (IgG, IgM and IgA) and Chitotriosidase activity in Majorera goats**

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#### **Abstract / Resumen:**

Eleven goats belonging to Majorera breed were used during the early lactation to determine the milk IgG, IgM and IgA concentration and the Chitotriosidase (ChT) activity in milk at three different milking frequencies. The goats were machine milked during 5 weeks, at week 1 and 5 once daily, at week 2 and 4 twice daily and at week 3, three times a day. Every week, milk samples (50 ml) were collected from each goat after the first morning milking. The samples were aliquoted and storage at -80°C until immunoglobulins concentration and ChT activity were analyzed. To determine the IgG, IgM and IgA concentration a commercial goat ELISA kit was used and fluorimetric assay was performed to measure the ChT activity. Milk IgG and IgM concentration decreased as milking frequency increased, showing an enhance trend when the milking frequency returned to milking once daily. IgA concentration increased throughout the experimental period from 0.03 mg/ml (week 1) to 0.09 mg/ml (week 4). ChT activity decreased from week 1 (782.90 nmol/ml/h) to week 5 (651.18 nmol/ml/h). In conclusion, milking frequency affected the milk immune status, although different evolutions have been observed. Findings in the present report might help in the discussion about the susceptibility of mastitis when milking frequency is increased. More experiments will be necessary to evaluate long term effects of milking frequency on milk immune status.

## **Blood selenium concentration of grazing goats under extensive condition in semi arid area in Brazil**

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### **Abstract / Resumo:**

Selenium (Se) is essential for body functions such as growth, reproduction, prevention of various diseases and the production of the healthy tissue (McDowell 1985). This element is contained in glutathione peroxidase which aids in protecting the cellular and subcellular membranes from oxidative damage. In Se deficiency, the growth and reproductive performances of livestock are decreased. On the other hand, Se is also toxic element which results in the serious disease such as alkali disease and blind stagger caused by Se-polluted grass. Rio Grande do Norte (RN), Brazil is a semi arid region called Caatinga receiving an annual rainfall less than 400 mm. Farmers leave their goats to graze freely on indigenous pasture in their farms. During the dry season, animal forage intake is too low to meet energy, protein and mineral requirements. Hayashida et al. (2008) reported that blood phosphorus and copper concentrations of some goats were lower than the normal range levels (9th ICG). However there is scanty information regarding Se status of goats in RN. The objective of this study was to determine blood Se concentration of grazing goats in this region during dry season. The study was conducted in 4 farms of Mossoró - RN (50°23'W, 36°08'S) in January and February, 2006. All the goats (average 200 per farm) were under free range grazing conditions throughout the year without any supplementation. Animals depend on browsing on leaves, twigs and fruits of coconut trees during the dry season. A total of 40 mixed-bred goats were used. Blood sample from each animal was taken from the jugular vein. Se concentrations in whole blood were determined. Mean values of blood Se concentration of grazing goats in each farm were higher (326.1-546.7 ng/mL) than the normal range of 20-100 ng/mL recommended by Underwood and Suttle (1999). There were no significant differences between sampling months in each farm ( $p > 0.05$ ). Animals in 2 farms had much higher concentrations (455.0 & 516.2 ng/mL) than those in other 2 farms (327.2 & 357.1 ng/mL) ( $p < 0.05$ ). The results clearly show the goats might be endangered to over intake of Se, although no animals appeared any symptoms of toxicity or deficiency of Se.

### **Effects of milking frequency on goat immune status.**

Ruiz-Díaz, M. D.<sup>1</sup>, Capote, J.<sup>2</sup>, Sein, C.<sup>3</sup>, Argüello, A.<sup>1</sup>, Moreno-Indias, I.<sup>1</sup>, Hernández-Castellano, L. E.<sup>1</sup>, Castro, N.<sup>1</sup>

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### **Abstract / Resumo:**

The aim of present study was to identify the effect of milking frequency on immune status of dairy goats. Eleven dairy Majorera goats in the middle lactation were milked during 5 weeks at different milking frequencies. The first and fifth week, goats were milked once a day (09:00), the second and fourth week goats were milked twice a day (09:00, 17:00), and the third week goats were milked three

times a day (09:00, 13:00, 19:00). Blood samples were taken once a week each Wednesday. White blood cells count (WBCC) was measured and, after that, blood was centrifuged and the plasma fraction storage at  $-80^{\circ}\text{C}$  until subsequent analysis. IgG, IgM and complement system activity (Classical plus alternative and alternative pathway alone) were evaluated. A Proc Mixed procedure was performed by SAS statistic package. Mean blood plasma IgG was 26.7, 17.8, 9.8, 11.7 and 14.8 mg/ml at week 1, 2, 3, 4 and 5 respectively. Blood plasma IgG was significantly higher at week 1 than other periods studied and the level of IgG was reduced as milking frequency was high. Blood plasma IgM was 0.8, 0.9, 1.0, 1.1 and 1.3 mg/ml at week 1, 2, 3, 4 and 5 respectively. The highest blood plasma IgM was observed at week 5, showing an increase trend during the experimental time. WBCC was 14.0, 14.0, 15.0, 13.9 and 13.5x10<sup>3</sup> cells/ml at week 1, 2, 3, 4 and 5 respectively. WBCC at week 3 was significantly higher than at week 5, although a trend was observed while milking frequency increased the WBCC concomitant increased. Complement system activity measured as Classical plus alternative pathways activation was 44.7, 47.0, 55.2, 71.7 and 71.7 % at week 1, 2, 3, 4 and 5 respectively. Complement activity measured as alternative pathway alone was 28.8, 31.8, 39.2, 42.0 and 40.9 % at week 1, 2, 3, 4 and 5 respectively. Complement activity measured as classical plus alternative pathways and alternative pathway alone were affected (increasing) by milking frequency during the first three weeks, and after that the complement activity still increased. As a preliminary conclusion, milking frequency affect in a different way the innate and acquired immune status of dairy goats. Nevertheless, further studies are necessary.

### **Effects of selfsuckling behavior on immune milk status, milk quality and milk technological parameters**

Bissieres, V.3, Ruiz-Díaz M. D.1, Morales-delaNuez, A.1, Moreno-Indias, I.1, Capote, J.2, Castro, N.1, Argüello, A.1

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### **Abstract / Resumo:**

The aim of this study was to evaluate the effect of selfsuckling on immune milk status, milk quality and milk technological parameters on cisternal and alveolar fractions. Eleven Majorera breed dairy goats were observed to display a unilateral selfsuckling behavior. Goats were milked daily by machine milking and milk samples were obtained weekly. During 6 weeks the cisternal milk yield was evaluated from each suckled (SU) and non suckled gland (NSU) after the administration of an intravenous injection of an inhibitor of oxytocin (Atosiban®). After cisternal milk removal, goats were intravenously injected with 2 IU of Oxytocin in order to collect and record the alveolar milk. In cisternal and alveolar fractions were measured immune parameters (IgG, IgM, Chitotriosidase and Somatic cell count), milk quality parameters (Fat, Protein and Lactose percentages) and technological parameters (pH, Density, Titratable acidity, Rennet clotting time, Ethanol stability). Data from six weeks were pooled and an ANOVA was performed using a SAS statistic package. No effects of selfsuckling behavior were observed for cisternal or alveolar milk yields. In reference to immune parameters the cisternal milk IgG concentration was affected by selfsuckling being higher on SU glands (30%). In the same way, somatic cell count was significantly higher on SU glands (225%). No effects on alveolar milk immune parameters were observed. Milk quality parameters were not affected by selfsuckling neither in cisternal nor alveolar fractions. Technological parameters were affected by selfsuckling behavior, with

special reference to pH and titratable acidity. pH was significantly higher on SU than NSU cisternal milk but that differences did not reach significance on alveolar fraction ( $P=0.08$ ). Titratable acidity was significantly lower on SU than NSU cisternal milk however no differences were observed in alveolar milk. In sum, selfsuckling behavior observed in intensive management affect the immune milk status and technological parameters overall in cisternal milk. These effects must be investigated in relation to mastitis susceptibility and cheese quality.

### **Effect of different treatments on colostrum antimicrobial activity**

Ruiz Díaz, M. D.1, Morales-delaNuez, A.1, Torres, A.2, Moreno.Indias, I.1, Sánchez-Macías, D.1, Castro, N.1, Argüello, A.1

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### **Abstract / Resumo:**

The aim of the present study was to evaluate the effect of different pasteurization methods and different technological treatments as skim or rennet on the antimicrobial activity in goat colostrum against *Escherichia coli*. The first postpartum colostrum from ten dairy Majorera goats was collected by a milker bucket. The obtained colostrum was divided in six aliquots (50ml) and storage at  $-80^{\circ}\text{C}$  until analysis were performed later on. Colostrum samples were defrosted and heated at  $37^{\circ}\text{C}$  in a water bath and, after that, the different treatments were applied, except on control samples. The pasteurization was performed using three different methods, at  $56^{\circ}\text{C}$  during 1 hour,  $63^{\circ}\text{C}$  during 30 minutes and  $72^{\circ}\text{C}$  during 15 seconds. Another colostrum aliquot (50ml) was skimmed by using a commercial skimmer. The final aliquot was clotted by using commercial rennet and colostrum whey obtained was recovered after centrifugation. Ten microlitres of each sample were imbibed in a sterile antibiogram disk and let to dry. Sterile saline serum and Enrofloxacin (250 microgram) were used as negative and positive control, respectively. Two hundred microliters of *E. coli* (ABS 600 nm = 3) were plating into Petri dishes with violet red bile agar medium. In each Petri dish, 4 antibiogram disks (positive and negative controls and two samples to test) were located and incubated at  $37^{\circ}\text{C}$  for 24 hours. After that, halos were measured using a digital scanner. A Proc Mixed procedure was performed by SAS statistic package. Assuming positive control as 100% of antimicrobial activity and negative control as 0% of antimicrobial activity, the percentages of the different samples were as follow: control samples (without treatment) 14.78%, pasteurization at  $56^{\circ}\text{C}$  during 1 hour 12.28%, pasteurization at  $63^{\circ}\text{C}$  during 30 minutes 14.48%, pasteurization at  $72^{\circ}\text{C}$  during 15 seconds 9.71%, whey colostrum 6.35% and skimmed colostrum 16.22%. As preliminary conclusion, pasteurization (at 56 and  $63^{\circ}\text{C}$ ) and skimmed did not affect significantly the colostrum antimicrobial activity, although pasteurization at  $72^{\circ}\text{C}$  and colostrum whey decreased the antimicrobial activity of goat colostrum.

### **Effect of milking frequency and genotype on udder morphology and milk quality**

Torres, A.1, Sánchez-Macías, D.2, Capote, J.1, Argüello, A.2, Hernández-Castellano, L.E.2, Moreno-Indias, I.2, Castro, N.2

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**Abstract / Resumo:**

The effects of once (X1) vs twice (X2) daily milking on milk yield, milk composition, somatic cell count (SCC), and udder morphology were studied in 30 dairy goats from three different breeds (10 Majorera 10 Tinerfeña and 10 Palmera) in middle lactation period. Each goat was milked X1 or X2 at 10 and 14 hours intervals (left or right mammary gland respectively), during 6 weeks. The udder morphology was evaluated (cisternal height, nipple height and distance between nipples). Milking frequency affected cisternal height, decreasing significantly in X1 and X2 in Majorera goats (4.10% vs 3.42%), Tinerfeña goats (11.82% vs 8.81%) and Palmera goats (6.96% vs 2.81%). The differences in morphological parameters were due to X1 animals had stored more milk after 24 hours than X2 goats after 14 hours. However, no significant differences were observed for nipple height and distance between nipples. X1 milk yield was lower than X2 by 8.73% in Majorera goats, 14.87% in Tinerfeña goats and 25.53% in Palmera goats. This wide variation in yield losses between the studied breeds under X1 management may be due to differences in level of production and individual udder morphological characteristics of each breed. Yields of fat, protein, lactose, total solids and solids non fat tended to be higher for X2 than for X1 in Majorera and Tinerfeña goats but significant differences were found only for Palmera breed. Milk somatic cell count did not differ between treatments ( $P= 0.182$ ) which is important because it has become an important quality index in goat milk. In conclusion, milking frequency had effects on udder morphology without negative effects on milk quality.

**Effect of milking frequency and genotype on milk partitioning and milk quality**

Torres, A.1, Hernández-Castellano, L.E.2, Morales-delaNuez, A.2, Castro, N.2, Argüello, A.2, Sánchez-Macías, D.2, Capote, J.1

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**Abstract / Resumo:**

30 dairy goats of three Canary breeds (Majorera, Tinerfeña and Palmera) in middle lactation period were milked to evaluate udder compartments (cisternal and alveolar), milk yield and milk composition of each milk fraction. Left mammary gland were milked once daily (X1) and right mammary gland twice daily (X2) at 10 and 14 hours intervals during 3 weeks. Before milking goats an intravenous injection of an inhibitor of oxytocin (Atosiban®) was administered to evaluate the cisternal milk yield. After cisternal milk removal, goats were intravenously injected with 2 IU of oxytocin, and then milked again in order to collect the milk contained in the alveoli. No significant differences were found in the percentage of cisternal and alveolar milk on total milk produced in X1 and X2. Nevertheless, the Majorera breed had higher average yields of cisternal milk (54.79 ml/h and 58.57 ml/h for X1 and X2, respectively), than Tinerfeña breed (50.63 ml/h and 57.88 ml/h for X1 and X2, respectively) and Palmera breed (42.22 ml/h and 52.73 ml/h for X1 and X2, respectively), and consequently those goats had a 13.55% and 20.58% more cisternal area than Tinerfeña and Palmera breed, respectively. Cisternal milk of X1 goats contained similar percentages of fat (3.70 vs 3.65%), protein (3.65% vs 3.56%), lactose (4.83% vs 4.85%), total solids (12.90% vs 12.76%) and solids non fat (9.19% vs 9.10%) than cisternal milk of X2 goats. However, alveolar milk of X1 goats contained higher percentages of fat (6.31% vs 5.43%) and total solids (15.27% vs 14.42%) than alveolar milk of X2 goats. Although, there were breed by frequency interactions in the cisternal milk yields ( $P= 0.032$ ), no interactions for the

parameters of cisternal milk composition were found. In the alveolar milk, breed by frequency interactions were not found in the milk yield ( $P= 0.793$ ) and milk composition. In sum, the milking frequency did not affect the percentage of cisternal and alveolar milk in Canary breed goats. Furthermore, the milking frequency has not negative effects on composition of cisternal and alveolar milk.

### **Productive Status of Marwari Goat in Arid Zone of India**

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#### **Abstract / Resumo:**

Not available.

### **Preliminary results of growth and carcass quality of goat kids fed whole cow's milk and an exogenous source of DHA.**

Moreno-Indias, I1,2, Morales-delaNuez, A.1, Castro, N.1, Argüello, A.1, Hernández-Castellano, L.E.1, Torres, A.2, Capote, J.2

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#### **Abstract / Resumo:**

30 Majorera males and females newborn goat kids were randomly assigned to three groups according to different diets and sexes: goat milk (GM), whole cow's milk (WCM) and whole cow's milk plus Docohexanoic Acid (DHA-gold©, DHA) (WCM9). All animals were fed ad libitum during the experiment. Goat milk was taken from the bulk tank every day during the experiment and the dehydrated cow whole milk was rehydrated and used to feed WCM and WCM9 groups. For whole cow's milk diets, the dry matter was 16% w/w, being 9g the concentration used of DHA-gold©. Twice a week, animals were weighted and the group intakes measured in each fed. When goat kids reached 8 kg of body weight (BW), they were slaughtered following EU regulation. In order to study the carcass quality, pH and color (parameters "a" and "b") were measured at 0 and 24 hours by insertion into the longissimus muscle (at the 12/13th rib ) after slaughter as well as the conformation of the animals at 24h, when the carcasses were split down and frozen at -20° C for subsequent analysis. Growing periods were grouped from birth to 6 kg BW and from 6 kg to BW at slaughter, and the average daily gain (ADG) was calculated. During the first period, ADG were 134, 149 and 124 g/d for GM, WCM and WCM9, respectively, while in the second period the ADG were of 143, 176 and 133 g/d for GM, WCM and WCM9, respectively. Within the first period statistical differences were found between diets and sex. However no significant differences were found when sex effect was considered in the second period. Preliminary results show that there were not statistical differences in pH neither at 0 hours nor at 24 hours. Statistical differences in colour parameter "a" were found between treatments at 0 hours. However 24 hours later, differences in the color parameter "a" did not reach significance and the color parameter "b" differed significantly between sexes within the same and different treatments. No statistical differences were found in the carcass conformations neither the joints of the half carcass in connection with to the treatments. In conclusion, feeding goat kids with WCM is a good option to

consider, cheaper and with good results in growth. More analysis in carcass and meat quality should be done to determine if the DHA addition improves the quality of the final product.

### **Preliminary effects of microseaweed addition in the diet on goat immune status.**

Moreno-Indias, I1, Torres-Pizarro, C. M.2,1, Sánchez-Macías, D.1, Castro, N.1, Argüello, A.1, Morales-delaNuez, A.1, Capote, J.3

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#### **Abstract / Resumen:**

10 Majorera dairy goats were randomly assigned into two experimental groups according to the diet. Control group (CG) received corn, soy 66, dehydrated Lucerne, and dehydrated beetroot, wheat straw and a vitamin–mineral corrector according to the guidelines of L'Institute National de la Recherche Agronomique. The microseaweed group (MG) was fed with the same diet than CG plus 5 g/day of *Chlorella pyrenoidosa*. This procedure was used from 15 days before the expected parturition date to 40 days after partum. A blood sample of each goat was obtained immediately before the first treatment and onwards, 1 week after, at partum, 5, 10, 20, 30 and 40 days of lactation. After centrifuged, blood plasma was storage at  $-80^{\circ}\text{C}$  until analysis was performed. Milk samples were obtained at partum, 1, 2, 3, 4, 5, 10, 20, 30 and 40 days of lactation and frozen at  $-80^{\circ}\text{C}$  until analysis. IgG concentration and the Chitotriosidase activity (ChT) were measured in blood and milk samples by using a commercial ELISA goat kit and fluorimetric assay. No significant differences for blood plasma IgG concentration and ChT activity were observed between groups during the experiment. Blood plasma IgG concentration peaked at day 20 in both groups (17.4 and 17.0 mg/mL, CG and MG respectively) but showed a slightly increase earlier (5 d postpartum) in MG than in CG (10 d). Blood plasma ChT activity ranged from 4896.1 to 5673.5 nmol/mL/hour in CG and from 4362.6 and 5456.4 nmol/mL/hour in MS group. At day 40 after microseaweed inclusion ChT activity was significantly higher than before treatment. A time effect on colostrum IgG concentration was observed in both groups; the highest values were observed at partum (39.3 and 30.1 mg /mL in CG and MG respectively) decreasing along the time. Milk ChT activity peaked at partum in both groups (9253.2 and 10392.0 nmol/mL/hour for CG and MG respectively). These preliminary results suggest that the addition of 5 g of *Chlorella pyrenoidosa* to the diet could have an effect on the goat immune status; however the concentration of microseaweed added should be revised.

### **Self-suckling activity in goats: a behavioral approach**

Martínez-de la Puente, J., Morales-delaNuez, A, Moreno-Indias, I, Hernández-Castellano, L.E., Ruíz-Díaz, M.D., Sánchez-Macías, D., Castro, N., Argüello, A.

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#### **Abstract / Resumen:**

Self-suckling is a poor studied behavior in goats. With the exception of few studies including a case report of it occurrence in a feral goat, the description and consequences of this behavior remain unclear. The aim of this study was to measure the frequency of self-suckling in dairy goats and their

effects on udder morphology and milk production. To do that, the self-suckling behavior of 21 Majorera breed dairy goats was recorded daily during 20 minutes at 3 different times, immediately after milking (10:30), immediately after the fed (13:00) and at mid-afternoon (17:00). A total of 27 periods were considered in this study. In addition, goats were milked and the milk production of each mammary gland was measured by using recording jars (4L±5%). Moreover, the length and width of each goat's teat were measured using a digital calliper. For the total of goats included in this study, 15 (76%) were observed developing this behavior while self-suckling was not observed in 6 goats (24%). Goats suckled significantly more frequently from their right gland than their left gland probably due to the position of the rumen. Furthermore, the goats suckled their own glands more frequently immediately after milking than during the other periods considered in the study. In addition, significant associations between the morphology of the teat and the frequency of self-suckling were found. Those goats developing self-suckling during more periods had wider teats. Finally, the frequency of self-suckling behaviour of the left gland was significant and negatively associated with the production of milk of this gland. This relationship did not reach significance for the case of the right gland. To our knowledge, this is a first approach to the study of self-suckling behavior in dairy goats which may affect the immune milk status and technological parameters of milk.

### **Effect of Number and Placement of Cubic Spline Knots in the Lactation Curve of Extended Lactations**

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#### **Abstract / Resumo:**

Cubic splines have been used empirically to model extended lactation; however, a complexity of cubic splines is determining the number and placement of the knots, which can affect the "fit". The objective of this study was to examine the effect of the number and placement of cubic spline knots for fitting extended lactation curves in dairy goats. Daily milk yields for 69 Alpine does with an average 502 dim, range of 400 to 613 dim, were used in this study. Data were first smoothed before cubic spline analysis. Two methods were employed for determination of the number and placement of cubic spline knots for each doe. The first method utilized the trapezoidal rule. Three tolerance criteria (T; 0.08, 0.14 and 0.40 kg-day) were chosen because they resulted in approximately 3, 5, and 7 knots, respectively. The second method was a heuristic approach, taking the lactation length for each doe and dividing it into equally-spaced intervals. The desired numbers of knots (K) for this method were 3, 5, and 7. The coefficients of the cubic spline for each doe were estimated using linear and nonlinear regression techniques. The error sums of squares (SSE) were generated for both regression techniques. Method 1 resulted in irregularly spaced knots, with more knots concentrated in areas of greater curvature. The average spacings between knots are 44, 60, and 101 dim for T equal to 0.08, 0.14, and 0.40, respectively. Method 2 knots are equally spaced with the value of the first knot being the interval between knots as according the algorithm. Method 1 tended to have an earlier placement of knots that did method 2. About 75% of the knots determined by both methods were within 20 dim of each other. Non-linear regression failed to improve the "fit" of the cubic splines based upon SSE. Increasing the number of knots decreased SSE. Cubic splines were relatively similar as to the number and placement of knots across lactations. Thus, cubic splines can be used to model the curve of extended lactations in dairy goats. The robustness of the cubic spline was relatively indifferent to the

location of the knots; however, it was sensitive to the number of knots. The trapezoidal rule method for determining the number and placement of knots was no better than equally spacing knots over the data range. However, the trapezoidal rule is easy to compute using a personal computer and can give an indication of an adequate number of knots.

### **Milk quality and cheese yield of four European and African goat biotypes bred in a semi arid area of Argentina Northwest**

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#### **Abstract / Resumo:**

The objectives of the present work were to evaluate and to compare milk and cheese quality parameters and cheese yields of Saanen, Anglo-Nubian, Toggenburg and Alpine biotypes bred together at similar feed and management conditions in semi-arid area of Northwest of Argentina (NWA). Herds were fed in alfalfa field and supplemented with corn grain and alfalfa hay. The four biotypes presented good milk parameters values; however Anglo-Nubian showed the best profile to cheese manufacturing. Cheese yield of Saanen, Alpine and Toggenburg were the same. Casein content in milk presented the best correlation to cheese yield; however protein was proposed as another good possibility.

### **Allometric growth coefficient for slaughter data in SRD male kids reared in Ceara State**

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#### **Abstract / Resumo:**

The experiment was aimed at studying the allometric growth of the major anatomical components in SRD goats slaughtered in the range weight commonly used in the state of Ceara. We raised 16 intact males SRD weaned at 110 days of age. These were distributed (n=4) in four groups of slaughter weight range: G1: 20.0 to 22.9kg; G2: 23.0 to 25.9kg; G3: 26.0 to 28.9kg; G4: 29.0 to 31.9kg. At slaughter, it was weighed empty alimentary tract (stomach + intestine), skin, feet, trachea + lungs, heart, liver, spleen, pancreas and kidneys. Allometric growth equation was used to estimate growth rates of slaughter data relative to the empty slaughter weight of animal. The results showed isometric growth (b=1) in the skin, trachea + lungs and spleen, while the pancreas and kidneys presented up late (b>1), registering allometric coefficients of 1.33 and 1.25, respectively. However, for the alimentary tract, feet, heart and liver the allometric coefficients showed to be less than an unit (b <1) and so precocious.

### **“MANTA OVINA” FROM PETROLINA: MICROBIOLOGICAL ASPECTS OF PRODUCT SAFETY**

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#### **Abstract / Resumo:**

The “Manta Ovina” from Petrolina is a traditional, hand-made lamb meat product. The boned, salted and dried product is the result of a series of traditional techniques, namely cutting, salting and drying. It is well known and consumed in the “Vale do Sub-médio São Francisco”. The aim of this study was, therefore, to evaluate the hygienic-sanitary conditions of the Manta Ovina” from Petrolina processed in a complex of restaurants, the “Bododromo”, located in the city of Petrolina-PE, Brazil. The data obtained through this study regarded the incidence of coliform, thermotolerant halophilic bacteria, Salmonella sp and Staphylococcus aureus. They were obtained from nine samples from three restaurants. The results showed that all “Manta Ovina” samples had Salmonella sp absence, fecal coliform count of <math><10\text{ CFU / g}</math>, and halophilic bacteria count of <math><10\text{ MPN / g}</math>. On the other hand, the accounts of Staphylococcus aureus were presented in very high levels, ranging from  $8 \times 10^3$  to  $5.1 \times 10^6\text{ CFU / g}</math>. The samples also presented elevate number of total coliform, ranged from  $5.2 \times 10^3$  to  $5.5 \times 10^6\text{ CFU / g}</math>. The results showed that the “Manta Ovina” was safe for human consumption, since it had absence of Salmonella and fecal coliform, and attended the requirements of the Brazilian legislation for meat products (Brazil, 2001). However, as the product exceeded the limit established for Staphylococcus, it is worth the implementation and maintenance of hygienic and sanitary practices during its preparation. The application of Good Manufacturing Practice (GMP) will assure the production of a safe salted lamb meat product, with high quality standards for the population.$$

#### **Effects of small ruminant type and restricted protein intake on metabolism**

Asmare, A1, Puchala, R1, Tesfai, K1, Detweiler, G1, Dawson, LJ2, Askar, AR3, Wang, Z1, Goetsch, AL1  
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#### **Abstract / Resumo:**

Boer goat (BG; 9), Spanish goat (SG; 6), and Rambouillet sheep (RS; 8) catheterized wethers,  $\geq 2$  yr of age, were used in a crossover experiment with 28-d periods. Diets were ad lib. consumption of wheat straw alone (CON) or with a 90% soybean meal, 10% molasses supplement given at 0.22% BW (SBM). Initial BW was 35, 55, and 32 kg for BG, RS, and SG, respectively (SE = 1.2). Total DM intake was greatest among animal types (  $P < 0.05$ ) for RS (469, 578, and 463 g/d for BG, RS, and SG, respectively) and greater for SBM vs. CON (  $P < 0.05$ ; 616 vs. 391 g/d). NDF digestibility was similar among animal types and between diets. BW change was numerically least for RS (-92, -158, and -107 g/d for BG, RS, and SG, respectively; SE = 22.6) and not different between diets (-120 and -118 for SBM and CON, respectively; SE = 16.6). ME intake was similar among animal types (244, 230, and 259 kJ/kg BW<sup>0.75</sup> for BG, RS, and SG, respectively; SE = 16.6) and greater (  $P < 0.05$ ) for SBM vs. CON (320 vs. 168 kJ/kg BW<sup>0.75</sup> ). Total energy expenditure (EE) was greater (  $P < 0.05$ ) for RS than for BG (362, 415, and 402 kJ/kg BW<sup><sup>0.75</sup> for BG, RS, and SG, respectively) and for SBM vs. CON (  $P < 0.05$ ; 413 vs. 374 kJ/kg BW<sup>0.75</sup> ). EE by the portal-drained viscera (PDV) (1.34, 1.33, and 1.17 MJ/d; SE = 0.122) and liver (1.48, 1.44, and 1.32 MJ/d; SE = 0.133) was similar among animal types. Liver EE was greater (  $P < 0.05$ ) for SBM vs. CON (1.60 vs. 1.22 MJ/d), but PDV EE was similar between diets (1.35 vs. 1.21 MJ/d);</sup>

SE = 0.098). Net fluxes of ammonia N (AMN) and urea N (UN) across the PDV (AMN: 3.4, 2.4, and 3.2 g/d (SE = 0.69); UN: -5.2, -3.3, and -4.6 g/d (SE = 1.19)) and liver (AMN: -3.6, -3.2, and -4.3 g/d (SE = 0.78); UN: 7.6, 4.8, and 4.2 g/d for BG, RS, and SG, respectively (SE = 1.17)) were similar among animal types. Net fluxes of UN across the PDV (-5.3 and -3.4 g/d; SE = 0.98) and liver (6.1 and 5.0 g/d; SE = 0.97) did not differ between diets; however, diet affected ( $P < 0.05$ ) net fluxes of AMN across the PDV (3.9 and 2.2 g/d) and liver (-4.8 and -2.6 g/d for SBM and CON, respectively). In conclusion, the magnitude of any difference in N recycling among animal types was less than necessary to affect fiber digestibility. Nonetheless, some findings suggest a lesser ability of sheep to modify metabolic functions to cope with limited nutritional planes elicited by feeding crop residue-based diets, perhaps relating to energy use by extra-splanchnic tissues.

### **Effects of small ruminant type and restricted forage intake on metabolism**

Asmare, A1, Puchala, R1, Tesfai, K1, Detweiler, GD1, Dawson, LJ2, Askar, AR3,1, Wang, Z1, Goetsch, AL1

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#### **Abstract / Resumo:**

Boer (BG) and Spanish goat (SG) and Rambouillet sheep (RS) wethers, 2.5 yr of age, consumed grass hay ad lib. (AL) or in restricted amounts (RE). NDF digestibility was similar among animal types. Initial BW was 50, 74, and 40 kg for BG, RS, and SG, respectively. BW change was lowest ( $P < 0.05$ ) among animal types for RS (-0.18, -0.29, and -0.14 kg/d for BG, RS, and SG, respectively). Total energy expenditure (EE) in kJ/kg BW<sup>0.75</sup> was greatest ( $P < 0.05$ ) among animal types for BG (363, 335, and 335 kJ/kg BW<sup>0.75</sup> for BG, RS, and SG, respectively) and similar between levels of intake. EE in MJ/d by the portal-drained viscera (PDV) (1.43, 1.25, and 1.17 MJ/d; SE = 0.118) and liver (1.16, 1.14, and 1.08 MJ/d; SE = 0.149) was similar among animal types. Both PDV (1.44 vs. 1.12 MJ/d) and liver EE (1.50 vs. 0.76 MJ/d) were greater ( $P < 0.05$ ) for AL vs. RE. Net fluxes of ammonia N across the PDV (3.1, 2.4, and 3.0 g/d, SE = 0.50; 2.9 and 2.7 g/d, SE = 0.34) and liver (-4.1, -3.5, and -3.8 g/d for BG, RS, and SG, respectively (SE = 0.63); -4.3 and -3.2 g/d for AL and RE, respectively (SE = 0.48)) were similar among animal types and between levels of intake. PDV net flux of UN was greatest among animal types ( $P < 0.05$ ) for RS (-4.0, -1.4, and -3.6 g/d for BG, RS, and SG, respectively) and similar between intake levels (-3.5 and -2.5 for AL and RE, respectively; SE = 0.47). Net flux of UN across the liver was similar among animal types (3.1, 3.3, and 5.2 g/d for BG, RS, and SG, respectively; SE = 1.34) and between intake levels (5.2 and 2.5 g/d for AL and RE, respectively; SE = 1.02). In conclusion, some findings indicate that with limited nutritional planes of this experiment, sheep were less able to reduce EE than goats, which may have involved differences in extra-splanchnic tissue metabolism. Likewise, N recycling appeared less extensive for sheep vs. goats, but to a magnitude less than to impact fiber digestion.

### **Effects of level of feeding on energy utilization by Angora goats**

Tovar-Luna, I2,1, Puchala, R1, Sahlu, T1, Goetsch, AL1

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### **Abstract / Resumo:**

Twelve mature Angora does were used in a replicated 3 × 3 Latin square. Fiber growth was measured in the first 4 wk of 6-wk periods, preceded by 2 wk of adaptation. Metabolizability and gas exchange measures occurred in wk 4, followed by feeding near maintenance then fasting in wk 5 and 6 to determine the ME requirement for maintenance (ME<sub>m</sub>). A 60% concentrate diet was fed at levels to approximate 100, 125, and 150% of assumed ME<sub>m</sub>. Digestibility and metabolizability were not affected by treatment with different levels of offered feed and subsequent intake near ME<sub>m</sub>. Energy expenditure (EE) during fasting (261, 241, and 259 kJ/kg BW<sup>0.75</sup>), efficiency of ME use for maintenance (71.6, 69.6, and 69.2%), and ME<sub>m</sub> (365, 344, and 377 kJ/kg BW<sup>0.75</sup> for 100, 125, and 150%, respectively) were similar among treatments. Tissue (non-fiber) gain was lowest among treatments (P < 0.05) for 100% (-0.6, 23.7, and 29.8 g/d), although clean fiber growth only tended to increase with increasing level of feeding (5.60, 6.57, and 7.36 g/d for 100, 125, and 150%, respectively). Intake of ME was greater (P < 0.05) for 125 and 150 than for 100% (6.87, 8.22, and 8.41 MJ/d for 100, 125, and 150%, respectively). Total EE was greater for 150 vs. 100 (P < 0.05) and 125% (P < 0.07; 6.03, 6.31, and 6.77 MJ/d), and mobilized tissue energy was low but greater (P < 0.05) for 100 vs. 125 (P < 0.05) and 150% (P < 0.07; 0.16, 0.01, and 0.04 MJ/d for 100, 125, and 150%, respectively). Efficiency of ME use for fiber growth was similar among treatments (17.2, 16.3, and 17.7% for 100, 125, and 150%, respectively). In conclusion, efficiency of ME use for fiber growth was similar to the NRC recommendation. Energy appeared partitioned to fiber growth, although preferential usage was not complete possibly because energy metabolism for tissue and fiber accretion reached a plateau eliciting increased feed refusal.

### **Effects of restricted feed intake on energy expenditure by different goat breeds**

Helal, A2,1, Puchala, R1, Detweiler, GD1, Gipson, TA1, Sahlu, T1, Goetsch, AL1

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### **Abstract / Resumo:**

Sixteen Boer (B), Spanish (S), and 8 Angora goats (283, 316, and 330 d initial age, respectively) were used. During the first and second 10-wk phases, 8 animals of each breed were fed a 50% concentrate diet for maintenance and moderate energy accretion (C). Other animals were fed approximately 50% of these amounts in phase 1 relative to initial BW, followed by the higher level of feeding in phase 2 (R). ME intake was 4.47, 2.20, 4.84, 2.43, 4.14, and 2.06 MJ/d in phase 1 and 4.74, 4.09, 5.46, 4.67, 4.57, and 4.01 MJ/d in phase 2 for A-C, A-R, B-C, B-R, S-C, and S-R, respectively. ADG was 43, -20, 16, -78, 8, and -48 g in phase 1 (SE = 5.0) and 26, 44, 50, 65, 27, and 32 g in phase 2 (SE = 3.5) for A-C, A-R, B-C, B-R, S-C, and S-R, respectively. Clean mohair fiber growth by A was greater (P < 0.05) for C vs. R in phase 1 (6.70 vs. 5.33 g/d) and 2 (6.33 vs. 5.37 g/d). Energy expenditure (EE) for maintenance was greater for C vs. R in both phases (P < 0.05), greatest in phase 1 among breed × intake treatments for A-C (P < 0.05), and greatest (P < 0.05) in phase 2 among breeds for A (481, 347, 430, 356, 424, and 338 kJ/kg BW<sup>0.75</sup> in phase 1, and 494, 479, 445, 397, 444, and 406 kJ/kg BW<sup>0.75</sup> in phase 2 for A-C, A-R, B-C, B-R, S-C, and S-R, respectively). Breeds on R differed in the temporal pattern of EE (kJ/kg BW<sup>0.75</sup>) expressed as a % of the wk-0 value: 95.8 – (8.18 × wk) + (0.655 × wk<sup>2</sup>) (R<sup>2</sup> = 0.58) for A, 95.3 – (4.34 × wk) + (0.271 × wk<sup>2</sup>) (R<sup>2</sup> = 0.41) for B, and 97.4 – (4.69 × wk) + (0.282 × wk<sup>2</sup>) (R<sup>2</sup> = 0.53) for S in phase 1, and 78.9 + (8.74 × wk) – (0.608 × wk<sup>2</sup>) (R<sup>2</sup> = 0.60) for A, 77.5 + (3.30 × wk) – (0.153 × wk<sup>2</sup>) (R<sup>2</sup> = 0.39) for B, and 80.6 + (4.50 × wk) – (0.208 × wk<sup>2</sup>) (R<sup>2</sup> = 0.43) for S in phase 2. In conclusion, nutrient

restriction and realimentation elicited more rapid change in EE of greater magnitude with A vs. B and S. The pattern of decline in EE by B and S during restriction was similar, but the subsequent rise with realimentation was slower and smaller for B.

### **A framework for the transfer of animal health knowledge to rural goat owners**

VATTA, A.F.1, DE VILLIERS, J.F.2, HARRISON, L.J.S.3, KRECEK, R.C.1,4, PEARSON, R.A.3, RIJKENBERG, F.H.J.5, SPICKETT, A.6, WORTH, S.H.5

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#### **Abstract / Resumo:**

A series of studies were conducted in KwaZulu-Natal Province, South Africa over a 10-year period (1998 to 2008), involving on-farm research and extension and small-scale goat farmers. Initially, 2 farmers in the Impendle region participated, followed by 9 farmers in Bulwer and latterly, 15 farmers in Bergville. Various approaches were also taken to engage the greater goat farming community. The general aim was to ameliorate the various problems affecting goat health and productivity in the area. A flexible framework for the acquisition of skills and knowledge was developed, which incorporated the use of the on-farm research project as a training vehicle. The farmers were trained in basic health care techniques such as drenching, injections and the use of the FAMACHA© system, a simple method for determining anaemia, a symptom of gastrointestinal nematode infection. Community based workshops were used to strengthen the farmers' knowledge of animal diseases and their treatment. Extension materials were developed, including a "Goatkeepers' Animal Health Care Manual". The degree to which these participatory approaches helped increase community awareness of and ability to deal with goat health and management problems was assessed through questionnaire surveys conducted with participating and non-participating farmers and the general community. The framework developed as a result of these very successful studies, may be equally applied to assist goat farmers in other agro-ecological zones.

### **Potential field application of copper oxide wire particles for Haemonchus contortus control in grazing goats**

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#### **Abstract / Resumo:**

A study was conducted to examine the extended efficacy of copper oxide wire particles (COWP) against *Haemonchus contortus* in grazing goats. Forty-eight indigenous male goats were infected naturally by grazing them on a 0.67 ha pasture seeded with *H. contortus* larvae by 20 infected sheep. When the mean faecal egg count in the goats was 3179 eggs per gram of faeces, half the animals were

treated with COWP (day 0). Eight treated and 8 non-treated goats were removed from the pasture on each of days 7, 28 and 56. Following removal from pasture, the goats were maintained for 4 weeks in pens that precluded further nematode infection and were then euthanized for nematode recovery. The percentages reduction in *H. contortus* counts were 71%, 37% and -49% in the goats removed from pasture at days 7, 28 and 56, respectively. The mean burdens  $\pm$  standard deviations of the treated versus the non-treated goats were, respectively,  $184 \pm 136$  and  $645 \pm 429$  at day 7 ( $P = 0.006$ ),  $207 \pm 118$  and  $331 \pm 441$  at day 28 ( $P = 0.938$ ) and  $336 \pm 252$  and  $225 \pm 149$  at day 56 ( $P = 0.669$ ). Mean liver copper levels were in the high range in the goats removed from pasture at day 7 after treatment (treated:  $191 \pm 70$  ppm; untreated:  $120 \pm 36$  ppm;  $P = 0.047$ ), but had dropped to adequate levels in the goats removed from pasture at day 28 (treated:  $148 \pm 24$  ppm; untreated:  $121 \pm 29$  ppm;  $P = 0.061$ ) and day 56 (treated:  $163 \pm 60$  ppm; untreated:  $150 \pm 54$  ppm;  $P = 0.683$ ). The study indicated that COWP has a limited extended efficacy but repeated treatment of grazing goats may be possible after 2-3 months, given that the copper is excreted from the liver within this time.

### **Evaluation of Dual Use Napiergrass as an Animal Fodder and the Biofuel Feedstock**

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#### **Abstract / Resumo:**

Napiergrass (*Pennisetum purpureum* Schumach) grows well in the southern United States and has attracted much attention as potential biofuel feedstock because of its high biomass yield. In this study we examined if napiergrass can be harvested advantageously two times per year, first after full growth in October for feedstock and next before frost at the end of November or early December for animal fodder. Napiergrass yield from first harvest amounted to 40.4 Mg/ha compared to 16.91 Mg/ha for another important biofuel feedstock, energy cane (*Saccharum officinarum* L.). Soon after harvest, sprouting from the root followed by a vigorous growth started in the napiergrass while comparable activity was not observed in the energy cane. Napiergrass re-growth yielded 9.77 Mg/ha of young herbaceous plant material for animal feed. The ratoon biomass was of good fodder quality as evident from its 22.58% crude protein, 494 g/kg NDF and 275 g/kg ADF content. This study is of special significance to small farmers who generally follow mixed crop-and-animal farming. The preliminary results indicate that napiergrass can be an additional quality fodder source during the late fall season for the southern United States without compromising its economic value as a biofuel feedstock.

### **Evaluation of Napiergrass for Dual Use as an Animal Fodder and a Biofuel Feedstock**

Bharat, Wayne, Thomas, Hari

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#### **Abstract / Resumo:**

Napiergrass (*Pennisetum purpureum* Schumach) grows well in the southern United States and has attracted much attention as potential biofuel feedstock because of its high biomass yield. In this study we examined if napiergrass can be harvested advantageously two times per year, first after full growth in October for feedstock and next before frost at the end of November or early December for animal

fodder. Napiergrass yield from first harvest amounted to 40.4 Mg/ha compared to 16.91 Mg/ha for another important biofuel feedstock, energycane (*Saccharum officinarum* L.). Soon after harvest, sprouting from the root followed by a vigorous growth started in the napiergrass while comparable activity was not observed in the energycane. Napiergrass re-growth yielded 9.77 Mg/ha of young herbaceous plant material for animal feed. The ratoon biomass was of good fodder quality as evident from its 22.58% crude protein, 494 g/kg NDF and 275 g/kg ADF content. This study is of special significance to small farmers who generally follow mixed crop-and-animal farming. The preliminary results indicate that napiergrass can be an additional quality fodder source during the late fall season for the southern United States without compromising its economic value as a biofuel feedstock.

### **Effects of sericea lespedeza on dairy goat milk production and composition**

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#### **Abstract / Resumo:**

*Sericea lespedeza* (*Lespedeza cuneata*) hay (SLH) is lower in crude protein than alfalfa (*Medicago sativa*) hay (ALH), high in condensed tannins, and grows well in poor and acid soils where alfalfa is not well-suited. Condensed tannins contained in *Sericea lespedeza* have been reported to reduce internal parasites in small ruminants and increase bypass protein to the small intestines. When fed as a balanced ration to growing meat goats, average daily gains were higher with a sericea-based diet compared to a bermudagrass hay-based diet. However, the ability of this forage to support production and maintain milk composition in dairy goats has not been investigated. The objective of this experiment was to evaluate the effect of sericea lespedeza on milk yield and composition in dairy goats. Thirty dairy goats were stratified by days-in-milk and milk yield and randomly assigned to 4 pens (2 pens / treatment) equipped with calan gate feeders and automatic waterers. Goats were fed a diet containing either alfalfa or sericea lespedeza as the roughage source. Morning milk yields for individual animals were monitored (5 wks) and samples collected (9 wks) for component analysis. Milk fat was extracted with a chloroform-methanol mixture, prepared for fatty acid methyl esters, and analyzed by gas chromatography. Data were analyzed using the Mixed Model of SAS for repeated measures. Dietary treatments did not affect milk yield, but the Saanan breed produced more milk (1.43 lb) than the Alpine goats (0.78 lb) in the morning. Sericea lespedeza-fed does produced milk with less fat (3.3%) compared to the alfalfa-fed goats (3.6%). Total milk protein and lactose were similar between the 2 groups but total solids tended ( $P = 0.10$ ) to increase with the alfalfa diet. Compared with ALH-fed goats milk, SLH-fed goats milk had lower ( $P < 0.05$ ) levels of capric (C10:0; 14.17 vs  $11.42 \pm 0.937\%$ ), lauric (C12:0; 4.57 vs  $3.70 \pm 0.305\%$ ), myristic (C14:0; 9.15 vs  $7.06 \pm 0.625\%$ ), and myristoleic (C14:1n5; 0.51 vs  $0.36 \pm 0.076\%$ ) acids. No significant differences were found in short and long chain fatty acids in the resulting milk fat. Milk fat from goats fed ALH had higher percentages of medium chain fatty acids (C8 to C14; 34.14% vs 27.40%) and saturated fatty acids (87.98% vs 80.60%) than that from SLH-fed goats. Diet did not change the proportion of milk mono- and poly-unsaturated fatty acids. Sericea lespedeza in a total mixed ration can support milk production in goats with similar protein, lactose and total solids content like alfalfa but with less fat. Feeding SLH to dairy goats may produce healthier milk fat compared to those fed ALH.

## **Birth and Weaning Weights of Meat Goat Kids from a Complete Three-Breed Diallel.**

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### **Abstract / Resumo:**

Birth and weaning weights were recorded for kids produced over six years in a three-breed diallel involving Boer (B), Kiko (K), and Spanish (S) straightbred sires and dams semi-intensively managed on humid, subtropical pasture. Birth weights were recorded for 1543 kids born in March and May. Kids were not creep-fed and male kids were not castrated. Weaning weights were recorded for 1173 kids at approximately 3 mo of age and adjusted to a 90-d standard. Year, month, sex, dam age, and litter size at birth affected ( $P < 0.01$ ) birth weight. Buck kids were heavier than doe kids. Kid birth weight differed ( $P < 0.01$ ) between each litter size, decreasing progressively as birth type increased from single to triplet. The sire breed x dam breed interaction was an important ( $P < 0.05$ ) source of variation for birth weight. Birth weights were heaviest ( $P < 0.05$ ) for BB, BK, and BS and lightest for KK, SS, KB, KS, and SK kids. Year, month, dam age, litter size at birth and dam breed influenced ( $P < 0.05$ ) kid retention to weaning. Kid retention differed ( $P < 0.01$ ) between each litter size, decreasing progressively as type increased from single to triplet. A lower proportion ( $P < 0.01$ ) of kids born to B dams were weaned at 3 mo compared to K and S dams. Year, month, sex, and litter size at birth and weaning each affected ( $P < 0.01$ ) preweaning ADG. Buck kids gained weight faster than doe kids. Single, twin, and triplet kids as classified at birth or weaning all differed ( $P < 0.01$ ) from each other for preweaning growth rate; ADG progressively decreased as litter size increased. The sire breed x dam breed interaction was an important ( $P < 0.01$ ) source of variation for preweaning weight gain. Preweaning ADG were highest ( $P = 0.01$ ) for BK, KK, and SK and lowest for BB, SS, and SB. Year, month, sex, dam age, and litter size at weaning influenced ( $P < 0.01$ ) 90-d weaning weight. Buck kids were heavier than doe kids. Weaning weight differed ( $P < 0.01$ ) among each litter size, decreasing as type increased from single to triplet. The sire breed x dam breed interaction was an important ( $P < 0.01$ ) source of variation for weaning weight. Weaning weights were heaviest ( $P < 0.05$ ) for BK and KK and lightest for BB, SS, SB, and KS. Heterosis levels for weaning weight were 5.0% ( $P < 0.01$ ) between B and K, 2.6% ( $P = 0.1$ ) between B and S, and 0.4% ( $P = 0.75$ ) between K and S. Across the population, heritability ( $h^2$ ) was estimated to be 0.27 ( $P < 0.01$ ) for weaning weight. Sire and dam breeds interact to influence meat goat kid performance from birth to weaning.

## **THE CACTUS AS A FOOD SUPPLEMENT FOR GOATS IN THE SEMIARID: EFFECT OF SIZE AND DEGRADATION RATE, IN VIVO DIGESTIBILITY, DEGRADATION KINETICS AND INTESTINAL DIGESTIBILITY OF *Opuntia ficus indica* CLADODE VAR. COPENA**

Cordova-Torres,AV, Mendoza M,JC, Kawas,R.J, Andrade-Montemayor,H.

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### **Abstract / Resumo:**

In order to determine the effects presented by the use of two sizes (or maturity) of cladode cactus on in vivo digestibility, in situ degradation and intestinal digestibility of dry matter, so as the effect on rate of passage on effective degradation and intestinal dry matter (DM), neutral detergent fiber (NDF) and acid detergent fiber (ADF), 10 male adult goats weighing  $44.7 \pm 3.3$ , were used. The in vivo

digestibility trials were (done) in 2 periods of 22 days (15 for adaptation and 7 for sampling). Food and water consumption, as well as feces and urine production were monitored. Feed intake was restricted (56 g DM/kg LW<sup>0.75</sup>). The cladode size (width x length) was for the small cladode (SC) 147.03 ± 19.2 cm<sup>2</sup> and for the large cladode (LC) 705.25 ± 101.3 cm<sup>2</sup>. The statistical design was randomized with factorial arrangement (3 diets \* 2 periods). The diets were: Control (CTR), SC (80 %CTR + 20% SC), LC (80%CTR+20%LC). The degradability of dry matter, fiber and protein rations were estimated according to the equation recommended by Orskov and McDonald (1979) and the apparent digestibility of cactus was calculated with Meneses (2002). The results were: OM digestibility was greater (P < 0.001) in the rations with LC. Potential and effective degradability of DM was higher (P < 0.001) with LC rations. Size does not affect (P > 0.05) *in vivo* digestibility and degradability of NDF, which shows that the large or mature cladode, considered a waste or by-product can be used as a nutritional supplement for goats in semiarid regions. Acknowledgements: this work was supported by SEP-PROMEPE, and funded by the project PROMEP/103/07/2518. Keyword: Cactus, size or maturity of the leaf, digestibility, degradability, degradation rate

### **Antioxidant activity of endemic shrubby consumed by goats on semiarid rangelands in central Mexico.**

Puga D.C.1,2, Cuchillo H.M1, Navarro-Ocaña, A.2, Espinosa, M.J.G.2, Pérez-Gil, R.F.1

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#### **Abstract / Resumen:**

Vegetation species under stress conditions become adapted to resist biotic and abiotic disturbances, as well as, to evaluate active plant consumed by herbivores by means of biological development strategies, principally through secondary compounds production. Many plant bioactive metabolites are considered as feed detriments. Recently the characterizations of such compounds include beneficial effects which their relevance on animal husbandry is still debatable. The objective of the study was to evaluate the nutritive value and qualitative antioxidant activity (QAA) of endemic plants browsed/grazed by goats on semiarid rangelands in central Mexico. Extractions of methanol, methanol: water (80:20) and acetone were employed to assess the qualitative (QAA) and quantitative antioxidant activity (QTAA) of shrubby. Findings in botanical chemical composition demonstrated that some shrubby species had high crude protein value e.g., *A. farnesiana*, *C. pallida*, *M. biuncifera* and *V. serrata*. All plant alcoholic extractions tested showed QAA; however, a positive response was found at higher means on fruits and flowers whilst the lowest were achieved by stems and leaves extracts. *A. farnesiana* fruits had the maximum QAA with highest capacity to donate hydrogen ions. Quantitative antioxidant activity (QTAA) evaluations of MeOH and MeOH: H<sub>2</sub>O extracts by DPPH<sup>+</sup> showed the best radical protection, differing from acetone extracts which achieved lower mean values. Then, the use of different alcoholic solvent could bring dissimilar antioxidant activities. Shrubby resources are capable to be used to cover nutritional and productivity demands of goats. Higher intakes of forages containing higher antioxidant activities might help in delivering healthier animal products. Much work still to be done to clarify the implications of plant bioactive compounds on animal husbandry, as well as the potential benefits and limitations of shrubby feedstuffs.

### **Development, sensory and microbiology evaluation in goat sausages**

Puga, D.C.1, González D.G.3, Mireles M.E.2, Tuz. D.F.1, López. G.E.1, Pérez-Gil. R.F.1

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#### **Abstract / Resumen:**

The goat production in Mexico shows a technological and organization imbalance. Forty-five percent of goat meat national production is mainly located in five entities. The goat meat is an important source of nutrients. However, their use is restricted to “cabrito” or “birria”. Its technology transformation represents an option. The objective of this study was development and evaluated two kinds of sausage made from meat goat. Ten creoles male goat kids were allocated to two groups (I and II). Life body weight was  $19\pm 1.7$  and  $21\pm 1.4$  respectability life body weight). The study was carried out at  $18^{\circ} 29' 59''$  N latitude and  $100^{\circ} 02'$  y  $101^{\circ} 29'$  W longitude. The animals grazed (nine hours/day, without supplementation) on a caducifolious forest located in the region of “tierra caliente” Guerrero, Mexico. All the muscle was used in the manufacture of sausages. Sensory and microbiology evaluation were made in ham and sausage cooked of goat meat. Microbiological analysis showed that the products were free from Salmonella sp, Escherichia coli and Staphylococcus aureus. Sixty consumer panelist, detected differences ( $p < 0.05$ ) in the colour and texture, between experimental sausages and control sample (pork sausages, commercial samples most intake in Mexico). The taste and odour in the ham cooked showed the lower ( $p < 0.05$ ) value according to control ham. Results from this study revealed that an acceptable valued added the goat meat, when this were transformed to sausages. More studies are necessary to increase the acceptability.

#### **Nutritive Value of Goat Kid's Meat Reared under Low Input Production Systems in Mexico**

Puga, D.C.1, Mireles, M.E.2, Cuchillo, H.M.1, Castillo, D.R.M.1, Pérez-Gil, R.F.1

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#### **Abstract / Resumen:**

In developing countries low input farming represents a food security issue where an emergent demand of food supplies is growing as the population increases. Goats reared under tropical conditions are able to maintain reasonable outputs, even when forage availability comprises poor quality feedstuffs. Small holders from tropical regions seem to be far away to perceive the benefits of the global scale and high-value agriculture market. On the other hand, it is well documented that grazing based farming is distinguished by a superior healthy properties compared to barn feeding, where year season influences key parameters of meat quality according to temperature and relative humidity. Therefore, the present study collaborates to investigate the nutritive value of goat kid's meat reared under low input systems during two seasons to better characterize the benefits and limitations of such extensive means of production. This could build the basis to typify the quality of local meat and to identify the possible advantages and limitations of goat meat on small production scales. Variations in the weight gain and carcass yield over two periods (Summer 2007 and Winter 2009) were performed. Ten creole male goat kids ( $19\pm 1.7$ ;  $21\pm 1.4$  life body weight), were allocated to two groups set to grazing (nine hours/day) without supplementation in a caducifolious forest located

in the region of “tierra caliente” Guerrero, Mexico. The region is described as a warm subwet dry tropical climatic condition. The vegetation included *Cynodon dactylum*, *Panicum fasciculatum*, *Asistida ternipes*, *Pithecellobium acatiense*, *Prosopis leavigata*, *Cordia elaeagnoides*, *Cassia tora*, *Pithecellobium dulce*, *Acacia farneasiana*, *Malva parviflora*, *Cuphea aequipetala*, *Cassia didymobotrya*, *Ipomoea cairica*, *I. purpurea* principally. Animals were weighed bi-weekly throughout the study, slaughtered at 120 days of age. Protein, ash and moisture, total fat, fatty acid profile, total phenols, caffeic acid and catechine were determined in longissimus dorsi muscle. Lower weight gains during summer period compared to winter rates were observed. A trend towards higher final live weight could be seen in winter groups, but this was not significant ( $P < 0.05$ ). The results of carcass yields of goat kids grazing on summer were not significantly different from winter ones ( $P < 0.05$ ). As well, protein of the longissimus dorsi muscle was not affected by the seasonality. Conversely, water content was significantly affected by the grazing season; i.e., meat from goats pastured during summer had higher moisture content than winter meat ( $P < 0.05$ ). In this study was possible to detect polyphenol, caffeic acid and catechine content, all of them with proved beneficial impacts on human health. Higher means of intramuscular fat of meat produced during winter was detected ( $P < 0.05$ ). Conversely, SFA and MUFA concentrations were greater in meat from winter treatments ( $P < 0.05$ ). Moreover winter meat had a higher  $\omega$ -6: $\omega$ -3 ratio than summer meat ( $P < 0.05$ ). Daily body gain of goats kid’s reared under low input production system was influenced by the season, winter feeding resulted in a better weight daily gain rates. Meat quality produced on dry extensive tropical regions can be recognized as meat with rich PUFAS content.

#### **Breed and protocol effect on the use of melatonin implants in Mediterranean goats.**

Gatica, M.C.2,1, Guzman, J.L.1, Celi, I.1, Malpoux, B.3, Zarazaga, L.A.1

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#### **Abstract / Resumen:**

The aim of this work was to determine the effectiveness (fertility) of exogenous melatonin depends on the used breed or the used protocol. Two farms located in the same latitude at a distance of two kilometre housing Murciano-Granadina (N=534 females) or Payoya (N=535 females) goat breeds were used. Animals for each breed were distributed at random depending on the use of exogenous melatonin or not. Exogenous melatonin (Melovine®) was implanted around the spring equinox. After the implant insertion, isolation during 45 days between males and females was performed to induce a male effect. For each breed, the used protocols were: males and females implanted with melatonin, females without melatonin breed with males implanted with melatonin and females implanted with melatonin breed with males without melatonin. When both gender and only males were implanted, melatonin implant was more effective in Murciano-Granadina breed ( $P < 0.01$ ). When only females were implanted no differences between breeds were observed. The higher fertility was observed when both gender and only females were implanted with melatonin (at least,  $P < 0.05$ ) in comparison with the only buck implantation. These results demonstrate that the effectiveness of exogenous melatonin depends on the used breed and the used protocol. Supported by Grant PETRI 95-0964.OP.

#### **Photoperiodic control of luteinizing hormone secretion is influenced by nutrition in Mediterranean**

**goats. Keywords: photoperiod, nutrition, LH, goat**

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**Abstract / Resumo:**

Forty Ovariectomised and oestradiol-treated goats were distributed in a factorial 2x2 experimental design with photoperiod and nutrition as factors. Females were placed into two lightproof buildings and exposed for 1 year to alternations of 3 months of long days and 3 months of short days. One group was first exposed to long days (Group LDS, N=20) and the other one to short days (Group SLD, N=20). The does of each group were distributed into two nutrition groups that received 1.1 or 0.7 as the maintenance requirements (H, N=10 and L, N=10, respectively). Blood samples were obtained twice a week to determine LH concentrations. To establish the pulsatility of secretion of LH, three periods of intensive sampling were conducted at the onset of the seasonal anoestrous, deep seasonal anoestrous and the end of the seasonal anoestrous according to the LH profile. All groups displayed large variations in LH concentrations according to the photoperiod with a significant effect of nutrition ( $P < 0.001$ ). The LH concentrations were higher during the short days than during the long day photoperiods ( $P < 0.001$ ). The mean interval between the shift from long to short days and the stimulation of the LH secretion, and the shift from short to long days and the inhibition of the LH secretion was different between nutritional groups ( $P < 0.001$ ). The frequency of LH pulses were different between sampling periods with higher frequency of LH pulses at the end of the seasonal anoestrous or onset of the reproductive activity and the lower pulse frequency during the deep seasonal anoestrous. The frequency of LH pulses was no different between nutritional groups in each sampling period. These results show that female Mediterranean goats are sensitive to photoperiodic changes they are exposed to, and this environmental cue may control the timing of the breeding season in natural conditions, and also that nutrition plays an important role in the transduction of the photoperiodic information. Supported by Grant AGL2006-01426.

**Physical form of the forage affects the usefulness of goats as biological control of the weed**

***Hyparrhenia rufa* (Jaragua grass)**

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**Abstract / Resumo:**

Caprine herbivory has been previously evaluated as a means to control weeds and shrubs. *Hyparrhenia rufa* (HR; Jaragua grass) is an invasive weed (USDA-NRCS) that has invaded cropland in the Caribbean areas. Two trials evaluating goats as biological agents to control HR at the flowering stage were conducted. In trial one, the inclusion of HR hay at 25% of the total forage offered on the dry matter (DM) basis in combination with tropical grass hay (TGH) was evaluated using six meat-type goats assigned to one of two treatments: 100% TGH (control) and TGH mixed with HR (75:25 proportions, w/w). Forage intake was higher ( $P < 0.05$ ) (1206.1 vs 1116.0 g/d) for the control diet than the TGH:HR mixture. The 25% inclusion of HR decreased daily DM intake in relation to goat body weight from 2.66 to 2.46%. Consumption of HR hay by goats constituted only 3 % of total weed

offered and less than 1% of total forage intake. In trial two the selective consumption of HR offered as fresh foliage or hay by twelve meat type goats showed a higher selectivity and consumption of fresh HR than of the invasive weed conserved as hay. Thus the physical form affects the acceptability of HR. Consumption by goats of the weed under grazing condition needs to be studied

### **Goat milk production in tropical cultivated pasture**

Cavalcante, A.C.R. 1, Cutrim Jr.; A.A. 2, Santos, P.M. 3, Cândido, M.J.D.2, Silva, G.L. 4, Vasconcelos, E.C.G. 4, Oliveira, L.S. 1, Guimaraes,V.P. 1

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#### **Abstract / Resumo:**

Goat milk production has been identified as alternative to improve income generation of family farmers. This trial was conducted to evaluate the potential of goat milk production in pasture under different intensities of grazing management. Nubian goats were tested. Method of grazing was rotational grazing. Pasture received four managements: intensive (pos grazing residue-PGR 30cm and N supplied 600 kg/ha year); moderate (PGR 45cm and N supplied 300 kg/ha year), light (PGR 45cm without N supplied) and extensive (PGR 30cm without N supplied). Two types were most interesting. First one, light presented productivity until 4.000kg per hectare during six month with just 16 goats. This management is more interesting to farms with slow technological input. Another one, intensive got 15.000kg during same period with 76 goats. Last one should be used by farms those technological level is higher.

### **Effect of grazing management on animal behavior of dairy goats in Tanzania grass pasture**

Cavalcante, A.C.R.1, Cutrim Junior, J.A.A.2, Santos, P.M.3, Cândido, M.J.D.2, Silva, G.L.4, Vasconcelos, E.G.4, Mesquita, T.M.O.4

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#### **Abstract / Resumo:**

Nowadays, sustainable models to produce animal is a challenge when used cultivated pasture. Discovery new tools to produce forage must be associated with adequate welfare conditions to animals can be productive in pasture. The objectives of this study were to assess the behavior of goats on pasture under different grazing in Tanzania grass cultivated and irrigated pasture, during dry season. This experiment has been carried out at Embrapa Caprinos in Sobral, Ce, Brazil during dry season. Daily temperature during dry season averaged 30oC with minimum and maximum value close to 24oC and 35oC, in this order. Relative humidity averaged 53%. Daily pasture was irrigated except paddocks with goats. Nubian goats were tested. Was used a rotational grazing system. Pasture was management to get four levels of grazing: intensive (pos grazing residue-PGR 30cm and N supplied 600 kg/ha year); moderate (PGR 45cm and N supplied 300 kg/ha year), light (PGR 45cm without N supplied) and extensive (PGR 30cm without N supplied). Grazing behavior was assessed by direct observation. Goat activity in terms of time spent eating, chewing, and resting was monitored every 10

min. Activities like to urinate, to defecate, to drink other and salt intake were measured when occurred. The averages were compared using Kruskal-Wallis test ( $p < 0.05$ ). The SAS 9.0 software was used to perform the statistical proceeding. No significant differences to grazing time, rumination time and resting time were observed among treatments. The animals spent time averaged 29%, 23% and 49% with grazing, chewing and resting in this order. The frequency urinating, defecation and drink water was low to all treatments. The animals in moderate intaked more salt than other. Was observed effect of hours on main activities. Grazing was more intensive at morning (5-12hrs) and after milking (15-17hrs). A small period was observed at night (20-23hrs). Was observed rumination in all hours, but at dawn (0-5hrs) the animals spent more time with rumination than other activities. Animals spent more time to resting during night. No significant effect of treatments was observed on grazing, rumination and resting time. In conclusion, animals spent more time with grazing during morning and afternoon while rumination and resting time was mainly measured during night. These results are a typical behavior of ruminants in pasture.

### **FLUSHING: A TOOL TO IMPROVE BODY CONDITION OF DAIRY GOATS IN PASTURE.**

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#### **Abstract / Resumo:**

This trial was carried out to evaluate the effect of flushing under recovery of body condition of dairy goats in Tanzania grass (*panicum maximum* cv. Tanzania) pasture. The goats were maintained on pasture during eight hours per day in wet season. Three treatments were used to grazing management: intensive (high nitrogen - 600kg/ ha year), moderate (medium nitrogen 300Kg/ha year) and extensive (no nitrogen). The experimental design was completed randomized, with four repetitions by treatment. The amount concentrate (flushing) was 600g/head per day for all animals. The diet composition was done with 11%crude protein and 2.61 Mcal/Kg. Before flushing the body condition was 1.5, 1.6 and 1.8 to intensive, moderate and extensive management. There was improving of body condition for all treatments after flushing (intensive: 1.8; moderate: 2,5 and extensive: 2.2). Probably a short grazing time reduced the intake had been need supplementation to recovery the body condition prior to breeding season. Finally, flushing was an efficient tool to recovery body condition of goats in pasture during wet season independent grazing management used.

### **WORM CONTROL IN DAIRY GOAT ON CULTIVATE PASTURE: A CHALLENGE**

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#### **Abstract / Resumo:**

The Haemonchus parasites are main problem to goat milk production on pasture. This trial was carried

out to evaluate effects of grazing management and season under the occurrence of anemia by worms and frequency of treatments on dairy goats in Tanzania grass pasture. The method used to identify and control worms was Famacha. The grazing management was rotational. The pasture received four degrees of management: intensive, extensive, moderate and light, as a result, each one had a different rest period. The moderate and intensive had 30 and 21 rest days, while, extensive and light had 42 and 36 rest days. During one year was observed the ocular conjunctiva used a chart like guide to determine which animals to treat. The eye chart had scale of 1-5 with 1 indicating pink conjunctiva with no evidence of anemia to 5 indicating white conjunctiva with severe anemia. The animal that presented conjunctiva 3, 4 or 5 was treated. This evaluation was done once a week. During wet season, goats that received an intensive management had higher anemia. For this reason, the frequency of treatment was higher in intensive management (12 times), during wet season. While, extensive and light management was treated six times. By the other hand, during dry season most of time (85 + or - 5%) no treatment was necessary for all managements. The frequency of treatments to intensive, moderate and light was four times during dry season. The extensive management was treated just twice a dry season. From the standpoint of sustainability, milk production during wet season in pasture is not sustainable. But, during dry season were possible used mangement strategies such as rotational grazing, resting pastures to reduce frequency of treatments.

### **Successful production of Argentina's first cloned goats**

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#### **Abstract / Resumo:**

Somatic Cell Nuclear Transfer (SCNT) has been proposed as an outstanding tool for expanding the dissemination capacity of animals of extreme genetic value, as well as for the genetic "resurrection" of elite animals affected by incurable disease or that died suddenly. Moreover, frozen cell lines may become a better and safer method for international trading in animal genetics, e.g. in situations where import of semen or embryos (but not somatic cells) could be considered as a high sanitary risk. We report herein the birth of the first 2 cloned goats born in Argentina using SCNT technology. Oocytes were collected by laparoscopic ovum pick-up (LOPU) from 40 hormonally treated adult goats of the Raza Criolla breed following procedures previously described (1). Oocyte maturation, cell transfer, fusion and activation, culture and transfer to recipients were conducted following procedures previously described (2). All this work was conducted in the month of October, i.e. during the Argentinean spring which is out-of-breeding season for goats. Pregnancy was detected and monitored for the first three months by transrectal ultrasound scanning. LOPU resulted in a total of 584 follicles aspirated (14.6/goat) of which 499 oocytes (12.5/goat) were recovered for a 79.4% overall recovery rate. Following micromanipulation, 218 reconstructed embryos were selected for transfer into 21 recipients (10.4 embryos/recipient). Substantial variation was observed between the developmental capacity of the 2 cell lines used (FF1/FF2). Initial pregnancy was 4/11 (36%) for FF1 and 5/10 (50%) for FF2 at day 30; however by day 60 ultrasound scan revealed that all pregnancies from FF1 were lost and only 3 pregnancies from FF2 were still ongoing. A third pregnancy from FF2 was lost around day 90. The remaining 2 recipients were able to carry their pregnancies to term and 2 healthy cloned kids were delivered by elective C-section at the expected kidding date, in order to minimize suffering of fetuses during parturition and provide better neonatal care. The kids weighted 4.0 and 3.2 Kg at birth

and had no apparent health issues so after providing neonatology care for a few hours they were returned to their foster mothers. At the time of writing this abstract they are one month of age, healthy and growing normally (weighing 17 and 11 Kg). Our results are in agreement with previous reports suggesting that cell line may be the largest source of result variation in SCNT, in particular in the aspects of initial embryonic development, as well as pregnancy establishment and maintenance to term (2). In our study we observed a significant difference between the 2 cell lines used, with only one cell line resulting in pregnancies carried to term and kids born. To the best of our knowledge, these are the first cloned goats produced by SCNT technology in Latin America. 1. Baldassarre, H., et al. *Theriogenology* 57.1 (2002): 275-84. 2. Baldassarre, H., et al. *Cloning Stem Cells* 5.4 (2003): 279-85.

### **Morphostructural and Breeding System Characterization of Moxotó goats at the Center of Origin based on Local Knowledge**

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#### **Abstract / Resumo:**

This study aimed to characterize the breeding system and morphometry of Moxotó goats at the center of origin; record the strategies of choice in breeding livestock as well as highlighting the importance of local knowledge in the management of the genetic variability of the breed. 17 farmers were included in the study, with ages ranging from 19 to 84 years. These were divided into 3 groups according to racial type they reared. Free and semi-structured interviews were conducted to assess the breeding system and the criteria for selection of breeding animals. There were evaluated 11 morphometric measurements: longitude head (LH), longitude face (LF), head width (LW), ear size (ES), body length (BL), thoracic perimeter (TP), height withers (HW), height sacral region (HSR), pin width (PW), longitude rump (LH) and perimeter shuttle (PS) and 6 indexes: Index body (IB), Index of chest perimeter (ICP), Cephalic Index (CI), metacarpo-thoracic index (MTI), and transverse-pelvic index (TPI). There was no significant effect of locality, gender and age on these variables. The animals evaluated in this study were classified as dolichocephalic, medium shape, with legs, chest and well developed skeleton and dual-purpose (meat and milk) according to the evaluated indexes. The principal component analysis revealed the variables LH, TP, WH, BL, LW, PS, HSR, PW and LH as the most important. The study suggests culling in future studies the variables LC and LF once they have had the smallest contribution. It was observed that herds are reared under extensive and communally system. The breeders have their own criteria for selection and culling breeding animals. The racial pattern observed were consistent with the official ones.

### **Sensitivity of gastrointestinal nematodes of dairy goats with anthelmintics in the town of Passage, Paraíba, Brazil**

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**Abstract / Resumo:**

The present work had as objective to evaluate the sensibility of gastrointestinal nematodes on milking goats to anthelmintics at the local authority of Passagem, Paraíba. The enormous resistance found in different vermifuges, this evaluation has enormous economic importance for the producers and for the health of the animals. Knowing that the gastrointestinal nematodes are the mayor causes of mortality on goats and sheeps in Brazil, the sensibility to the anthelmintics will be valued through a test of reduction of eggs by gramme of feces done in the Laboratory of Parasitic Diseases of the Domestic Animals of the Academic Unity of Veterinary Medicine of the Centre of Health and Rural Technology of the Federal University of Campina Grande, Patos Campus. The results demonstrated that the Levamisol and Ivermectine were effectives on the control of the gastrointestinal nematodes of goats on seven and 14 days after treatment, the Mocidectine was effective only 14 days after treatment. Although, it was observed resistance on the group treated with Albendazole seven and 14 days after treatment.

**Use of laparoscopy as a management tool in goat farming**

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**Abstract / Resumo:**

Laparoscopic examination of internal reproductive organs of does with poor reproductive performance is a useful tool to make accurate decisions about which does to cull and which to retain. Twenty-one out of about 200 Boer cross does belonging to Nimbkar Seeds Pvt. Ltd. in Phaltan, Maharashtra State, India had a history of either repeat breeding or long anoestrus. They had not kidded for 1 to 2 years and some had never kidded. Their internal reproductive organs (ovaries, fallopian tubes and uterus) were examined with a laparoscope (Karl Storz<sup>TM</sup>). The does were deprived of feed and water for 12 hours before laparoscopy. For laparoscopy, the doe was restrained in a specially designed cradle. Xylocaine hydrochloride was used as a local anaesthetic. Double puncture laparoscopy was performed. The abdomen was inflated. The reproductive organs were viewed through a telescopic lens and observations were recorded. Nine does had abnormalities such as ovarian or uterine hypoplasia, inactive, small and abnormal shaped ovaries or ovarian and bursal adhesions. These conditions either have no treatment or the treatment is very costly. Therefore, they were culled. Three does had permanent corpora lutea on their ovaries. They were each given one intramuscular injection (5 ml) of Dinoprost Tromethamine (Lutalyse<sup>TM</sup>, Pfizer). They responded to this treatment, exhibited oestrus and conceived. Three does had ovaries that were inactive but of normal size and shape, one doe had a flaccid uterus and one doe had two small size (less than 2 millimeter diameter) corpora lutea on its left ovary. These five does were given a commercially available mineral mixture supplement at about 5 gm per day. All five does responded to treatment and conceived. Two does with small follicles on their ovaries, one doe with an inactive ovary of normal size and shape and one doe with an atonic uterus are being given the same mineral mixture supplement at about 5 gm per day and are under observation. Thus at least 38% of does with reproductive problems could be successfully treated and brought back into production with the use of laparoscopy combined with the skill and intuition, born of experience, of the operator resulting in correct interpretation and treatment. It also allowed saving of expenditure on the feeding of does which were found to have irredeemable abnormalities.

## **Goat rearing in two Indian villages: a low-input occupation to boost incomes and nutrition**

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### **Abstract / Resumo:**

The Osmanabadi goat field unit of the All India Coordinated Research Project on Goat Improvement of the Indian Council of Agricultural Research was started at the Nimbkar Agricultural Research Institute (NARI) in 2009. The objectives of this project are to assess the production performance of goat breeds in village flocks and improve them through selection, to evaluate the economics of goat production, to disseminate pro-poor goat based technologies and evaluate their impact on goat production. A survey of the socio-economic status and goat management practices of goat keepers of Bibi and Wadgaon villages, 20 km from Phaltan town, in Satara District of Maharashtra State was carried out in September-October 2009 with a specially designed questionnaire. Phenotypic characteristics and body measurements of their goats were recorded after individual identification of all adult does with ear tags. All does are being performance recorded. New born kids are ear tagged after two months of age. Does and kids were vaccinated by NARI against enterotoxaemia, haemorrhagic septicaemia and PPR, dewormed once at the end of the monsoon and sprayed against ectoparasites. Thirty-four percent of the 88 goat keepers owned only 1 or 2 does and another 41% had 3 to 5 does. Only 6% goat keepers had 10 to 20 does and 7% had more than 20 does. Out of total 304 adult does, 176 (58%) kidded between October and December 2009 and 56 (19%) kidded between January and March 2010. Forty-one does (13%) are expected to kid in June and 30 (10%) in August 2010. The average litter size was 1.5 (343/232). Milk production of does varied from 200 to 1685 ml on 1-30 days after kidding; 195 to 1260 ml on 30-60 days after kidding and 90 to 1500 ml on 60-90 days after kidding. Most goat keepers relied almost entirely on available natural grazing on their own land or on common lands for the sustenance of their goats. About half of the goat keepers fed grain grown by them to their goats and/or kids for about 100 days and their average expenditure per kidded doe was Rs.189. Out of 343 kids, 10 were sold at the age of <3 months (average weight 8.4 kg and price Rs.775), 84 at the age of 3 to 6 months (average weight 11.6 kg and price Rs.1351) and 38 at the age of 6 to 12 months (average weight 14.1 kg and price Rs.1494). Twenty-six percent of the kids were sold to butchers resident in the villages and 75% in livestock markets nearby. Osmanabadi goats were found to be able to produce and reproduce without much supplementary feeding. There was substantial variation in weights of kids and milk production of does. Thus there appears to be a potential for selection which should be exploited systematically.

## **Cloning and Sequence Analysis of Hormone-sensitive Lipase (HSL) Gene in Xinong Saanen Dairy Goats**

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### **Abstract / Resumo:**

Mammary glands are not only one of the tissues in the body with the highest lipid content, but also one of the most active metabolic tissues in the body during pregnancy and lactation (Lopez-Luna et

al., 1991). The product of lipid metabolism in rat mammary gland adipocytes is an important source of both calories and essential fatty acids for newborn and drinker (Martin-Hidalgo et al., 2005). During lactation, a woman could secrete 800 mL of milk per day, about 32 g milk lipid, with the main components is triglycerides (TGs) and some fatty acids (FAs), the lactating mouse mammary gland secretes 5 mL of milk per day with 30% lipid (Rudolph et al., 2003), which suggest that mammary glands have the ability to produce a remarkable amount of lipid. Hormone-sensitive lipase (HSL), originally described in the early 1960s, was regarded as the key enzyme releasing the first and the second FAs from TGs, and it also exhibited substrate specificity capable of hydrolyzing diacylglycerol (DG) and monoacylglycerol (MG), cholesterylester, retinylester, and numerous water soluble esters (Kraemer et al., 2006). HSL is an intracellular neutral lipase found in a variety of tissues (Kraemer, et al., 1993), and was manifested existing in cytoplasm of both alveolar epithelial cells and adipocytes of rat mammary gland. Studies have shown that HSL is closely related with milk lipid synthesis and metabolism. Although studies have shown that the presence of HSL activity in mammary glands of lactating rats (Tavares do Carmo et al., 1996) and the mRNA of it is also existed in human and bovine mammary glands (Yonezawa et al., 2008), the function and sequence of HSL gene in goat mammary gland is unknown, therefore, to attain the goat HSL sequence and prepare for further function research in milk lipid synthesis of mammary gland, we isolated and cloned the whole cDNA of the HSL gene of Xinong Saanen Dairy goat with the methods of RT-PCR (reverse transcription PCR) and RACE (rapid amplification cDNA ends), and conducted the structure analysis and function prediction using bioinformatics software.

### **Identification of a missense polymorphism at the caprine melanocortin receptor 1 that segregates specifically in Canarian goats**

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#### **Abstract / Resumo:**

Abstract Melanocortin receptor1 (MC1R) plays a key role in mammalian hair pigmentation by modulating the synthesis of eumelanin (black pigment) and phaeomelanin (associated with a red or yellow color). Herewith, we have sequenced the whole coding region of the goat MC1R gene in a wide array of goat breeds. This approach has allowed us to identify seven single nucleotide polymorphisms (SNP): one synonymous, one non-sense and five non-synonymous (Ala81Val, Lys226Glu, Val249Phe, Gly255Asp and Cys267Trp). Amongst these SNP, polymorphism Gly255Asp (produced by a G to A substitution) had not been previously described in any goat breed and in silico analyses with Panther and Polyphen predicted that this mutation might be deleterious (Polyphen PSIC score: 1.781, classified as probably damaging; Panther: subPSEC = -6, probability of being deleterious = 0.95). This polymorphism has been typed with a Sequenom MassARRAY iPLEX platform in about 575 goats from the Iberian Peninsula (Murciano-Granadina and Malagueña breeds), Canary Islands (Majorera, Palmera and Tinerfeña), Italy (Girgentana, Cilentana Nera, Garganica, Derivata di Siria and Jonica), Morocco and Tunisia (local breeds); Switzerland (Saanen) and Asia (Cashmere). Our data show that G-allele is fixed in most populations, with the only exception of the Canarian Palmera breed where the

A-allele is fixed. This variant might be considered a specific marker for this breed and it could be used for identification purposes.

### **Comparative morphologic characterization of the tissular components of the mammary gland in Majorera, Palmera and Tinerfeña dairy goats: preliminary results**

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#### **Abstract / Resumen:**

The tissular components of the mammary gland and, in particular correct values of secretor and connective tissues are important items to be evaluated in a healthy mammary parenchyma. By means a random sampling in the body of the udder of 9 goats belonging to the three Canary Island (Spain) breeds (Majorera, Palmera and Tinerfeña) was made one study of the secretor, canalicular, connective and vascular tissular components. These mammary glands were milked once a day (left gland) or twice a day (right gland) during six weeks in middle lactation. Two biopsy samples of each gland were taken at the dorsal and middle levels of the glandular parenchyma. They were histological processed and then analyzed by a morphometric software. The values of the different tissular components (secretor, canalicular, connective and vascular) were obtained for each breed: Majorera (49.18% secretor tissue, 1.7% canalicular tissue, 48.57% connective tissue, 0.53% vascular tissue), Palmera (43.49% secretor tissue, 2.23% canalicular tissue, 57.85% connective tissue, 0.71% vascular tissue) and Tinerfeña (42% secretor tissue, 1.87% canalicular tissue, 55.52% connective tissue, 0.71% vascular tissue). No significant differences were found as regards the milking frequency. The obtained values joined to other parameters relative to the milking will allow to determine results related to the productivity of these breeds. New studies in a next future will allow to confirm the results obtained in a major number of animals.

### **Evolution of the breeding program of the Murciano-Granadina dairy goat breed**

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#### **Abstract / Resumen:**

Alter ten years of work in the breeding program of the Murciano-Granadina goat breed developed by CAPRIGRAN Breeders Association, it is time to make a survey of its evolution. In 2000 we count with a database of more than 50000 lactations of 14526 goats distributed in more than 80 farms. It was theoretically a very good base to work, but after a deep auditory we detect a lot of defects in the database, mainly distributed in three main subjects: genealogy, connectivity, quality of the records. At this moment we had to take a hard decision what was the discarding of all the historical database with inter-herd breeding purposes (they were used in intra-hard calculation of dam selection index) and start from zero, developing a routine for the genealogical control by mean of microsatellite markers; improving the collection and management of the recording information and advancing in the use of the artificial insemination in the herds genetic connection. A previous step was the establishment of a

selection nucleus with those farms with the best degree of participative attitude, and technological development. In this foundational nucleolus 37 herds were introduced. Was in 2008 when we could present the first sire catalogue using breeding values obtained with a BLUP sire model, based in a data set of 930 lactations of 410 goats of 12 herds. It permits us to present four top sires exceptional with breeding values for milk, fat and protein production in lactations of 210 days. It was a good stimulus for our farmer and their comprehension of the necessity of a professional collection of data. At 2009 the breeding program count with 1550 lactations from 1192 goats in 37 herds, the pedigree file count with 1889 animals, with 741 founders. It supposes an increasing of more than 40% in the information and goats but more extensive in connected herds. We have to stand out that the connectivity of these herds is perfect (artificial insemination), all the genealogy sires and dams are checked with DNA markers, and all the recording is perfectly supervised. Summarising we could say that our data set shows the best quality. Maintaining these good conditions we count in 2010 with an increasing of more than 60% in the information, even when the year is still in course. Further advances introduced in 2010 is the marker assisted selection using the casein locus information, specially the two markers with relevance in protein production (qualitative and quantitative), Kapa-caseína and  $\alpha$  S1 caseine. Also we are introducing in the breeding program the routine of linear assessment collection of data. The present paper presents the technical details of the evolution in terms of genetic parameters, breeding values and precisions, standing out the challenges for the future.

### **Conservation Program of the Pitiüsa or Ibizan Goat. Current status**

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### **Abstract / Resumen:**

Pitiüsa or Ibizan goat breed is, certainly, one of the most endangered goat breeds in the world. A small number of females are still available for breeding; anyway its small census in purity (147 individuals) proposes the breed as extremely endangered. A scientific and technical collaboration agreement has been signed between the Institute of Animal Biology of the Balearic Islands and the Department of Genetics of the University of Córdoba, with a view to develop a genetic conservation program including intense in situ and ex situ actions. The objectives are the control of the average inbreeding rate per generation and the cryopreservation of genetic material to ensure the survival of the breed at long term and preventing any disaster due to its geographic concentration. Today we are working on a program of mating and a gene bank with 324 doses of semen from three Ibiza goat stallions. In this paper we are describing in detail the development and management of the program, mentioning the challenges for the near future.

### **Germplasm bank of the Granadina goat population**

Cortéz, S.<sup>1</sup>, Herrera, J.<sup>2</sup>, Delgado, J.V.<sup>1</sup>, Pleguezuelos, J.<sup>4</sup>, M.E. Camacho Vallejo<sup>3</sup>, Miró-Arias M.<sup>1</sup>, A. Vallecillo<sup>1</sup>  
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### **Abstract / Resumo:**

A decision of the Spanish Ministry of Agriculture took in the seventies promoted the genetic management of two ancestral Spanish goat breeds into a single her book. Such decision along four decades has produced some genetic effect in the population structure of these genetic resources. Molecular studied of our team has demonstrated the present existence of three different varieties inside the Murciano-Granadina goat breed. Two of them are in expansion because their good adaptation to the present tendencies of intensive production, they are the Murciana and the crosses at different level Murciano-Granadina. While the old Granadina breed, considered today as a variety, is in extreme danger of extinction. The breeders' association CAPRIGRAN is stimulating several actions to ensure the survival of the old Granadina. Mainly, its official recognition and the development of its germplasm bank as ex situ guarantee saving. In the present paper we describe the management of this bank formed today for 2000 doses from 8 sires, selected by their individual molecular genetics profile adjusted to the Granadina population profile using techniques of individual assignment to populations.

### **Effects of calcium chloride injection on tenderness and flavor of chevon cuts**

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### **Abstract / Resumo:**

Calcium chloride (CaCl<sub>2</sub>) injection into meat cuts has been shown to improve tenderness by increasing the calpain proteolytic activity. The objective of this study was to determine the effect of CaCl<sub>2</sub> injection on the palatability of chevon (goat meat) from two breeds of goats. Primal leg cuts from 8-month-old Kiko x Spanish (n = 16) and Boer x Spanish (n = 16) bucks were allotted to one of four treatments (n = 16 leg cuts/treatment): control (no injection), water injection, CaCl<sub>2</sub> (food grade, 2.2% w/v) injection, or CaCl<sub>2</sub> plus spice mix (commercial beef roast seasoning) injection. The injection was made at 24 h postmortem using a ten-needle automatic injector to give a 5% pump. Immediately after injection, 2.5-cm thick steaks were cut, vacuum packed and frozen (-20°C) until analysis. The CaCl<sub>2</sub> (with or without spice mix) injected steaks had lower (P < 0.05) Warner-Bratzler shear force values of 4.2 kg compared with water injected or control steaks (6.4 and 5.8 kg). Sensory analysis by an eight-member trained panel showed that CaCl<sub>2</sub> injection increased tenderness, juiciness, and flavor in chevon steaks. Analysis of cooked meat volatile flavor compounds by solid phase microextraction (SPME) revealed 11 aldehydes, 6 ketones, and 10 alkanes in the leg steaks, although only two volatiles were different among treatments. The results indicate that CaCl<sub>2</sub> plus spice mix injection can be applied to improve tenderness of chevon without detrimental effects on other sensory characteristics.

### **Dairy Goat Breeding Program: a Brazilian experience**

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**Abstract / Resumo:**

In 2005, the Brazilian Agricultural Research Corporation (EMBRAPA), started the Dairy Goat Breeding Program. The program aimed to structure the dairy goat national databank and conduct the progeny tests for the main dairy breeds raised in the country. Data information comes from two progeny test and Official Dairy Control Tests. The objective of the progeny test is to evaluate young bucks of Saanen, Anglo-Nubian and French Alpine breeds. After a series of initial difficulties, like financial limitations, lack of organization and operational difficulties, the program was reformulated and is now beginning the 2nd group of the progeny test and expanding the number of participating herds. With the support of the Brazilian Ministry of Agriculture, Livestock and Food Supply (MAPA 703412/2009), Goat and Sheep Breeders Association of the state of Minas Gerais (Caprileite / ACCOMIG) and EMBRAPA Goats and Sheep, the Official Dairy Control Test has been carried out. The databank file was structured and is being filled with monthly data from official milk record from 16 herds located in Minas Gerais, Rio de Janeiro, Espírito Santo and São Paulo states, Brazil. Recently, more four herds from Bahia state joined to the program. The information collected refers to animal identification, reproduction and milk production. Standardized zootechnical recording sheets are been used to collect these data. The field data is stored in the databank through the Herd Management System of the Dairy Goat Breeding Program. This system consists of software that was developed in PHP/HTML/Javascript with access to a PostgreSQL database. The system has restricted access through internet (<http://srvgen.cnpq.embrapa.br/leite/index.php>) and each breeder has their own login and password to access zootechnical reports. Altogether, the databank has, at this moment, 6,372 daily milk control records. It represents an increase of 86% of the databank in a year of work, showing that the program is growing. The databank contains records of production of 860 Saanen and Alpine goats in 1,129 lactations. Of these, 648 lactations have been ended with averages of total milk yield in a lactation, milk yield in 305 days of lactation, duration of lactation and average daily yield of 760.6 kilograms, 689.09 kilograms, 275.76 days and 2.68 kilograms/day, respectively. These results are compatible with the more commons production systems in the southeast region, where the goats are raised under good conditions of health and nutritional management. Conducting a program like this involves an ongoing effort to aggregate the breeders, seek financial resources, minimize costs and improve the processes.

**Forage Preference and Activity of Goats Grazing Alfalfa and Rhizoma Peanut Plots**

T. H. Terrill, Ph. D., S. Gelaye Ph. D., B. Kouakou, Ph. D., S. Miller, E. A. Amoah, Ph. D., G. Kannan, Ph. D.  
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**Abstract / Resumo:**

Rhizoma peanut (*Arachis glabrata* Benth.) and alfalfa (*Medicago sativa* L.) are high-quality legume forages used in grazing production systems in the lower southern United States, but little information on grazing behavior and preference of goats for these forages is available. A study was conducted with twelve mature goat bucks grazing well-established (6 years) alfalfa and rhizoma peanut pastures for 3 days in July and October. Identification numbers were spray-painted on the flanks of each animal and grazing activities monitored with binoculars daily from 7-10 AM, Noon-2 PM, and 4-7 PM during both

grazing periods. Position of individual animals on the plots was recorded every 5 min during these times. Pre- and Post-grazing yield and botanical composition samples were taken in each plot, with forage subsamples analyzed for quality parameters. There was no difference in forage preference during the summer grazing period, but the goats showed a strong preference during the autumn grazing, spending 64.1% of their grazing time on rhizoma peanut plots compared to 35.9% for alfalfa. This difference appeared to be related to available non-weed pasture DM, as there were no treatment differences in forage DM on offer during the summer trial, but available rhizoma peanut tended to be higher ( $P < 0.10$ ) than that of alfalfa during the autumn trial. Goats were very selective when grazing alfalfa plots, preferring alfalfa leaf over stem material. There was no difference in quality of pre- and post-grazed rhizoma peanut forage, which indicates less selective grazing by goats on these plots. Overall, the goats displayed a natural rotational grazing pattern, averaging only 10-15 min on any individual plot.

### **Forage Preference and Activity of Goats Grazing Alfalfa and Rhizoma Peanut Plots in the Southern USA**

Ph.D., Ph.D., Ph.D., MS, Ph.D., Ph.D.

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#### **Abstract / Resumo:**

Rhizoma peanut (*Arachis glabrata* Benth.) and alfalfa (*Medicago sativa* L.) are high-quality legume forages used in grazing production systems in the lower southern United States, but little information on grazing behavior and preference of goats for these forages is available. A study was conducted with twelve mature goat bucks grazing well-established (6 years) alfalfa and rhizoma peanut pastures for 3 days in July and October. Identification numbers were spray-painted on the flanks of each animal and grazing activities monitored with binoculars daily from 7-10 AM, Noon-2 PM, and 4-7 PM during both grazing periods. Position of individual animals on the plots was recorded every 5 min during these times. Pre- and Post-grazing yield and botanical composition samples were taken in each plot, with forage subsamples analyzed for quality parameters. There was no difference in forage preference during the summer grazing period, but the goats showed a strong preference during the autumn grazing, spending 64.1% of their grazing time on rhizoma peanut plots compared to 35.9% for alfalfa. This difference appeared to be related to available non-weed pasture DM, as there were no treatment differences in forage DM on offer during the summer trial, but available rhizoma peanut was higher ( $P < 0.05$ ) than that of alfalfa during the autumn trial. Goats were very selective when grazing alfalfa plots, preferring alfalfa leaf over stem material. There was no difference in quality of pre- and post-grazed rhizoma peanut forage, which indicates less selective grazing by goats on these plots. Overall, the goats displayed a natural rotational grazing pattern, averaging only 10-15 min on any individual plot.

### **Milk Production and Composition of Late-Lactation Dairy Does fed Alternative Legume Forages as Compared with Alfalfa**

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**Abstract / Resumo:**

Alfalfa (*Medicago sativa* L.) is the most widely used legume forage in the dairy industry. Production costs for this legume are high in the southeastern United States due to inputs necessary for growth or expenses for trucking in from other regions. Rhizoma peanut (*Arachis glabrata* Benth.) and sericea lespedeza [*Lespedeza cuneata* (Dum-Cours.) G. Don.] both grow in this region with fewer inputs than alfalfa. Two studies were performed to assess the value of rhizoma peanut and sericea lespedeza as viable alternatives to alfalfa in the diet of late-lactation dairy goats. One study was performed at the Georgia Small Ruminant Research and Extension Center at Fort Valley State University in central Georgia, and the other on a dairy goat farm about 40 miles east of Atlanta, Georgia. Both studies included twelve late lactation Alpine or Saanen does fed pelleted complete mixed rations ad libitum. Each ration contained 50% of either alfalfa, rhizoma peanut, or sericea lespedeza ground hay and was balanced for protein and energy. Groups of goats were rotated through the three diets in a diet x time Latin Square. Each group was given ten days to adjust to the new feed, and then milk samples were collected and milk weights recorded at all milkings for a period of not less than two days and not more than four days for each rotation. Samples were analyzed for fat, protein, lactose, and total solids. Statistical analysis using the mixed procedure of SAS (including covariate analysis) was performed. In the first study, there were no significant differences found in production, fat, protein, lactose, or total solids. In the second study there was no significant difference in production, lactose, or total solids, but there were significant ( $P < 0.05$ ) differences in milk fat between does fed alfalfa and sericea lespedeza and milk protein between rhizoma peanut and sericea lespedeza groups. The results of this study indicate that rhizoma peanut and sericea lespedeza hold promise as alternatives to alfalfa in a complete dairy goat ration.

**Radical and Unilateral Mastectomy as Treatment of Choice for Gangrenous Mastitis in Goats**

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**Abstract / Resumo:**

The growth of dairy goat farming in the Northeast of Brazil, an activity that represents not only the mainstay of the local economy, but also a source of food and a therapeutic resource that could be better utilized, has aroused the interest of researchers in many respects. Gangrenous mastitis is the most severe form of mastitis, causing partial or total loss of the udder or even resulting in the death of the animals. In order to evaluate radical and unilateral mastectomy as surgical procedures of choice in the treatment of the gangrenous mastitis, we used four goats that had the disease and which had been raised in the dry rural area of the state of Pernambuco – Brazil. For the radical mastectomy we proceeded with a wide elliptic incision, exposing the glandular tissue. For the unilateral mastectomy, we proceeded with a uniform incision pattern by the inter-mammary septum. We collected swabs with the secretion of the central part of the parenchyma of the mammary gland affected by the gangrenous mastitis. In the samples we were able to isolate 1/4 (25%) *Corynebacterium* sp. , 1/4 (25%) coagulase-negative *Staphylococcus* , 1/4 (25%) *Enterococcus faecalis* and 1/4 (25%) *Staphylococcus* sp. combined with *Corynebacterium* sp. , all sensitive to enrofloxacin. We had a frequency of 2/4 (50%) for *Corynebacterium* sp. among the isolated microorganisms. We expect this work to serve as a tool for the enhancement and preservation of herds of animals, and also for

reducing public health risks. We also understand that the adoption of low cost practical measures that can reduce medication and medical assistance costs, loss of milk and loss of animals is an urgent need and will make producers life an easier one.

### **Relationship of SCC and their structures to the presence of pathogens in goat mammary gland**

Bagnicka E1, Winnicka, A2, JóŹwik, A1, Rzdewuska, M.2, Strza<sup>3</sup>kowska, N.1, Prusak, B.1, Koœciuczuk, E.1, Kaba, J.2

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#### **Abstract / Resumo:**

Milk samples (altogether 487) of 66 Polish White and Coloured Improved goats were taken from separate udder halves, three times during lactation (beginning, peak, the end of lactation) for three years. Total SCC and their structure and presence of pathogens were established. CNS was isolated from 9%, while the major pathogens from 12% milk samples. CNS did not influence total SCC. Presence of major pathogens caused increase of total SCC. Both per cent of leucocytes in total SCC and per cent of leucocytes of each fraction (except from lymphocytes) in total SCC were the highest in milk samples containing major pathogens.

### **Impact of SCC and pathogens in goat milk on cheese yield and quality**

Strza<sup>3</sup>kowska, N.1, Bagnicka, E.1, Rzewuska, M.2, JóŹwik, A.1, Kosciuczuk, E.1, Winnicka, A.2, Horbanczuk, J.1, Krzyzewski, J.1

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#### **Abstract / Resumo:**

Altogether 481 milk samples of 60 Polish White and Coloured Improved goats were taken from separate udder halves, three times during lactation (beginning, peak, the end of lactation) for three years. Total somatic cell number and their structure and presence of pathogens were established. The technological parameters and constitute contents were also investigated. The dry matter of cheese and quality of casein curd in fermentation and fermentation-rennet tests did not depend on the presence of pathogens. Also high somatic cell number in milk from healthy udders did not influence usefulness of milk to cheese making. Highest casein content was in milk without pathogens.

### **First detection of caprine herpesvirus type 1 (CpHV-1) infection in goats in Poland**

Czopowicz, M.1, Kaba, J.1, Szalus-Jordanow, O.1, Nowicki, M.1, Witkowski, L.1, Frymus, T.1, Bagnicka, E.2

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#### **Abstract / Resumo:**

Serological survey was carried out in 2007 in order to check whether population of goats covered by a milk recording program in Poland is infected with caprine herpesvirus type 1 (CpHV-1). To achieve this

aim all 48 herds covered by the milk recording program at the time the survey has been conducted were screened. The herds counted from 12 to 450 adult does (> 1 year-old). Expected within-herd seroprevalence was assumed to be 10%. The size of a sample taken from each herd was determined on the basis of the number of adult females in each herd and calculated according to the formula commonly applied in veterinary epidemiology, so that detection of at least one seropositive goat was possible on the level of confidence of 95%. The goats in each herd were selected in a simple random way. Finally, from 12 to 28 goats from each herd were involved in the study giving a total number of 918 blood samples. Blood was collected to dry tubes and after centrifugation, serum samples were stored at -20°C until testing. Epidemiological questionnaires were carried out in herds as a part of each survey. Data from previous five years concerning abortions and conception failures as well as respiratory and alimentary disease signs in kids were collected according to the farmers' reports. For the needs of statistical analysis goat herds were classified into three categories: small – up to 50 females, medium – 51 – 100 and large – over 100 does. The sera were examined using a commercial indirect immunoenzymatic tests (ELISA) – Pourquier® ELISA IBR-IPV Serum&Milk (Institut Pourquier). Positive sera were subsequently screened with competitive immunoenzymatic tests capable of detecting specific antibodies directed against glykoprotein E: HerdChek IBR gE Antibody ELISA (IDEXX). No sera reacted positively in ELISA directed against glykoprotein E what allowed to conclude that all goats positive in the study were infected with CpHV-1. Herd-level prevalence for CpHV-1 was 35,4% (17 out of 48 herds). The antibodies to CpHV-1 were detected in small, medium and large herds and the herd-level prevalence was 28%, 24% and 67%, respectively. It is the first time when CpHV-1 infection has been described in Poland. CpHV-1 is considered as an important cause of abortions and neonatal mortality in goats as well as infectious pustular vulvovaginitis in does and balanoposthitis in bucks. The virus is also capable of producing a generalized infection in kids and contributes to the development of respiratory tract diseases as well as enteritis. Analysis of data with logistic regression revealed statistically significant ( $P \leq 0.05$ ) relationship between the presence of CpHV-1 infection and diarrheas in kids (0,027). No such relationship could be found for abortions, conception failures and respiratory disease signs in kids.

### **Infection with *Toxoplasma gondii* is widespread in goat population in Poland**

Czopowicz, M.1, Kaba, J.1, Szalus-Jordanow, O.1, Nowicki, M.1, Witkowski, L.1, Frymus, T.1, Bagnicka, E.2

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#### **Abstract / Resumo:**

Serological survey was carried out in 2007 in order to determine herd-level prevalence of *Toxoplasma gondii* infection in population of goats covered by a milk recording program in Poland. To achieve this aim all 48 herds covered by the milk recording program at the time the survey has been conducted were screened. The herds counted from 12 to 450 adult does (> 1 year-old). Expected within-herd seroprevalence was assumed to be 25%. The size of a sample taken from each herd was determined on the basis of the number of adult females in each herd and calculated according to the formula commonly applied in veterinary epidemiology, so that detection of at least one seropositive goat was possible on the level of confidence of 95%. The goats in each herd were selected in a simple random way. Finally, from 8 to 15 goats from each herd were involved in the study giving a total number of 502 blood samples. Blood was collected to dry 10 ml volume tubes and kept for 24 hours at room

temperature. After centrifugation, serum samples were stored at -20°C until testing. Epidemiological questionnaires were carried out in herds as a part of each survey. Data from previous five years concerning abortions were collected according to the information given by the farmers. The sera were examined using a commercial immunoenzymatic tests (ELISA) – Checkit Toxotest (IDEXX). Seropositive animals were detected in 44 out of 48 herds so herd-level prevalence for *T. gondii* was 91,6%. It is to be concluded that the vast majority of goats in Poland is infected with *T. gondii*. While the infection is always asymptomatic in non-pregnant goats, it is considered as very important cause of abortions. However, analysis of data with logistic regression revealed no statistically significant relationship ( $P \leq 0.05$ ) between the presence *T. gondii* infection and occurrence of abortions in goat herds.

### **The Woman Involvement at Goats Milk Culture in Arcoverde-PE**

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#### **Abstract / Resumo:**

This role this work the importance of the involvement from woman on the activities related on the goat milkmaid culture of Ipojuca – Arcoverde PE. THE goat culture that's a activity what she presents big importance about to acquaintance of the man into the semi - arid ortheastern, as allow the production of meat, milk and hide, products considerate nobles. As importance is highlighted at fact from region she presents about 93% of the effective goat of the country. The Ipojuca is situated into the Arid of Pernambuco minor region of the Moxotó, one of the areas with minor index of development human of the country, where exists some thirty producers of goat's milk. While the activity he may be considerate traditional for community, again coping diverse problems related the handling productive and sanitary of the flock, this grieved were developed actions about to sustentability from goat milk culture and improvement from the conditions of handling from the animals. The activities consist in visitors monthly about to realization of activities and practices in a community. During the realization from the actions observer, while the activity he may be considerate familiar considerate strictly of the men, being the participation of the woman little expressive. Such participation feminine was encourage in the actions, being facilities by presence marking of women on staff of execution of the project. After the conclusion from the activities proposals the project, were applied questionnaires joined the producers, where the dice affirm the participation from woman on activity step the be effective (100%), being what in approximately (85%) the properties her step developing activities related the handling from the animals, principally into the handling from the breed and clean from the installations, contributory such about to improvement from the conditions of creation and the results obtained with the realization from the actions.

### **Genetic variability of a Creole goats population in Formosa (Argentina)**

Revidatti, M.A.1, Ribeiro, M.N4, Martínez, M.A.3, Prieto, P.N.1, De La Rosa, S.A.2,1, Rocha, L.4, Delgado, J.V.3, Escalante, F.1

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**Abstract / Resumen:**

With the objective of determinate the Genetic variability of a Creole goats population in Formosa western (Argentina), hair samples from 45 animals belonging to this population have been obtained. A set of 23 polymorphic genetic markers (BM 1329, BM 6506, BM 8125, BM1818, SRD247, HSC, MM12, FCB48, SRCRSP8, INRA 63, MAF209 , ILSTS 011 , SPS115 , TGLA 122 , BM6526 , CSRM60 , CSSM66, McM527, FCB11, FCB304, MAF65, ETH 225, ETH10 ), were used to reach that objective. The average number of alleles by locus was 7,2; the mean Polymorphic Information Content, 0,715; average expected heterozygosity, 0,747; average observed heterozygosity, 0,624, 9 loci were not in HWE ( $P < 0.05$ ), and Fis, 0,147\*\*\*. These results show high levels of genetic variability. Microsatellites out of HWE were mostly the result of lower than expected heterozygosity (in 21 of the 23 loci) and the variability within the population estimated by Fis showed a deficit of heterozygotes.

**Performance and carcass yield of goat kids in semiarid zone of the Formosa Province (Argentina)**

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**Abstract / Resumen:**

With the objectives of evaluate the comparative advantages and disadvantages of using exotic goat breeds on local AnGR of Formosa, a research was carried out The study included 62 individuals with an average age of 4 months of the Boer breed (B) (n = 27), Anglo Nubian (AN) (n = 12) and Creole (Cr) (n = 23) which were slaughtered after a fattening period of 43 days during which all animals were kept in the same pasture receiving the same daily ration of 0,500 kg of a concentrated with 16% of CP. The average daily gain (ADG) was assessed and carcass yield was calculated as a percentage of the live body weights at slaughter (BW). Statistical analysis were done by ANCOVA, in a Factorial Analysis which included the main effects: sex (male: M and female: F) and genetic group (B, AN, Cr) using initial weight of the supplementation for ADG and (BW) for carcass yield as covariates respectively. Only FW and BW showed a significant effect, with no differences in the main effects of the independent variables. The estimated LSMeans and E.E. for ADG and carcass yield were: B-M = 0,068 g  $\pm$  0,01 and 40,6%  $\pm$  1,12, B-F = 0,017  $\pm$  0,01 g and 41,3%  $\pm$  1,88; AN-M = 0,062 g  $\pm$  0,01 and 43,4%  $\pm$  1,49, AN-F = 0,064  $\pm$  0,04 g and 43,7%  $\pm$  4,9, Cr-M = 0,039 g  $\pm$  0,01 and 40,1%  $\pm$  1,09, Cr-F = 0,050 g  $\pm$  0,03 and 46,2%  $\pm$  3,47. Under conditions in which the experience took place there are no advantages of exotic breeds Boer and Anglo Nubian on the Creole adapted to arid environment of the region to improve ADG or carcass yield.

**Factors influencing birth weight and weight gain after 90 days in goats kids in semiarid region of Formosa (Argentina)**

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### **Abstract / Resumo:**

With the aim of evaluate the effect of the breed, kidding type (simple and multiple), sex (male and female) and year (2007, 2008,2009) on birth weight (BW) and average daily gain (ADG) of weight after 90 days, 338 animals were studied in the Provincial Goat Farm (CEDEVA-) of Formosa, Argentina. The breeds and crossbreeding animals were: Boer (B), Anglo Nubian (AN), Creole (C),  $\frac{3}{4}$  Boer ( $\frac{3}{4}$ BC),  $\frac{3}{4}$  Anglo Nubian ( $\frac{3}{4}$ ANC). The results of the descriptive statistics (Means, S.D.), for the whole population, were: BW: (n=338) 2,83kg  $\pm$  0,72, and ADG :( n=250) 0,07kg  $\pm$  0,03. ANOVA and post hoc Tuckey analysis using four variation sources (breed, kidding type, sex and year and their interactions) were done to compare LSMeans. Significant differences were found for the four main effects on the two dependent variables, which were favorable to simple kidding type, year 2009 and sex male. B and  $\frac{3}{4}$ BC outperformed the Creole and AN and  $\frac{3}{4}$ ANC showed intermediate values. The estimated LSMeans and E.E. were: BW: B (n = 62) 2,98kg  $\pm$  0,08; AN (n = 85) 2,86kg  $\pm$  0,07; C (n = 65) 2,48 kg  $\pm$  0,09;  $\frac{3}{4}$ BC (n = 52) 3,09kg  $\pm$  0,10;  $\frac{3}{4}$ ANC (n = 74) 2,85kg  $\pm$  0,08 and for ADG were: B (n= 43) 0,07g  $\pm$  0,004; AN (n= 62) 0,08  $\pm$  0,003; C (n= 49) 0,06  $\pm$  0,003;  $\frac{3}{4}$ BC (n= 41) 0,07  $\pm$  0,004;  $\frac{3}{4}$ ANC (n= 55) 0,07  $\pm$  0,003. Although Boer and his crosses had a major BW, in subsequent ADG outperforms Anglo Nubian and sex, kidding type and year effects took part in animals' performance.

### **Recovery and Germination of Leguminous seeds ingested by Goats**

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### **Abstract / Resumo:**

This work was carried out with the objective of evaluating the germination of *Pueraria phaseoloides* Benth, *Clitoria ternatea* L., *Stylosanthes* sp., *Macroptilium artropurpureum* cv. Siratro and *Flemingia macrophylla* [(Willd.) Merrill] submitted to the passage through digestive tract of goats, scarified with sulphuric acid and control treatment. The experimental design employed was completely randomized, in a 5 x 3 factorial arrangement. The treatments were the three methods of scarification and five leguminous species. The seeds were offered with concentrate to five goats (200 seeds/animal), kept in pen trial. After being collected in faeces, the seeds were led to germination cabinet. The higher germination was found in the control treatment and scarification with sulphuric acid when compared with the passage through the digestive tract of goats among the most of leguminous. The highest number of seeds recovered in goats faeces was found in *Pueraria phaseoloides*, followed by *Flemingia macrophylla* [(Willd.) Merrill] and *Macroptilium artropurpureum* cv. Siratro. The passage through the digestive tract of goats can be a viable alternative for the germination of seeds, mainly to *Flemingia macrophylla* (65, 2%) and *Pueraria phaseoloides* Benth (53%).

### **Growth and slaughter traits of kids fed bakery waste replacing corn**

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**Abstract / Resumo:**

The aim of this work was to evaluate the effect of the of corn replacement by dried bakery waste in the kids diet on weight gain and characteristics of carcass yield. Four levels of corn replacement by bakery waste (0; 33; 66 e 100%) on the dry matter basis were evaluated, using 16 kids with average live weight of 17 kg, arranged on completely randomized design. The animals were kept in individual pens. The diets were composed by concentrate and *Cynodon* spp hay. The inclusion of bakery waste as corn substitute did not affect the daily weight gain, which was 140 grams. There was no difference in relation to variables analyzed, among the groups of animals fed with diets containing increasing levels of dried bakery waste replacing corn. Average values for slaughter weight, hot and cold dressing percentage and percentage of cold loss were respectively 26.9 kg, 45.3%, 44.3% and 2.2%. Besides that, there was no difference in relation to loin eye area, commercial cuts and subcutaneous fat thickness. Therefore, the bakery waste can be an alternative for feeding of kids.

**Influence of Parturition Order on Parasitism by Gastrointestinal Helminths in Dairy Goats of Saanen Breed**

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**Abstract / Resumo:**

The objective was to study the influence of parturition order on the size of the population of gastrointestinal helminths in Saanen dairy goats raised in tropical area. Coprologic tests were realized weekly from 36 animals, in the four weeks preceding the parturition, at the time of parturition and four weeks after parturition. The animals were divided into three groups (G): G1 12 animals of first lactation, G2 12 animals of second lactation and G3 12 animals of third lactation. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. The average values of counting the number of eggs per gram of faeces (EPG) was: 1010 for animals of first lactation, 800 for animals of second lactation and 550 for animals of third lactation. Throughout the study, animals of first lactation showed up count eggs per gram (EPG) significantly ( $p < 0.05$ ) higher than the animals of second and third lactation. These results are justified by the fact that ruminants have a complete maturation of the immune system later; making them vulnerable to parasites even in adulthood. Coprologic data showed no significant quantitative and qualitative difference ( $p > 0.05$ ) among the population of helminths of animals of 1<sup>o</sup>, 2<sup>o</sup> and 3<sup>o</sup> lactation. The genera found were *Haemonchus* (65%), *Trichostrongylus* (32%) and *Oesophagostomum* (3%). It was concluded that primiparous Saanen goats are more susceptible the helminthiasis than pluriparous, thus justifying the need for greater care to these animals during the periparturient.

**Impact of periparturient relaxation of immunity on Gastrointestinal Helminthiasis in Crossbred Goats (½ Saanem x ½ Boer) in Tropical Area**

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**Abstract / Resumo:**

The objective of this study was to evaluate the impact of periparturient relaxation of immunity (PPRI) on gastrointestinal helminthiasis in crossbred goats (½ Saanem x ½ Boer) raised in the tropics. Coprologic tests were realized weekly from 22 female animals with 2 to 4 years of age, during the five weeks preceding the parturition, at the time of parturition and five weeks after parturition. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. The average counts of eggs per gram of faeces (EPG) during the period before the parturition, at the time of parturition and after the parturition were respectively: 300, 700 and 500. Significant increase of EPG in the third week before the parturition was observed, reaching a peak during the week of the parturition and stabilizing in the second week after the parturition. The degree of infection of animals has remained moderate during the study, probably due to the degree of blood Boer, since it is a breed considered resistant to helminths. The mean value of EPG of animals after the parturition was significantly higher ( $p < 0.05$ ) than before the parturition, probably due to stress of lactation. Coprologic data showed the presence of the genera *Haemonchus* (62%), *Trichostrongylus* (33%) and *Oesophagostomum* (5%). No difference was observed between the composition of helminth populations when compared before the parturition, at the time of parturition and after the parturition. It was concluded that crossbred goats (½ Saanem x ½ Boer) showed an increase in EPG during the periparturient, but remained with low parasite load, demonstrating a good alternative to milk producers in the tropics.

**Seasonality of Gastrointestinal Helminthiasis in Dairy Goats under Rotational Grazing**

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**Abstract / Resumo:**

The objective was to study the seasonal dynamics of helminthiasis in Saanen goats maintained under rotational grazing in the tropics. Coprologic tests were realized monthly from 20 animals from January to December 2007. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. The average egg count per gram of faeces (EPG) of the herd ranged from 400 to 3000, being the lowest parasitism in June and the highest in November. EPG counts in the four seasons were: summer 1250, autumn 900, winter 600 and spring 1850. In the comparison of the seasonal average of EPG, significantly difference ( $p < 0.05$ ) was observed between the four seasons. In the spring, where was observed the highest values of EPG, 60% of the animals showed heavy infection. The higher values of EPG observed in this season, is due to favorable environmental conditions for larval survival on pasture and thus the infection of the herd. Another important fact was the large number of births in the period, so there was an increase in the EPG due to the phenomenon of periparturient relaxation of immunity (PPRI). When the EPG data were analyzed by separating the rainy season (spring and summer) and dry (autumn and winter), there was significant difference ( $p < 0.05$ ), being the rainy season more propitious to parasitism. Coprologic data showed the presence of the genera *Haemonchus* (61%), *Trichostrongylus* (30%) and *Oesophagostomum* (4%). The *Haemonchus* is reported as a factor limiting the goats in the tropics because of its high power pathogenic to animals. The gastrointestinal parasites showed up as an obstacle to dairy goats in the tropics, requiring an effective anthelmintic control program for the animals keep themselves productive.

## **Gastrointestinal Helminthiases in Bergamacia Sheep Raised in Tropical Area**

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### **Abstract / Resumo:**

The objective of this study was to investigate the population of gastrointestinal nematodes in Bergamacia sheep maintained during the winter season. Faeces samples were collected fortnightly from 15 animals with a mean age of 2 years, during the winter of 2007. For quantitative analysis of the parameters studied, were used analysis of variance (ANOVA), linear regression and student t test at 5% significance level. Count of eggs per gram of faeces (EPG) in McMaster chambers to measure parasite load of animals, and fecal culture to recover and identify the third-stage larvae of the superfamily Trichostrongyloidea were carried out. The average values of the EPG ranged from 20 to 250, characterizing the degree of infection of the mixed to light throughout the study. In none of the animals studied were observed heavy degree of infection, thus demonstrating the adaptation of these animals due to the conditions of parasitism by gastrointestinal helminths in the tropics. The identification of third-stage larvae revealed the presence of four genera of helminths: *Haemonchus* (60%), *Trichostrongylus* (26%), *Oesophagostomum* (3%) and *Cooperia* (11%). Throughout the study the genera *Haemonchus* presented predominant, showing be the helminth of greatest importance in warm climates. Bergamacia sheep presented with low parasite load, being a viable alternative for producers in tropical countries where helminthiases may limit the permanence of productive breeds.

## **Raising goats and sheep in “Fundo de Pasto” grazing areas**

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### **Abstract / Resumo:**

Raising goats and sheep is a major economic activity in the semi-arid region of Bahia and is consolidating as the most appropriate agroecological production to generate economic growth and social benefits. Many family farms have sheep and goats, because they are hardy and readily adapt to Brazil's semi-arid region. Experiences advised by SASOP are working to spread and consolidate practices to improve handling of goats and sheep, such as health checkups and expanding the food supply in the dry season, by taking better advantage of native vegetation as forage and encouraging the planting of species that can withstand drought better. This animal husbandry by farming families plays a key role in creating and developing economic and social infrastructure, promoting ongoing improvement of people's living conditions in the semi-arid region. One approach specific to the semi-arid region in the State of Bahia uses “Fundos de Pasto”, for family farmers' herds in the region. A Fundo de Pasto system is where the land area is shared by all members of a given collective group, such as community or public property. The area is subdivided into a place for housing, a place for growing food crops and supplementary forage for herds, and an open area for collective use, for extensive grazing by ruminants, mainly sheep and goats. To defend this modality of community land use and hold back against pressures by outside groups attempting to encroach on their areas and their

mineral resources, communities using the Fundo de Pasto system are organizing to achieve recognition and fight for regulation of farmland, confirming their ways of producing, while also learning new technologies to coexist with the semi-arid region. Another key element is involving women in raising goats. The technical support that women are receiving is helping change their situation of invisibility. In this process, it has been fundamental to use resources from the revolving fund supported by Heifer International to help spread these experiences throughout the region.

### **The experience of the MNCI in the advance of peasant goat production and marketing from the experience of Revolving Funds and from the “Kids Campaign”**

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#### **Abstract / Resumo:**

In both arid and semiarid regions of northern Argentina happens the advance of monoculture for Export and intensive cattle production, which produce serious social environmental and economic problems, exerting great pressure on indigenous and peasant populations and on the natural resources. Although the goat production has an important role in production systems to farmers, it presents several problems in terms of scale production, undersized facilities, management unsuitable for breeding, diseases aggravated by poor nutrition, high mortality, need for genetic improvement, as well as the quality and amount of food. Peasant organizations as UST, APENOC MNCI, supported by institutions such as Heifer International, build sustainable alternatives based on Food Sovereignty and appropriate distribution and use of natural resources, mainly land and water; in these alternatives, the production of goats is as a core component, being based on the Community organization, crop diversification, industrialization of milk, change in the market rules, autonomy with regard to technology packages and use of Creole seeds and breeds. Two mechanisms are especially important in this experience of building sustainability: the Revolving Funds (family and community) and the kids marketing campaign. The first is a tool for community organization and it allows access to financial resources that provide solutions to the problems of the families. It is used to finance inputs and activities that ensure the nourishment, management, health and sanity of animals; and also to improve the infrastructure for the processing of goat milk, enabling to duplicate income as well as for the purchase of inputs for the community processing. The experience of rotating funds contributed to lower production costs (27% for corn, 34% for alfalfa and 18% for the balanced food), based on logistics and community work and timely purchase. It also contributed to lower mother mortality from 10% to 4% and improved the rate of calving in the output of the winter from 70% to 82%. The plantation of pastures ensured 50% of food supplement and besides guaranteed the strengthening of community organization. The kids marketing campaign in urban centers such as Cordoba and Mendoza also have a strong organizational aspect and it accumulates 6 years of experience. Despite representing only 5% of the total sale of goats, the price increased by 30%, due to the depending on the empowerment that allowed the peasant families.

### **Stabilization of forage on offer: the experiences of storage of the family farms agroecological in Paraíba-Brazil**

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**Abstract / Resumo:**

The regions under the influence of semi-arid climate have two better defined seasons, the period the rainy and dry season. The rainy season enables farmers to cultivate their fields and it is when native and cultivated pastures, increasing the supply of forage for the animals. During the dry period the availability of forage reduces significantly. The peasant family agriculture of Brazilian semiarid has developed diversified farming systems, in which goats and sheep have been distinguished by its importance in food and household income. Historically the food management of animals relied on the strategies to value native vegetation and to profit stubble of agricultural crops. The restricted access to native grasslands and the decrease of properties by inheritance led to a strong pressure on natural resources, putting at risk the resilience of farming systems. In periods of prolonged drought when the supply of food for the animals can go to zero, the livestock sub-systems may collapse with the death of part or the whole flock. Family farmers and peasants from both Borborema and Cariri Paraibano region networked respectively at Rural Farmers Union (Pólo Sindical), Organizations of Family Farming and Coletivo Regional do Cariri are developing technical and organizational strategies to overcome limitations and provide a regular supply of forage for the animals along the year and in periods of prolonged droughts. Organized in two committees of breeding, they have sought to bring together knowledge developed by the farmers, in partnership with advisory and research centers. The families are experiencing and adopting practices related to the ecology of the environment - the storage -. The silage and the hay are the two most widely used techniques, however to accomplish them it is necessary equipments (shredders, balers and forage) and supplies (tarp, fuel, etc...) purchased with the initial support of international cooperation organizations such as Heifer. The exchange of knowledge among families caring and sharing of equipment through the Revolving Fund is presented as a fundamental strategy to significant changes in the number of families who are adopting the practices of storage. In 2009, about 300 families from more than 100 communities in 17 municipalities stockpiled about 4,000 tons of forage. These experiences have helped families to stabilize the supply of forage for livestock, making their livestock systems less vulnerable to climate swings, with greater resistance to disease and greater productive capacity.

**Economic losses in reproductive parameters due to the Caprine Arthritis-Encephalitis**

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**Abstract / Resumo:**

This study aimed to determine the economic losses arising from the reproductive parameters due to caprine arthritis encephalitis in a dairy herd. Ninety female goats, half-breed Nubian x Saanen, four bucks from the same genetic group of females, and four thugs with no defined breed were used. The animals were divided into two groups: seropositive and seronegative by Western blot diagnostic test. The animals underwent the same management conditions and were kept in separate areas with similar characteristics in the same farm. To calculate the economic losses, the following parameters were evaluated: birth rate, number of pups born, mortality rate at weaning, number of young after

weaning, body weight (BW) at weaning, total production in kilograms and dollar value of BW (US\$ in Kg / BW). Statistical analysis was performed using the SAS package. The results show that the income obtained from the seronegative group was 1.52 times higher than that of seropositive. With this study, we conclude that there are economic losses in reproductive parameters due to the caprine arthritis encephalitis in dairy goats in Brazil.

### **Assessment of renal function, liver function, blood parameters and animal behavioral in goats submitted to follicular aspiration by laparoscopy**

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#### **Abstract / Resumo:**

The laparoscopy has gained prominence, amongst the surgical techniques, for being less invasive and faster, therefore reducing the stress suffered by the animal. This study aimed to evaluate the effects of repeated harvests of oocyte by laparoscopy on biochemical and blood parameters and on the behavior of goat females in the postoperative period. Twelve goat females were submitted for four sessions to harvest oocyte with an interval of 15 days. Blood samples were collected in two periods: immediately before and the next day (24h) after laparoscopies. The parameters evaluated were aspartate aminotransferase (AST), alkaline phosphatase (ALP) and gamma-glutamyltransferase (GGT) to assess liver function and urea and creatinina to evaluate renal function, and determination of erythrometric and leukometric values. The behavioral assessment of animals was conducted, considering aspects such as mobility, appetite and socialization. The average values of total red blood cells showed no change, regardless of period evaluated. There was an increase in total white blood cells 24h after laparoscopy ( $P < 0.01$ ), which is expected due to normal inflammatory reaction caused by the procedure. The values of hematocrit and hemoglobin remained within the normal range for goats in the two periods evaluated. The mean values of AST increased ( $P < 0.05$ ) 24h after laparoscopy. The muscle tissue irritation caused by a single intramuscular injection may be sufficient to raise serum levels of AST. Reduction in the values of ALP was observed at 24h post-surgery ( $P < 0.01$ ) and GGT did not show any change between periods. Increase in mean creatinina ( $P < 0.01$ ) occurred 24h after laparoscopy, which may be due to dehydration caused by water restriction (24h) or due to surgical positioning. Plasma levels of urea decreased ( $P < 0.01$ ) 24h after laparoscopy, which may be due to fasting time required to perform surgery safely (36h), since the anesthesia tends to cause regurgitation. With regard to mobility behavior, based on observations of animals, after laparoscopy, most of them had only limited movement in the first four hours after surgery. This can be attributed to surgical wounds and the abdominal distension caused by pneumoperitoneum. The loss of socialization, discreetly in the first four hours after surgery can be attributed to the effect of anesthesia still latent and less mobility. The decrease in appetite during the first four hours after surgery was due to discomfort, especially the abdominal region, beyond the effect of anesthesia is still present which affect, among others, the chewing, swallowing and rumination. We concluded that the technique is safe and can be performed in goats at an interval as short as 15 days between interventions. Financial support: FAPESP

## **Quantitative somatic characterization of creole goat of Córdoba, Argentina.**

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### **Abstract / Resumen:**

Discrimination analysis of quantitative variables has proved efficient to describe breed or population and to set up differentiation patterns. Therefore, within a larger project, the aim of this research was to characterize quantitative somatic variability of Creole goats from the North West of Córdoba, Argentina, as an essential previous step for defining enhancement strategies that respect their adaptation traits. Research was carried out over a population of 145 adult goats from 7 herds representing local animals so as to determine if they shared identity characteristics in spite of the differences observed. They were measured up to two pure exotic breed populations (Anglo Nubian and Saanen), the latter better adapted to the region than the former. Description statistics were obtained. Main component multivariate analyses were later performed. Quadratic discriminating analysis was used to determine the correct assignment rate. On comparing the Creole populations among themselves, analysis proved not trustworthy enough to separate them. Constituting a unique group, 11 out of the 15 traits used were required to compare them to the pure breeds. Accurate discriminating rate obtained for each population was 95,94% for the Creole goats from the North West of Córdoba, 75 % for Anglo Nubian and 91,89 % for Saanen. Representation by means of a dispersion graphic allowed for the visualization of overlapping levels. Quantitative morphologic variables analysis confirms that Creole goats from the North West of Córdoba, Argentina, belong to one same population clearly different from the Anglo Nubian and Saanen breeds.

## **National Goat Committee: Participatory policies applied to the goat sector development in Argentina**

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### **Abstract / Resumen:**

Caprine activity in Argentina has historically been linked to producers with unmet basic needs and constraints in their environmental and production conditions. However, in recent years it has incorporated a sector of goats producers with corporate profile, which has provided different traits. While this new profile seeks to maximize income, traditional producers have been sustained minimizing risks. An awareness of participatory work and greater involvement of government agencies in the harmonious development of the whole activity, coupled with interest in finding solutions to a complex problem, encouraged the active participation of most of the actors. Thus arises, since 2004 the National Goat Committee, with the participation of representing governmental and nongovernmental organizations and producers who worked closely. As a result of many meetings, the actors developed rules able to solve existing problems, and they consolidated this way, their future participation in the decision-making structures. Since the aggregation of small-scale economies generate large economic dynamics, that have impact in the behavior of market laws and their swings, it was determined the need for small producers to obtain a diagnosis of their business. It is

understood that in this way can facilitate decision making that contributes to the equitable distribution of resources generated in the chain, to promote the development of family farmers and small and medium entrepreneurs. It was agreed to approach the sector under the methodology of Value Chain Analysis, first by understanding the methodological tool as an instrument of consensus and not only a cost calculation and secondly to strengthen the participatory planning approach, widely developed over the working process of the National Goat Committee. The challenge of the correct application of the Participatory Politics for the development of goat farmers in Argentina seeks to establish a Sector Strategic Plan, which provides the framework for the design and development of strategies to guide efficiently the public and private investment. This will achieve the objective of improving the quality of life of the actors involved in value chains for meat, fiber, milk and caprine leather, increasing efficiency in every link of the chain, ensuring safety and quality of products, keeping the real sustainability at all levels.

### **Phenotypic Characterization of different biotype of races present in population of goats in La Rioja, Argentina.**

Ricarte, A. R.1, Vera, T. A.1, Diaz, R. F.1, Arriba, P. N.2, Vélez, J. A.2

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#### **Abstract / Resumen:**

Goats were introduced in America by Spanish and Portuguese people in the XVI century. After hundred of years of no controlled rearing, a biotype of goats no well characterized was originated and at it is known, at present, as regional, "criollo" or native. In the arid zones of our country, goats show an excellent adaptation and constituent one of the principal productive activity. These populations no well characterized, at present are in extinction danger due to exotic race introduction. With the objective to characterize the different present racial biotypes of goat population in the area surrounding INTA La Rioja Experimental Station, we obtained zoometric measurements goat population of the region. Utilizing multivariate analysis, principal components and discriminating analysis, we determinate the existence of phenotypic variability in the population and the presence of at least four populations well differentiated and characterized: Anglo Nubian, Criollo, Boer y Criollo INTA.

### **Effect of the station of the year on the body weight, scrotal circumference and the levels of testosterone in adult male Goats Creole in The Plains of La Rioja, Argentina.**

Vera, T. A.1, Vaninetti, M. E.3, Chagra Dib, E. P.2, Leguiza, H.D.2, Brizuela. E. R.4, Matellon, G. F.3

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#### **Abstract / Resumen:**

The arid Chaco covers 10 million hectares in the central west region of the Republic Argentina. The native vegetation gives the forage that sustains to the wild fauna and the cattle activities. The

extensive goats production which final product is the sucking kid, is the second cattle activity in importance to regional level and the principal source of revenue for small producers. The reproductive managing is scanty or void, where males and females remain united all the year round, nevertheless a natural parking of the mating takes place, Centering the lambing in autumn-winter (60-65%) and spring ends (35-40%), being in the first case the most numerous in quantity of childbirths and presence of double and triple childbirths. Throughout the year the males goats demonstrate seasonal variations of the scrotal circumference, which is reflected in variation of the fertility, being the station of minor fertility the spring. The aim of the present study was to evaluate the effect of the station of the year on the body weight (BW), the scrotal circumference (SC) and the levels blood of testosterone (To) in Criollo Argentino male goats under rangelands conditions. The study was realized in the experimental field "The Vizcacheras " of the INTA EEA La Rioja (30° 22' S, 66° 17' W) located in the ecological region of the Arid Chaco of Argentina. The scrotal circumference, the body weight and the blood levels of testosterone were taken monthly in 11 Criollo Argentino male goats major of 2 years of age. The information was tried across an ANAVA, for a linear model, taking as treatments to the stations and as repetitions the animals. Are observed seasonal variations of the SC (Winter: 22,8 to; Spring: 23,14 to; summer: 25,38 b and Autumn: 26,57 cm b) and To (Winter: 2,9 b; Spring: 1,08 to; summer: 3,15 bc and Autumn: 3,48 c ng/dl), while the variations in the BW did not manage to be significant (Winter: 61,26; Spring: 58,07; summer: 57,33 and Autumn: 61,26 kg). If we take BW behavior as a reflex of the nutritional variations that the male goats receive on the different stations of the year, the similar behavior demonstrated between To and SC would confirm the effect of control that exercises the photoperiod on the reproductive behavior of the Criollo Argentino male goats. One concludes that in Criollo Argentino male goats under rangelands conditions the epoch of the year had influence on the values of SC and To not like that on the BW, answering the reproductive behavior to the seasonal variations of the photoperiod in latitude 30°.

### **Evaluation of a milk replacer with vegetal protein in a goat kid raising system.**

Dr. Fernando Ruiz-Zárate

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#### **Abstract / Resumo:**

To evaluate a milk replacer with vegetal protein, Saanen goat kids of 2-3 d of age were fed during seven weeks with: 1. Vegetal protein milk replacer (VPMR, n=5) based on sunflower seeds and soybean meal. 2. Commercial milk replacer (CMR; n=5) and 3, Goat pasteurized milk (control, GPM, n=5). After three weeks pelleted solid feed was offered. A completely randomized design showed that the average daily gain (ADG) was different ( $P=0.003$ ) with 0.10, 0.11 and 0.13 kg d<sup>-1</sup> anim<sup>-1</sup> and so, the fluid feed intake (FFI;  $P < 0.0001$ ) with 686.0, 679.0 and 762.0 mL d<sup>-1</sup> anim<sup>-1</sup> for VPMR, CMR and GPM. Birth weight (BW) and solid feed intake (SFI) were not different ( $P > 0.05$ ). GPM chemical composition was better than milk replacers. GPM kids consumed more milk and were heavier than milk replacer kids. VPMR can be used as well as a commercial milk replacer.

### **Genetic correlation between resistance to strongyle natural mixed infection and resistance to Haemonchus contortus experimental infection in Creole goats**

BAMBOU, J-C., de la Chevrotière, C., GUNIA, M., ALEXANDRE, G., ARQUET, R., MANDONNET, N.

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**Abstract / Resumo:**

Previous studies demonstrated the feasibility of breeding for improved resistance to gastrointestinal nematodes (GIN) within the Creole goat breed. This breed is reared for meat production in tropical field conditions and has not yet been selected. Recently, Creole goat breeders, extension services and the French National Institute for Agricultural Research (INRA) have started building up a breeding scheme. In this context, INRA wants to put forward a genetic evaluation design for resistance to GIN. For this purpose, infection and rearing conditions should be standardized because the GIN pressure and nutritional levels are variable at pasture. In this study, we estimated the genetic correlation between resistance to GIN natural infection and to *Haemonchus contortus* experimental infection, the dominant GIN species in tropics. Our objective was to evaluate the validity of indoor conditions for the genetic evaluation of 11 months old Creole bucks. For natural infection, the dataset held fecal egg counts (FEC) records on 2465 kids sired from 124 bucks and 721 does. For experimental infection, the dataset held a total of 295 male kid records sired from 32 bucks and 194 does. A bivariate animal model was used to analyze the FEC genetic variances and correlations on natural and experimental infection using VCE software. Maternal genetic effect was not significant for both traits. Direct genetic variability of resistance to experimental infection was assessed. Heritability estimate of FEC is medium ( $0.25 \pm 0.09$ ) and in the same range as resistance to natural mixed infection ( $0.19 \pm 0.03$ ). The genetic correlation between FEC after natural infection and after experimental infection was estimated at  $0.52 \pm 0.30$ . The accuracy of this estimation is still low. Although the two measurements cannot be considered as manifestation of the same underlying trait, these results already indicate that resistances expressed after natural mixed infection at pasture and after experimental infection with *H. contortus* are favorably correlated. So, a significant part of the genes controlling resistance to *H. contortus* are not specific ones. Breeding goats for increased resistance to *H. contortus* will also increase their resistance at pasture. Experimental infection will be suggested to professionals for the genetic evaluation of resistance to strongyles in Creole goats.

**Management of local genetic resources by in situ and ex situ methods for research and breeding purpose: the case study of the local Creole goat of Guadeloupe.**

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**Abstract / Resumo:**

Very few studies are implemented towards the management of local genetic resources specifically in the tropics, although there is an urgent need for preservation and breeding improvement of these hardy genotypes. The Creole goat of Guadeloupe derives from Spanish and African goats, imported in the Caribbean during the history. This breed is of great interest for research and breeding purpose, as it obtains a high productivity and presents a natural genetic variability for resistance to gastrointestinal strongyles. In Guadeloupe, INRA is conducting researches on the characterisation and preservation of this breed. Their purpose is mainly a better understanding of the immune response of the animal to the parasites, and the implementation of a sound genetic improvement program for both production and adaptation traits. An experimental flock of about 250 goats (1000 heads), constituted in the 70', is

managed as a closed nucleus herd, in 12 families, and the complete genealogy is known on about 12 generations on average. The mean inbreeding coefficient is about 2.3 %, and breeding is rationally performed to maintain the consanguinity at a level lower than 3 %. Cryopreservation is also implemented. A total of 256 frozen embryos from 16 donors are stored by the French National Cryobank, and 2800 doses of semen from 36 bucks are stored in local facilities. A biological resource centre has also been equipped in order to conserve biological material from the local breeds of ruminants and pig. Genetic researches are also conducted, and a collection of DNA and other biological samples (blood, cells and tissues) has been initiated for molecular genetics studies. 6500 samples are currently stored in december 2009, with an increment of 800 samples per year. A set of 70 animals representative of the diversity have been characterised for a panel of microsatellites. Other genetic studies are undertaken, as the research of QTL for production and adaptation traits, by microsatellites or SNP analysis within 10 halfsibs family. Through these activities, combining in situ and ex situ methods for research and breeding purpose, INRA is highly committed in the characterization, preservation and improvement of a local genetic resources valuable for the humid tropics.

### **An evaluation grid to characterize phenotypical traits in Creole goat of Guadeloupe**

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#### **Abstract / Resumo:**

The Creole goat of Guadeloupe is a very hardy breed well adapted to tropical conditions though it has not yet been selected. It is reared for meat production in Guadeloupe where official census reports an overall population of about 31 000 goats. Many crossbreds resulting from uncontrolled mating between Creole and meat or milk breeds are observed thence original qualities of the Creole goat are endangered. Therefore, there is an urgent need to define the standard of the Creole goat breed because it is sometimes difficult to distinguish between purebred and crossbred animals. Furthermore, this tool is essential to implement the breeding scheme that Creole goat breeders, extension services and the French National Institute for Agricultural Research (INRA) have started to build up. The first step was to make a phenotypic description of Creole goats from the experimental herd of INRA-Gardel. This herd was settled in the 1980's with Creole animals of Guadeloupe from diverse origins. Chosen to be representative of the herd variability, 23 bucks and 61 does were described according to different quantitative and qualitative parameters. The main morphological traits of Creole goats are: small-size, short hairs and multi-pattern coats. Mucous membranes are predominantly pigmented, ears are middle sized with different orientations, forehead profile is straight for females and concave for males, horns are short. According to these observations, a standard evaluation grid was then developed with breeders and experts of the breed. Two types of traits were considered: 6 morphological and 6 functional criteria with double weight on morphological criteria. Goat breeders and extension officers were trained to use this grid. It has then been used to choose Creole animals for the basis breeding population in Guadeloupe. Such tool will be adapted and promoted for different tropical local breeds of goat.

### **High genetic correlation between resistance to strongyle natural mixed infection and resistance to Haemonchus contortus experimental infection in Creole goats**

BAMBOU, J-C., de la Chevrotière, C., GUNIA, M., ARQUET, R., MANDONNET, N.

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#### **Abstract / Resumo:**

Previous studies demonstrated the feasibility of breeding for improved resistance to gastrointestinal nematodes (GIN) within the Creole goat breed. This breed is reared for meat production in tropical field conditions and has not yet been selected. Recently, Creole goat breeders, extension services and the French National Institute for Agricultural Research (INRA) have started building up a breeding scheme. In this context, INRA wants to put forward a genetic evaluation design for resistance to GIN. For this purpose, infection and rearing conditions should be standardized because the GIN pressure and nutritional levels are variable at pasture. In this study, we estimated the genetic correlation between resistance to GIN natural infection and to *Haemonchus contortus* experimental infection, the dominant GIN species in tropics. Our objective was to evaluate the validity of indoor conditions for the genetic evaluation of 11 months old Creole bucks. For natural infection, the dataset held fecal egg counts (FEC) records on 2465 kids sired from 124 bucks and 721 does. For experimental infection, the dataset held a total of 295 male kid records sired from 32 bucks and 194 does. A bivariate animal model was used to analyze the FEC genetic variances and correlations on natural and experimental infection using VCE software. Maternal genetic effect was not significant for both traits. Direct genetic variability of resistance to experimental infection was assessed. Heritability estimate of FEC is medium ( $0.25 \pm 0.09$ ) and in the same range as resistance to natural mixed infection ( $0.19 \pm 0.03$ ). The genetic correlation between FEC after natural infection and after experimental infection was estimated at  $0.52 \pm 0.30$ . The accuracy of this estimation is still low. Although the two measurements cannot be considered as manifestation of the same underlying trait, these results already indicate that resistances expressed after natural mixed infection at pasture and after experimental infection with *H. contortus* are favorably correlated. So, a significant part of the genes controlling resistance to *H. contortus* are not specific ones. Breeding goats for increased resistance to *H. contortus* will also increase their resistance at pasture. Experimental infection will be suggested to professionals for the genetic evaluation of resistance to strongyles in Creole goats.

#### **Ingestive behavior ½ Blood Boer Goats Fed with hay of saltbrush**

Tosto, M.S.L.1, Costa, T.F.C.2, Turco, S.H.N.3, Araújo, G.G.L.4, Pereira, L.G.R.5, Oliveira, G.F.de6, Ribeiro, C.V.D.M7

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#### **Abstract / Resumo:**

The saltbrush (*Atriplex nummularia*) is a halophyte plant, able to grow under unfavorable conditions for other species. Its leaves have a high CP content and DM production. It has been used for supplementation of ruminants in arid and semiarid regions. However, when formulating diets it is known that some types of food and its combinations can lead to changes in feeding behavior (FB) of the animals and thus interfere with nutrient uptake and better production efficiency, since the factors

affecting FB are related to food, animal health and the environment. The objective of this experiment was to evaluate the ingestive behavior of ½ blood Boer goats fed diets consisting of 8.4, 18.8, 31.2 and 48.3% hay of saltbrush, associated with spineless cactus (*Opuntia ficus*) added with urea and different concentrates of a base of corn and soy meal to make the diets isonitrogenous and isocaloric. It used 32 goats, males with body weight (BW) averaging 20.28 kg. The randomized block design was adopted. Statistical analysis was performed using the software SISVAR, where the averages were compared with the Scott-Knott test. The FB of the animals was determined in four days within the period of 24 h/d, evaluated the feeding (FT), ruminating (RUT) and resting time (RET). FT, RUT and RET, showed average of 266, 866 and 487 min/d, respectively. The goats fed diets containing 8.4, 18.8 and 31.2% saltbrush of hay, took more FT when compared to goats fed the diet with 48.3% hay. When feeding the diet with the highest percentage of saltbrush of hay, the consumption was limited by probably two factors: excess salt and/or by physical effect, keeping the intake for longer in the gastrointestinal tract, which reduced the FT. The RUT in goats fed diets containing 8.4, 18.8, 31.2 and 48.3% saltbrush of hay was averaged 7.49, 8.20, 8.39 and 8.40 h/day, respectively. These results are consistent with those found for FT, since the fiber content and physical form of the diet are the main factors that affect rumination time. Some studies claim that an animal that ruminates roughage during the period, 8-9 h/d, can consume more and be more productive. According to the results, the diet with 8.4% of hay did not make this rumination, probably due to the high content of spineless cactus diet (74.9% DM). Times of 10h, 15h and 16h showed the highest FT. Lowest FT occurred between three and four o'clock in the morning, where the animal decreased food intake and increased rumination, so there would be a better utilization of dietary nutrients by reducing the size of food particles, which resulted in a higher metabolic heat production, and thus can maintain its homeothermy. Diets containing more than 8.4% saltbrush of hay and spineless cactus do not compromise the productive performance ½ blood of Boer goats. However, diets must be provided around 6h and 16h, so that the peak metabolic heat production from the digestion does not coincide with times of high ambient temperature, thus facilitating the maintenance of homeothermy.

### **Intake, digestibility and weight gain of ½ Boer goats fed saltbrush hay**

Tosto, M.S.L.1, Araújo, G.G.L.2, Santos, A.S.3, Pereira, L.G.R.5, Ribeiro, C.V.D.M.3, Moraes, S.2, Souza, W.H.4

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### **Abstract / Resumo:**

The objective of this work was to evaluate the effect of adding 8.4, 18.8, 31.2, and 48.3% of saltbrush hay, in diets fed to ½ Boer goats, on nutrient intake and digestibility, body weight gain, and feed conversion. Thirty-two male goats, with average body weight (BW) of  $20.82 \pm 1.46$  kg were used in a randomized complete block design that lasted for 80 days. Diets were fed at 9:30 and 15:30 h. The animals were housed in individual stalls and their weights were recorded every 15 days after 18 hours of fasting. At day 61, 24 animals were housed in metabolic cages and plastic bags were used for feces collection to estimate ingredient digestibility. The addition of saltbrush hay in the diets promoted a quadratic response on DM intake. The minimum and maximum intakes of DM (53.11 and 104.27 g.kg<sup>-0, 75</sup>) were observed in the diets with 8.4 and 48.3% of saltbrush hay, respectively. The total and daily

BW gain had a linear behavior, with the highest values of 207.5 kg and 12.42 g.day<sup>-1</sup>, respectively, for diets with 31.2% of saltbush hay. No significant difference ( $P>0.05$ ) was observed for feed conversion, averaging 5.77. There was a linear effect on digestibility of DM and CP, where the lowest digestibility was found with 8.4% saltbush hay and 74.9% of spineless cactus for both variables. There was no significant difference in the digestibility of OM, TC, NFC, and NDF, averaging 74.72, 75.45, 93.74, and 50.66%, respectively. Saltbush hay proves to be a very viable alternative to feed goats, especially in semi-arid regions, since its use up to 48.3% increases the digestibility and nutrient intake and promotes BW gain of 140 g.day<sup>-1</sup> in ½ Boer goats.

### **Nitrogen Balance in Goats Fed Saltbush Hay, Spineless Cactus and Concentrate**

Tosto, Manuela Silva Libânio<sup>1</sup>, Araújo, G.G.L.<sup>2</sup>, Pereira, L.G.R.<sup>4</sup>, Moraes<sup>2</sup>, Ribeiro, C.V.D.M.<sup>3</sup>, Costa, C.T.F<sup>5</sup>, Turco, S.H.N.<sup>5</sup>

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#### **Abstract / Resumo:**

The saltbush (*Atriplex nummularia* L.) is a halophyte plant with high DM yield and CP content in leaves. It has been used as dietary ingredient of ruminant diets in arid and semi-arid regions. However, its roots and leaves have a high salt content, which can cause metabolic problems; for example, alter the excretion of some metabolites through body fluids such as urine. The determination of nitrogen balance (NB) under controlled conditions provides a quantification of N metabolism and demonstrates whether the body is losing or gaining N. Thus, the objective of this study was to determine the effect of adding saltbush hay on NB and N use by ½ blood Boer goats. Twenty-four male goats, castrated, with average BW of 20.28 kg were used in a randomized complete block design. And housed in metabolic cages. The experimental diets consisted of 8.4, 18.8, 31.2, and 48.3% of saltbush hay, together with spineless cactus (*Opuntia ficus* L.). Urea and concentrate (ground corn and soybean meal) were used to balance the isonitrogenous and isocaloric diets. The trial lasted for 20 days: 15 for adaptation and 5 for sample collection. Plastic bags were used for the collection of feces and buckets, under the cages, for the collection of urine. In the collection buckets, 100 mL of 10% H<sub>2</sub>SO<sub>4</sub> were added in order to avoid bacterial growth. The total nitrogen (N) present in feces and urine were analyzed using methods described by El Snazly (1958). The addition of saltbush hay had a quadratic response on DM intake ( $P < 0.01$ ), with intakes of 0.48, 0.80, 0.96, and 0.92 kg.day<sup>-1</sup> for diets containing 8.4, 18.8, 31.2 and 48.3% of hay, respectively. The diets had similar N concentrations; hence, the quadratic effect observed for N consumption (10.05, 16.81, 20.62 and 17.32 g.day<sup>-1</sup>) was attributed to the quadratic effect observed for DM intake. Faecal excretion also showed a quadratic response ( $P < 0.05$ ) but no significant difference on the excretion of N in urine, which averaged 0.03 g.day<sup>-1</sup> of N. The low excretion of N associated with its consumption and absorption indicates that there was an adequate utilization of nitrogen fraction by ruminants. The NB was positive in all treatments and showed a quadratic behavior, which demonstrates the absorption and utilization of N consumed. Although a drop in consumption and excretion of N was observed on diets with more than 32.1% of hay, the liquid use of N was increased linearly ( $P < 0.01$ ). The highest liquid use of N (82.9%) was found on the diet with 48.3% of hay and the lowest use on the 8.4% hay diet (75.3%). Thus, diets with spineless cactus had a better absorption and utilization of N when saltbush hay was added.

Saltbush hay proved to be a plant with forage potential, since its use up to 48.3% in complete diets for ½ Boer goats promoted positive NB and increased N use by animals.

### **Milk Exotic Goats Physical-Chemical Characteristics Treated with Recombinant Bovine Somatotropin (rbST) and Different Concentrate Levels**

LUCENA, J.A.1, Barreto, H.F.M2, Amaro, L.P.A1, Sombra, D.S1, Maciel, M.V1, Ribeiro, G.M1, Silva, N.P1, Tholon, P1

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#### **Abstract / Resumo:**

The objective of this work was to determinate the milk goats physical-chemical characteristics from Anglo Nubiana and Saanen breeds receiving Recombinant Bovine Somatotropin (rbST) and different concentrate levels. The experiment was carried out in GOAT EMBRAPA, Sobral/CE - Brazil. Thirty-two goats from Anglo Nubiana and Saanen breeds were used and selected according to lactation order (second to fourth) and yield level. The goats were put in metabolism cages and received composed food of elephant grass (*Pennisetum purpureum*, Schum) and concentrated food based on soybean and triturerated corn, water and mineral salt ad lib. The administration of rbST was started after lactation peak repeat it in a regular intervals of 14 days. The milk samples were collected after each rbST administration and they were composed samples per animal. Content of protein, fat, lactose and minerals such as acidity, density, total solids and nonfat solids were determinated. The treatments used were a mix two breeds (Anglo Nubiana and Saanen), somatotropin levels (0 and 3 mg/Kg live weight) and two concentrate levels (1,0Kg/head/day and 1,25Kg/head/day). The experimental design used was completely randomized design using factorial experiment 2x2x2 with four replications. The variance analysis was accomplished with two lost plot. Four applications with rbST were accomplished made after the lactation peak with 14 days intervals. The variance analysis showed the breed acts on fat and minerals content and milk physical-chemical characteristics ( $p < 0,05$ ).

### **Recombinant Bovine Somatotropin (rbST) and Food Effects on Weight Gain on Exotic Goats in Semiarid Northeast Brazil**

J.A Lucena1, Tholon, P1, Ribeiro, G.M1, Barreto, H.F.M2, Sombra, D.S1, Amaro, L.P.A1, Maciel, M.V1, Silva, N.P1

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#### **Abstract / Resumo:**

The growth hormone like Recombinant Bovine Somatotropin controls the growth, affects the nutrient metabolism, stimulates milk yield and improve production efficiency. The objective this work was evaluates the Recombinant Bovine Somatotropin (rbST) and food effects on weight gain of exotic goats. Thirty-two goats from Anglo Nubiana and Saanen breeds were used and selected according to initial weight. The experimental design used was completely randomized design using factorial experiment 2x2x2 with four replications. The treatments used were a mix two breeds (Anglo Nubiana

and Saanen), somatotropin levels (0 and 3 mg/Kg live weight) and two concentrate levels (1,0 kg/head/day and 1,25kg/ head/day). The variance analysis was accomplished with two lost plot. Four applications with rbST were accomplished with two lost plot. Four applications with rbST were accomplished made after the lactation peak with 14 days intervals. The goats were weighted before and after rbST administration, weighting four times per goat. The results showed no weight gain among animals that received rbST administration ( $p > 0,001$ ). The animals treated with hormone lost about 325g total live weight. The reduce weight of animals occurred probably due to nutrients partition toward milk yield against corporal reserve formation. The Recombinant Bovine Somatotropin administration didn't promote weight gain on exotic goats in semi-arid northeast Brazil.

### **Milk Yield, Corrected Milk Yield and Dry Matter Intake Goats Using Recombinant Bovine Somatotropin (rbST) and Different Concentrate Levels**

Lucena, J.A.1, Amaro, L.P.A1, Barreto, H.F.M2, Maciel, M.V1, Ribeiro, G.M1, Silva, N.P1, Sombra, D.S1, Tholon, P1

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#### **Abstract / Resumo:**

The objective of this present work was to evaluate milk yield goats using Recombinant Bovine Somatotropin (rbST) and different concentrate levels. Thirty-two goats from Anglo Nubiana and Saanen breeds were used and selected according to lactation order (second to fourth) and yield level. The treatments used were a mix two breeds (Anglo Nubiana and Saanen), Somatotropin levels (0 and 3 mg/kg live weight) and two concentrate levels. The experimental design used was completely randomized design using factorial experiment 2x2x2 with four replications. The variance analysis was accomplished with two lost plot. Four applications with rbST were accomplished made after the lactation peak with 14 days intervals. The results showed interaction of breed versus concentrate over milk yield and corrected milk yield. The milk yield Saanen race was higher ( $p < 0,05$ ) when the goats had less concentrate level. There was iteration of Somatotropin versus concentrate to milk yield and corrected milk yield. The use of Recombinant Bovine Somatotropin together to different concentrate levels increased milk yield (36%) and milk yield corrected (43%). There was interaction between breed and concentrate over milk yield and milk yield corrected ( $p < 0,05$ ) and between concentrate and rbST over dry matter intake and forage consumption ( $p < 0,05$ ). The milk yield goats from Anglo Nubiana increased 27% when received 1,25 kg of concentrate, while the milk yield goats from Saanen race didn't have difference receiving 1,0 ou 1,25 kg of concentrate. When was given 1,0 kg of concentrate for the goats the Saanen goat yield was higher ( $p < 0,05$ ), increasing (33%). The corrected milk yield has the same tendency. The dry matter intake was higher ( $p < 0,05$ ) for animals treated with rbST and less concentrate level. The milk yield goats in northeast Brazil can be developed with rbST application and correct food.

### **COMPARISON OF INTRA- AND INTERSPECIES NUCLEAR TRANSFER TECHNIQUES IN THE PRODUCTION OF CLONED CAPRINE EMBRYOS**

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**Abstract / Resumo:**

The application of assisted reproductive technologies (ARTs) in goat breeding program becomes a limelight in the 21st century. Reproductive cloning is one of the ARTs that are possible to be applied in goat breeding program in future. There are two possible approaches that can be applied to produce cloned embryos, namely intraspecies SCNT (intraSCNT) and interspecies SCNT (interSCNT). At present, the application of interSCNT approach to produce cloned caprine embryos has not been reported. Therefore, this present study was conducted with the aim to produce cloned caprine embryos using intraSCNT versus interSCNT technique. As a control to this experiment, bovine intraSCNT was conducted. The result for fusion rate of caprine interSCNT (64.2%) was significantly lower compared to the caprine intraSCNT (81.9%). The reconstructed caprine oocytes derived from interSCNT approach seemed to have the in vitro developmental efficiency that is comparable to the intraSCNT approach as the cleavage rate of both caprine intra-(48.9%) and interSCNT (51.3%) embryos did not differ significantly. The in vitro development of caprine interSCNT could not go beyond morula stage. Therefore, the comparison of the in vitro developmental rate of cloned bovine and caprine using intra- and interSCNT was made up to morula stage. The percentage of cloned caprine embryos developed to morula using intra- (20.6%) and interSCNT (6.9%) approach did not differ significantly. However, the percentage of cloned bovine morula derived from intraSCNT approach (46.1%) was significantly higher. In the nutshell, cloned caprine embryos can be produced via both intraSCNT and interSCNT approach. The efficacy of interSCNT approach is competent to the intraSCNT approach in the effort of producing cloned caprine embryos.

**Sensory Quality and Microstructure of Colby-like Cheese Made of Goat Milk and Soymilk**

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**Abstract / Resumo:**

The objective of this preliminary study was to investigate the effect of addition of soymilk to goat milk on sensory quality and microstructure of Colby-like cheese. Cheeses were made of mixed milk at three different ratios of Alpine goat milk to soymilk, i.e., 100% goat milk, 90% goat milk plus 10% soymilk, and 85% goat milk plus 15% soymilk. Results of this preliminary study revealed that addition of soymilk to goat milk at as low as 10% adversely affected sensory score and microstructure of Colby-like cheese. The main defects identified in the mixed milk cheese were “beany” for flavor and “mushy” for texture. Confocal laser scanning microscopic results confirmed the “mushy” defect in 60 d Colby-like cheeses. Flavor–masking agents and technical texture modification may be required to make cheeses with mixed milk of goat and soybean to suit American consumers’ taste with added health benefits of soymilk.

**Physical Chemical Characterization and Somatic Cells Count of Goat Milk**

Silveira, Timotheo S., Alcântra, Lizzy A.

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**Abstract / Resumo:**

Quality of goat milk is defined by its physical chemical and microbiological parameters and is a requirement of market and benefited industry. Aiming to characterize the physical chemical composition and determine the somatic cell count of goat milk (SCC), were analyzed 190 samples of raw goat milk (50 mL) of the herd of goats breeds saanen and pardo-alpino of the goat sector of the Federal University of Viçosa, in Viçosa - MG, during the months from January to December 2007. Milk goat samples were collected and transported under refrigeration according the recommendations of the Laboratory of Animal Nutrition of the Federal University of Viçosa. The experiment was conducted in a completely randomized design, being analyzed for content of fat, protein and lactose and SCC. Samples were previously homogenized and left at room temperature for the realization of physical chemical analysis. All the analysis were performed in triplicate. The fat content was determined by electronic equipment of differential absorption of infrared radiation waves MilkoScan 4000. The determination of protein and lactose content was held at the Milk Quality Laboratory at EMBRAPA / JF - MG, Gado de Leite Unit. SCC was determined by electronic equipment Somacount 300. The results were analyzed using the MEANS procedure of the statistical package Statistical Analysis System® version 9.0. For fat content, the results ranged from 2.30% to 6.24% with an average value of 3.71%. The protein content presented an average value 3.15%, ranging from 2.27% to 4.73%. The average value obtained for the lactose content was 4.18%, and the values ranged from 3.10% to 5.02%. The samples had mean values of somatic cells of 1298.69 x 10<sup>3</sup> cells/mL and minimum and maximum values of 73 x 10<sup>3</sup> cells / mL and 3015 x 10<sup>3</sup> cells/mL, respectively. Results of dry matter ranged from 9.55% to 15.43%, with an average value of 11.97%. The results obtained in this study confirmed the high nutritional value of goat milk, being of great use in food products. However, the SCC presented high results, indicating the need for more hygienic control during milking, since the SCC increase in goat milk promotes the reduction of some components of milk, affects the industrial performance and indicates an inadequate hygienic state of udder.

**Planning of Intensive Production System uses Technical Indicators and Monte-Carlo Models**

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**Abstract / Resumo:**

A dairy goat in southeastern Brazil is characterized by its intensive production system. In recent years, products derived from goat milk are gaining space in the food market due to their nutritional and digestive disorders. This culture, previously characterized as a subsistence crop, currently has a new position in the market, becoming a sector financially attractive. However, the entry of new producers, allied to a foreign policy favorable to the industry, reduced profit margins in the industry. In this context, it becomes necessary to professionalise production and producers and, before that, the main objective of this work involved the determination of factors that cause the greatest impact on profitability in dairy goat production intensive, simulation and scenario analysis. The construction of these scenarios was based on cost data from production and other productive aspects of intensive production system of the goat. Tests were carried out in droves and stabilized with known technical indicators. Through the variable cost methodology, this study used the Monte Carlo analysis to statistically validate the test scenarios. It was found that among the factors tested, the profitability of

goat suffers the greatest impact in terms of variation in female fertility and the number of days in milk. This study concluded that the model used allows the producer greater accuracy in determining goals and objectives through better planning.

### **Employment Milkoscan 4000 in determining the fat content of goat milk**

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#### **Abstract / Resumo:**

The determination of fat content stands out as one of the main physico-chemical properties of milk. Its application is justified since the definition of the price paid to producers, livestock nutritional guidance, allowing the standardization of milk according to destination commercial or industrial and helps verify the integrity of the product, especially in investigations of fraud. The official methods for determination of fat content in food are usually time consuming, requiring much time to obtain results. In addition, large volumes of processed foods require numerous samples and quick results, which are difficult to obtain in a timely manner for decision making using the Gerber Method. This study aimed to compare the fat content of raw goat milk by the electronic method of differential absorption infrared radiation relation to the Gerber Method. In addition, the correlation between the two methods was made. The value calculated for the t test was equal to 1.62 when compared to the value tabulated for the bilateral test (TTAB = 1.96), leads to no rejection of the hypothesis  $H_0$ , and the average content fat determined by the two techniques studied do not differ at 5% probability by t test ( $P > 0.05$ ). The Pearson correlation analysis showed a high value ( $r = 0.87$ ), suggesting that both techniques have a close affinity. The method for determining the fat content using electronic equipment presents itself as a good alternative, due to the short time analysis, practicality and good correlation with the Gerber Method.

### **Replacing cassava root scrapings with corn for Saanen dairy goats fed diets with sugar cane**

SILVA, M.J.M.S., CARVALHO, F.F.R., ALMEIDA, M.P., FRANÇA JÚNIOR, J.B.L., FONSECA, N.N.N, COSTA, V.M.S., ANDRADE, R.B., CONCENIÇÃO, M. G.

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#### **Abstract / Resumo:**

The effect of replacing ground corn by cassava root scrapings (0, 25, 50 and 100%) on feed intake, production and milk composition in Saanen goats. We used five lactating goats, distributed in a 5x5 Latin square design. The experimental period lasted 21 days, 14 days for adaptation and five days to collect data and samples. The intake of nutrients, yield and milk composition were not affected by replacement levels, probably due of the similarity in composition. Milk production was not affected by treatments, probably due cassava have ensured nutrient intakes similar for all treatments. For dairy cows producing 2.0 kg milk day, cassava can replace corn with the same production and milk composition.

### **Seminal quality of goats fed with different levels of licury (*Syagrus coronata* (MARTIUS) BECCARI) oil**

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#### **Abstract / Resumo:**

The aim of this study was to determine the best level of licury oil in the feeding of goat male  $\frac{3}{4}$  Boer to promote a better seminal quality. Sixteen male goats  $\frac{3}{4}$  Boer sexually mature, healthy, with average age of 12 months were used in the experiment. Animals were randomly distributed into four groups (G) with different levels of licury oil added in the diet, corresponding to 0%, 1.5%, 3.0% and 4.5%. Semen collections were performed twice a week. For each group were collected 48, 45, 56 and 49 semen samples for the groups 1, 2, 3 and 4, respectively, with a total of 211 ejaculates. to perform physical and morphological exam (volume, aspect, mass motility, sperm vigor, sperm motility, sperm concentration, morphology and primary, secondary and total abnormality). The different levels of licury oil (0%; 1.5%; 3.0%; 4.5%) did not changed the mass motility, the sperm motility, sperm vigor, sperm concentration and morphological evaluation. In conclusion the supplementation with licury oil, until 4.5%, in diet of buck  $\frac{3}{4}$  Boer did not influences the seminal quality, however did not show any damage.

### **Freezability seminal of goats fed diets with levels of licury [*Syagrus coronata* (MARTIUS) BECCARI] oil**

Dutra, P.A1, Barbosa, L.P1, Matins, L.E.P2, Cardoso Neto B.M1, Kiya.C.K2, Brito, L.S2, Bagaldo, A.R1, Oliveira, R.L2

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#### **Abstract / Resumo:**

The objective was to determine the best level of licury oil in the diet of males  $\frac{3}{4}$  Boer goats by the better resistance to the process of sperm cryopreservation. The experiment was conducted at the School of Veterinary Medicine, Federal University of Bahia. Sixteen  $\frac{3}{4}$  Boer male goats, mean age of 12 months were used. Animals were housed in individual pens with feeders and watering place, and randomly distributed into four groups (G) according to the levels of inclusion of licury oil in the diet: 0%, 1.5%, 3.0% and 4.5% of the oil in dry matter of the diet. The animals were fed diets for 60 days before starting the semen collections. Semen collections were performed twice a week, by the method of artificial vagina. It was collected 48, 45, 56 and 49 samples from groups 1, 2, 3 and 4, respectively, totaling 211 ejaculates. Perform physical examinations and morphological (volume, aspect, mass motility, sperm vigor, sperm motility, sperm concentration, morphology and primary, secondary and total abnormality). There were no differences in physical characteristics, sperm motility, sperm vigor, post-thawing sperm motility, post-thawing sperm vigor, loss of sperm motility and loss of semen of sperm vigor related to the levels of licury oil used. The addition of licury oil in the diet for  $\frac{3}{4}$  Boer male goats did not influence the frozen sperm, so it can be included up to 4.5% in the diet for breeding goats.

## **Evaluation of an Agroecologic Goat Production System in The Semi-Arid Region of Brazil**

Medeiros, H.R.3, Campanha, M.M2, Silva, G.J.G.4, Pereira, V.G.2, Bomfim, M.A.D.2

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### **Abstract / Resumo:**

The objective of this study was to evaluate an agroecologic goat production system in “Caatinga”, a typical rangeland of Brazil. The original “Caatinga” was modified, it was done a strip cutting the wood vegetation that improved the availability of herbaceous and arbustive extracts. This research was carried out from January to December of 2009. The experimental station is located 3 ° 42 'South latitude, 40 ° 21' west longitude, and 83 meters higher than sea level. The weather is BShw 'according to the Köppen classification, with rainy season from January to June and average rainfall of 759 mm/year. The area with 8 hectares (ha) was divided in three parts: forest reserve (1,6ha); agricultural (1,6 ha) and livestock area (4,8ha). It was done a lowering and thinning of woody vegetation in agricultural and livestock area, with the preservation of up to 200 and 400 trees per hectare, respectively. The average mass of “Caatinga”, was measured all months and it ranged from 800 kg/month in December to 3600 kg/month in June at livestock area. However, it was observed that more than 70% of biomass was constituted of avoided plant species or had a little intake by animals, such as “Bamburral” (*Hyptis suaveolans* (L.) Poit) and “Mofumbo” (*Combretum leprosum* Mart.). These results indicate that will be necessary increase the production of forage species in the area. Probably, the reduction of biodiversity and forage production was a consequence of overgrazing and selectivity of goat, during the rainy season. It will be necessary, in a near future, use some strategies of excluding grazing and/or stockpile forage to improve the forage production in the area. Besides, the activities of lowering and thinning of wood increase the requirements of labor in the system. Those activities compete for the time to plant, for example, corn and beans to his family. Probably, the cost of opportunity of labor time limits the adoption of this technology by smallholder farmers. Those results showed that is necessary improve the efficiency of the smallholder farmer labor. On the other hand, the agroecologic system permit an increase of food supply for family (corn, beans, goat milk and meat), allows the incorporation of 11 tons of organic matter in the soil, sustainability of production and become economically viable the small-holder system in the Brazilian Semiarid.

### **Modeling of Goat Production systems using linear programming**

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### **Abstract / Resumo:**

The modeling of systems permits identify opportunities of research, the comprehension and quantify process that occur in animal production systems. This research was carried out to develop a linear programming model to simulate a goat production system in “Sertão Central” in Ceará state of Brazil. The model evaluates the profits of three systems: milk, beef and mixed (milk and beef). The result of the model was compared with the small farmers of Piranji district, in Ibaretama city-CE. The results of simulations realized indicates that the best choice to the farmers is use 34 females of mixed proposition (milk and beef), and the money (capital) (R\$ 300,00) to buy concentrates to animals limits

the system. This result is similar as the observed in the real systems, where the farmers used a mixed proposition (milk and beef) animals, utilize the “Caatinga” and/or silage to feed the animals are the based of animal nutrition. The profit of this system is bigger than R\$ 700,00, if it has a good administration and organization. The model is indicating to simulate and optimize goat production systems.

### **Effects of The Grazing Behaviour of Goats on The Biodiversity and Forage Production of The Caatinga**

Barbosa, V.S.1,1,2, Silva, G.J.G.M.3,3,3, Medeiros, H.R.1,1,2, Campanha, M. M.2,2,2, Luna, A. A.1,1,1  
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#### **Abstract / Resumo:**

The most important forage support for the goat production systems in the Northeast region of Brazil is the “Caatinga” (a typical rangeland of this part of country). Therefore, a lot of problems as overgrazing and/or reduction of number of plant species resulted in decrease on carry capacity of “Caatinga” and sometimes in the degradation of this biome. The objective of this study was to realize a phytosociological study of a manipulated “Caatinga” and grazed in continuous stocking strategy by Dairy Goats. This research was carried out from January to December of 2009. This period of time include the water and dry season in the same year. The experimental station is located 3 ° 42 'South latitude, 40 ° 21' west longitude, and 83 meters higher than sea level. The weather is BShw 'according to the Köppen classification, with rainy season from January to June and average rainfall of 759 mm/year. The average mass of “Caatinga”, measured in this research, ranged from 800 kg/month in December to 3600 kg/month in June. However, this high amount of biomass, the proportion of forage species in it varied from 40% in February to 6% in April. On average 20% of the pasture biomass was identified as a forage and/or intake by the Dairy Goats. The major part of biomass of pasture was constituted of avoided plant species or had a little intake by animals, such as “Bamburral” (*Hyptis suaveolans* (L.) Poit) and “Mofumbo” (*Combretum leprosum* Mart.). Specifically, this two native species, sometimes could represent more than 70% of the mass of pasture. These results indicate that will be necessary increase the production of forage species in the area. It could be done planting native or exotic species, and will result on an augmentation in the carrying capacity of the “Caatinga”. Moreover, if part of the pasture area (a paddock) was excluding grazing to be used as stockpile forage, similar results could be obtained. Both strategies, used at the same time, will permit increase the production and seed bank of forage species in this area and the herbage allowance. If anything was done, a despite the system to remain green and apparently in good condition, it will occur a reduction in biodiversity of plant species, as a consequence from selective grazing by goats and decrease of carrying capacity of “Caatinga”. In the worse scenario, the “Caatinga” start a irreversible process of degradation and could not be used as a native pasture for dairy goat production system.

#### **Economic weights for selection objectives in dairy goat systems in Brazil**

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**Abstract / Resumo:**

Increasing food demand in tropical regions is a consequence of rapid human population growth. Profit from investments affect both consumers and producers, since cost reflects on commercialization prices. This is a preliminary study to identify relevant socio-economic traits and derivate economic weights for selection objectives in Brazilian milk goat production systems. Production and economic indicators for intensive and semi-intensive dairy goat systems in Brazil were evaluated, including feed and sanitary management and also productivity indices, using process from January 2010. An economic analysis of each system was carried out and only traits responsible for more than 10% of the profit were selected. The component traits for selection objectives for dairy goat systems were: Milk production (kg/animal/day), food consumption (%), adult female weight (kg), disease resistance, lactation duration (days), total milk dry extract (%), somatic cell count, colony forming units, total mortality (%), kidding interval (months), fertility (%) and prolificacy (kids/partum). The economic value of the trait was calculated by the difference between profit before and after an increase in a single unit of each individual trait ( $V_e = L' - L$ ), where  $L'$  is the average farm profit after increasing each trait by one unit (or 1%), keeping the average of others unaltered. For biological reasons, 0.1 was considered a change unit for prolificacy. Flock simulation was carried out considering 100 female goats. The determination of all economic and productive weights for both systems was carried out using Excel software. In general, the economic indicators showed similar results, with a slight advantage for the intensive system (up to 10%). Profit in both systems was practically the same, but average profit was significantly better for the semi-intensive system (R\$ 0.185 and R\$ 0.226 for the intensive and semi-intensive systems, respectively). Among the analyzed traits, only milk production (MP), food consumption (FC), total dry extract (TDE), somatic cell count (SCC) and colony forming units (CFU), were responsible for more than 10% of the result economics (profit or loss) in dairy goat production in Brazil. The average economic weights for MP, FC, TDE, SCC and CFU were 0.3154, -0.2924, 0.0597, 0.0298 and 0.1194 for the intensive system, and 0.3335, -0,3429, 0.0596, 0.0298 and 0.1192 for the semi-intensive, respectively. Food consumption showed high and negative economic value. Highest economic value was for milk production. Milk total dry extract, along with colony forming units also showed high economic values and contributed significantly to average profit. Quantitative and qualitative traits that have significant economic weights should be used as selection objectives in goat production systems in Brazil. Total dry extract, number of colony forming units, somatic cell count and milk production are the most important traits. This study was supported by CAPRILAT for economic values of production systems and CNPq for funding research.

**EFFECT OF THE PARTURITION TYPE AND LACTATION NUMBER ON THE MILK PRODUCTION OF CREOLE GOATS**

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**Abstract / Resumo:**

Farming Goat systems in Argentina, are aimed mainly at suckling kids goat from 30 to 60 life days with variable slaughter weight between 4.5 kg to 8 kg. This type of farms is usually done on natural pasture

in range management. The predominant goat is the "Creole", a descendant variety of the ones Spanish conquerors introduced, with a great adaptation to local environment. Work has been carried on according to the genetic characterization, as well as the morphological and productive native goats in extensive conditions, but there is not much information about this breed in intensive systems. Factors influencing on goat's milk quality and production are varied and can be classified into those that are intrinsic, such as race, age, lactation number and parturition type and those extrinsic or linked to the management and the environment as climate, season, food, etc. In systems of the region, one of the factors of non-genetic variation which has the greatest influence on milk production is the availability and quality of forage during the year. However, other factors can affect it, so it is necessary to estimate their influence on milk production. The objective of this study was to assess the incidence of the parturition type and lactation number on milk production of Creole goats in an intensive system up to 60 days of lactation. The experiment was carried out in the experimental field of the INTA "La Forestal" in Rivadavia department of Mendoza city (68° 29'55" O-33° 15'22" S). For this experiment 72 creole goats were used, a year old 36 primiparous young goats and two years old, 36 goats of second parturition. The measurement period was conducted in two consecutive years during the July-August breeding. Feeding the goats was carried out with lucerne hay ad libitum, direct grazing winter annual pasture and a ration of 0.350 g/day of corn and soybean pellet in a 65:35 ratio plus a mineral vitamin supplement in a 0.03 % ratio. The milk production of goats was individually determined by the method of double weight (before and after suckling) with subsequent manual milking if there was any milk after the kids fed. These determinations were made in the morning and afternoon, three times a week on nonconsecutive days during the sampling period. The results were analyzed by ANOVA. There was an incidence of parturition type in milk production, significantly increasing multiple births with  $p < 0.05$  with an average of 1.150 kg/day milk production for single birth, and 1.560 kg/day for twin births. The number of parturition there was a significant difference  $p < 0.05$  with means of 1.22 kg/day and 1.44 kg/day respectively to the first and second lactation. We conclude that milk production of Creole goats in intensive conditions is affected by the parturition type and the lactation number. Key words: Argentine creole goats, milk production

### **Effects of garlic supplementation on performance of grazing goats**

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#### **Abstract / Resumo:**

Garlic has been used as an ingredient in folk deworming remedies for humans and animals for many centuries in some countries. Our previous indoor-study indicated that feeding nematode-infected goats with a diet containing 2% garlic powder significantly reduced fecal egg count (FEC) and increased body weight during a 4-wk period. The present experiment was conducted to determine the effects of garlic supplementation on performance of lactating meat goat does grazing grass/forb pastures in the summer. Forty Boer does (2 to 5 yr of age) naturally infected with nematode parasites (initial mean FEC = 474; SE = 119) were used in the 84-d experiment. Litter size was 1 or 2, with kids 1 to 4 mo of age when the experiment began. Five does with their kids grazed 8 0.4-ha pastures. Treatments were control and garlic, with 4 pastures per treatment. During phase 1 (the first 6 wk), control does received 80 g/d of a mixture of 25% molasses and 75% ground corn. Does on the garlic treatment received the same supplement plus 20 g/d of garlic powder. A loose mineral-vitamin supplement was

available free-choice. During phase 2 (the second 6 wk), 500 g/d of concentrate (54% ground corn, 26% soybean meal, 13% molasses, and 7% minerals and vitamins) was offered to each doe in both groups and plus 20 g/d of garlic powder for garlic treatment animals. Forage DM mass was similar between treatments at the beginning, middle, and end of the experiment (2,080, 1,269, and 1,064 kg/ha for control; 2,228, 1,002, and 1,032 kg/ha for garlic, respectively). The concentration of CP in hand-plucked forage samples was similar between treatments (7.0 vs. 6.5% (SE = 0.36) in phase 1 and 17.8 vs. 15.9% (SE = 1.03) in phase 2 for control and garlic, respectively). Doe ADG was similar ( $P > 0.05$ ) between treatments (-0.15 vs. -0.12 g/d, SE = 0.024 in phase 1 and -0.045 vs. -0.060 g/d, SE = 0.008 in phase 2 for control and garlic, respectively). Kid ADG was similar ( $P > 0.05$ ) between treatments (41.6 vs. 45.7 g/d for control and garlic, respectively; SE = 4.75) during a 56-d period. At 42 d, doe FEC was less ( $P < 0.06$ ) for garlic vs. control (2,837 and 6,105, respectively; SE = 927), at which time some control does were treated with Levasole® (Schering-Plough Animal Health Corp, Union, NJ) to keep them alive. These data suggest that garlic supplementation of lactating meat goats grazing grass/forb pastures in the summer does not affect performance of goats despite impact on level of nematode parasitism.

#### **Effect of fat level in chemical and microbiological quality of goat mortadella produced from discarded animals.**

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#### **Abstract / Resumo:**

Three goat mortadella formulations were prepared using discarded lamb meat and pork fat in different percentages - 10, 20 and 30%. The mortadella were analyzed regarding the microbiological recommendations of the Brazilian laws for the Fecal coliforms, Staphilococcus aureus, Salmonella and Sulfite-reducing clostridium. The chemical composition, starch and chlorides were quantified for the assessment of chemical quality, as well as peroxide oxidation and oxidative rancidity parameters. The microbiological data showed that the goat mortadella were safe for human consumption, since all parameters analyzed attended the Brazilian legislation. In addition, the percentages of moisture, ash and protein decreased in relation to the increase of the percentage of pork fat used in the formulation. The percentages of ash, protein, lipid, starch and chlorides in all formulations were according to Brazilian legislation; however, the moisture value (65.47%) of mortadella made with 10% pork fat was slightly above the levels recommended by the legislation (maximum 65%). Lipid goat mortadella profile was negative for peroxide index and oxidative rancidity. The results showed that mortadella produced with meat from discarded goats and fat percentages ranging from 10 to 30%; appear as an option for the development of the agribusiness in the Northeast of Brazil, since they are nutritious and low cost products to the consumer.

#### **Use of spineless cactus as a basal food for dairy goats: impacts on milk production and kid's growth**

Dr1,1,1, Dr1,1,1, Dr1, Pr2

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**Abstract / Resumo:**

The objective of this study was to determine the effects of spineless cactus incorporation on milk production from local goats and kid's growth. Fourty five females of the local Tunisian breed were used in the experiment. Animals were divided into three homogeneous groups of 15 animals each. Goats for control group were reared on grazing pasture and received indoor 0.5 kg of oat hay and 0.4 kg of concentrate. Goats for the second (Cac-CC) group were kept in feedlot and fed spineless cactus ad libitum, they received as the control group 0.5 kg of the same hay and 0.4 kg of the same concentrate. The last group (Cac-TS) was also kept indoor and fed spineless cactus at libitum more 0.5 kg of the same hay and 0.2 kg of soybean meal. The results from this experiment showed that feeding system affected growth kids, average daily gain during the first month was 64 vs. 32 g / d for grazing and Cac-CC kids, respectively. The daily milk production averaged 485 and 407 ml for control group and for ones receiving spineless cactus (Cac-CC and Cac-TS) without significant differences. The milk protein content was not affected by feeding system, it averaged 2.7%, while fat content was significantly ( $P < 0.01$ ) different between experimental groups, 3.9, 3.7 and 3.1% for control, Cac-TS and Cac-CC group, respectively.

**IN VITRO EFFICACY OF OIL FROM THE SEEDS OF *Carapa guianensis* AULB. (ANDIROBA) AGAINST *Damalinia caprae* (GURLT, 1843) (MALLOPHAGA: TRICHODECTIDAE)**

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**Abstract / Resumo:**

The aim of the present study was to assess the in vitro efficacy of the oil from seeds of *Carapa guianensis* (andiroba) against *D. caprae* (Gurlt 1843). Nine hundred adult specimens of *D. caprae* were distributed among nine experimental groups, with four replicates composed of 25 specimens in each group. The different groups were submitted to seven different concentrations of andiroba oil (100, 50, 30, 20, 10, 5 and 2.5%). A positive control group was submitted to monosulfiram and a negative control group was submitted to distilled water. The groups were immersed in the solutions for three minutes and observations were made at 1, 3, 6, 24, 48 and 72 hours until all lice in all groups were dead. The positive control and andiroba seed oil at concentrations of 100%, 50% and 30% achieved 100% mortality after one hour of treatment. In all other andiroba seed oil treatments, mortality was complete by six hours. In the negative control, the lice remained alive during the test, even without feeding, with mortality occurring between 48 and 72 hours.

**Effect of oil from seeds of *Carapa guianensis* Aubl. (andiroba) on gastrointestinal nematodes in naturally infected goats (*Capra hircus*)**

FARIAS, M.P.O., BARROS, F.N., MAIA, C.S., LIMA, M.M., FERREIRA, M.P.B., SANTOS, N.V.M., ALVES, L.C., FAUSTINO, M.A.G.

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**Abstract / Resumo:**

The aim of the present study was to assess the *in vivo* action of andiroba seed oil (*Carapa guianensis* Aubl.) on gastrointestinal nematodes in naturally infected goats. Thirty animals were distributed among three groups of ten animals: Group I – animals treated with andiroba seed oil at a dose of 1 mL/Kg once a day for three consecutive days; Group II – treatment with a single dose of oxfendazole, following the manufacturer's recommendations; and Group III – untreated animals (control). Fecal samples were collected on the day of treatment and each subsequent seven days for a period of 21 days. The samples were processed for the determination of eggs and larvae per gram of feces. Anti-helminth activity was assessed through the percentage of reduction in eggs and third-stage larvae. The data were interpreted based on the classification proposed by the World Association for the Advancement of Veterinary Parasitology. The percentages of reduction in the number of eggs demonstrated the andiroba seed oil treatment to be ineffective, with percentages of 32.4%, 24.1% and 27.0% at seven, 14 and 21 days following treatment, respectively. Regarding the number of third-stage larvae, a slightly effective reduction (65.43%) was obtained at seven days following treatment and ineffective reduction was determined at 14 (35.74%) and 21 (29.12%) following treatment. Although with greater reduction percentages in comparison to the andiroba seed oil, the results of the egg and larva counts after the use of oxfendazole did not achieve sufficient values for this drug to be classified as effective in the control of gastrointestinal nematodes in goats. This suggests anti-helminth resistance to this drug in the herd studied. The larval cultures revealed infecting larvae from the genera *Haemonchus* and *Trichostrongylus*, with a predominance of the former.

**Study of Production of Dairy Cattle not Stabilized the Period of 2004 to 2009**

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**Abstract / Resumo:**

Milk production varies throughout the year and there are several factors responsible for fluctuation in the quantity produced. The aim of this study is to evaluate the possible causes of variation in milk production of a goat herd in the period 2004 to 2009 in order to find any solution for that production has minor variations during the year. The experiment was conducted in a property located in the city of Macaíba metropolitan area Natal / RN - Brazil. Were collected the values of milk produced monthly. The interfering factors are identified as low or high nutritive value of forage available, low persistence of production of some animals, breeding season, parities, participation in farming exhibitions and buy and sell of animals. Based on the analysis performed during the study period, it's noticed that with some changes in the management of property is possible that production becomes more stabilized. As an example, it can be adopted two or three breeding seasons during the year, since there are different races on the property and the geographical position is favorable, because the light changes throughout the year is minimal compared to other regions of Brazil. The breeding herd is also another important factor. The acquisition of animals with high yield potential as high production and persistence will ensure a more stable production. Disposal of animals that do not meet the expectations of production, whether because of low production, high rate of return to estrus and shorter lactation period, should also be considered.

## **Genetic Improvement of Egyptian Nubian Goats as Dairy Prolific Sub-Tropical Breed**

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### **Abstract / Resumo:**

Egyptian Nubian (E. Nubian) goats, known to be the progenitor of the standard Anglo-Nubian are raised as household dairy animal in North-East of Nile Delta region and known for its high prolificacy. The present E. Nubian herd had been established in 1987 and raised at El-Serw Research farm, north of Delta. Since 1990, sires were selected based on their dam milk yield, sire selection index was applied in 2000, included weaning and yearling body weights of the buck plus milk yield of their dams at 1st parity. Sires were used for 2 to 3 mating season and replaced from within the herd. Does produce less than 150 kg/lactation (the highest production from other indigenous goats) was excluded from the herd. Starting from the year 2000, milk yield at 1st parity and body weight at 1st mating were included in a selection index for the does. In all cases single-born goats were not allowed to breed. A total of 7298 E. Nubian does' and 10374 kids' records were used to estimate annual phenotypic, genetic and environmental changes in milk yield, litter size, and growth traits. Estimated lactation curve parameters; initial milk yield, rate of ascending to peak yield, rate of decline determined 95% of the variation in milk yield. Lactation peak week, peak milk yield and persistency averaged 3.91 wks, 1.8 kgs and 1.38, respectively, which are intermediate between standard dairy breeds and the indigenous ones. Total milk yield averaged 253.1 kg in 251.3 days of lactation (including 90 days suckling). Seventeen percent of the does produced more than 350 kg of milk/lactation. Annual genetic changes were estimated based on the predicted breeding values over year of birth. Annual genetic changes were positive and highly significant for total milk yield (TMY), (0.690 kgs/yr,  $p < .0001$ ) and litter size at weaning (LSW) (0.0012 kgs/yr,  $P < 0.001$ ), which is encouraging as response to the applied selection program. Annual genetic changes were highly significantly positive for lactation curve traits. Annual phenotypic changes were insignificantly negative for milk yield and growth traits, and statistically significant for prolificacy traits, which indicate unfavorable environmental conditions and the need for better management of the herd to explore its genetic potentiality as a sub-tropical dairy prolific breed. Litter size averaged 2.1 kid at birth and 1.6 kid at weaning, where 55.7% of does produced twins, 30.0% triples and 4.2% quadruplets. Culling single-born animals (15-20% of the herd) slightly improved litter size at birth. The significant positive response in LSW was the result of better growth performance of the kids and higher milk yield of their dams. Annual genetic changes for kid growth rate were significantly positive ( $P < 0.0001$ ) being 0.304 kg/yr for WW. Annual maternal changes were significantly negative for both BW and WW. It was recommended to apply more intensive selection program to explore the E. Nubian genetic potentiality as a subtropical dairy breed. Lactation period and lactation curve parameters should be considered in any future selection program.

## **Change in Behavior of Goat Producers after On-line Training in Health Practices**

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### **Abstract / Resumo:**

In 2006, Langston University unveiled an on-line training and certification program for meat goat producers (<http://www2.luresext.edu/training/qa.html>). The program consists of 22 learning modules, including herd health, biosecurity and internal parasite control. In March 2010, an electronic survey was sent to 160 certified producers to assess impact of the training. Fifty-four surveys were completed for a response rate of 33.7%. Prior to certification, 52.8% of respondents used selective deworming criteria. Current deworming practices include: FAMACHA, 43; visual condition, 28; pasture rotation-based, 15; and calendar-based, 14; for practice and percentage of responses, respectively ( $\chi^2=19.02$ ,  $P < 0.001$ ). However, when asked if individual animals or all animals in a pasture or pen received anthelmintic when deworming, 76% of respondents said that all animals received anthelmintic ( $\chi^2=14.52$ ,  $P < 0.001$ ). The dosage of dewormer given was most often calculated based upon table guidelines given in the certification course, 54%, vs. 35% who relied on veterinarian instructions and 11% who self-determined dosage amounts ( $\chi^2=18.22$ ,  $P < 0.001$ ). Over 60% of respondents reported that prior to becoming certified they did not consult a veterinarian for use of drugs extra label. When asked how current withdrawal times for drugs not approved for goats are determined, 41% of responses reported using veterinarian instructions with an identical percentage using table guidelines from the certification course; with 19% of responses using information from the internet ( $\chi^2=7.32$ ,  $P < 0.03$ ). Results of the survey show changes in behavior of certified goat producers when compared with previous practices in anthelmintic usage. More emphasis on the importance of veterinarian approval for lawful use of extra-label drug is needed. Changes in production practices noted imply that an on-line training course can be effective in promoting proper herd health practices for goat producers.

### **The effect of average daily production, parturition order and stage of lactation on the physical and chemical characteristics of goat milk**

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#### **Abstract / Resumo:**

The objective of this study to evaluate the influence of parturition order and stage of lactation on the average daily production and physic and chemical composition of milk from dairy goats participants Tournament Circuit State Agricultural Exhibition of Rio Grande do Norte, in the period April to November 2009. Were made 106 collections of goats breed Saanen, Toggenburg and cross-breed. In addition to monitoring of weighing data for average daily production (PM), the milk samples were analyzed for the levels of fat, extract of total solids, Extract of solids without fat, protein, lactose and determination of freezing point, acidity and density. There was significant effect ( $P < 0.05$ ) of parturition order on the average daily production and the content of total solids for all stages of lactation. The average daily production was influenced by the parturition order, where the goats had one primiparous to multiparous lower output. The levels of total solids extract showed significant differences in milk composition of primiparous and multiparous goats.

### **Corticosteroid therapy in the treatment of idiopathic immune-mediated anemia in goats**

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**Abstract / Resumo:**

A long-term treatment of corticosteroid therapy was evaluated in the treatment of idiopathic immune-mediated anemia in goats. A total of 12 goats were evaluated for immune-mediated anemia and then treated with hypertonic saline dextran @ 5ml/kg body weight once, 2 liters of whole blood transfusion and isoflupredone acetate for three weeks at different dose rates. Ceftiofur HCl was administered @ 6 mg/kg for five days. The goats showed improvement each day and was discharged at the end of 3rd week. Body condition at the time of discharge was excellent and values for hematocrit and hemoglobin concentration were 34% and 14 g/dL, respectively. It was concluded from the study that immune-mediated anemia could occur in goats and is a treatable condition. It is effective to use corticosteroid therapy for its recovery along with hypertonic saline dextran and whole blood transfusion.

**Comparative clinical efficacy of hypertonic saline and hypertonic bicarbonate solutions in the treatment of dehydrated diarrheic goats**

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**Abstract / Resumo:**

The clinical efficacy of IV administered hypertonic saline solution (HSS) and hypertonic bicarbonate solution (HBS) in the treatment of dehydrated diarrheic goats was evaluated which has not been compared yet. Our hypothesis was that HBS is more advantageous than HSS in the treatment of goats with severe metabolic acidosis. For this purpose, sixteen dehydrated goats due to diarrhea were included in the study. These goats were randomly divided into two equal groups i.e. group A and group B. Goats of group A were treated with hypertonic saline solution (7.5% NaCl) @ 4 mL/kg BW, IV, while group B was treated with hypertonic bicarbonate solution (5% NaHCO<sub>3</sub>) @ 10 mL/kg BW, IV. Serum electrolytes, blood gas analyses and haematological analyses were monitored for 72 hours after treatment. The use of small volumes of hypertonic saline solution in a single dose restored the plasma volume and serum sodium and chloride concentrations. When compared to HBS, HSS brought about a less marked hemodilution. We concluded that hypertonic rehydration represented a safe and reliable method to improve the hydration status of diarrheic goats. Hypertonic saline seems to be most appropriate for goats as most of these patients suffer from a slight to moderate metabolic acidosis. Hypertonic bicarbonate solution (HBS) allows successful treatment of diarrheic goats even with severe metabolic acidosis. Hypertonic bicarbonate solution is appropriate in goats without respiratory problems with more severe metabolic acidosis.

**Intake, Performance, Organ Growth, and Carcass Characteristics of Purebred Boer and Kiko Kids Fed High Concentrate Diet**

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**Abstract / Resumo:**

Twelve pure breed Boer and Kiko male goat kids (n = 6) were randomly selected from a group of 24 counterparts for each breed to determine intake of forage vs. concentrate, growth performance, feed efficiency, different organ growth, and carcass quality. Three sire lines represented each breed group. Goat kids were weaned at 3 months of age and had average body weight (BW) of 24.6 and 22.8 + 1.34 kg for Boer and Kiko kids, respectively. Goats were offered a commercial concentrate mix and bermudagrass hay at 80:20 ratio, respectively. Feed intake and growth performance were monitored for 85 days. At the end of the study goats were transported about 150 km to Mississippi State University Meat Lab and were slaughtered according to USDA guideline. Upon slaughter, carcasses were evaluated and different organ weights were recorded. There was no difference (P = 0.37) in initial BW for two breeds; however, final BW (P = 0.09) and average daily gain (ADG; P = 0.06) of Boer kids tended to be higher than Kiko kids. Although there was no difference in total dry matter intake (DMI; P = 0.48), given a choice, concentrate intake tended to be higher (P = 0.07) for Boer kids and hay intake was higher (P = 0.05) for Kiko kids. Gain efficiency (gain: feed intake) tended to be higher (P = 0.06) for Boer kids. Boer kids preferred less hay (23.1% vs. 31.5% DMI; P = 0.004) and more grain (76.9% vs. 68.5% DMI; P = 0.004) in their diet. There were no differences (P > 0.10) in dressing percentage and carcass characteristics between two breeds, except Boer kids had higher fat thickness over 12th rib (P = 0.04), higher total % fat (P = 0.001), and lower total % bone mass (P = 0.05) in carcass, with no difference in muscle mass (P = 0.22) between breeds. All the body organs as a % of fast BW were similar between two breeds, except Boer kids tended to have heavier scrotum (P = 0.05). In conclusion, Boer kids preferred and consumed more grain and tended to have higher ADG than Kiko kids; however, they gained more fat, and less bone mass.

**DEVELOPING A HIGH IRON SAUSAGE MADE FROM THE BYPRODUCTS OF GOAT.**

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**Abstract / Resumo:**

The use of blood and guts in the formulation of a high iron sausage is presented as an alternative to the use of goat slaughter the by-products, which, if not used in the preparation of the typical "buchada", are discarded in the environment, thus resulting in a potential pollutant. Considering the scarce information about the production of goat sausage, the objective of this paper was to develop a goat sausage with different formulations, submitted to the smoking process. Three formulations were tested, in which the percentages of viscera and blood ranged from 10 to 30% (viscera) and from 30 to 50% (blood), i.e., formulation A: 30% viscera and 30% blood, formulation B: 20% viscera and 40% blood, and formulation C: 10% viscera and 50% blood. After have been prepared, the sausages were divided into two lots; one set was submitted to the smoking process, resulting in formulations CDA, CDB and CDC of smoked sausages, while the non smoked sausages were named SDA, SDB, and SDC. A total of six treatments were prepared. Physicochemical characterization of goat sausages was performed, through the evaluation of Aw, pH and colour (a\*, b\* and L\*) parameters of smoked and non smoked sausages. Color characteristics presented significant differences (p < 0.05) among the

smoked and non smoked sausages. The redness ( $a^*$ ) and brightness ( $L^*$ ) parameters showed significant differences ( $p < 0.05$ ) among the six formulations. The yellow intensity ( $b^*$ ) had a higher variation ( $p < 0.05$ ) in the formulation with the lowest percentage of viscera (CDC and SDC). The values of  $a^*$ ,  $b^*$  and  $L^*$  for the sausages ranged from: 10.8 to 16.8, 19.9 to 25.2 and 17.2 to 25.9, respectively. It was observed that the pH and Aw parameters did not vary significantly ( $p > 0.05$ ) among the three formulations of both sets of smoked and non smoked sausages. The smoked sausages showed average values of Aw 0.958 and pH 7.3. The non smoked sausages had Aw values of 0.973 and pH of 7.41. As expected, when comparing the set of smoked and non smoked sausages, a significant difference ( $p < 0.05$ ) was detected for the content of Aw, which probably resulted from the loss of moisture occurred during the smoking process.

#### **DEVELOPMENT OF A GOAT PATE PROCESSED WITH SLAUGHTER BY-PRODUCTS**

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#### **Abstract / Resumo:**

The goat slaughter by-products, viscera and blood, usually are used in the preparation of a typical dish named "buchada" which is well appreciated in the Northeast of Brazil. Nowadays there are several processed meat products made with by-products of pork and cows, such as pate, sausages, blood sausage, and so on; however none of these uses goat by-products. Considering the scarcity of information on the production of goat meat products elaborated with goat by-products, this research aimed to develop a goat pate using blood and liver and to perform its physic-chemical characterization. Three formulations were tested, in which the percentages of blood and liver had been changed. Formulation "A" - 21% of liver + 9% of blood; "B" - 15% of liver + 15% of blood; "C" - 9% of liver + 21% of blood. The parameter of Aw, pH and color ( $a^*$ ,  $b^*$ ,  $L^*$ ) were evaluated for all formulations. The intensity of redness ( $a^*$ ) and lightness ( $L^*$ ) differed significantly ( $p < 0.05$ ) among the three formulations. However, the intensity of yellow ( $b^*$ ) had showed no change ( $p > 0.05$ ) among the treatments. The values of  $a^*$ ,  $b^*$  and  $L^*$  ranged from 13.98 to 15.51, from 11.83 to 13.91, and from 41.55 to 49.31, respectively. As expected, the lowest values for lightness ( $L^*$ ) were found in formulations with a higher proportion of blood, i.e. in formulation "C", since the concentrations of pigments (hemoglobin and its derivatives) were higher than in the other two. The higher value of redness ( $a^*$ ) was found in formulations "B" and "C" with a higher proportion of blood, justified by the high concentrations of these pigments. It was observed that the pH and Aw parameters did not vary significantly ( $p > 0.05$ ) among the three formulations, with average values of 0.965 for Aw and 6.81 for pH.

#### **Long versus short term progesterone treatments effects on synchronized estrous characteristics and fertility in goat on Colombian high altitude tropics**

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#### **Abstract / Resumo:**

The aim of this study was to evaluate the effect of duration of treatment with medroxyprogesterone acetate (MAP) on estrus synchronization and fertility in goats. Forty-eight goats type Saanen (crossbred), were divided randomly into four groups (n = 12). For groups 1 and 2 the length of treatment with MAP (50 mg) was 16 days, while for groups 3 and 4, the duration was 6 days. In groups 2 and 4, an analogue of PGF<sub>2</sub> (5 mg, Dinaprost) was administered 24 hours before insertion of sponge. All groups received a dose of human chorionic gonadotropin (250 IU of hCG) at sponge withdrawal. The timing of sponge removal was the same for all groups. Blood samples were taken to determine progesterone concentrations by radioimmunoassay on days -6, -4, -2, 0, 2, 4 and 6 (Day 0, sponge removal). There were significant differences for the variable animals in heat, being group 4 (short course) the one that had the lowest percent (50%). There were no significant differences between treatments for the variable interval at estrus and length of heat. Best results are evident for the pregnancy rate in the short course treatment 91.66% (group 3) and 83.33% (group 4) than for longer treatments 75% (group 1) and 66.7% (group 2), likewise, for conception rate in which long treatment group 1 (81%) and group 2 (72.7%) had lower percents, compared to short-term treatment group 3 (91.6%) and Group 4 (100%). From day -6 and at sponge removal time, progesterone levels were found at lower concentrations on long-term treatment exposed group. We conclude that short treatments have comparable effectiveness to induce heat, to that of long-term treatment in goats, is also observed that although short-term treatment achieved a lower prevalence of heat, this last is more fertile than heat observed in females exposed to long-term treatment, is proposed the sub fertility phenomena observed in long term treatments may be due probably to the presence of subluteal levels of progesterone at the time of sponge withdrawal on such treatment scheme.

### **Prevalence of clinical and sub clinical mastitis and antibiotic sensitivity profiling of the major isolates in indigenous breeds of goat in Faisalabad, Pakistan**

1. University of Agricu, Department of Clinical Medicine and Surgery, University of A. 2. Department of Clinic, Z. Ali, Muhammad G., Ahmad, T. Zafar M.A. 1Nadeem, M., and.

#### **Abstract / Resumo:**

Present study was planned to determine the prevalence of mastitis and antibiotic sensitivity testing of the major isolates in indigenous breeds (Beetal, Teddy and Desi goats) of goats in Faisalabad, Pakistan. For this purpose, 320 goats in and around district Faisalabad were selected. The udder half wise prevalence of sub-clinical was 29.84% and animal wise prevalence (37.18%) was recorded by using Surf Field Mastitis Test (SFMT) while that of clinical mastitis was (10.15%) half-wise and (11.56%) animal-wise in indigenous breeds of goats. Nine antibiotics were tested for in vitro sensitivity against bacterial isolates and among all antibiotics, gentamycin was highly (95.83%) sensitive followed by sulfamethoxazole+ trimethoprim (87.50%), amoxicillin+clavulanic acid (87.50%), tetracycline (83.33%), tylosin (79.17%), lincomycin (75.00%), ampicillin (45.83%) and pencillin G (41.67) respectively.

### **Mitochondrial DNA polymorphism in Moroccan goats**

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**Abstract / Resumo:**

The present research has for objective to study the mitochondrial diversity of local goats in Morocco. Thus, the mitochondrial diversity of 150 Moroccan goats over 4 geographical regions and belonging to different phenotypic entities in the country has been characterized in comparison with 21 individuals present in the world. The 150 goats represented 97 haplotypes for the HVI segment of the mitochondrial DNA (mtDNA) control region, with a high diversity of haplotypes. Most of this diversity was distributed within phenotypic entities and within regions. These weak phenotypic and geographic structures may result from the fact that all haplotypes were mixed at the time of domestication and all haplotypes were mixed on arrival in Morocco. All the Moroccan goats studied belong to the haplogroup A that is dominant in the world, and no other haplogroup is represented by these individuals. No group could be distinguished from others, but considering geographical distribution, the haplotypes of the Northern region of Morocco may be more or less distinguished as a subgroup. The haplotypes of other regions are very heterogeneous.

**Reproduction in North Moroccan local goats**

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**Abstract / Resumo:**

This research aims to study, in North Moroccan goats, seasonal variation of reproductive ability of female and female, puberty attainment and gestation. North Moroccan female goats show great reproductive seasonality as influenced by photoperiod. The occurrence of ovulation and oestrous behaviour diminishes progressively starting at the winter solstice. These manifestations completely stop in April, May and June and progressively resume at the summer solstice. This seasonality is not influenced by the feeding level varying within one to two times maintenance requirements range. In bucks, Testis measurement (scrotal circumference, testicular diameter and length), sperm parameters (volume of the ejaculate, sperm concentration and produced sperm) and plasmatic testosterone level were significantly influenced by season. After a winter period, during which the lowest values were observed, an improvement of these parameters was observed during spring and summer where the highest values were recorded. Puberty in female is attained from 270 days of age and at an average weight of 17.6 kg. Through its effect on body development, increased feeding lowers age at puberty but does not affect the weight at puberty. Goats attain puberty at a critical weight (46% of adult weight) regardless of feeding level. The average pregnancy length of North Moroccan goats is 149.7 days. The length of pregnancy in female giving singletons was higher than those giving twins ( $151.0 \pm 1.4$  vs  $148.3 \pm 1.7$ ;  $P < 0.05$ ). No effect of the litter size was detected on progesterone plasma concentration.

**Effect of *Leucaena leucocephala* hay on intake, digestibility, growth and carcass quality of Saanen goats fed a total mixed ration.**

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**Abstract / Resumo:**

The objective of this study was to examine the effects of diets with different protein sources (oil seed cakes vs. *Leucaena leucocephala* hay) on digestibility, intake, growth and carcass quality of goats fed a total mixed ration (TMR). Sixteen Saanen male goats were allocated to one of the two TMR without or with *L. leucocephala* hay at 25% of DM. The TMR were formulated to be iso-nitrogenous, iso-caloric and iso-NDF while using two different sources of crude protein (CP): (1) *L. leucocephala* hay, and (2) oilseed cake meal (OSCM) from sunflower and cottonseed. No significant differences ( $P>0.05$ ) were revealed in average daily gain, feed intake and carcass quality due to partial replacement of oilseed cake by *Leucaena* hay. Similarly the digestibility coefficient for dry matter (DM), organic matter (OM), crude protein (CP), neutral detergent fibre (NDF) and acid detergent fibre (ADF) as well as digestible DM, OM, CP, NDF and ADF per unit metabolic body weight were not different ( $P>0.05$ ) between the two TMR treatments. In contrast, the voluntary intake of these nutrients per unit metabolic body weight was highest for goats fed the TMR with *Leucaena* compared to those fed the control diet. It was concluded that replacing a portion of oilseed cake meal with *Leucaena* hay in TMR for Saanen male goats did not negatively influence their feed intake, digestibility, growth performance and carcass quality.

**Effect of *Leucaena leucocephala* hay, as protein source in a total mixed ration, on milk yield and composition of Saanen milk goats**

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**Abstract / Resumo:**

The objective of this study was to examine the effects of diets with different protein sources (oil seed cakes vs. *Leucaena leucocephala* hay) on the performance of lactating goats fed a total mixed ration (TMR). Thirty Saanen milk goats were divided into two groups, each fed one of the two TMR without or with *L. leucocephala* hay at 25% of DM. The TMR were formulated to be iso-nitrogenous, iso-caloric iso-NDF while using two different sources of crude protein (CP): (1) *L. leucocephala* hay, and (2) oilseed cake meal (OSCM) from sunflower and cottonseed. No significant differences ( $P>0.05$ ) were revealed in body condition score, body weight change, milk yield, milk fat (%), milk lactose (%), somatic cell count (%) and milk protein (%) during the entire lactation period. However, goats fed the TMR with *Leucaena* hay had a lower milk urea level than those fed the control diet (with oil seed cake meal). It was concluded that replacing a portion of oilseed cake meal with *Leucaena* hay in TMR for Saanen goats did not negatively influence milk production and composition.

**Growth of Saanen goat kids reared using a conventional system or a system of restricted suckling.**

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### **Abstract / Resumo:**

The aim of this research was to compare the growth of goat kids that were reared according to a conventional commercial system, with those reared using a system of restricted suckling, similar to that practised by farmers in developing areas of South Africa. Goat kids born at the Research Farm of the University of Pretoria were removed from their mothers after three days, and placed in groups in kid nursery pens. Each treatment was allocated 15 goat kids. Treatment 1: (control group: conventional rearing system): goat kids were given 0.5 litres goat milk twice a day, by bottle, and had access to calf starter pellets ad lib. and lucerne hay. Treatment 2: (restricted suckling): goat kids were allowed access to their mothers overnight after milking and separated during the day, and had access to veld grass hay ad lib. Treatment 3: as for Treatment 2, plus 200g calf starter pellets per day. Milk intake of goat kids on restricted suckling was found to be approximately 1 litre per day. This was measured indirectly by difference, by periodically not allowing the lactating goats access to their kids overnight, and then milking them in the morning. The goat kids were weaned at 8 weeks of age and slaughtered at 10 weeks. The kids that ate more roughage, because they were fed no concentrates (Treatment 2) or only a small amount of concentrates (Treatment 3) grew at a faster rate than those in the control group, which had access to concentrates ad lib. This might have been because of the more frequent intake of milk from natural suckling, or because of the faster growth of the rumen, reticulum and omasum when more roughage was ingested.

### **Predicting the body mass of small ruminants from body measurements**

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### **Abstract / Resumo:**

Although monitoring the live weight (as a body mass estimate) is very useful for small ruminant farmers, most of them lack reliable weighing devices. Using spring or steelyard balances can be painful because animals need to be lifted up. The spring in the scale can permanently stretch with repeated or out-of-bounds use, resulting in biased measurement. Scales must be installed on a horizontal base (concrete floor) and checked regularly for setting and calibration. Any defect in the base building can result in a bias in the measurements, as well as any lack of calibration. Scale calibration and maintenance require skilled technicians, and finally such devices are too expensive for most of small farmers. Heart girth (HG) and live weight (LW) data were collected on Creole goats (609 growing male and female and 36 adult male) and on Martinik hair sheep (347 growing male and female). The gompertz model gave the better prediction of LW from HG Goat ( $R^2=0.98$ ):  $LW= 102*\exp(-10.35*\exp(-0.0301*HG))$  Sheep ( $R^2=0.97$ ):  $LW= 193*\exp(-8.64*\exp(-0.021*HG))$  The cross validation of the models gave a prediction confidence interval under 4% of LW for the goats, and under 5% of LW for the sheep. The model parameter estimates allow building a dedicated tape (graduated in kg LW, or any usual weight unit) with one side for growing goats and the other for sheep. Such tool would be cheaper and easier to implement than the various different weighing apparatus currently in use. However, the parameters presented above were fitted for the Creole goat or Martinik sheep and require validation and possibly correction for different breeds and body shapes.

### **Effects of mixed grazing on nutrition and growth of grazing goats infected by gastrointestinal**

## **nematodes**

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### **Abstract / Resumo:**

In the tropics, gastrointestinal nematodes are the major source of lost production in small ruminants. Mixed grazing using large and small ruminants is an alternative strategy which has been used to reduce parasite burdens and increase meat production in sheep. This approach has not been studied in the tropics using goats and cattle. Differences in feeding behaviour and immunity between sheep and goats may affect the potential use of goats mixed grazing systems. Replicated studies in Guadeloupe used either 6 goats per treatment or 6 goats with two heifers that were exposed to artificial and natural infection with *Haemonchus contortus* or were maintained free of infection using an injectable anthelmintic "Moxidectin. Goats infected and mixed with cattle had higher organic matter intake, digestible organic matter intake and average daily gains (61.7 gOMI/kgP 0.75, 55.0 gDOMI/kgP 0.75, and 35 g/d) than goats infected but reared alone (43.5 gOMI/kgP 0.75, 38.8 gDOMI/kgP 0.75 and 24 g/d,  $P < 0.0001$ ). Mixed grazing improves the nutrition and growth performance in *H. contortus* infected and uninfected goats. These benefits should enable a reduction in the requirement for anthelmintic treatment with subsequent benefits regarding the rate of the selection of anthelmintic resistance.

### **Effects of indoor management on growth and carcass quality of infected Creole kids: preliminary results**

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### **Abstract / Resumo:**

Within a research program including the effect of experimental infection with *Haemonchus contortus*, animals were reared indoors. The effect of indoor management on average daily weight gain (ADG) and carcass quality of Creole kids were assessed using 20 intact males. Kids were fed with hay of tropical forage (500g/h/d) and concentrate (100g/d). They were randomly allocated into individual pens (IP) and collective pens (CP). Growth data were analysed using mixed models and carcass quality data were analysed using GLM. Statistical analysis show a better ADG in IP than in CP (46 vs. 38 g/d, respectively,  $P < 0.05$ ). Carcass quality data show a significantly better dressing percentage in IP than CP (0.56 vs. 0.53, respectively;  $P < 0.05$ ), carcass from the IP group loose less water than CP group (0.165 vs. 0.218 g/100g, respectively IP vs. CP;  $P < 0.05$ ). The meat pHu was higher in IP than in CP group (5.85 vs. 5.71 respectively,  $P < 0.05$ ). Meat of the CP has a higher colour parameter ( $b = 7$  vs. 5 respectively,  $P < 0.05$ ). In conclusion, the present results show that kids managed indoor in individual instead of collective pens resulted in positive effects on growth, carcass yield and some other quality parameters.

### **PRICES SEASONALITY ANALYSIS OF GOAT MEAT IN THE STATE OF BAHIA**

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**Abstract / Resumo:**

The behavior study of the agricultural prices is extremely important to any economy. The price mechanism plays the major role in a market economy, due to the fact that prices reveal what, when, how and for whom to produce. From the standpoint of the consumer, market prices reflect their own preferences and command the goods from the production side. Moreover, the prices mechanism affects the agricultural inputs, and thus determine the allocation of resources in these industries. The methodology used in this method is based on Harmonic Analysis. We observed that the prices of goats marketed in the city of Feira de Santana, Bahia State, showed no characteristic cyclical pattern. This behavior can be explained by biological characteristics of the goat and the intensive production technologies that allow a distribution of production throughout the year, with a consequent stabilization of the levels of prices. In this context, this study aimed to identify the seasonal behavior of the price series of goat meat sold in the state of Bahia. For this purpose, was used monthly data of prices received by producers in Feira de Santana, and published by the Bahia Agricultural Research (EBDA), during the period from January 2002 to December 2009.

**Cholesterol concentration in the seminal plasma of goats as indicative of presence of goats seminal proteins (GSP) in tropical environment (data preliminary)**

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**Abstract / Resumo:**

This study was conducted to determine the concentration of total cholesterol and HDL cholesterol in seminal plasma of goats and, also, to verify the occurrence of cholesterol efflux after incubation during 1 hour at 38 °C. Eight two-year old crossbreed male goats were used. Then the pool of two ejaculates was divided in three aliquots: the first was centrifuged (control) immediately and the second was incubated in water bath and after centrifuged by analyses biochemical characteristics (treatment). The third aliquot was diluted in an extender with sodium citrate and glucose and samples were evaluated to determine sperm motility and vigor by heat resistance test. The total cholesterol and HDL cholesterol of the seminal plasma were estimated by the colorimetric method using chemical commercial kit. Data were evaluated using the Statistical Analysis System, SAS v.8. Cholesterol efflux was observed in this study. Such findings suggest that GSP caused these changes. However, more researches aiming to identify the presence of GSP in seminal plasma need to be performed. In the current study, LDL-Cholesterol was not measured, but the results suggest that HDL cholesterol was the main major steroid found in the goat seminal plasma. No associations were found before incubation among seminal parameters and total cholesterol and HDL-cholesterol, however, correlations both were found with vigor ( $r = -0.30$ ;  $p < 0.05$ ) and motility ( $r = -0.38$ ;  $p < 0.05$ ) after incubation at 38 °C for total cholesterol. In conclusion, the seminal plasma of goats contains a high concentration of cholesterol and the HDL-cholesterol is the main major cholesterol found in this species. Moreover goat semen contains factors that stimulate cholesterol efflux from the sperm membrane to the seminal plasma.

## **ENERGY SPERMATOZOA GOATS PREFERENCE UNDER REFRIGERATION (data preliminary)**

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### **Abstract / Resumo:**

This study was conducted to verify if the buck's ejaculated spermatozoa uses fructose or glucose with similar efficiency whenever the semen is diluted and stored in citrate or Tris extenders. Four two-year old Nubian male goats were used. Semen samples were collected by an artificial vagina. Then the semen was diluted in the four extenders: citrate-glucose-egg yolk (CGE), citrate-fructose-egg yolk (CFE), Tris-fructose-egg yolk (TFE), and Tris (hydroxymethyl-aminomethane) - citric acid-glucose-egg yolk (TGG). This semen was gradually cooled at 5 °C and, samples of each extender were evaluated at 2 and 24 hours after storage. The semen was incubated in a water bath at 38 °C and samples were taken to test sperm motility and vigor using the heat resistance test. The data was evaluated using the Statistical Analysis System, SAS v.8 (2000), according a randomized design. In this study, the spermatoc vigor was better in the extenders made with sodium citrate and fructose or glucose than in tris, at both 2 and 24 hours. However, values were higher in the citrate-fructose-egg yolk. Thereby, the results suggest that the goat sperm uses fructose as a preferential energy source. In conclusion sodium citrate with fructose was the best extender to store goat semen at 5 °C up to 24 hours.

## **Phospholipase A2 activity in the seminal plasma of goats raised in an equatorial latitude**

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### **Abstract / Resumo:**

This study aimed to verify the effect of the PLA2 activity on the goat semen quality and if this enzyme may be used by indicative of good or bad sperm cooling, in equatorial latitude. The PLA2 activity in eight male crossbred goats was quantified and the experimental animals were divided into two groups: group I had five animals with PLA2 activity in seminal plasma less than 6.70 U / mL and group II had three animals with PLA2 activity greater than 11.00 U / mL. Semen was collected weekly, diluted in a coconut water solution and divided in two aliquots: the first was the control treatment and the second was washed, without seminal plasma. After that, semen were cooled at 4 oC for 48 hours, and analyzed to spermatoc vigor and motility at 0 (fresh semen), 2, 12, 24 and 48 hours of cooling, by thermoresistance test. With the advance of cooling time, the spermatoc parameters decrease, indicating effect of time conservation on seminal quality. The semen wash improved the semen quality in both groups, but was more evident in group I, especially to the spermatoc vigor. Difference between both groups was not observed for spermatoc vigor, moreover, the sperm motility differed significantly only at 48 and 24 h for washed and control semen, respectively. These results suggest that the PLA2 activity in seminal plasma of goats raised in tropical region are insufficient to cause deleterious effect on sperm quality. This way, suggests that in tropical region PLA2 activity is not the mainly factor responsible for low semen quality, as in temperate regions. So, the level of PLA2 activity

in seminal plasma of goats raised in equatorial latitude region was not the determining factor in the decrease of the sperm parameters, such as spermatid vigor and motility. In addition, the level of PLA2 activity could not use as an indicator of good or bad sperm cooling, in tropical region.

### **Characterization of Goat Production Systems in the Central Region of Colombia**

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#### **Abstract / Resumen:**

This research had as a main tool the development of a dynamic structural survey in the program Access, completed through the application of general systems theory, in order to know the structural characterization of goat production systems in the central region of Colombia (municipalities of Antioquia, Boyacá, Cundinamarca, Santander and Valle). The study implemented surveys to producers and the journey in 77 goat farms in Colombia, which had a minimum number of 10 for females on reproductive age. A descriptive statistical analysis was performed, to establish a diagnosis on the dynamics of production, managed within systems of goats in the region. In general, goats systems do not have a daily record of milk produced, which is reflected in the absence of annual production data reported nationally. The analysis is presented on three levels. At the top level "location and area," goats systems observed were located between the 960 masl and 2550 masl, with areas for production ranging between 0.48 ha and 42 ha. 78% of the production systems are developed in areas with less than 6 ha. The second level, "objective function and production lines", shows that 42% of farmers manage their goat system as a primary production line, 34% have technical assistance and their productive objective is divided into 55% genetic and milk 33% genetic and 12% milk, genetics and dairy. On the third level of analysis "structure", 67% of the systems have a built pen or sheepfold, 37% are handled in extensive grazing, 60% with rotational grazing, and 3% in housed systems. The period of greatest concentration of births is February, and only 20% of producers use reproductive biotechnology. The most susceptible population to animal diseases is the one in lactation age. As major critical factors of production are proposed, the non-consolidation of distribution channels of goat products, processing plants and the unknowing of products among consumers.

### **Methodological Criteria for the Characterization and Analyze of Small Ruminant Production Systems**

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#### **Abstract / Resumen:**

Small Ruminants Breeding Systems in Colombia develop in different scenarios where there is a predominance of variation on geographical dispersion, land use, production models and production system designated area. In order to strengthen the development of management alternatives in the ovine and caprine sectors, Colombia needs to deepen its knowledge about the dynamics in the farm and regional levels. It would include a process of structural characterization of the elements influencing the production system and the development of typologies defining the eventual groups in the country depending on their structure. The proposal is that the construction and deepening of the

productive structure of the small ruminant production systems in Colombia requires the elaboration of methodological criteria applying the systemic approach on expert surveys which count with record and codification of variables explaining their level of technological development. The approach is illustrated by means of several regional models elaborated for the determination of the technological development on the farming systems. Such models promote a better understanding the dynamics between and inside the components of the production systems.

### **Evaluation of haematological and parasitological parameters of Canidé and Moxotó goat breeds in the Northeast Semi arid**

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#### **Abstract / Resumo:**

This study aimed to evaluate the hematological values and its relation to parasite load in goat breeds Canidé and Moxotó in Northeast. This work was conducted at Embrapa Goats and Sheep, using 15 Canidé and 15 Moxotó caprine from which were taken blood samples and feces in April and September/2007 and 2008. Comparing the hematological values according to infestation degree, group I (up to 800 EPG) and group II (> 800 EPG), there was statistical difference ( $P < 0.05$ ) for hematocrit ( $26.16 \pm 3.51$  vs  $24.09 \pm 3.23$ ), respectively, for Canidé breed, but it was not observed difference ( $P > 0.05$ ) for other parameters analyzed: RBC count (x cels.  $106/10^9$ l), hemoglobin (g/dl), Mean Corpuscular Volume (fL), mean corpuscular hemoglobin (pg) and Mean Corpuscular Hemoglobin Concentration (%). In Moxotó breed there was no differences ( $P > 0.05$ ) in any of these parameters. Although the Canidé race has proven to be more sensitive than Moxotó, can be attributed this difference to factors like race and environment, as these variables influence the hematological parameters, studies to clarify this influence should be made in depth to assess the degree of adaptation of these animals in the region.

### **Evaluation of biochemical parameters of Moxotó and Canidé goat in the dry and wet periods in Northeastern Brazil**

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#### **Abstract / Resumo:**

This work had as objective to evaluate the biochemical parameters of Canidé and Moxotó goats breed in the dry and wet periods in Northeastern Brazil. The experiment was conducted at Embrapa Goats and Sheep where it was used 15 Moxotó and 15 Canidé goats race. The blood sampling occurred in the months of April and September 2007 and 2008. It was observed statistical difference ( $P < 0.05$ ) for total protein and globulin values between Canidé ( $7.14 \pm 0.88$ ;  $3.26 \pm 0.86$ ) and Moxotó ( $6.70 \pm 0.54$ ;  $3.26 \pm 0.05$ ) races, respectively, during the rainy season, this difference was not observed ( $P > 0.05$ ) for albumin. Upon analyzing the dry period, there was no difference ( $P > 0.05$ ) for the

variables between the races. The values found in this study for total protein, albumin and globulin were similar to those observed by other authors in the same region and its are therefore within the averages. These results show, probably, that the total protein and globulin are susceptible to periods of the year. However, further studies should be performed on the blood chemistry in this region with the same races.

### **Mastitis diagnose in dairy goats in the towns of Pedra and Venturosa, PE – Brazil.**

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### **Abstract / Resumo:**

Goat breeding is an economically important activity in Northeastern Brazil, which withholds about 90% of the Brazilian goat livestock, approximately 9.543.000 goats, according to FAO (2000) (Food and Agriculture Organization) and Ministry of Agriculture, Livestock and Supply – MAPA (2005). Thus, the region expresses a real vocation for this economic activity. In Northeastern Brazil goat breeding represents an important activity in the hinterland, which concentrates most of the herd. The operation goat milk in Brazil is socially important for human feeding through products and by-products such as yogurt, cheese, sweets and serums that can boost the economy of rural families (CURI and BONASSI 2007; ASSIS, ALBUQUERQUE and SARMENTO et al. 2006). World production of goat milk is estimated around 8.78 million tons / year and 129,000 are produced in Brazil, placing the country in 18th position, with the Brazilian Northeast having about 90% of this total (IBGE 2001; FAO 2000). Of the 16 who reacted CMT 03 (+++), only 07 (or 43.75%) showed microbial growth, whereas of the 75 samples with CMT 02 (++) , 15 (20%) had microbial growth. That is, of the total of 91 samples positive for CMT, only 22 (24.18%) had microbial growth, which results in a negative correlation against the microbiological test. However, Figueiredo (1995) reports that the negative results in the CMT are fully reliable and very helpful during field work in the bovine species. Costa, Ribeiro and Garino et al. (2001) disagree about the negativity to CMT in relation to the presence of microbial agents, characterizing the carrier animals. According to them, the carrier animal may not show positive reaction to the CMT, however showing a positive result in the microbiological examination. On the other hand, Jorge, Andrighetto and Strazza et al. (2005) state that the CMT had positive and significant correlation for somatic cells count (SCC), proving to be an effective test for detecting subclinical mastitis in buffalo herds. Santos, Scherer and Schmidt et al. (2004) showed reduced sensitivity and specificity for CMT in the diagnosis of mastitis in goats. The same authors state that the special defense of goat mammary gland leads to a physiological increase in the number of somatic cells in milk compared with other ruminant species. Thus the CMT test is not reliable for detecting sub-clinical mastitis in dairy goats and should only be used as a screening test, since all positive samples were between CMT two (++) or three (+++). It is noteworthy that in the case of goats the CMT is not characterized as a model for diagnosis of mastitis, especially if applied only in the evaluation of the herd, requiring other complementary tests.

### **Use of medicinal plants in health management of dairy goats in the towns of Pedra and Venturosa**

MESQUITA, E. P., DE PAULA, J. T., LIMA FILHO, J. A. C., SAMPAIO, M. O., Rodrigues, J. B. L., Lima,

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### **Abstract / Resumo:**

Ethnobotany is cited in the literature as one of the alternative paths that most evolved in recent years to discover bioactive natural products, considering that medicinal plants have several desirable characteristics such as high efficiency, low risk of adverse effects, as well as reproducibility and constancy of quality (PRINCE 1991). Herbal drugs have always been a significant part in the drug market. The sector moves US\$ 21.7 billion globally per year. There are no Brazilian official data updated, however, this market is estimated in around US\$ 160 million per year (CARVALHO 2008). In Brazil, the main organ responsible for regulation of medicinal plants and their derivatives is the National Sanitary Surveillance Agency (ANVISA 2010), local authority of the Ministry of Health which function is to protect and promote population health by ensuring the health safety of products and services and participating in the construction of access. In his research Roque et al. (2010), emphasized the native species in the Northeast, in an attempt to understand the interrelationship of population with local plants, for this is not inherited from other cultures, they are linked only to popular beliefs. Works like the one from Albuquerque & Andrade (2002) demonstrate the importance of developing systematic studies of plants native to the area and they can identify problems caused by improper use of plant resources available, since, based on this information, it is possible to offer efficient alternatives that reduce the impact of collection on natural populations. Of the species found, 20 plants were identified in the surveys by Albuquerque and Andrade (2002) and 19 by Roque et al. 2010 in who reports the list of herbal medicines registered with ANVISA (2010). Among the plants collected, it was recorded the presence of various habits such as: a) Bindweed (6.66%) - *Eriosema glaziovii* Harms. (Sand Pea) and *Ipomoea gloria* Tour. (Jitirana) b) Shrub (15%) - *Jatropha curcas* L. (Barbados Nut), *Croton heliotropiifolius* Kunth. (Canopy), also reported by these authors, but other plants of this sort have been identified in this collection, *Urena lobata* L. (Caeser weed), *Malva sylvestris* L. (Common mallow), c) Herb (30.30%) - *Boerhavia paniculata* Lam (Spiderling), *Borreria verticillata* (L.) G. Mey. (Shrubby false buttonweed) *Chenopodium ambrosioides* L. (Wormseed), *Cleome spinosa* Jacq. (Spiny spiderflower) *Egletes viscosa* (L.) Less. (Erect tropical daisy), *Heliotropium elongatum* Willd. (Cherry-pie), these herbs were also reported by Albuquerque and Andrade (2002) and Roque (2010), among others d) Tree (46.66%) - *M. urundeuva* (Aroeira), in agreement with Albuquerque and Andrade (2002) as well as *Anadenanthera colubrina* Vell. (Angico), *Aspidosperma pyriforme* Mart. (Pereiro), their presence is explained by Araújo et al. (1998) and Zappi (1994) for its resistance to sandy soils. These species have been cultivated in areas near the homes of farmers and are not eliminated for some special reason, either for its medicinal properties, such as *Anadenanthera colubrina* Vell. (Angico), or for supplying fruits and shade, such as *Erythrina velutina* Willd. (Mulungu) as reported by Albuquerque and Andrade (2002).

### **Resistance of *Staphylococcus* sp. strains isolated from goat's milk in natura to antimicrobial drugs used by producers from Pedra and Venturosa counties - PE**

MESQUITA, E. P., DE PAULA, J. T., LIMA FILHO, J. A. C., OLIVEIRA, A.E., MOURA, A.P.B.L, MAIA, R.C.C., COELHO, M.C.O.C., ANDRADE, L.S.S.

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**Abstract / Resumo:**

Caprine milk has been indicated to children, elders and convalescents consume due to its high nutritional value, good digestibility and low allergenic potential. In Brazil, the annual goat's milk production is around 130 thousand tons directed by Government Programs, such as "Milk for all" (ANUALPEC, 2009). However, in order to achieve its whole nutritional potential and assure food safety to many families, the goat's milk needs to have high quality and be free of microbial, physical and chemical contaminations (CARVALHO et al., 2008). Microbial contamination is one of the main causes of Food Acquired Diseases. Amongst many types of pathogenic organisms easily transmitted through milk and its derivatives, we can find *Staphylococcus* sp., which can show high prevalence and high risk of producing toxins involved in food poisoning (ZECCONI; HAHN, 2000); FAGUNDES et al., 2004). According to Brabes et al. (1999), there is a prevalence of the genera *Staphylococcus* in the mastitis epidemiology, causing difficulties on treatment due to the high levels of antibiotic resistance. It is also the most frequent pathogen isolated from raw milk (ZECCONI; HAHN (2000). Their pyrogenic enterotoxins can lead to toxic shock and are usually associated to food poisoning and many types of allergies and auto-immune diseases (BALABAN; RASOOLY (2000), FAGUNDES et al. (2004) It was observed diseases in 76,66% of the farms, with four infections being the most prevalent: Mastitis (53,33%), Caseous Lymphadenitis (26,66%), Contagious Ecthyma (13,33%) and Papillomatosis (10%). The high number of cases of mastitis can be explained by the inappropriate milking procedures, with a lack of sanitary measures such as pre- e post-dipping. Bandeira et al. (2007) identified Caseous Lymphadenitis in 51,7% of the flock and Contagious Ecthyma in 48,4% in a study performed in herds of Paraíba, with such values much higher than the ones found in the present study. However, Carvalho et al. (2008) detected the presence of Papillomatosis in 9% of the herds studied in the semi-arid region of the state of Paraíba, with these findings being much more close to what was found in this study. The most probable cause for the many illness found in this study is the unsuitable management of the animals what increases the chances of the diseases observed and of many others, as described by Pinheiro et al. (2000). The use of antimicrobials was reported by the producers, being the most widely used the Tetracycline (36,36%), followed by Sulfonamides (18,18%), Aminoglycoside (12,12%), Macrolide and Penicillin (9,9%), as shown in Table 1. Nascimento et al. (2001) describes the aforementioned drugs as the most used, although, the author found the penicillin as the most common class of drug found in his milk samples.

**Diagnosis of caprine arthritis encephalitis by AGID and ELISA dairy goats in the states of Maranhao and Piauí.**

Nascimento, C.B.1, Pinheiro, R.R.2, Batista, M.C.S.1, Rodrigues, A.S.2, BRITO, R. L. L.2

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**Abstract / Resumo:**

The caprine arthritis-encephalitis virus (CAEV) is a RNA virus of the Lentivirus genus, Retroviridae family causing persistent infections in goats. Early detection in the animals is one of the best ways to limit their spread in the herd. The objective of the present assay was to compare the diagnosis results of goats Lentivirus, by agar gel immunodiffusion MIDGA (Kit Biovetec) with immunoenzymatic assay-indirect ELISA. The analysed 696 serum samples come from the University Veterinary Hospital,

proceeding from municipalities of the Piauí and Maranhão States, during four years (January 2007 to March 2010). It was found that the AGID detected 128 (18.4%) positive samples and the ELISA, 259 (37.2%). The sensitivity and specificity of the AGID test regarding the ELISA were 94.5% and 75.7% respectively. The sensitivity and specificity obtained with the indirect ELISA comparing to MIDGA were 94.5% and 75.7% respectively. It was verified highest prevalence in older animals ( $p < 0.05$ ). The males prevalence was 56.7% and in the females 35.4% ( $p < 0.01$ ), indicating the males as the most probably source of transmission. Higher sensitive is was found in the enzyme immunoassay-ELISA than agar-gel immunodiffusion microtechnic.

### **MESQUITE MEAL ASSOCIATED WITH DIFFERENT PROTEIN SOURCES IN DIETS FOR LACTATING GOATS: ENERGY INTAKE AND DIGESTIBILITY**

SANTOS, A.B., PEREIRA, M.L.A., ARGÔLO, L.S., PEDREIRA, M.S., RIBEIRO, L.S.O., SANTOS, E.J., ALMEIDA, P.J.P., PEREIRA, C.A.R.

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#### **Abstract / Resumo:**

The objective was to evaluate the intake of total digestible nutrients, metabolizable energy and nutrient digestibility in lactating goats fed mesquite meal with different protein sources. The experiment was conducted at the Universidade Estadual do Sudoeste da Bahia (UESB), Bahia State, Brazil. We used eight Alpine goats and crossbred Anglo-Nubian x Saanen, with  $96.5 \pm 3.7$  days in milk, producing  $2.0 \pm 0.4$  kg of milk and body weight (BW) of  $47.5 \pm 6.6$  kg at the beginning of the experiment, confined in individual stalls with dimensions of a 1.5 x 2.0 m. The animals were distributed in to two 4 x 4 Latin squares design consisting of four periods of 15 days each (ten for diet adaptation and five for sample collection). The criterion for allocation of animals in each Latin square was the breed, since the animals were in the same stage of lactation and production level. We evaluated the association of the mesquite pod meal with different sources of protein in the concentrate SM (soybean meal), CM (cottonseed meal), CAPH (cassava aerial part hay) and LH (Leucaena hay). The goats were fed diets with different protein sources, consisting of Tifton 85 hay (40%) and concentrate (60%, composed of corn and mesquite pod meal in the relation 1:1; urea 0.5%; mineral mix 2.3% and protein source). The intake was calculated as the difference between the food provided and the leftovers. During the five days of collection, the leftovers were weighed in the morning and afternoon, before supplying new food. After weighing, an aliquot of approximately 10% was removed, following the same sampling procedure described for the offered foods. For each animal were obtained composite samples to each experimental period, which were stored at 20°C negative for subsequent laboratory analysis. The mesquite pod meal can be used both associated with soybean meal as with cottonseed meal, cassava aerial part hay and Leucaena hay, by not to change the intake of total digestible nutrients and metabolizable energy, as well as digestibility of most nutrients.

### **USE OF CREATININE AS AN INDICATOR OF URINARY EXCRETION IN LACTATING GOAT**

SANTOS, A.B.1, PEREIRA, M.L.A.1, ARGÔLO, L.S.1, CARVALHO, G.G.P.2, RIBEIRO, L.S.O.1, MOREIRA, J.V.1, PEREIRA, T.C.J.1, CRUZ, J.F.1

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**Abstract / Resumo:**

It was aimed to assess the of potential use of urinary creatinine concentration as an indicator of urine excretion in lactating goats fed different protein sources in the diet. The experiment was conducted at the Universidade Estadual do Sudoeste da Bahia (UESB), Bahia State, Brazil. We used four Alpine goats, with  $94.0 \pm 9.0$  days in milk, producing  $1.7 \pm 0.4$  kg of milk and body weight of  $42.6 \pm 6.1$  kg at the beginning of the experiment, confined in individual stalls with dimensions of a 1.5 x 2.0 m. The animals were distributed in one 4 x 4 Latin squares consisting of four periods of 15 days each (ten for diet adaptation and five for sample collection). We evaluated the association of the mesquite pod meal with different sources of protein in the concentrate SM (soybean meal), CM (cottonseed meal), CAPH (cassava aerial part hay) and LH (Leucaena hay). The goats were fed diets with different protein sources, consisting of Tifton 85 hay (40%) and concentrate (60%), composed of corn and mesquite pod meal in the relation 1:1; urea 0.5%; mineral mixture 2.3% and protein source). On the 14th day of each experimental period were collected urine sample to every two hours after feeding the morning in the 24 hours period during, spontaneous voiding of the animals. Was also made, total collection of urine lasting for 24 hours, held on the 15th day of each experimental period, by catheterization using foley catheter n° 12. The total urine was collected in plastic gallon containers of 5 L, containing 100mL H<sub>2</sub>SO<sub>4</sub> at 20% and, the end of each collection, was weighed, homogenized and filtered through gauze, removing a part of 10% of daily urinary excretion in each period. Aliquots of 10mL of samples obtained with the collections by sampling (every two hours) and total (for twenty-four hours) were diluted in 40 mL of H<sub>2</sub>SO<sub>4</sub> the 0.036 N. These samples were prepared with a pH below three to avoid the bacterial destruction of metabolites present in urine and soon after, were stored at -20° C. The creatinine concentrations of urine samples were determined colorimetrically using a commercial kit (Doles) . The source of protein in the diet of lactating goats can affect the concentration of creatinine in urine in the 24-hour cycle. The creatinine can be used as indicator of urine volume in dairy goats, when performing sampling spot urine representative of the total urine excreted. However, it is recommended obtain the average daily excretion of creatinine per unit body weight of at least one animal, representative of the experimental group.

**Evaluation of the Quality of Yogurt of Plum Elaborated with Milk of Goat Frozen**

Magnavita, A.P.A1, Ferrão, S.P.B1,1, Caldeira, L.A2, Santos, T.D.R1, Pereira, M.L.A1, Santos, A.B.1  
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**Abstract / Resumo:**

The present work was developed with the objective of evaluating the physical properties, chemistries and sensorial of the yogurt processed starting from the frozen goat milk. The goat milk used it was obtained of females of the Alpine Brown race, of the Section of Bovid culture of the State University of the Southwest of Bahia - UESB, obtained according to practices of it milks hygienic. Each lot of employed milk for the processing stayed frozen for 90 days, being thawed in the previous day of the same, under temperature of refrigeration. The processing was accomplished 3 times, being constituted in the repetitions. After defrosting and the analysis of the milk, the yogurt was prepared starting from the mixture of the goat milk (15L), sugar (12%) and powdered milk (2%). The mixture

was submitted to 95°C/5 minutes and soon after caught a cold to 42°C. Was inoculated 1% of culture thermophilic DVS of direct inoculation BioRich (Streptococcus thermophilus and Lactobacillus delbrueckii ssp. bulgaricus) and subsequent incubation at 42°C/5 hours. Soon after, the curdled milk was cooled to the temperature of 5°C/12 hours. After that period it was proceeded the break of the curdled milk and addition of 5% of plum pulp. The filling of the yogurt was accomplished immediately, in flasks of polyethylene previously washed and sanitized in chlorinated water, and stocked under temperature of refrigeration for up to 21 days. The yogurt samples were appraised, in copy, in the times 0, 7, 14 and 21 days of storage, with relationship to the pH, through the use of a pHmetro model QUIMIS, acidity titratable, percentile of fat and protein (Brasil 2006). THE color was determined by the system CIELAB in equipment Colorimeter Color Quest XE, through the color parameters: L\* (brightness), the a\* and b\* (chromaticity coordinates), measured in the own apparel. The activity of water was determined in equipment AQUALAB series v3 S2. For determination of the viscosity was used rheometer Brookfield Model DVII+, with splinde coupled LV-3C, with 3.5 rpm. Acceptability test was accomplished by a panel not trained of 60 fitting room, being used a hedonic scale of 9 points, varying of "I liked extremely" (9 points) "I displeased extremely" (1 point) for evaluation of the appearance attributes, consistence and flavor, in agreement with Chaves and Sproesser (1999). The tests were led in individual compartment being the samples offered under temperature of refrigeration in codified glasses of 50 ml. Water in glasses of 200 ml was offered for rinse of the mouth in the interval of the tasting of the samples. The found results revealed that the freezing of the goat milk for 90 days influenced in the composition of the elaborated yogurt, presenting physical-chemical parameters altered with relationship to the tenors of acidity and pH values, observed during the storage period. The sensorial analysis revealed that the elaborated product possesses good acceptance close to the consumer.

### **Development and Characterization of Chocolate Dairy Beverage Prepared with Goat Milk**

Ferrão, S. P. B.1, Santos, T. D. R1, Santos, A.B.1, Magnavita, A. P. A.1, Caldeira, L.A.2, Pereira, M. L. A.1  
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### **Abstract / Resumo:**

The objective this work was evaluate the physical, chemical and sensory of three formulations of chocolate dairy beverage prepared with different concentrations of serum and goat milk. The cheese whey was obtained from the processing of 15 L of milk goats Alpine, obtained in the Sector of Goat of the State University of the Southwest of Bahia - UESB, Brazil second hygienic milking practices. The milk obtained was taken to the laboratory of the milk processing and derivatives of the UESB, where was pasteurized at 65 °C/30 minutes, added 12 mL of liquid rennet, and the mixture remained at rest for 50 minutes until the formation of the mass, which was cut into 1 cm<sup>2</sup> and transferred to forms of polyethylene, resulting in a fresh cheese. The sweet whey resulting from this process was used to prepare of the chocolate drinks. The stages of preparation of cheese, obtaining serum and the preparation of drinks were made three times, and thus represent three replications. Were three prepared formulations drinks milk chocolate, with a volume of 3.5 liters for each formulation, with different concentrations of serum and goat milk (F1 - 80% serum and 20% milk, F2 - 70% serum and 30% milk; F3-60% serum and 40% milk). After mixing the serum and milk were added the other ingredients: chocolate powder (98 g), sugar (245 g), thickener/stabilizer (14 g). The formulations were

treated at 85 °C/30 minutes, cooled to 42 °C in an ice bath and placed in polyethylene bottles, previously washed and sanitized in chlorinated water 100 ppm, and stored in refrigerator at a temperature of 5 °C until analysis. The sensory panel was consisted of 50 untrained tasters, and the tests were conducted in individual booths, being the samples offered under refrigeration temp in coded cups to 50 mL. Water in cups of 200 mL was provided to rinse of the mouth in the range of the samples tasting. Significant difference was observed between the formulations for the fat content and color. The sample most preferred sensory, was the formulation with 70% serum and 30% of milk for the attributes of color and viscosity, but for the other studied attributes (aroma, flavor and sweetness) no preference between the samples.

### **Effect of ensiled olive cake on milk, chemical composition and fatty acids profile of goat milk in North of Morocco.**

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#### **Abstract / Resumo:**

Effect of ensiled olive cake on milk, chemical composition and fatty acids profile of goat milk in North of Morocco. M. Ayadi\*, Keli, A. 1, Chentouf, M.2 National Institute of the Agronomic Research, Center of Tangier, Morocco. mayadi3@gmail.com In North of Morocco, important quantity of olive cake is produced. The partially stoned crude olive cake (OC) is relatively rich in fat, mainly in unsaturated fatty acids C16 and C18 which represent 96 % of the total fatty acids; so presenting certain nutritional interest. However, its effect on milk production in dairy goats was not studied. The objective of the study is to search upon the effects of incorporating ensiled and stoned crude olive cake in the diet of goat on yield and quality of milk on north of Morocco. Olive cake was stoned and ensiled with molasses (15% DM) and then incorporated in the diet of lactating goats. Fourteen local goats of the North of Morocco were divided in two groups, of seven each. Both groups received diet which differed by the level of incorporation of OC, 25% and 0 % respectively for test (Ts) and "control" (T) groups. Milk production was estimated every day from birth to weaning in 3 months. Samples of milk were taken every week to analyze dry matter, fat, protein, pH and fatty acids profiles. Result showed no significant effect of OC on the yield milk (respectively for T and Ts 768 vs 686 g/day/goat). The average content of dry matter (DM), fat and protein in Ts milk is very significantly superior to that of control (respectively 15,86 %, 4.23 % and 35.98 g / kg, vs 13.80 %, 3.10 % and 34.6g / kg  $P < 0.01$ ). Ensiled OC contribution in the diet of goats does not affect the average milk acidity, 6.5 vs 6.41 respectively for Test and control group. Fatty acids obtained in high quantity in the milk of the Ts group were oleic (C18:1n9), palmitic (C16:0), stearic (C18:0), with respectively 27,15 %, 24,86 % and 12,40 % of the total fatty acids. Content of  $\alpha$ -linolenic (c18: 3n6), who is the precursor of the polyunsaturated fatty acids, was significantly higher in Ts milk (0,22 % vs 0,11 %,  $P < 0.01$ ). Incorporation of ensiled OC in concentrate diet did not significantly increase levels of long chain (LCFA; 43,01 % vs 42,78 %), polyunsaturated (PUFA; 2,2 % vs 1,93 %) and mono-unsaturated (MUFA; 29,09 % vs 28,58 %) fatty acids of test milk. The increase in the level of unsaturated fatty acids induce an improvement of (SFA/UFA) ratio (2,3 vs 2,2). Crude OC which is stoned and ensiled with molasses (15% DM) can be incorporate in the diet supply of goat during lactation with 25 % of concentrate diet. This partial replacement is advantageous considering the absence of negative effect on the yield milk and the

improvement of the nutritional quality of milk. Key word: Ensiled Olive cake, yield milk, chemical composition, fatty acids.

### **Salted Sheep Meat: An Alternative to Aggregate Value to the Product**

COSTA, R.G.1, MADRUGA, M.S.2, Voltolini, T.V.3, MEDEIROS, G.R.1, DUARTE, T.F.1, PEDROSA, N.A.2  
1. INSA, Instituto Nacional do Semiárido. 2. UFPB, Universidade Federal da Paraíba. 3. CPATSA, Embrapa Semiárido.  
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#### **Abstract / Resumo:**

In this paper, the yielding and the chemical composition of salted sheep meat (manta ovina) were evaluated. This product originated from the partial deboning of lamb carcasses and posterior cutting, followed by salting and drying, and it is traditionally produced in the city of Petrolina, in the state of Pernambuco, Brazil. The study was performed in three restaurants which are part of the gastronomic complex called "Bodódromo", located in the city of Petrolina. The yielding of salted meat after deboning varied from 71.2 to 75.3%, and the yielding of the salted meat for charcoal grilling was from 63.3 to 72.6%, and produced values between 6.9 and 10.6 kg of salted meat for charcoal grilling consumption from the carcasses that weighed between 16.3 and 21.2 kg. Havier carcasses yielded more at deboning and for salted meat for charcoal grilling in the restaurants. The average nutritional values found in the salted meat characterized it as being a food of high moisture ( $71.56 \pm 0.089$ ), high protein ( $21.55 \pm 0.71$ ) and low lipid content ( $1.95 \pm 0.24$ ). About 50% of the minerals found (2.72%) are in the form of chlorides. This fact is directly associated to the usage of salt, an essential ingredient to prepare the product. The results obtained indicate a viability of salted sheep meat production, both in the commercial aspect and in the characteristics of its nutritional composition. There is a need for improvements in the productive chain, such as a definition of a "pattern animal", or a better carcass weight, for the preparation of the product.

### **Utilization of the use of Prickly Pear (*Opuntia ficus indica* Mill) Replacing Corn on Performance, Intake and Digestibility of Nutrients**

COSTA, R.G.1, TREVIÑO, I.H.2, MEDEIROS, G.R.1, MEDEIROS, A.N.2, PINTO, T.F.1  
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#### **Abstract / Resumo:**

The objective of this trial was to evaluate performance and nutrient and digestibility in feedlot Santa Inês Sheep fed with increasing levels (0, 25, 50, 75 100%, in DM basis) of prickly pear (*Opuntia ficus indica* Mill), to replace corn. Forty-five Santa Ines non-castrated male sheep, averaging  $27.50 \pm 0.48$  kg of body weight (BW) at the beginning of the study, were used in this trial. A completely randomized block design with nine replications per treatment was used. The intakes of DM, OM, MM, NDF, NDFcp, ADF and TDN increased linearly with the substitution of corn by forage cactus ( $P < 0.01$ ). Intakes of protein (CP) and total carbohydrates were quadratic and NFC intakes of EE ( $P > 0.05$ ). The intake of fresh matter increased linearly ( $P < 0.01$ ) with increasing of dietary prickly pear, as the voluntary intake of water decreased ( $P < 0.01$ ). The replacement of corn by prickly pear increasing the apparent digestibility of OM, CP, EE, NDF. Total weight gain (TWG) and average daily weight (DWG) decreased

linearly to ( $P < 0.01$ ). The conversion and feed efficiency decreased with the inclusion of prickly pear in the diet. The prickly pear has a high digestibility of nutrients, improving the quality of forages, reducing the voluntary intake of water, representing an important source of fodder and water reserves for use in semiarid climates.

### **Utilization of Prickly Pear (*Opuntia ficus indica* Mill) Replacing Corn for the Performance Santa Inês lambs**

COSTA, R.G.1, Treviño, I.H.2, MEDEIROS, G.R.1, PINTO, T.F.1, MEDEIROS, A.N.2

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#### **Abstract / Resumo:**

The objective of this trial was to evaluate performance and nutrient and digestibility in feedlot Santa Inês Sheep fed with increasing levels (0, 25, 50, 75 100%, in DM basis) of prickly pear (*Opuntia ficus indica* Mill), to replace corn. Forty-five Santa Inês non-castrated male sheep, averaging  $27.50 \pm 0.48$  kg of body weight (BW) at the beginning of the study, were used in this trial. A completely randomized block design with nine replications per treatment was used. The intakes of DM, OM, MM, NDF, NDFcp, ADF and TDN increased linearly with the substitution of corn by forage cactus ( $P < 0.01$ ). Intakes of protein (CP) and total carbohydrates were quadratic and NFC intakes of EE ( $P > 0.05$ ). The intake of fresh matter increased linearly ( $P < 0.01$ ) with increasing of dietary prickly pear, as the voluntary intake of water decreased ( $P < 0.01$ ). The replacement of corn by prickly pear increasing the apparent digestibility of OM, CP, EE, NDF. Total weight gain (TWG) and average daily weight (DWG) decreased linearly to ( $P < 0.01$ ). The conversion and feed efficiency decreased with the inclusion of prickly pear in the diet. The prickly pear has a high digestibility of nutrients, improving the quality of forages, reducing the voluntary intake of water, representing an important source of fodder and water reserves for use in semiarid climates.

### **Salted Sheep Meat: Typical Regional Product of the city of Petrolina, state of Pernambuco**

COSTA, G.R.1, MEDEIROS, G.R.1, DUARTE, T.F.1, MADRUGA, M.S.2, VOLTOLINI, T.V.3, PEDROSA, N.A.2

1. INSA, Instituto Nacional do Semiárido. 2. UFPB, Universidade Federal da Paraíba. 3. CPATSA, Embrapa Semiárido.  
betogermano@hotmail.com

#### **Abstract / Resumo:**

In this paper, the yielding and the chemical composition of salted sheep meat (manta ovina) were evaluate. This product originated from the partial deboning of lamb carcass and posterior cutting, followed by salting and drying, and is traditionally produced in the city of Petrolina, in the state of Pernambuco, Brazil. The purpose of this research was to obtain information and establish identity patterns and product quality, consequently, contributing to the strengthening of sheep production in the semi arid region of Brazil. The study was performed in three restaurants which are part of the gastronomic complex called "Bodódromo", located in the city of Petrolina. The yielding of salted meat after deboning varied from 71.2 to 75.3%, and the yielding of the salted meat for charcoal grilling was from 63.3 to 72.6%, and produced values between 6.9 and 10.6 kg of salted meat for charcoal grilling consumption from the carcasses that weighed between 16.3 and 21.2 kg. Heavier

carcasses yielded more at deboning and for salted meat for charcoal grilling in the restaurants. The average nutritional values found in the salted meat characterized it as being a food of high moisture ( $71.56 \pm 0.089$ ), high protein ( $21.55 \pm 0.710$ ) and low lipid content ( $1.95 \pm 0.239$ ). About 50% of the minerals found (2.72%) are in the form of chlorides. This fact is directly associated to the usage of salt, an essential ingredient to prepare the product. The results obtained indicate a viability of salted sheep meat production, both in the commercial aspect and in the characteristics of its nutritional composition. There is a need for improvements in the productive chain, such as a definition of a "pattern animal", or a better carcass weight, for the preparation of the product.

## **DETECTION OF BLUETONGUE VIRUS ANTIBODIES IN GOATS FROM SOROCABA REGION, SÃO PAULO, BRAZIL**

De Stefano, E, Nogueira, A.H.C., Galleti, N.T.C., Chiebau, D.P., Gabrill, F.H.L., Cardoso, M.C., Lara, M.C.H.H.S., Okuda, L.H., Pituco, E. M.

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### **Abstract / Resumo:**

Bluetongue is a viral disease, whose etiologic agent belongs to the family Reoviridae, genus Orbivirus, transmitted by a vector (arthropod) haematophagous the genus Culicoides. The affected animals are domestic and wild ruminants, however small ruminants are the most affected. This study aimed to detect antibodies to bluetongue in goats in the region of Sorocaba. There were analyzed 51 serum samples from goats without clinical signs belonging to 10 ranch, by agar gel double immunodiffusion, from the Pan American Foot and Mouth Disease Center. Out of 51 serum samples analyzed, 15.7% (8/51) had antibodies for bluetongue virus. These results suggest that the bluetongue virus is found in these regions causing inapparent infections. However, larger studies are needed in order to clarify the importance of disease in these herds, as well as the presence of mosquitoes in these regions.

**Financial support:** Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP/Processo 2006/51689-5).

## **Pregnancy Rate Obtained with Low Dose of eCG in Short-Term Protocol for the Synchronisation of Estrus in Moxotó Goats Raised in the semi-arid Brazilian's northeast**

Batista, A.M.1, Monteiro Jr, P.L.J.1, Barreto, L.M.G.2, Maior Júnior, R.J.S.2, Medeiros, A.N.2, Guerra, M.M.P.1

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### **Abstract / Resumo:**

The objective of this work was to study eCG low dose effect in Short-term protocols of estrus synchronization in pregnancy rate of Moxoto goats raised in the semi-arid Brazilian's northeast. It was used 32 Moxoto goats, multiparous nonlactating, raised in intensive system production, with water and mineral-salt ad libitum. It was used the Short-term protocol for synchronization estrus, through the use of an intravaginal sponge impregnated with medroxyprogesterone for 5 days plus one dose of PGF $2\alpha$  analogue. The goats received 200 IU (Group A; n = 14) or 100 IU (Group B; n = 18) of eCG at

sponge withdrawal. It was not observed significantly differences in the estrus presentation and pregnancy rate. However, it was observed a positive relation between the dose of eCG and the embryo number per pregnant goat. Based on this results, it is possible to conclude that low dose of eCG does not interfere in rate pregnancy, but it decreases the number of multiple pregnancy.

### **Comparison between CapriPure and Percoll for preparation of frozen/thawed goat semen**

Batista, A.M., Silva, S.V., Soares, A.T., Monteiro Jr, P.L.J., Wischral, A., Guerra, M.M.P.

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#### **Abstract / Resumo:**

In the present study, we have examined the effect of density gradient preparations CapriPure and Percoll on buck sperm separation. Frozen/thawed semen goat buck from six Boer buck were pooled. Sperm quality parameters such as sperm progressive motility, concentration, membrane integrity (PI/CFDA), acrosome integrity (FITC-PNA) and mitochondrial activity (JC-1) were evaluated before and after sperm processing using CapriPure and Percoll density gradients. No significant differences ( $P > 0.05$ ) were found in sperm concentration, progressive motility and membrane integrity between the semen samples evaluated immediately after thawing and following the use of the CapriPure and Percoll density gradient. There was a significant reduction ( $P < 0.05$ ) in the percentage of spermatozoa with intact acrosome following Percoll gradient centrifugation when compared to the percentage in the sample immediately after thawing. There was a significant increase in the percentage of spermatozoa with high mitochondrial membrane potential in both density gradient centrifugation methods CapriPure ( $P < 0.01$ ) and Percoll ( $P < 0.05$ ) when compared to the value obtained immediately after thawing. Although sperm evaluation parameters did not differ between our two protocols, the CapriPure gradient showed a tendency for improvement sperm parameters regarding to Percoll gradient, suggested that CapriPure is a good alternative to Percoll for buck sperm separation. However, further studies are needed to assess the fertilizing capacity of these spermatozoa following the use of the CapriPure gradient.

### **Mitochondrial membrane potential and kinematic of goat semen cryopreserved in skimmed-milk supplemented with superoxide dismutase and catalase**

SILVA, S.V.1, BARROS, M.S.R.M.1, SOARES, A.T.1,2, ALMEIDA, F.C.1, NUNES, J.F.3, GUERRA, M.M.P.1

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#### **Abstract / Resumo:**

Five bucks were used to evaluate the effect of antioxidant addition [superoxide dismutase (SOD) and catalase (CAT)] on mitochondrial membrane potential (MMP) and kinematic of goat sperm submitted to freezing. Semen samples were diluted in skimmed-milk plus glycerol 7% (320 million sperm/mL) supplemented with antioxidants: G1) Control; G2) SOD 25U/mL; G3) SOD 50U/mL; G4) SOD 100U/mL; G5) CAT 25U/mL; G6) CAT 50U/mL; G7) CAT 100U/mL; G8) SOD 100U/mL + CAT 25U/mL. The samples were packed in straws (0.25 mL), frozen and stored in liquid nitrogen (-196 °C). After thawing (37 °C/30 seconds), semen aliquots of each group were evaluated to PMM and kinematic (CASA). No

significant difference ( $P>0.05$ ) was observed among groups on PMM, total motility (TM), progressive motility (PM), curvilinear velocity (VCL), linear velocity (VSL), average path velocity (VAP), amplitude of lateral head (ALH), linearity (LIN), beat cross frequency (BCF), straightness (STR) and wobble (WOB) among experimental groups. However, higher number of spermatozoa with high PMM was observed on CAT 100U/mL group (G7; 48.25±9.45%) than on control group (G1; 46.13±8.00%). Also, higher number of TM, PM, VCL, VSL, VAP, LIN and BCF was observed on SOD 50 U/mL (G3; 43.55±13.80%, 14.17±3.79%, 65.92±6.76%, 28.85±2.36%, 38.67±3.36%, 43.82±2.25% and 13.02±0.73%, respectively) and SOD 100U/mL groups (G4; 45.80± 23.60%, 14.97±7.69%, 71.37±11.03%, 30.82± 3.94%, 42.10±5.69%, 43.50±3.85% and 12.52±0.51%, respectively) than on control group (G1; 38.37±11.2%, 12.17±5.78%, 64.60±8.71%, 27.66±3.03%, 37.17±3.24%, 42.95±1.74% and 12.30±0.97%, respectively). The results suggest that CAT and SOD (25, 50 and 100 U/mL) added to skimmed-milk and glycerol 7% extender did not improve mitochondrial membrane potential and kinematic of thawed goat sperm; Nevertheless, further studies adding higher concentration than 100U/mL of SOD and CAT in skimmed-milk and glycerol 7% extender to freezing goat semen should be realized.

### **Evaluation of the degree of acceptance of Nambi as a native goat breed in Piauí**

Silva, P.O.1, Castelo Branco, J.F.1, Campelo, J.E.G1, Araújo A.M2, Machado, T.M.M2, Sarmiento, J.L.R.1, Almeida, M.J.O2, Silva, J.L.L.N.1

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### **Abstract / Resumo:**

Animals with small ears called Nambi are found scattered in the states of Northeast Brazil, in a situation that is unknown about the risk of extinction and/or if there is the potential to become a native breed. From this perspective, there may be the need to adopt strategies for its preservation or use selection to its most immediate use. However, it is important to take into consideration the beauty of these animals and/or, if the fact of having small ears would be viewed as an anomaly or defect that might undermine its acceptance as a breed, because there is no way to promote a genetic cluster of animals if it is not related to an economic differential, and that among the comparative advantages, requirements related to aesthetics should also be considered. From this perspective, data obtained in parallel with a survey regarding the geographical location and phenotypic characterization of the Nambi in herds in the state of Piauí (latitude 5°5'20 south and longitude 42°48'07 west), Brazil, were analyzed aiming to evaluate the degree of acceptance of this phenotype to be worked on as a native breed in the region, with the inclusion of the breeder in this process. In the process of collecting data, it was presented individually in contexts related to goats, two types of questionnaires to 158 people with activity related to goats or not. The questions were about whether they already knew the Nambi, its beauty, defects and rusticity, if they would raise these animals and if they viewed the Nambi with the potential to become a breed. The second questionnaire had, besides these questions, some other questions relating to the La Mancha breed, which was presented after a lecture on its qualities, as well as if their opinions about the Nambi remained the same. Data were subjected to frequency distribution and with the crosstabulation procedure from Statistical Package for Social Sciences software, the answers to "Do you consider the Nambi animals as having the potential to become a breed?" was crossed with answers to the other questions, applying the Chi-square test to the frequencies obtained. It was observed that, regardless of profession, education level, if the small ears

were considered as ugly or defective, or prior knowledge about Nambi or La Mancha did not interfere in considering Nambi with the potential to become a breed. thus, the small size of the ears was not seen as a defect that compromised the acceptance of this phenotype in goat husbandry. The Nambi is a naturalized genetic cluster with acceptance to be worked on aiming at the creation of an adapted breed. However, the lack of infrastructure on reproductive management in herds with extensive farming, contributes to the genetic dilution, not being possible in this study to say whether they are at risk of extinction, therefore, making it necessary to characterize the variability with the use of molecular genetics tools.

### **Comparison of serological and molecular methods for caprine arthritis encephalitis diagnosis in goat kids with neurological symptoms.**

PINHEIRO, R.R.1,2, BRITO, R.L.L.1,2, VERAS, A.K.A.1,2, RODRIGUES, A.S.1,2, SOUZA, K.C.1,2, ANDRIOLI, A.1, NASCIMENTO, C.B.3, SIDER, L.H.1

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#### **Abstract / Resumo:**

The neurological form of the caprine arthritis-encephalitis (CAEV) usually affects kids aged 60-120 days. Clinical evaluation is not appropriate to determine the disease since symptoms can be confused with other illnesses. Serological and molecular methods can be used to the ultimate diagnosis. This study aimed to compare five methods, namely, Agar Gel Immuno Diffusion (AGID), Enzyme Linked Immunosorbent Assay (ELISA), Western Blotting (WB), RT-nested PCR and nested PCR, for the diagnosis of the caprine arthritis-encephalitis virus in seven goat kids aged between 87 and 103 days, showing neurological signs. Blood samples were collected to perform serological methods. Blood was used also to detect free genomic RNA and/or proviral, as well as cerebrospinal fluid (CSF). Our results showed that WB detected anti-CAEV antibodies in 100% of the animal, while ELISA and AGID detected specific antibodies and one and none of the samples, respectively. PCR-based methods were also useful to detect viral particles in all animals, especially if done concurrently in two different samples, as in this case, blood and CSF. Taken as a whole, we can conclude that AGID is not suitable for the early detection of CAE. By the other hand, WB showed to be a very sensible method and should be applied in individual animal, especially those who present clinical signs of the disease. Finally, PCR-based methods are also very useful, since they can detect viral particles even before seroconversion.

### **Nervous form of caprine arthritis-encephalitis: clinical and laboratory parameters**

PINHEIRO, R.R.1,2, BRITO, R.L.L.1,2, OLIVEIRA, E.L.1, RODRIGUES, A.S.1,2, DIAS, R.P.3, SANTIAGO, L.B.2, ANDRIOLI, A.1, SIDER, L.H.1

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#### **Abstract / Resumo:**

The caprine arthristis-encephalitis (CAE) is a multisystemic, chronic and wasting disease. Its main route of transmission is the ingestion of colostrum and/or milk from seropositive goats. Of all the forms of

manifestation of the disease, encephalitis is the least common. When it happens, it affects goat kids aged 60-120 days. The diagnosis is made through history, and evaluation of clinical, pathological and laboratory findings. This study aimed to describe neurological symptoms, as well as to perform blood counts and biochemical and microbiological evaluation of cerebrospinal fluid (CSF) of seven seropositive goat kids, as then confirmed by western blotting. The main symptoms observed were increased cardio-respiratory frequency, muscle weakness, tremors, circling, initial state of blindness, nystagmus, head tilt and ataxia or paresis of hind limbs evolved to the supine and/or lateral position. Despite all these symptoms, animals showed normal appetite and temperature. No change in CSF biochemical parameters were found, as well as no bacterial growth. One animal presented anemia, which is compatible with *Haemonchus contortus* parasitism. Two other animals showed a slight leukocytosis (lymphocytosis and neutrofilia), which corroborates with previous work in animals infected by the CAE virus.

### **Comparison of serological and molecular methods for caprine arthritis encephalitis diagnosis in goat kids with neurological symptoms**

PINHEIRO, R.R.<sup>1,2</sup>, BRITO, R.L.L.<sup>1,2</sup>, VERAS, A.K.A.<sup>2</sup>, RODRIGUES, A.S.<sup>1,2</sup>, SOUSA, K.C.<sup>1,2</sup>, NASCIMENTO, C.B.<sup>3</sup>, ANDRIOLI, A.1, SIDER, L.H.<sup>1</sup>

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#### **Abstract / Resumo:**

The neurological form of the caprine arthritis-encephalitis (CAEV) usually affects kids aged 60-120 days. Clinical evaluation is not appropriate to determine the disease since symptoms can be confused with other illnesses. Serological and molecular methods can be used to the ultimate diagnosis. This study aimed to compare five methods, namely, Agar Gel ImmunoDiffusion (AGID), Enzyme Linked Immunosorbent Assay (ELISA), Western Blotting (WB), RT-nested PCR and nested PCR, for the diagnosis of the caprine arthritis-encephalitis virus in seven goat kids aged between 87 and 103 days, showing neurological signs. Blood samples were collected to perform serological methods. Blood was used also to detect free genomic RNA and/or proviral DNA, as well as cerebrospinal fluid (CSF). Our results showed that WB detect anti-CAEV antibodies in 100% of the animal, while ELISA and AGID detected specific antibodies one and none of the samples, respectively. PCR-based methods were also useful to detect viral particles in all animals, especially if done concurrently in two different samples, as in the case, blood and CSF. Taken as a whole, we can conclude that AGID is not suitable for the early detection of CAE. By the other hand, WB showed to be a very sensible method and should be applied in individual animal, especially those who present clinical signs of the disease. Finally, PCR-based methods are also very useful, since they can detect viral particles even before seroconversion.

### **Economic losses in reproductive parameters caused by the Caprine Arthritis-Encephalitis**

CARNEIRO, F.F.D.<sup>1,2</sup>, BRITO, R.L.L.<sup>2,1</sup>, GOMES, T.C.L.<sup>1</sup>, GUIMARÃES, V.P.<sup>2</sup>, ANDRIOLI, A.2,<sup>1</sup> SIDER, L.H.<sup>2</sup>, PINHEIRO, R.R.<sup>2,1</sup>

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**Abstract / Resumo:**

The objective of this study was determine the economic losses in reproductive parameters caused by caprine arthritis-encephalitis in dairy flocks in Brasil. Ninety female goats Nubian x Saanen crossbreed, four bucks from the same genetic group of females and four teaser without defined race were used. The animals were divided in two groups: seropositive and seronegative by Western Blot diagnostic test. The animals had the same management conditions and were kept in separate areas with similar characteristics in the same farm. To calculate the economic losses, the following parameters were evaluated: birth rate, number of kids born, mortality rate at weaning, number of young after weaning, body weight (BW) at weaning, total production in kilograms and dollar value of BW (US\$ in Kg.BW-1). Statistical analysis was performed using SAS. The results showed that the income obtained from the seronegative group was 1.52 times higher than that of seropositive. Was found that there are economic losses in reproductive parameters due to the caprine arthritis encephalitis in dairy goats in Brazil.

**Evaluation of the prevalence of caprine arthritis encephalitis virus in goats reared under extensive conditions in the city of Petrolina, PE**

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**Abstract / Resumo:**

The caprine arthritis encephalitis (CAE) is an infectious disease characterized by slow and progressive course, because the majority of affected animals did not present any clinical symptoms. Therefore, the serology test is the most efficient for diagnosis of CAE because the presence of antibodies shows indirectly the existence of infection with Lentiviruses. This objective was to identify the prevalence of infection by caprine arthritis encephalitis virus in goats in the city of Petrolina, state of Pernambuco, Brazil. The study used four properties with goat rearing undefined breed, reared under extensive (savanna vegetation). Blood samples were collected in aseptic manner of 51 goats (20 males and 31 females), approximately 10 mL from each animal, by jugular venipuncture. The samples were submitted to agarose gel immunodiffusion (AGID) test using as antigen the p28 capsid protein virus of CAE. The immunodiffusion in agarose gel was realized in disposable petri dishes containing 16 mL of 1% agarose (w/v) solution of sodium borate buffer (10 mM, pH 8.6). At the time of testing, the gel was drilled in a hexagonal and added the antigen in the center and peripheral parts was added alternately standard serum and serum to be tested. After addition of reagents, the plates were incubated in a moist chamber at 25 Â°C and readings were realized after 24 and 48 hours of incubation. Data analysis showed that the serum of all animals tested did not present evidence for the reagents in caprine arthritis encephalitis, and it characterizes that animal undefined breed and reared under extensive conditions in the city of Petrolina, have been little exposed to the virus. The caprine arthritis encephalitis is little used in areas or properties where the purchase or exchange of breeding are not routine, without introducing exotic breeds. The selection of animals genetically resistant to the virus is an alternative to control the spread of CAE.

**SENSITIVITY OF *Corynebacterium* spp. ISOLATES FROM GOATS IN THE CITY OF PETROLINA TO DIFFERENT CONCENTRATIONS OF IODINE**

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**Abstract / Resumo:**

The goat production has been increasing worldwide. There is great concern regarding several diseases that can affect the herd productivity, as example of caseous lymphadenitis. This study aimed to verify the in vitro sensitivity of 22 *Corynebacterium* spp. samples isolated from abscesses in goats presenting caseous lymphadenitis signals to different concentrations of iodine. The collected samples were plated onto blood agar at 5% and the plates were incubated at 37°C for 48 hours. To determinate the antibacterial activity of iodine, a microdilution protocol according to descriptions of the document M7-A7 Clinical and Laboratory Standards Institute(CLSI) was performed. From the iodine solution diluted in ethanol were obtained concentrations of 0.75%, 1.25%, 2.5%, 5%, 10% and 20%. The bacterial challenge ( $1 \times 10^4$  CFU) was added to microtubes containing Brain Heart Infusion (BHI) broth and iodine solution to be tested at different concentrations. The tubes were incubated at 37°C for 48 hours. After, to evaluate the minimum bactericidal concentration (MBC) 10  $\mu$ l of each microtube were transferred to Brain Heart Infusion (BHI) agar plates, which were incubated at 37°C for 48 hours. All samples were sensitive to 2.5%, 5%, 10% and 20% concentrations. Concentrations of 0.75% and 1.25% presented only one resistant isolate. Thus, the antibacterial activity of iodine confirms its potential use in caseous lymphadenitis treatment and prevention. Future studies using disinfectant solutions are still necessary aimed to reduce resistant bacteria selection.

**Seasonal andrologic profile of bucks infected by small ruminant lentivirus**

Paula, N.R.O.1, Andrioli, A.2, Melo, M.T.1, Cardoso, J.F.S.1, Pinheiro, R.R.2, Souza, K.C.2, Alves, F.S.F.2, Teixeira, M.F.S.3

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**Abstract / Resumo:**

Several authors (Paula et al., 2009; Ali Al Ahmad et al., 2008; Andrioli et al., 2006) have reported that bucks and rams present intermittent elimination of Small Ruminant Lentivirus (SRLV) proviral DNA in the semen. Thus the objective of this study was to verify the influence of the climatic season and the disease and describe individually the andrological parameters of bucks naturally infected by the SRLV during the wet and dry seasons in the Northeast of Brazil. The experiment was carried out over twelve months, in the dry, dry-wet season (transition 1), wet and transition wet-dry seasons (transition 2). . The experiment was carried out at EMBRAPA – National Research Center for Goats and Sheep, Brazil. The bucks from the Saanen breed (n=2) and the Anglo Nubian breed (n=4) were 3-4 years old with 53.13kg mean weight. They were proven to be naturally infected by SRLV after at least two IDGA tests and Nested-PCR tests. The semen of the animals was examined weekly and the external genitalia (penis, prepuce and scrotum) were inspected every fifteen days by testis and epididymis palpation to assess the consistency, symmetry, position and presence of painful sensitivity. The scrotum circumference was measured as indicated by the CBRA (1998) and a paquimeter was used to measure the length and width of both testis to calculate the testis volume, using the spheroid prolate formula (Bailey et al. 1998). The semen was collected with an artificial vagina (Mies Filho, 1962). After

collecting and determination of the ejaculate volume (mL) the semen was sent to the laboratory and assessed following the CBRA criteria (1998). During the assessment period, alterations were observed in the andrological examination in all the males, but these alterations did not damage the animals' andrological performance. In spite of the alteration, the reproducer presented 72.86 ± 16.84% mean motility (+ ep) and 3.07 ± 0.83 mean vigor (+ ep) during the referred period. All the infected bucks were able to respond to semen collection at some time during the experiment. However, at some moment it was not possible to collect semen. Individual variation was observed for all the morphological parameters, except in transition period 1 for the minor defects and percentage of normal cells. In the present study, the climatic season did not affect all the bucks in the same way, probably because of a greater resistance to caloric stress naturally presented by some animals or because of interference from the viral pathology. In conclusion, bucks naturally infected by the Small Ruminant Lentivirus present normal reproductive characteristics and could be used in assisted reproduction programs but need periodic care from a veterinary to maintain their health and welfare.

### **In vitro evaluation of goat spermatozoa after freezing in skimmed-milk diluent supplemented with Glutathione reduced**

SOARES, A.T.1, SILVA, S.V.2, ALMEIDA, F.C.2, ARAÚJO-LEMONS, P.F.B.1, MONTEIRO JÚNIOR, P.L.J.2, BATISTA, A.M.2, PEIXOTO, C.A.3, GUERRA, M.M.P.2

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#### **Abstract / Resumo:**

Aiming in vitro evaluate the effect of adding Glutathione reduced (GSH) in skimmed-milk diluent on the plasma membrane (iPM) and acrosome (iAc) integrity, mitochondrial membrane potential (MMP), kinematic, as well as ultrastructural analyses of thawed goat sperm, five Boer bucks were used to collecting semen by artificial vagina in six replicates. After analysis of each ejaculate, a pool of samples was diluted ( $240 \times 10^6$  sperm/mL) in skimmed-milk plus glycerol 7% with antioxidant: G1) Control, G2) GSH 2mM/mL, G3) GSH 5mM/mL and G4) GSH 7mM/mL. The samples were packed in straws (0.25 mL), frozen and stored in Liquid Nitrogen (-196 °C). After thawing (37 °C/30 seconds), aliquots of semen from each group were analysed to iPM, iAc, MMP, kinematic by CASA (total motility, progressive motility, linearity, straightness, wobble, curvilinear velocity, straight line velocity, average path velocity, lateral head displacement, beat cross frequency) and ultrastructure (transmission electron microscopy). The analysis of iPM, iAc, MMP and kinematic of thawed goat sperms showed no difference ( $P > 0.05$ ) among groups. In the ultrastructural analysis, higher ( $P < 0.05$ ) number of sperms with plasma membrane (head and tail region) and acrosome intact were observed in fresh samples (39.63±5.34%; 64.35±7.76% and 65.33±11.18%, respectively) than Control (G1: 28.28±4.52%; 36.31±4.38% and 33.66±5.27%, respectively), GSH 2mM/mL (G2: 35.25±5.34%; 30.75±2.52% and 27.40±3.20%, respectively), GSH 5mM/mL (G3: 26.51±2.50%; 30.31±2.98% and 30.11±1.64%, respectively) and GSH 7mM/mL (G4: 26.13±3.38%; 29.58±2.56% and 31.38±2.35%, respectively) groups. But control and GSH groups showed no difference ( $P > 0.05$ ) on these evaluated parameters. However, axoneme integrity was higher ( $P < 0.05$ ) in control group (G1: 55.66±7.00%) than GSH groups (G2=43.90±5.94%; G3=44.18±5.79% and G4=33.96±4.34%). Mitochondria integrity of control (G1: 61.53±5.81%) and GSH 2mM/mL (G2: 50.86±3.94%) groups were higher ( $P < 0.05$ ) than GSH 5mM/mL

(G3:30.58+1.49%) and GSH 7mM/mL (G4: 28.43+2.19%) groups. It can be concluded that the addition of GSH in skimmed-milk and glycerol 7% diluent do not improve the viability of thawed goat sperm.

### **In vitro evaluation of goat spermatozoa after freezing in skimmed-milk diluent supplemented with Trolox**

SOARES, A.T.1,1, SILVA, S.V.2, ALMEIDA, F.C.2, ARAÚJO-LEMONS, P.F.B.1, MONTEIRO JÚNIOR2, BATISTA, A.M.2, NUNES, J.F.4, GUERRA, M.M.P.2

1. EMEPA-PB, EMPRESA ESTADUAL DE PESQUISA AGROPECUÁRIA DA PARAÍBA. 2. UFRPE, UNIVERSIDADE FEDERAL RURAL DE PERNAMBUCO. 3. CETENE, CENTRO DE TECNOLOGIAS ESTRATÉGICAS DO NORDESTE. 4. UECE, UNIVERSIDADE ESTADUAL DO CEARÁ.

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#### **Abstract / Resumo:**

With the objective to evaluate in vitro effect of different concentrations of Trolox (vitamin E analogue) in skimmed-milk plus glycerol 7% diluent on the plasma membrane (iPM) and acrosome (iAc) integrity, mitochondrial membrane potential (MMP), kinematic and ultrastructural analyses of thawed goat sperm, it was used semen samples from five Boer bucks collected by artificial vagina in six replicates. After analysis of each ejaculate, a pool of samples was diluted ( $240 \times 10^6$  sperm/mL) in skimmed-milk plus glycerol 7% supplemented with antioxidants, according to experimental groups: G1) control, G2) Trolox 30 $\mu$ gM/mL; G3) Trolox 60 $\mu$ gM/mL, G4) Trolox 120 $\mu$ gM/mL. The samples were packed in straws (0.25 mL), frozen and stored in Liquid Nitrogen (-196 oC). After thawing (37 oC/30 seconds), semen aliquots of each group were submitted to iPM, iAc, MMP, kinematic by CASA (total motility, progressive motility, linearity, straightness, wobble, curvilinear velocity, straight line velocity, average path velocity, lateral head displacement, beat cross frequency) and ultrastructural (transmission electron microscopy) analysis. The iPM, iAc, PMM and kinematics parameters showed no significant difference ( $P > 0.05$ ) among groups. In ultrastructural analysis, acrosome, plasma membrane on the tail region and axoneme integrity did not differ ( $P > 0.05$ ) among groups, but they were observed in lower ( $P < 0.05$ ) percentage than those of fresh samples. However, Trolox 60 $\mu$ gM/mL (G3: 40.33+6.53%) and Trolox 120 $\mu$ gM/mL (G4: 37.07+4.84%) groups had higher ( $P < 0.05$ ) percentage of sperms with intact plasma membrane on the head region than control (G1: 28.66+4.52%) and Trolox 30 $\mu$ gM/mL (G2: 30.66+3.47%) groups, but they did not differ ( $P > 0.05$ ) of the fresh samples (39.63+5.34%). Higher percentage ( $P < 0.05$ ) of sperms with intact mitochondrias were observed on fresh (72.82+11.33%), control (G1: 61.53+5.81%) and Trolox 60 $\mu$ gM/mL (G3: 62.16+7.32%) samples than those of Trolox 30 $\mu$ gM/mL (G2: 54.66+8.86%) and 120 $\mu$ gM/mL (G4: 45.21+4.58%). Based on ultrastructural analysis, it can be concluded that Trolox (60 and 120  $\mu$ gM/mL) can be used in skimmed-milk plus glycerol 7% diluent to improve the viability of thawed goat sperms. Although, further studies are recommendable to testing the effect of these substances in the fertility rate of inseminated goats.

### **Clinical and Serological Monitoring of Goats Experimentally Infected by Virus Arthritis-Encephalitis Caprine**

Souza, K.C.1, Andrioli, A.2, Pinheiro, R.R.2, Brito, R.L.L.2, Dias R.P.2, Brito, I.F.1, Abreu, D.A.1, Sider, L.H.2

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**Abstract / Resumo:**

The objective of this study was to evaluate which diagnostic test, agar gel immunodiffusion (AGID) or Western Blot (WB), would detect early seroconversion of goats experimentally infected by Caprine Arthritis-Encephalitis Virus (CAEV) via artificial insemination and relate seroconversion with clinical signs of disease. Thirty goats were used, with no defined breed, inseminated with semen contaminated with the standard virus strain CAEV-Cork, with infective titles of 106TCID<sub>50</sub>/mL and another 102TCID<sub>50</sub>/mL. The goats were then serologically and clinically followed for a year. The experiment was conducted in accordance to the ethical principles of animal experimentation. Statistical analysis was performed using the chi-square test ( $P < 0.05$ ). At 30 days after insemination, there were found the first seroconversions. In two, out of 20 goats inoculated, antibodies were detected for the CAE virus using the technique of AGID, and 12 by a WB. After 60 days of the AIs, all inoculated goats showed reaction of antibodies to antigens of CAEV in WB and in one year in both tests, indicating that they were infected. All the 10 goats in the control group remained seronegative throughout the experiment. The AGID presented, during the study period, eight false-negative results among 60 tests (13.3%), while the WB showed only one false-negative among 132 tests performed (0.76%) ( $P < 0.001$ ). As the clinical symptoms of CAE noted that only two (10%) of the infected females showed a slight increase in the articular index clinical, are considered clinically suspected joint problems. It was concluded that due to CAE remains asymptomatic for long periods, and the AGID test does not detect early infected animals, and the high occurrence of false-negative, there should be used more sensitive diagnostic tests, such as WB, periodically, to monitor the CAE in the national herd.

**DIETARY MANIPULATION AND ADDITION OF *Bifidobacterium animalis* FOR THE PRODUCTION OF A PROBIOTIC CONJUGATED LINOLEIC ACID-ENRICHED CAPRINE COALHO CHEESE**

dos Santos, K.M.O.1, Bomfim, M.A.D.1, Vieira, A.D.S.2, Benevides, S.D.1, Saad, S.M.I.3, Buriti, F.C.A.1, Egito, A.S.1

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**Abstract / Resumo:**

The aim of the study was to investigate the influence of an enhanced CLA concentration on the viability of a recognized probiotic strain, *Bifidobacterium animalis* subsp. *lactis* Bb12, in caprine coalho cheeses during a 60 days storage period. Saanen goats ( $n=30$ ) were divided in two groups, characterized by the diets without and with soybean oil supplementation, for the production of control milk or CLA-enhanced milk, respectively. Four pilot-scale cheese-making trials were performed, in triplicates. Cheeses T1 and T2 were produced with milk from control group, and T3 and T4 with milk from CLA-enhanced group. *B. animalis* Bb12 was added to cheeses T2 and T4. CLA content was determined in goat's milk and in coalho cheeses, after 1, 30 and 60 days. Population of *B. animalis* was monitored fortnightly for cheeses T2 and T4. The supplementation of goat's diets with soybean oil increased the CLA content (isomer C18:2 cis-9, trans-11) in milk, compared to the control, and in T3 and T4 cheeses ( $P < 0.05$ ), compared to T1 and T2. Populations of *B. animalis* were around 8 log cfu/g in T2 and T4 cheeses during the period studied. The higher CLA content in T4 cheese did not influence the viability of *B. animalis*. Therefore, CLA-enhanced goat milk obtained through dietary manipulation may be used for the production of a probiotic caprine coalho cheese with increased content of CLA.

### **Morphological Traits of Criollo Goats in Lonquimay (Chile)**

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#### **Abstract / Resumo:**

Criollo goats were characterized for anatomical and morphological traits in the Lonquimay valley in Chile. One hundred and fifty-three adult female goats were characterized, from 8 herds were weighed, measured and classified for several traits, during november, 2009. Weight of goats ranged from 23 to 57 Kg (mean 39,6). Withers height ranged from 47 to 77 cm (mean 66,3). These and other anatomical measurements were similar to other Criollo goat types described in Argentina and Mexico, as a reflect of a common origin. Variability of measurements was also found to be similar to other Criollo populations and moderate in size, suggesting a strong influence of the harsh environmental conditions were these animals are maintained. Hair color was only one in most of the goats (68%) with white, black and brown as the most frequent.

### **Influence of the genetic group in the birth weight, weaning weight, daily weight gain and carcass yield of goat kids Saanen and crossbred Saanen x Anglo-Nubian**

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#### **Abstract / Resumo:**

The study aimed to evaluate the influence of genetic group on birth weight, weaning weight, daily weight gain and carcass yield growing goat kids raised in Northeast Brazil. The experiment was performed at Sítio Esperança, located in Pacatuba, metropolitan region of Fortaleza, Ceará, northeastern Brazil. Located at latitude 3°53'52,8" S and longitude 38°34'31,7" W, altitude 69 meters in the tropical climate. We used 35 goat kids, belonging to two genetic groups, Saanen (n=18) and ½ Saanen + ½ Anglo-Nubian (n=17) and obtained the birth weight (BW), weaning (PD), which occurred at 90 days, daily weight gain (DWG) and carcass yield (CY). The age mean of animal slaughter was 90 days. The goat kids received 1,5L/day of goat milk daily, and from the fifth day green leaves of leucaena leucocephala and concentrate initial and water ad libitum. Mean BW, WW, ADG and HCW of related genetic groups, were 3,39 ± 0,63; 17,14 ± 2,87; 0,153 ± 0,04; and 8,57 ± 1,43 kg for goat kids Saanen, and in the same order of weight, 3,09 ± 0,80; 14,86 ± 2,81; 0,131 ± 0,03; and 7,43 ± 1,41 kg for goat kids ½ Saanen + ½ Anglo-Nubian respectively. No significant difference of genotype (P>0,05) for birth weight and daily weight gain. The weaning weight and carcass yield were influenced by genetic group (P <0,05), where Saanen animals were significantly higher than the means of half-breed Saanen x Anglo-Nubian. Thus, the marketing of suckling goat kids from dairy system would be more a form of income for the producer.

### **RESEARCH OF MYCOPLASMA AGALACTIAE WITH DIFFERENTIAL DIAGNOSIS IN CAPRINE AND OVINE**

## **MILK SAMPLES FROM SÃO PAULO STATE, BRAZIL**

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### **Abstract / Resumo:**

*Mycoplasma agalactiae* is the etiological agent of Contagious Agalactia (CA), one of the most important mycoplasmosis in animals. Outbreaks can involve 100% of the susceptible and these, 10 to 20% can evolve to death. The disease is characterized by acute mastitis, agalactia and septicemia, hyperthermia, inappetence; arthritis and keratoconjunctivitis are observed in 5 to 10% of the affected animals. The disease presents worldwide distribution, and that is why the international trade or exchange of animals and genetic materials is a potential source of the agent's spread. Similar syndrome can be caused by *Mycoplasma capricolum* subsp. *capricolum* and *M. mycoides* s subsp. *capri*, indicating the need of a differential diagnosis. In Brazil, the first report of this illness was accomplished in 2006 in Paraíba, however, its status in São Paulo State is ignored. With the objective of detecting the agent of Contagious Agalactia in small ruminant, between 2008 January till now, milk samples from 103 farms located in different geographic regions of the State, were collected 224 samples of raw milk of 151 ewes and 73 does. The samples were collected aseptically in pool, in a sterile tube, refrigerated and sent to the lab until 78 hours after collection. The samples were tested for mycoplasmas presence by cultivation techniques and specie-specific PCR (*M. agalactiae*). The modified Hayflick media were used to accomplish the isolation in broth and agar plates, using ten-fold serial dilution per sample. All the materials were incubated at 37°C with 5% CO<sub>2</sub> atmosphere. Sub cultivation (broth to plate) was performed after 48 and 96 hours in order to confirm the growth in broth media. The plates were maintained in the incubator for 20 days and examined in inverted microscope each two days. The specie-specific PCR was performed according to Subramaniam et al., 1998. All samples were negative in both techniques. The differential diagnosis was accomplished in 27 doe's milk samples from 20 herds and 108 ewe's milk samples from 66 herds. By standard bacteriological techniques the goat's milk presented *Staphylococcus* sp. 11/27 (40.7%), *Bacillus* sp. 4/27 (14.8%), *Serratia rubidae* 1/27 (3.7%), *Corynebacterium pseudotuberculosis* 1/27 (3.7%) e *Enterobacteriaceae* 1/27 (3.7%); in 14/27 (51.9%) it was not observed bacterial growth. In ewe's milk, it was observed: *Staphylococcus* sp. 69/108 (63.9%), *Bacillus* sp. 33/108 (30.5%), *Escherichia coli* 13/108 (12%), *Enterobacteriaceae* 13/108 (12%), *Enterobacter* sp. 2/108 (1.8%), *Streptococcus* sp. 2/108 (1.8%), *Proteus netter* 1/108 (0.9%), yeast 4/108 (3%), group CDC-NO1 bacteria 6/108 (5%), fungi 3/108 (2%), *Corynebacterium* sp. 6/108 (5%); it was not observed bacterial growth in 13/108 (12%) of the sheep's milk. The results show that São Paulo State is probably free of the disease and points to the need for attention with the commercialization of in natura milk since that, potentially pathogenic bacteria can be present and be harmful for human consumption. New samples are in test to know the real situation of CA in the State, what will help the authorities in order to develop animal health monitoring and control programs.

### **Influence of Type of Salt in ingestive behavior of sheep Santa Ines**

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### **Abstract / Resumo:**

The objective was to evaluate parameters of ingestive behavior in 24 male sheep Santa Ines aged 05 months and initial weight of 33.3 kg in confinement, suspended in fold. The parameters were eating, ruminating, idle, salt intake, drinking, defecating and urinating, by visual observation of the animals every 05 minutes, five full periods of 24 hours. In feed was used more elephant grass silage corn meal more cane sugar and mineral salt, and one group received a mineral salt for cattle (T1) and another group of sheep mineral salt (T2). The type of salt given affect intake and rumination ( $P < 0.05$ ). Animals fed with salt sheep had a greater rumination and lower salt intake as opposed to animals fed salt beef. Salt intake was higher in the morning in both treatments. Consumption of silage in both treatments was higher in the afternoon, it was time for feeding the animals, and decreased at night, since this period the animals were ruminating. It was observed that idleness at night was higher in T1, and in the mornings and afternoons alike. Fewer rumination was observed during the day, especially during periods of feeding.

### **Types of Facilities Sheep and Goats in Porto Franco - MA**

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### **Abstract / Resumo:**

The facilities represent the largest portion of the cost of creation, ie, represents a significant investment, and its proper planning and design depends on the future of creation. It is important to consider that plants evolve over time, like a flock, or otherwise depreciate. Environmental factors influence the internal conditions of the facilities in different ways, and their effect mitigated or exacerbated depending on the solar radiation on the roof, the roof orientation, shading and ventilation. The objective of this work to evaluate the characteristics of the folds, the supporting elements (types of drinkers, feeders, salt shakers), Properties of small, medium and large goats. A questionnaire was used previously established, and with direct observations in the field in 30 ciratórios goats that have folds in the city of Porto Franco - MA. The results showed that 60% of properties do not have adequate fold, 73.3% in the east-west, and 26.4% in the north south. 53.3% of facilities have standing - right around 2.80 and 3.00 m, 33.3% use of ceramic tile on the roof, the roof is 53.3% in the two slopes, 70% of the feeders are wood with PVC, 20% of drinkers are of masonry and 46.6% of plants have suspended floor. In the region of Porto Franco the amount of folds in addition to downtown is weak, especially there is a lack of a structural part, requiring the extension and re-equipping of the properties. There is no shortage of items essential to the management-drinker, feeder and salt shakers, but the roughness of the materials is prevalent in almost all of the properties, it is mainly because the rearing of sheep in the region has no economic clout, and the capital is aimed mainly at core activities such as cattle and milk. It was observed that a high index of manufacturers opted to use hanging folds, which facilitates the handling of health and quality of the herd.

### **Influence of Environment on Heat in Fold Physiological Variables Petticoat Santa Ines**

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**Abstract / Resumo:**

The objective was to determine the rates of thermal comfort and physiological parameters and the degree of adaptability of 14 the Santa Inês sheep fold drop in the roof with ceramic tile, all females in the final third of pregnancy. The data were analyzed environmental air temperature (TA), relative humidity (UR), black globe temperature (TGN), the index of black globe temperature and humidity (ITGU), radiant heat load (CTR). The physiological data were analyzed: respiratory rate (FR), heart rate (FC) and rectal temperature (TR), measured the hours of 9 and 15 h. The evaluation of the data was performed by a completely randomized design using the test of Duncan to 5% probability. The environmental indices in the afternoon, were higher than in the morning and had their values, except the Vv above the range considered normal. The TR, FR and FC in the afternoon shift were higher than in the morning round, and the TR was within the normal range and above the FR and FC recommended. We also observed that the animals, even bringing a FR and FC, had high capacity to adapt the region.

**ANALYSIS OF WHEY PEPTIDES FROM MOXOTÓ GOAT BY MALDI-TOF MASS-SPECTROMETRY**

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**Abstract / Resumo:**

Abstract: Changes such as denaturation and proteolysis, common in the manufacture of several dairy products lead to the formation of new compounds, known as bioactive peptides. Due to its physiological versatility and physical chemistry, peptides from milk are considered important constituents of food and play pharmacological activities improving human health. The objective of this research was to analyze the peptides present in milk serum from Moxoto goat through the technique of MALDI - TOF Mass-Spectrometry. Ten samples of Moxoto goat milk from the municipality of Pedro Avelino-RN, Brazil, were used in this analysis. The milk was precipitated by acid- coagulation technique for serum separation of the mass. After this step the pH from each whey sample was checked and adjusted to pH 4.6 with HCl 1%. The serum was then applied on a micro reverse phase column (ZipTip C-18) to remove salts, and then applied to the mass spectrum to obtain the profile of peptides resulting from acid precipitation. The mass spectrum was analyzed by MALDI-TOF, where about 68 peptide peaks between 513 and 2985 Da, were analyzed. The peaks 550, 568, 655, 1639, 1668, 1781.1881 m/z were the most intense, and in 70% of the samples were found the presence of the peaks 1781 and 1881 Da. According to the literature those peptides are derived from proteolysis of milk caseins (  $\alpha$ 1-casein,  $\alpha$ 2-casein ,  $\beta$ -casein and  $\epsilon$ -casein). We conclude that the technique of MALDI-TOF Mass-Spectrometry is a powerful tool for identification of peptides found in goat whey, and may be used as a tool in quality control of milk and dairy industry.

## **Relation of 45 kDa protein with the sperm membrane integrity of American Alpine goats raised in Northwest of Brazil.**

Souza, A.F.1,3, Batista, A.M.1, Coletto, Z.F.1, Guerra, , M.M.P.1, Gomes Leitão, M.C.3, Lima-Filho, J.L.3,2, Porto, A.L.F.1,3

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### **Abstract / Resumo:**

In goats, different factors influenced by seasonal variation interfere on the maintenance of the sperm viability. The concentrations of proteic molecules in the ejaculate of animals are under control of the season due to climatic differences observed between the reproductive and non-reproductive seasons. The experiment was conducted in the municipality of Camocim de São Felix in the Agreste Region of Pernambuco State, Brazil and humid tropical climate. It was used three goats of the American Alpine breed, sexually mature, submitted to semen collect (n= 48) using artificial vagina during high (HPI) and low (LPI) precipitation index, on two years (1 and 2). After collection, the macroscopic (color, volume and appearance) and microscopic parameters (progressive motility, vigor and integrity of acrosome and DNA) of the semen were evaluated. Semen samples were cryopreserved by automatic method. In fresh and thawed semen samples, the protein profile of sperm was performed by analyzing two-dimensional electrophoresis, after the determination of total protein for standardization of protein applied to gel electrophoresis. The analysis of image used software for 2D gels and detected 165 protein spots with isoelectric points (pIs) ranging from 3.37 to 8.80, while the molecular weights ranged from 9.0 to 131 kDa. A protein of 45 kDa and pI 7.6 was found in the membrane of fresh and thawed sperms extracted from semen samples obtained on the HPI1, HPI2 and LPI1 periods. It is noteworthy that this protein (45 kDa) was absent in semen samples with lower percentage of spermatozoas with intact acrosomes, like as 66.54 % (HPI1), 66.50 % (HPI2), 73.46 % (LPI1) and 62.57 % (LPI2). We conclude that the protein of 45 kDa molecular mass present in samples of fresh and thawed goat spermatozoa may provide protection to sperm cells.

## **Estrus synchronization in Saanen goats with sponge without eCG compared to the male effect in intensive system in the tropical climate**

SALLES, M.G.F.1, SALLES, M.G.F.1, RODRIGUES, I.C.S.1,1, VIANA NETO, A.M.3,3,3, VITALIANO, A.B.3,3,3, ALBUQUERQUE, I.A.3,3,3, ARAÚJO, A.A.1,1,1

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### **Abstract / Resumo:**

Introduction Current methods of estrus synchronization in dairy goats search leave a minimum of hormone residues in animals and their products, as well as the environment. This study compares methods of induction and synchronization of oestrus in Saanen dairy goats a hormonal method with the natural method of male effect. Material and methods The experiment was performed in Fortaleza, CE, Brazil. Located at latitude 3°53'52,8" S and longitude 38°34'31,7" W, altitude 69 meters in the tropical climate. Were used 72 Saanen goats (34 nulliparous and 38 pluriparous), mean age 2.3 ± 1.2 years for nulliparous and 4.4 ± 1.3 years for pluriparous, average weight of nulliparous 40.9 ± 6.2 kg and for pluriparous of 55,01 ± 11,1 kg reared in confinement system. Animals were fed at the

trough with concentrate with 21% CP, green forage composed of 70% elephant grass and for 30% of *Leucaena leucocephala* and drinking water ad libitum. The females were divided into two groups: G-1 goats (n=50) using intravaginal sponges impregnated with 60 mg MAP for 11 days in the cranial portion of the vagina being applied on the ninth day 50 mg of PGF2 $\alpha$  intramuscularly and beginning of the male effect. The G-2 was formed by goats (n=22) treated by male effect, which previously were kept separated from males for four weeks were then exposed to a goat twice a day for 40 minutes, making a total of 80 minutes daily for 42 days. So determining reproductive parameters such as pregnancy rate obtained by ultrasonography. Results and discussion Synchronization with the sponge without eCG resulted in 62% pregnancy rate, while the effect of male showed that 77.3% of goats were positive in the diagnosis of pregnancy. Results obtained in the sponge group are lower than those of Romano (2004) found that 65% did not also using eCG and higher than Motlomelo et al. (2002) who obtained 60% pregnancy rate. The lower values obtained in the sponge group compared to the male effect synchronization is due to the protocol that did not use the equine chorionic gonadotrophin (eCG), since the association of eCG protocol improves response in the frequency and rate of ovulation resulting in better synchronization of estrus in treated animals. But the objective of study was to reduce the use of hormones for estrus synchronization and verify that this reduction could bring positive results, given that Prosperi et al. (2003) worked with synchronization of estrus in goats with different times of permanence of the sponge containing progesterin and reported that the development of alternative protocols that use lower doses and less hormones may be economically advantageous. Conclusion Knowledge of these data will allow information Saanen goats raised in tropical climate, are used to improve reproductive efficiency.

### **The male effect to induce and synchronize estrus of dairy goats in a tropical climate**

SALLES, M.G.F.1,1,1, SAMPAIO, J.A.R.1,1,1, ALBUQUERQUE, I.A.2,2,2, VITALIANO, A.B.2,2,2, VIANA NETO, A.M.2,2,2, RODRIGUES, I.C.S.1,1,1, ARAÚJO, A.A.1,1,1

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### **Abstract / Resumo:**

The techniques used to induce estrus and ovulation in tropical areas should be effective and simple to integrate into existing production systems and the use of the male effect, associated with good health and nutritional status of females is an excellent strategy to encourage sexual activity of acyclic females and thereby maintain high production indices of dairy goat. To check the efficiency of the male effect in Saanen goats raised in tropical climate, it was evaluated for ten consecutive years (2000-2009) the method on 784 goats (304 nulliparous and 480 pluriparous) aged between eight months and ten years and weighing between 30 and 70 kg were created in the Sitio Esperança Lar Antonio de Padua, the city of Pacatuba-Ceará, Brazil. The goats were reared in intensive system and fed concentrate produced at the property with 20% CP, elephant grass mixed with 30% leucaena and drinking water ad libitum. The group of ten females were exposed to the male for 42 days for 80 minutes twice a day from 09:00 to 09:40 am and 15:30 to 16:10 h. After initiating the male effect in five days had females in estrus, who were brought to coverage for controlled breeding. This reproductive management during the last ten years has resulted in 282 single births, 420 doubles, 74 triples, 6 quadruples and two quintuplets, resulting in 1378 goats, with an overall prolificacy of 1.76 to 64.03% occurrence of multiple births obtained by using the male effect. The results obtained with calving rates show a trend in the ten years of using the male effect, probably due to an improvement of this method, as well as learning

from females, with the results: 71.8% (2000), 72.5% (2001), 74,0% (2002), 77,5% (2003), 83,4% (2004), 87,4% (2005), 86,1% (2006), 86,3% (2007), 80,0% (2008) e 82,0% (2009) rates consistent with the breeding seasons of natural mating. We conclude that the male effect is a simple technique and easy to perform which can be used as a tool for reproductive cost for induction and synchronization of estrus, however, without leaving residues on the hormonal environment.

### **Sugarcane (*Saccharum officinarum*) e Slow-Release Urea in Replacement of Tifton Hay (*Cynodon spp*) in Rations for Lactating Goats Saanen. Digestibility\***

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#### **Abstract / Resumo:**

We evaluated the digestibility of dry matter and other nutrients in diets with cane sugar and urea in place of Tifton hay, the feeding of Saanen goats, using a 5x5 Latin square design. The experimental diets were composed of concentrate, Tifton and different levels of sugar cane and slow release urea (SRU) on (0, 25, 50, 75, 100%) to Tifton, provided twice daily in the form of complete diet. Diets with higher levels of cane sugar had lower digestibility to neutral detergent fiber (NDF), while the other nutrients were not affected. Data were subjected to analysis of variance and regression using the GML procedure of SAS (2000). The use of cane sugar for goats from medium to high milk production may compromise the performance of these animals, however it's an alternative food and strategic periods of forage scarcity.

### **In silico analysis of goat (*Capra hircus*) heat-shock proteins Hsp70 and Hsp 90**

HARUTA, K.S.<sup>1,2</sup>, SOUZA, A.F.<sup>1,2</sup>, CUNHA, R. M. S.<sup>3</sup>, CAVADA, B.S.<sup>4</sup>, ELOY, A. M. X.<sup>5</sup>, CHAVES, M.E.C.<sup>1,2</sup>, ROCHA, C.R.<sup>1,2</sup>, LIMA-FILHO, J.L.<sup>1,2</sup>

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#### **Abstract / Resumo:**

Heat-shock proteins play important role on cellular processes and are divided in numerous families. Two important families are the 70kDa (Hsp70) and 90kDa (Hsp90) molecular chaperones. Hsp70 acts at multiple steps in a protein's life cycle, including the processes of folding, trafficking, remodeling and degradation. The function of Hsp90 also includes assistance in protein folding, cell signaling, and tumor repression. Hsp90 chaperone activity range from interacting with the specific proteins/chaperones involved in cell cycle control and hormone signaling, to more general interaction such as binding to metastable cellular proteins following stress. Whereas Hsp90 beta is expressed constitutively to a high level, Hsp90 alpha is stress-inducible and is over-expressed in many cancerous cells. Both Hsp70 and Hsp90 seem to be related to cancer. In this study, we analyzed in silico one predicted Hsp70 protein isolated from goat, and two partial Hsp90 proteins from goat and sheep. Both goat and sheep Hsp90 partial proteins (282 and 722 amino acids respectively) presented the

conserved amino acids among Hsp90  $\alpha$  isoform related in literature (10 and 26 amino acids respectively). It was identified one conserved ATP-binding site and one steroid receptor-binding domain on goat partial protein, and three ATP-binding sites on sheep partial protein. Phylogenetic analysis of cDNA and amino acid sequences were consistent between them. Hsp90 primary sequence seems to be very conservative according to comparative analysis between other mammals. Predicted Hsp70 protein of goat (841 total amino acids) possesses 82 strongly basic (+) amino acids (K,R) and 92 strongly acidic (-) amino acids (D, E), 220 hydrophobic amino acids and 151 amino acids are polar in nature, and showed isoelectric point as 5.611. Goat Hsp70 protein showed conserved catalytically essential acidic residues in the active site region of the ATPase fragment (Asp-10, Asp-199, Asp-206 and Glu-175). Comparison among Hsp70 protein of goat, sheep (partial), cattle and buffalo nucleotide sequences showed 96-99% similarity, and 95-100% on amino acid level. Comparison between goat and cattle secondary structure showed high similarity as expected. This is an initial study for understand the systematic work of molecular chaperones on goat under stress environment.

### **MAPPING OF GOAT BLOOD PEPTIDES BY MASS SPECTROMETRY**

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#### **Abstract / Resumo:**

Matrix-assisted laser desorption/ionization mass spectrometry (MALDI-MS) is an excellent tool to achieve a fast and sensitive analysis of peptides and proteins in a complex mixture. **OBJECTIVE:** In this experiment, blood peptides profile from native Moxoto goats were analyzed using a MALDI-Tof MS (Amersham, Sweden). **METHODS:** Serum samples were collect with protein inhibitor and stored at 80o C. Initially, 50  $\mu$ l of blood serum from male and female goats were treated with a anti-albumin and IgG kit manufactured by GE Healthcare Life Sciences. After the treatment, 10  $\mu$ l of each sample in 0.1 % TFA were adsorbed in ZipTip columns (Millipore, USA) and eluted with 50% acetonitrile and 0.1 % TFA. Then, 0.3  $\mu$ l from the eluates (total volume 10ul) were applied to individual wells on the MS slides. Alpha-cyano-4-hydroxycinnamic acid (HCCA) and 3,5-dimethoxy-4-hydroxycinnamic acid (sinapic acid) were used as matrices for the generation of the peptide mass profile in the MALDI-Tof analysis. All samples were assayed in duplicate. **RESULTS:** Peptides detected in a range of 1,000-2,000 m/z varied from 31 until 11 peak/sample in the male and from 20 until 9 peak/sample in the female. Maximum and minimum intensity of the peaks were 2.400-200 to males peptides and 3.000-200 to females, while approximately 74 % of the peaks presented a relative intensity of > 50% in male samples, only 63% of the female samples had the same score. **CONCLUSION:** The results showed that MALDI-Tof analysis can be used to identify goat serum peptides. Treatment with anti -albumin and IgG linked to a solid support, clean the samples from those majority serum protein helping in the investigation of others polypeptides present in small quantities. Finally, the differences found between male and female goat peptides need to be investigated, but they can reflect increased protein degradation in male or differences the peptides synthesis between male and female.

### **Correlations between carcass characteristics and body morphometry in young goats**

SILVA, N.C.S., CAMPELO, J.E.G, SILVA, M.R.S, KLEIN JÚNIOR, M.H, SILVA, P.O, BARÇANTE, F.P.S, SILVA, J. L. L. N.

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**Abstract / Resumo:**

Piauí has the third largest goat herd in the country. However, milk is not the main product even though there are indicators that it is more important economically than the meat, which in turn is the main product of extensive raising of goat in the state. The growth of this activity in Piauí depends largely on the adoption of management measures that are capable of promoting positively the productive and reproductive rates of the herds in order to routinely seek efficiency. In this context, the weight gain is an important variable to indicate the productive performance of the animal. Furthermore, knowledge of the age in which the highest growth rate occurs, allows the programming of the animal slaughtering to most convenient time, avoiding late slaughtering, which consequently increases the deposition of fat in the carcass, which is undesirable for the consumer who prefers meat with low fat deposition and more tender. One of the factors that influence weight gain is the deposition of muscle mass and, consequently, the period of its formation. This research was done at the Centro de Ciências Agrárias of Federal University of Piauí, Teresina, with longitude and latitude of 5.05S and 42.49W, respectively, with the objective to evaluate the indicating characteristics for carcass quality of the Anglonubiana goat breed and the Boer-Anglonubiana crossbred. A total of 48 male and female animals were used, raised in confinement and slaughtered at a predetermined body weight of 18, 25 and 32 kg (males) and 18, 24 and 30 kg (females), after solid-food fasting for 16 hours. It was considered an entirely randomized design and characteristics: body weight at slaughter, hot carcass and skin, grade on body condition, external and internal carcass and leg length, hip width, rump and thoracic perimeter, stratified by genetic group in body weight at slaughter. They were submitted to variance analysis and correlation analysis with SAEG software (UFV). Only in the external and internal length of the carcass was found genetic group effect, with Anglonubiana animals showing longer and less compact carcasses ( $P < 0.05$ ), confirming that the influence of the genotype on the components of live body weight depends on the difference in maturity between the breeds, because the crossbreds reached the slaughter weight sooner ( $P < 0.05$ ). The crossbreds showed higher apparent compactness, which is an important characteristic in meat specialized breeds. However, the correlation value among the characteristics proved to be independent from the genetic group and slaughter weight, thereby demonstrating similarity among animals and little effect on breeding. At the same weight, there were positive and of high magnitude correlations among characteristics, however, for the crossbred this was not confirmed in relation to the perimeter of the rump.

**Dynamics of endoparasites based on the EPG in Anglonubiana goat breed, and level of contamination in the pastures of the herd in Teresina Piauí**

SILVA, N.C.S., J.E.G. CAMPELO, Barros Júnior, A, SILVA, P.O., BARÇANTE, F.P.S., I.L. Mendonça, F.N. Barros, Silva, J. L. L. N.

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**Abstract / Resumo:**

The endoparasites cause economic damage by reducing productivity, increasing animal mortality and costs with labor and antiparasitic. Climatic, genetic and management factors and pasture characteristics influence the survival of the helminthes larvae in the pastures, being co-responsible for

the maintenance of infections in animals. The temperature and air and soil humidity affect the development of eggs and larvae in the environment. Therefore, this research has as objective to characterize the seasonality of endoparasite infestation in the herd of goats at UFPI, evaluating throughout the year the dynamics of infection in animals and the contamination level in pastures, relating to the rain seasonality in the region (data on temperature, relative air humidity and rainfall from the Meteorological Station of Embrapa, in Teresina). The research is being conducted in a herd of goats at UFPI located in Teresina (latitude 5°5'20 south and longitude 42°48'07 west) starting in 2009. Feces collected from the rectum of the animals every 40 days are analyzed at LASAN - UFPI with EPG for the McMaster technique and fecal culture for growing larvae. The contamination of pastures evaluated in four paddocks (85 Tifton, Tanzania, elephant grass and native pasture with *Andropogon gayannus*), made with samples to simulate grazing and cultivation of larvae with the counting in an optical microscope at 10x objective. Parallel to this sampling of the grass, the route of occupation by the animals was recorded, with the date of entry and exit of the pasture, the class and number of animals used. In upland pastures there was marked reduction in the quantity and quality of forage in the dry season, but also the presence of micro-climate apparently unfavorable to the presence of goat larval endoparasites. Thus, the declining trend of the stay of animals in each paddock was compensated by reducing the potential for reinfestation of the grass, because of the reduction of moisture in the soil and environment. Irrigated pastures in the presence of infective larvae was high throughout the period, favored by the high humidity in the environment, which directly influenced the level of parasitism in animals, implying a declining trend in the months of November and December 2009, that extended to the collecting at the beginning of the rainy season of 2010. The average EPG was less than 400, however, with some animals without parasitism indicated by EPG. The higher infection in pregnant and lactating animals deserves mentioning, whatever the time of the year, but also that the sanitary management adopted contributed to the reduction of the average level of infection. The most prevalent gastrointestinal nematodes in pastures were: *Haemonchus* spp, *Trichostrongylus* spp and *Oesophagostomum* sp.

### **Chemical composition of industry residues of instant noodles used in goat nutrition**

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### **Abstract / Resumo:**

Great food industries many times generate great volumes of residues that, if accumulated can cause environmental problems. Part of these residues is adjusted to animal nutrition, what beyond preventing environmental impact still it can help small goat producers, with substitution of part of conventional ingredients, as maize. One possibility is instant noodles residues. Noodles are a type of pasta product that is generally made from flour. The studied residues sold to producers are second quality noodles and after its shelf life time. For its use in feeding of goats it is necessary to know its chemical composition. With this aim were taken samples of industry residues of instant noodles of different commercial products, like Yakissoba (without spices), Cup Noodles (with spices), Miojo and Miojo light. Samples were taken from Ibiuna, SP, Brazil, where some goat producers buy these residues. Chemical analyses had been carried through in Chemical Laboratory of Unipinhal, in duplicates. Composition for Yakissoba in contents of dry matter, humidity, ashes, fat, crude protein,

crude fiber and non nitrogen extract was, respectively, 91.95%, 8.05%, 3.20%, 1.06%, 10.74%, 0.18% and 84.82%; for Cup Noodles, 94.10%, 5.90%, 4.91%, 11.10%, 10.89%, 0.32% and 72.78%; for Miojo, 91.93%, 8.07%, 2.75%, 11.92%, 9.52%, 0.45% and 75.36% and for Miojo Light, 89.55%, 10.45%, 2.91%, 0.67%, 12.32%, 0.43% and 83,67%. Also had been estimated TND (Total Nutrients Digestible), as energy measure, with values of 78.54% for Yakissoba, 92.80% for Cup Noodles, 88.13% for Miojo and 78.80% for Miojo light. All residues had been very palatable for goats. The results indicate the possibility of use of this residue in goat nutrition goat, with care in storage. Key words: alternative foods, environmental impact, goat nutrition.

### **Effect of vegetable oils mixture in acidity of goat cheese during its storage**

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#### **Abstract / Resumo:**

Olive oil and other vegetable oils had been evaluated about the acid value, destined to the use in *ijChevre a l'huilej* cheese. From 5 olive oil brands evaluated, 3 were classified as extra virgin. From other vegetal oils, were evaluated maize, sunflower and soybean oil, 2 brands of each one, totalizing 6 types. Vegetal oils are used in order to conserve goat cheese and the way to determine its quality is the acid value in acid oleic. It is usual in Brazil to use a mixture of olive oil and maize oil, besides maize oil usually is more expensive than sunflower or soybean oils. The aim of this study was to determine the initial acidity (time 0) and the acidification curve of different mixtures involving olive and other vegetable oils with small balls of fresh goat cheese immersed (times 7, 21 and 35 days). Were 30 mixtures and two batches of goat cheese, with different degrees of initial acidity. The samples had been kept under refrigeration at 5 „aC. Statistical analysis were carried out, evaluating as dependent variable the acid value in acid oleic and as variation sources the time, the type of cheese, the olive oil brand and the vegetable oil brand. The acidity was increasing, with the biggest value for mixture olive oil 1 and maize oil 6, with the goat cheese batch 2, in time 35. All the factors had statistically significant effect ( $P < 0.005$ ). The price of oils mixture varied from R\$ 0.56 (US\$ 0.31) to R\$ 1.05 (US\$ 0.58), with average of R\$ 0.77 (US\$ 0.43) per 100 mL. One of the maize oil brands was what promoted the biggest undesirable acidification. One of the olive oil brands, commercialized as extra virgin did not fit in the international classification, presenting an acid value above of the acceptable limit and was exactly the olive oil that promoted the biggest undesirable acidification. It can be concluded that it does not have reason for the use only maize oil with olive oil mixture; therefore the others less expensive vegetable oils had been adjusted in acidity terms. It is important to take care when buy extra virgin olive oil, therefore some brands in market can present acid values above of legal limit, although to have greater price. Key words: conservation, goat milk, oleic acid.

### **Nubian and Saanen goat milk cheese yield**

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### **Abstract / Resumo:**

Cheese yield is of basic importance to cheese manufacturers as small differences in yield translate to loss or profit, especially for the small goat milk cheese makers. So they need to know how to calculate the transformation costs correctly, in order to put a reasonable final price and get profit. For these it is necessary to know the yield from milk to cheese. One type of cheese very usual in Brazil is Frescal, natural or with condiments. The aim of this study was to calculate yield of goat milk transformed into Frescal cheese, evaluating the impact of breed (Nubian and Saanen) and two dosages of coagulant, as well as the whey drain speed. It was processed milk from two goat farms, both with good handling, good nutrition and well-taken care. One farm is dedicated exclusively to Nubian milk production and the other one, to Saanen. Milk from both farms arrived at laboratory as raw milk, cooled and 15, a D of acidity. It was carried through slow pasteurization of samples (63 ,aC for 30 min.) and then cooled to 32,,aC. During the cooling was added calcium chloride solution at 40%. It was used mesophilic lactic bacteria starter culture, in dosage recommended for manufacturer and curd 1:3000, treatment 1 with habitual dosage (20 mL/100 L of goat milk) and treatment 2 in double (40 mL/100 L of goat milk). Thus, two treatments had been tested: coagulant dose and breed. It did not have significant difference in whey drain speed for doses of curd or breed. Yield was similar for different doses of coagulant ( $P > 0.01$ ), while it had significant difference between breeds ( $P < 0.001$ ). Yield from Nubian milk was 32.7% greater than Saanen milk. Key words: conservation, coagulant dosage, oleic acid.

### **Effect of supplementation with energy silage on production and composition of goat milk**

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### **Abstract / Resumo:**

Fifteen goats Saanen and Alpine, with average weight of 50 kg and 60 days in milk, were used to assess the effect of supplementation with three energy silage, corn (*Zea maize*), sorghum (*Sorghum bicolor*) and sunflower (*Helianthus annuus*). The animals were divided into three treatments, whose diet consisted of one of the three silages energy, maralfalfa grass (*Pennisetum spp.*) and concentrate, in the proportions 30, 60 and 10% respectively. The production and milk composition (protein, fat, lactose and total solids) were evaluated through a randomized block design, using as covariates the days in milk and previous production to the beginning of the experiment. The data were analyzed using PROC GLM of SAS (2001) and the averages compared with the Tukey's test ( $p < 0.05$ ). Significant differences between silages for milk production, protein, total solids and lactose were recorded, where supplementation with maize presented the highest values and was different from sorghum and sunflower silages, which were statistically equal. The values obtained for the production of milk, protein, total solids and lactose were 1519.25, 1251.60 and 1122.17 L / day, 40.24, 33.97 and 30.32 g / day, 119.23, 100.29 and 90.36 g / day, 67.24, 56.44 and 51.13 g / day, for corn, sunflower and sorghum silage, respectively. Milk fat were not different between treatments, showing an average value of 57.21 g / day. It is concluded that supplementation with maize is a viable alternative to increase the volume and quality of goat milk.

### **Production and milk composition and curd yield in Saanen and Alpine goats**

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#### **Abstract / Resumen:**

Fifteen goats Saanen and Alpine, with average weight of 50 kg and 60 days in milk, were used to assess the effect of breed on milk composition (protein, fat, lactose and total solids) and curd yield. The diet of all animals consisted of corn silage (*Zea mays*), maralfalfa grass (*Pennisetum spp.*) and concentrate, in the proportions 30, 60 and 10%, respectively. The data were evaluated using a completely randomized design, using as covariates the days in milk and previous production to the beginning of the experiment, using the procedure PROC GLM of SAS (2001). Means were compared with Tukey's test ( $p < 0.05$ ) and was additionally performed a multiple regression analysis seeking to establish the relationship between the concentration of solids and curd yield. Significant differences between breeds were recorded for quantity and quality of milk, where the Saanen breed had the highest values. The values obtained for the production of milk, protein, fat, total solids and lactose were 1068.38 and 1503.90 L / day, 40.89 and 28.31 g / day, 65.90 and 48.04 g / day, 121.05 and 84.15 g / day, 68.21 and 47.55 g / day for Saanen and Alpine breeds, respectively. The curd yield was statistically similar between the two breeds, with values of 319.62 and 239.00 g, equivalent to 21.46 and 23.53% for Saanen and Alpine breeds, respectively. The variables that explained 95% curd yield were fat, protein and total solids, resulting in the regression equation: Curd yield (g) = 28.59 + (34.74 \* fat) + (580.57 \* protein) - 212.65 \* total solids). It is concluded that Saanen breed presented higher quantity and quality of milk, however, these differences were not reflected in the curd yield.

#### **Milk production and days to peak milk Saanen and Alpine goats housed**

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#### **Abstract / Resumen:**

Data from daily milk production of Saanen goats 15 and 12 Alpine goats were obtained during a period of 120 days. The goats were housed in communal pens and fed with maralfalfa grass (*Pennisetum spp.*), corn silage (*Zea mays*), concentrate (300 grams per female at every milking) and mineral salt ad libitum. Agro-ecological conditions corresponded to 1350 m.a.s, average temperature of 21.5 °C and relative humidity of 70%. Lactation curves were analyzed by racial group through the incomplete gamma function of Wood (1967) using the PROC MIXED of SAS (2001):  $Y_t = a * t^b \exp(-c * t)$ , where  $Y_t$  = milk production at time  $t$ , approximates the initial milk yield after calving;  $b$  = is the inclining slope parameter up to peak yield;  $c$  = is the declining slope parameter. Peak yield is  $a(b/c)^b * \exp(-b)$  and time of peak yield is  $b/c$ . The estimated parameters were  $a = 503.6$  and  $251.3$ ,  $b = 0.3813$  and  $0.5099$ ,  $c = 0.0111$  and  $0.0080$  for the group of Saanen and Alpine goats, respectively. Maximum production and time to peak were 1325 and 1265 g, 34.38 and 63.8 days for Saanen and Alpine goats, respectively. While both races have a different dynamic in the lactation curve, was concluded that the Saanen goats showed better productive performance in environmental and management conditions mentioned.

#### **Influence of ACTH administration on hematological and metabolic profile of lactating Saanen goats**

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### **Abstract / Resumo:**

The dairy goat industry has expanded substantially over the last years due to their ability to utilize many types of forages, tolerate unfavorable climates and require less feeds. Achievement of high standards of animal welfare can be assured or enhanced by following good management practices in livestock production. Stressful situations decrease milk production and directly affects milk quality by decreasing the total solids, protein, fat and somatic cells. In addition, stress can also adversely affect the hematological and metabolic profile of animals. The evaluation of plasma metabolites can be useful for monitoring the metabolic profile and health of animals. Exogenous administration of ACTH is an alternative method of measuring the stress response in animals as it increases the levels of cortisol, leukocytosis, neutrophilia, monocytosis, lymphopenia and eosinopenia in blood. The objective of this study was to evaluate the influence of the intravenous ACTH in blood and the (or its influence on the) hematological profile of lactating Saanen goats. Forty-four second lactation Saanen goats of  $55.43 \pm 1$  kg body weight and producing in average  $2500 \pm 130$  mL of milk were used. The experimental diet was formulated according to AFRC (1998) to meet the requirements of Saanen goats and consisted of ground corn, soybean meal, mineral supplement and soybean oil to meet a forage: concentrate ratio of 53:47. Goats were housed in stalls and experimentally induced to stress by intravenous injection of 0.6 IU/kg BW of adrenocorticotrophic hormone (ACTH) or saline solution (placebo). Blood samples were collected at -20 (before milking) and 60 min (after ACTH injection). Blood was collected and then centrifuged at 15 °C and  $3000 \times g$  for 15 min. The plasma obtained was stored at -20°C for determination of glucose, urea, albumin and creatinine. It was determined total leukocyte count, red blood cells and platelets, mean corpuscular volume and mean corpuscular hemoglobin for hematological analyses. Cells from blood samples were stained with Leishman stain and differential cell counts were performed. Statistical analyses were performed using SAS (SAS Institute, 2004). The results were analyzed by paired t- test, with statistical significance level of 5%. There were no significant differences ( $P < 0.05$ ) in blood components of dairy goats subjected an ACTH administration during the sampling time. After ACTH administration, MCV was the only hematological parameter significantly different at -20 and 60 minutes, respectively ( $28.6 \pm 0.13$  vs  $28.05 \pm 0.14$ ), which can be explained by the decrease in blood oxygen available in animals administered with ACTH. It was observed that glucose level was different after ACTH administration ( $67.27 \pm 1.39$  vs  $73.61 \pm 0.95$ , at -20 and 60 minutes, respectively). This increase in blood glucose concentration under stressful situations can be explained by the glycogenolysis and the moderate decrease in the rate of glucose utilization by the cells. The results showed that either the blood samples taken at 60 min after application of ACTH or the hormone concentration used to simulate the stress were not sufficient to change most of the blood parameters and metabolic profile of lactating Saanen goats evaluated in this study.

### **Productive and reproductive evaluation of Anglo Nubian goats and their crossbreeding with Boer into semiextensive production system**

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**Abstract / Resumo:**

The following study was to evaluate productive and reproductive behaviour of Anglo Nubian (AN) and Anglo Nubian x Boer (ANB) belly, under a semi-extensive handled system of meat production Data coming from 65 births (as result of 4 years of measuring in Campo anexo Santa Cruz INTA EEA Catamarca) was analyzed. Reproductive handling was performed during sexual activity season, by means of artificial and check of natural insemination oriented by Boer breed males. The kid goats were located in fitted-out farmyards and they were with the mother 7 days after birth. Milk supply was made before and after goats' shepherding until 60 days (weaning). After this, alfalfa (*Medicago sativa*) and corn was incorporated to the diet. It has been registered: type of birth, sex and weights in kilograms of the goats at birth (BW), 30 (W30D), 60 (W60D) and 90 (W90D) days-old, and with them the total weight birth by female (TWBF), prolificity (PRO) and weight earned daily (WED) was determined. A variance cording to a factorial design analysis was carried out, with year factor (4), biotype (2), type of birth (3) and type of sex (2) and the multiple comparison of the average through Duncan's test. BW was significantly affected ( $p \leq 0.05$ ) by sex and mother's breed and type of birth, not by year. Males BW was superior to the females in both biotypes. TWBF in kg. was highly superior ( $p \leq 0.05$ ) in ANB (6.03  $\pm$  0.19) as concerns AN (4.92  $\pm$  0.35). In triple births the ANB's TWBF (8  $\pm$  0.43) was higher ( $p \leq 0.05$ ) in a 60% as regards AN (5  $\pm$  0.96). PRO values to ANB and AN were 1.83  $\pm$  0.10 and 1.76  $\pm$  0.11 respectively. Double and triple birth's distribution was 97 % and 3% in AN, 56% and 14% in ANB respectively. Type of birth had a significant influence ( $p \leq 0.05$ ) on animals growing at different ages. ANB kid goats WED at 30 days, coming from single births (0.22  $\pm$  0.02), was highly superior ( $p \leq 0.05$ ). The same happened in type of birth and mother's biotype had meaningful effects on weaning weight. Single birth kid goats in ANB (13.29  $\pm$  0.6) and AN (12.58  $\pm$  0.9) was superior ( $p \leq 0.05$ ) to the rest. Males and females ANB W60D (11.73  $\pm$  0.42 and 11.20  $\pm$  0.45, respectively) were similar to the AN males (11.55  $\pm$  0.5) and higher ( $p \leq 0.05$ ) than AN females (9.69  $\pm$  0.49). WED post weaning was superior ( $p \leq 0.05$ ) in ANB males (17.41  $\pm$  1.11) and ANB females (16.85  $\pm$  1.01) in single births. The obtained results indicate us solid advantages in crossbreeding between both breeds on productive behaviour for meat production. It will be necessary to continue with these evaluations in the search for a biotype that can improve evaluated parameters and could adjust to the environment and to the semiextensive productive systems of arid and semiarid land in Catamarca.

**Fertility rate of goat semen extended and frozen in medium based on powder coconut water (PCW-101®) – preliminary results**

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**Abstract / Resumo:**

This work was to evaluate the fertility rate in goats inseminated with frozen goat semen, using medium based on powder coconut water (PCW-101™), and promote the spread of genetic material of superior animals for farming communities family, through artificial insemination. The freezing of semen was performed at the Laboratory of Technology of Sheep and Goat Semen of the State University of Ceará, located in Fortaleza, Ceará. We used two Saanen bucks, aged between 2-4 years.

Semen was collected with artificial vagina three times weekly, evaluated for motility, morphology and concentration, followed by prior dilution. The extender was prepared by diluting the sachet of PCW-101™ (3.77 g, pH 7.0, 300mOsm/Kg) into 50 mL of distilled water, which added 5% egg yolk and 40 mg of antibiotic. The solution was then divided into two fractions " A " without glycerol and fraction " B " with 10% glycerol. After the previous dilution in fraction " A " , semen was cooled to 5°C and added the rest of the fraction " A " and fraction " B " (added in three steps with 10 minute interval) so that the final concentration was 800 x 10 millions spz/mL and 5% glycerol. Freezing was performed in nitrogen vapors 5 cm from the level of nitrogen for 10 minutes, the dipped in liquid nitrogen. Were used for inseminations 106 dams, with minimum score of 2.5. Received an intravaginal progesterone implant on day 0, remaining with it until day 11, where the sponge was removed and administered 300 IU of e.C.G. and 75 µg of D-cloprostenol. The transvaginal inseminations were performed 36 hours after sponge removal. Pregnancy diagnosis method was carried out by trans-abdominal ultrasound with convex probe (5 MHz), 45 days after insemination. However, from 106 dams inseminated only 37 were assessed, while the other fewer than 20 days of insemination. Of the 106 dams inseminated, only 37 were in time to perform the ultrasonographic examination, and of these, 18 were pregnant, representing a pregnancy rate of 48.64%. In the face of the first inseminations with frozen goat semen in PCW-101™, even with few animals, the results are encouraging as yet had not sense of their fertilizing capacity. With this work could be granted six properties of the family farm until they leading genetics of cattle from herds with proven productivity. Although encouraging, these results are not yet sufficient to demonstrate in vivo the results that have been obtained in vitro during the last eight years of study.

### **Strategies to improve reproductive efficiency of goats in Brazil**

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#### **Abstract / Resumo:**

The generation of technologies and their transfer to the productive sector, could not even change the profile of the production chain of Northeast breed of goats and sheep. Efforts have been made by government agencies such as EMBRAPA, departments of agriculture, Universities and local actions with the municipal governments of the region. The dispersion of technologies, as well as from the production chain, and the lack of qualified human resources at all levels of the goat, seems to be the biggest problem with which we face. The lack of a productive model for the region, stratified for the production of meat, milk and skins through the use of applied technologies, together with the election of breeds most suitable for regional purposes, may solve the problem. The introduction of standards technified management in production systems as well as a breeding program focused on the concerns of producers in the region, should receive any priority. The cryopreservation of semen and embryos of genetically superior animals can, by working to control livestock, artificial insemination and embryo transfer, increase productivity, weight and number of herds. The evaluation of the races, followed by frozen semen and embryos of the best animals and the introduction and evaluation of new breeds will be one of the best tools technology can change the regional profile creation. Since the production efficiency of a herd is directly related to the number of products obtained, whether the goal of production. To the extent that you get more animals born, the greater the number of animals in the selection process for marketing and, consequently, the greater the profitability of farming. Thus, for

the reproductive management can be truly effective, must be understood as an inseparable item of the general management of the herd. The reproductive management is embedded in various aspects, i.e., feeding, mating system, the biotech to be used in the process of genetic evolution, the establishment of criteria for the selection of bulls and arrays and control of diseases of the reproductive. Since the efficiency of a herd can be assessed by the number of pups weaned per female per year, some guidelines should be sought so that there is promotion of production indices, such as raising the fertility rate, high rate of prolificacy; reduction mortality rate of young people, reducing the calving interval.

### **Multiple non epitheliotropic lymphoma in a goat**

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#### **Abstract / Resumo:**

In early October of 2007 a 4 years old male Boer goat was referred to the Hospital at PUCPR, presenting as main complaint lameness in pelvic limbs, which initiated one month before and was treated with flunixin-meglumine without improvement. At clinical examination, the animal presented proximal lameness in both pelvic limbs, trying to adopt a dog like sitting position when left alone. The left eye globus was projected with a 7 cm mass extending to the parotid node. On sitting position it seemed that the udder was developed, with a 10x20 cm mass beyond the right teat dislocating the scrotum to the left side. 3 other smaller masses were visible under the left teat, near the left side of the insertion of the scrotum. On two masses there was fluctuation and a puncture revealed dense caseous masses suggestive of an abscess. A direct panoptic coloured smear showed cocci and rods. Other clinical parameters (rectal temperature, cardiac, respiratory and ruminal frequency) were in physiological range. The findings were suggestive of reactive lymph nodes secondary to local mastitis with differential diagnosis for lymphadenitis and lymphosarcoma. For the next week an intensive high antibiotic treatment was performed without improvement. As the masses grew, we decided for euthanasia. Autopsy revealed also inguinal and mesenteric lymphnodes severely affected. Histological examination of the inguinal masses revealed neoplastic proliferation of dermis and adipose tissue suggestive of non epitheliotropic cutaneous lymphoma. This case resembles the cases described by Higgins et al. (1984) and DiGrassie et al. (1997). Neoplasms in goats are uncommon. In Brazil, the only case of lymphosarcoma described so far was a solitary left submandibular lymphosarcoma described by Guedes et al. (1998). This is the first description of a multicentric lymphoma in a goat in Brazil.

### **Sensitivity and Specificity of FAMACHA System in Goats Compared to Sheep**

SOTOMAIOR, C.1, COSTA, A.R.B.1, Maia, D.1, LIMA, E.C.1, Bedin, M.M.1, ROSALINSKI-MORAES, F.2, MONTEIRO, A.L.G.3

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#### **Abstract / Resumo:**

Sheep and goats are the species showing the biggest growth among zootechnically explored animals in Paraná State. One of the main problems found in Paraná State herds are the gastrointestinal parasites and the anthelmintic resistance. One of the newest resources to be used to slow down the development of anthelmintic resistance is the FAMACHA© System, considered a selective method to control of gastrointestinal verminosis on small ruminants. The purpose of this research was to evaluate sensibility and specificity of the FAMACHA© System in sheep and goats and to compare the results found for both species. The conjunctiva of 83 Suffolk sheep and 60 adult crossbred Boer goats were evaluated in FAMACHA© System, always by the same previously trained person. A blood sample was collected from each animal to determine the packed cell value (PCV). For the calculation of sensitivity and specificity of the FAMACHA© System, different criteria were adopted: animals classified as FAMACHA© 4 and 5, or 3, 4 and 5, were considered anemic animals (positive test) and animals classified as FAMACHA© 1, 2 and 3, or 1 and 2 are considered non-anemic animals (negative test). For the PCV, the standard value to confirm anemia, three cut off values were used:  $\leq 19\%$ ,  $\leq 18\%$  or  $\leq 15\%$ . On the sensitivity and specificity tests, the difference among the results found was evident, when considering F3 animals as anemic. In all cut off levels, the sheep sensitivity increased if F3 animals were included as anemic: from 55% to 90% (considering the PCV cut off level as  $\leq 19\%$ ); from 58.82% to 94.11% (PCV  $\leq 18\%$ ); and from 81.81% to 100% (PCV  $\leq 15\%$ ). However, the increase on the sensitivity implied on the decrease of specificity, which falls from 98.41% to 68.25% when including F3 as anemic (PCV  $\leq 19\%$ ); from 96.96% to 66.66% (PCV  $\leq 18\%$ ); and from 95.83% to 62.5% (PCV  $\leq 15\%$ ). Using the  $\leq 15\%$  cut off level, it is possible to opt not to drench the animals that were shown as F3, since the sensitivity is still high, indicating that few animals that should be drenched were not. For goats, sensitivity also greatly increased when F3 is included as positive, from 16.66% to 66.66% (considering the cut off level as PCV  $\leq 19\%$ ); from 33.33% to 100% (PCV  $\leq 18\%$ ); and from 50% to 100% (PCV  $\leq 15\%$ ). As well as sheep, there was a drop on the specificity, from 100% to 83.33% (PCV  $\leq 19\%$ ); from 100% to 82.45% (PCV  $\leq 18\%$ ); and from 100% to 81.03% (PCV  $\leq 15\%$ ). The option not to drench F3 goats is not recommended, since the sensitivity in any cut off level was too low, indicating that many animals that should be drenched were not. Therefore, the FAMACHA© System can be used for identification of anemic sheep and goats. It is necessary that all animals classified as FAMACHA© level 3 are treated, in order to increase the sensitivity values of the method. This method can be used in a safe and reliable manner, in order to control the anthelmintics selection pressure.

### **Production and Composition of Goat Milk of Purebred and Crossbred Saanen Goats Raised in Semi-Arid Region of Brazil**

Albuquerque Í.A.1, Villarroel A.B.S.1, Salles M.G.F.2, Pereira E.S.1, Oliveira S.M.P.1

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#### **Abstract / Resumo:**

This study was conducted to evaluate the production and physico-chemical composition of goat's milk in 22 pure Saanen breed (SS) and 25 crossbred Saanen with undefined breed racial characteristics goats (SRD), being 15 7/8 SSxSRD and nine SSxSRD and to determinate the effects of genetic group, type of kidding and parturition order on milk characteristics. Animals were in confinement system raised in the semi-arid region of the northeast of Brazil. The average daily goat milk production from all genotype group was (1.79  $\pm$  0.67kg/day) and the average goats' milk chemical composition was

(3.03%) for protein, (2.97%) for fat, (8.05%) for solids non fat and (11.01%) for total solids content and the average physical composition was (1.028g/cm<sup>3</sup>) for density and values of (15.25°D) for acidity. There was a significant effect ( $P < 0.05$ ) of genetic group, type of kidding and parturition order on all milk characteristics studied. It was observed a great variability within the milk characteristics, with the levels of fat and acidity showing the greatest variation among milk components studied. The average milk yield increase as the degree of blood Saanen increased in the genetic groups, however, when considering the total production and lactation length did not differ between the genetic groups. Data of the production and composition of Saanen goat milk observed in this study are according with the means found for this breed and its crossbreds in regions with temperate climate in Brazil. The values of the physico-chemical composition obtained in this study are accordance with current legislation for goat milk in Brazil. It was concluded that genetic group, type of kidding and parturition order influence the yield and composition of goat's milk and the production increase until the 5th lactation in Saanen does. The physico-chemical composition of goat milk is highly variable and is influenced by genetic group, type of kidding and parturition order, with fat content and acidity showing the greatest variation among the milk components studied. Milk goat production can be obtained satisfactory with Saanen crossbred goat in semi-arid regions and the milk daily production increase in crossed goats as increase the participation of pure breed blood.

### **Correlation Between Milk Production and Physico-Chemical Composition of Pure and Crossbred Saanen Goats**

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#### **Abstract / Resumo:**

This study was conducted to evaluate the correlation between production and physico-chemical composition of goat's milk and its variations throughout lactation in 31 goats, being 14 pure Saanen breed (SS) and 17 crossed Saanen with undefined racial characteristics animals-SRD, being 11 crossed does 7/8 SSxSRD and six 15/16 SSxSRD, raised in confinement system in the semi-arid region of northeast of Brazil. There was a significant ( $P < 0.001$ ) and negative correlation between milk production and physico-chemical composition, showing that when increasing the milk production there is a decrease of the milk components. Milk production had a greater influence on protein content ( $r = -0.2463$ ) and lower for density ( $r = -0.1295$ ). There was a significant variation ( $P < 0.05$ ) in milk production and physico-chemical composition during the lactation period, showing that the decrease in milk production during lactation also influence the levels of its components, mainly the fat content.

### **The effect of genotype on carcass quantitative traits of kids finishing in feedlot in northeast Brazil**

Cartaxo, Sousa, Cunha, Cabral, Viana

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#### **Abstract / Resumo:**

The objective of this trial was to evaluate the effect of genotype on carcass quantitative traits of the

kids. Thirty-two intact male kids, from four deferments genotypes:  $\frac{1}{2}$  Boer +  $\frac{1}{2}$  undefined-breed type (SRD); undefined-breed type (SRD);  $\frac{1}{2}$  Anglo Nubian +  $\frac{1}{2}$  SRD and  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD, finished in feedlot, with initial average weight of 16,60 kg and average age of 120 days. The kids had access to a complete ration containing 35% of maniçoba hay (*Manihot pseudoglaziovii*) and 65% of concentrate. The kids were randomly assigned according to four genotypes and eight repetitions and the data was analyzed according to the GLM procedures in the SAS statistics package in which the means were compared according to the Tukey test at 5%. The  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD kids showed greater loin eye area than all genotypes. Also showed greater cold carcass dressing and fat thickness in breast, when compared to the SRD; however, there was no significant difference among the genotypes on hot carcass dressing, percentage of cold loss and fat thickness between at 12° and 13° rib.

### **The effect of genotype on carcass quality traits of kids finishing in feedlot in northeast Brazil**

Cartaxo, Sousa, Cunha, Cabral, Viana

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#### **Abstract / Resumo:**

The objective of this trial was to evaluate the effect of genotype on carcass quality traits of the kids. Thirty-two intact male kids, from four deferments genotypes:  $\frac{1}{2}$  Boer +  $\frac{1}{2}$  undefined-breed type (SRD); undefined-breed type (SRD);  $\frac{1}{2}$  Anglo Nubian +  $\frac{1}{2}$  SRD and  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD, finished in feedlot, with initial average weight of 16,60 kg and average age of 120 days. The kids had access to a complete ration containing 35% of maniçoba hay (*Manihot pseudoglaziovii*) and 65% of concentrate. The kids were randomly assigned according to four genotypes and eight repetitions and the data was analyzed according to the GLM procedures in the SAS statistics package in which the means were compared according to the Tukey test at 5%. The  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD kids showed greater carcass conformation, when compared to the  $\frac{1}{2}$  Anglo Nubian +  $\frac{1}{2}$  SRD and SRD; however, there was no significant difference among the genotypes on amount of marbling, distribution of marbling, meat color and meat texture.

### **THE EFFECT OF GENOTYPE ON BODY COMPOSITION OF KIDS FINISHING IN FEEDLOT IN NORTHEAST BRAZIL**

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#### **Abstract / Resumo:**

The objective of this trial was to evaluate the effect of genotype on carcass quantitative traits of the kids. Thirty-two intact male kids, from four deferments genotypes:  $\frac{1}{2}$  Boer +  $\frac{1}{2}$  undefined-breed type (SRD); undefined-breed type (SRD);  $\frac{1}{2}$  Anglo Nubian +  $\frac{1}{2}$  SRD and  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD, finished in feedlot, with initial average weight of 16,60 kg and average age of 120 days. The kids had access to a complete ration containing 35% of maniçoba hay (*Manihot pseudoglaziovii*) and 65% of concentrate. The kids were randomly assigned according to four genotypes and eight repetitions and the data was analyzed according to the GLM procedures in the SAS statistics package in which the means were compared according to the Tukey test at 5%. The  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD kids showed greater muscularity index and muscle:fat ratio, when compared to the SRD. The  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD and  $\frac{1}{2}$  Boer +  $\frac{1}{2}$  SRD kids showed

greater percentage of fat, when compared to the SRD; however, there was no significant difference among the genotypes on percentage of muscle, percentage of bone and muscle:bone ratio.

### **THE EFFECT OF GENOTYPE ON BODY COMPOSITION OF KIDS FINISHING IN FEEDLOT IN NORTHEAST BRAZIL**

Cunha, M.G.G, Cartaxo, F.Q, Sousa, W.H, Ojeda, M.D.B

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#### **Abstract / Resumo:**

The objective of this trial was to evaluate the effect of genotype on carcass quantitative traits of the kids. Thirty-two intact male kids, from four deferments genotypes:  $\frac{1}{2}$  Boer +  $\frac{1}{2}$  undefined-breed type (SRD); undefined-breed type (SRD);  $\frac{1}{2}$  Anglo Nubian +  $\frac{1}{2}$  SRD and  $\frac{3}{4}$  Boer +  $\frac{1}{4}$  SRD, finished in feedlot, with initial average weight of 16,60 kg and average age of 120 days. The kids had access to a complete ration containing 35% of maniçoba hay (*Manihot pseudoglaziovii*) and 65% of concentrate. The kids were randomly assigned according to four genotypes and eight repetitions and the data was analyzed according to the GLM procedures in the SAS statistics package in which the means were compared according to the Tukey test at 5%. The  $\frac{1}{2}$  Anglo Nubian +  $\frac{1}{2}$  SRD kids showed greater percentage of shoulder, when compared to the SRD; however, there was no significant difference among the genotypes on percentage of leg, percentage of loin, percentage of rib and percentage of neck.

### **Profile of the sheep meat marketed in Imperatriz municipality - MA**

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#### **Abstract / Resumo:**

This study was conducted in Imperatriz municipality, MA state during the month of march, 2008, based upon questionnaire applied to the meet sheep traders. The objective was to characterize the profile of the sheep meat marketed in that municipality as well as its potential of acceptability and main problems that the activity faces. There was observed that this kind of meat is marketed in slaughter, supermarkets, restaurants and random seller's tables. There was verified that 80% of this meat come from of clandestine slaughters of the municipaly and region. The lamb is very popular in the city of Imperatriz / MA and its production has been developed considerably in the region, but still does not meet the demand, making it necessary to purchase animals from other states. Withdrawals are made, mostly illegally, on farms or residences of farmers, without any type of inspection, which compromises the reliability of the product.

### **Management of Nuclei Conservation Schemes of Brazilian locally adapted goats using molecular markers**

Paiva, S.R.1, Faria, D.A.1, Barreto, G.B.2, Facó, O.3, Vilela, L.C.V.3, McManus, C.4, Mariante, A.da S.1

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**Abstract / Resumo:**

The local adapted goat breeds undergo indiscriminate crossbreeding with several commercial breeds, affecting effective population size and therefore desirable allelic combinations for adaptation to extreme environmental conditions. Few studies have been carried out on the origin of these breeds, their production potential and genetic diversity. The objective of this study was to advance studies on genetic variability in the Conservation Nuclei of Canindé and Moxotó breeds kept in Embrapa Goats by mitochondrial DNA sequencing (mtDNA) to assist in optimization of genetic management of these herds as well as guide the collection of germplasm for ex situ conservation. A total of 391 base pairs were sequenced from the first half of the control region (D-loop) from 41 Moxotó and 30 Canindé goats from the Conservation Nuclei of Embrapa Goats, Ceará State, Brazil. Thirty-nine haplotypes were observed of which 16 were specific to the Canindé breed, 11 to the Moxotó and seven to commercial breeds. The results, in addition to those with nuclear markers (microsatellites), should help in the genetic management of these two herds and optimize genetic diversity and thereby reduce inbreeding.

**Clinical and Serological Monitoring of Goats Experimentally Infected by Virus Arthritis-Encephalitis Caprine**

Souza, K.C.2, Andrioli, A.1, Pinheiro, R.R.1, Brito, R.L.L.1, Dias, R.P.2, Brito, I.F.2, Abreu, D.A.2, Sider, L.H.1

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**Abstract / Resumo:**

The objective of this study was to evaluate which diagnostic test, agar gel immunodiffusion (AGID) or Western Blot (WB), would detect early seroconversion of goats experimentally infected by Caprine Arthritis-Encephalitis Virus (CAEV) via artificial insemination and relate seroconversion with clinical signs of disease. Thirty goats were used, with no defined breed, inseminated with semen contaminated with the standard virus strain CAEV-Cork, with infective titles of 106TCID<sub>50</sub>/mL and another 102TCID<sub>50</sub>/mL. The goats were then serologically and clinically followed for a year. The experiment was conducted in accordance to the ethical principles of animal experimentation. Statistical analysis was performed using the chi-square test ( $P < 0.05$ ). At 30 days after insemination, there were found the first seroconversions. In two, out of 20 goats inoculated, antibodies were detected for the CAE virus using the technique of AGID, and 12 by a WB. After 60 days of the AIs, all inoculated goats showed reaction of antibodies to antigens of CAEV in WB and in one year in both tests, indicating that they were infected. All the 10 goats in the control group remained seronegative throughout the experiment. The AGID presented, during the study period, eight false-negative results among 60 tests (13.3%), while the WB showed only one false-negative among 132 tests performed (0.76%) ( $P < 0.001$ ). As the clinical symptoms of CAE noted that only two (10%) of the infected females showed a slight increase in the articular index clinical, are considered clinically suspected joint problems. It was concluded that due to CAE remains asymptomatic for long periods, and the AGID test does not detect early infected animals, and the high occurrence of false-negative, there should be used more sensitive diagnostic tests, such as WB, periodically, to monitor the CAE in the national herd.

## **ISOLATION AND IDENTIFICATION OF CAPRINE LENTIVIRUS IN SYNOVIAL FLUID AND BLOOD USING Nested PCR AND WESTERN BLOTTING**

PINHEIRO, R.R.1,2, ANDRIOLI, A.1,2, FEITOSA, A.L.V.L.4, ARAGÃO, M.A.C.2, TEIXEIRA, M.F.S.4, SIDER, L.H.1, ALVES, F.S.F.1

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### **Abstract / Resumo:**

The caprine arthritis-encephalitis (CAE) is an infectious, multisystem disease, caused by a retrovirus belongs to the Lentivirus genus, which affects all ages goats and breed types. This study aimed to investigate the caprine arthritis-encephalitis virus (CAEV) through the isolation of native strains and identification with polymerase chain reaction (nested PCR) and western blotting (WB). Six female Saanen crossbreed with no definitive breed animals were used for the isolation of native caprine lentivirus. All animals belong to the Embrapa Goats and Sheep herd seropositive by agar immunodiffusion test for CAE. From each animal was collected the synovial fluid (SF) through arthrocentesis and blood from jugular venipuncture. The collected material was sent to the laboratory where it was performed the co-cultivation and the laboratorial tests. It was verified in the wells from the plates of leukocytes co-cultures and SF from the animal's formation of syncytia between seven to fifteen days after the second transition which confirming the presence of the virus in cells of monocytic-phagocyte system in cytopathic effect. All six samples isolates were observed viral reaction in moderate lytic effect. The proof of the isolation was made by Nested PCR and the WB in all six samples. In WB. the samples showed a similar pattern where it was observed the presence of the bands antigen-antibody molecular weight of 145, 70, 45, 28 and 14 KDa. We can conclude that blood leukocytes or the LS from goats can be used for the isolation by co-cultivation; native samples of CAEV in Ceara State present cytopathic moderate lytic viral effect and the WB and Nested PCR tests can be used to confirm the CAEV isolation.

### **Purification of antigen the caprine arthritis encephalitis virus by affinity column**

PINHEIRO, R.R.1,3, GOUVEIA, A.M.G.2, OLORTEGUI, C.C.2, ANDRIOLI, A.1,3

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### **Abstract / Resumo:**

The small ruminant lentiviruses are diseases characterized by a chronic, multisystemic and wasting nature. They are responsible for major production losses in goats and sheep. The control and eradication are very difficult, mainly by the absence of effective vaccines, lack of early detection of seropositive animals in herds, and dissemination in high value livestock. The clinical evaluation is not sufficient to determine the disease, since the major signs can be confused with other illnesses. Among the serological methods to diagnosis are the agar gel immunodiffusion, immunoblotting and the enzyme linked immunosorbent assay (ELISA). This study aimed to purify the proteins of CAEV by column bioaffinity. In assembling the column were used from both the seropositive sheep as seropositive goats from different regions, northeast and southeast of Brazil. In immunoblotting of

purified antigen was found four antigenic proteins and approximate WM: 145 kDa, 46 kDa, 28kDa and 19kDa. In ELISA it was observed that the serum dilution of 1:200 and 200ng of antigen showed a difference between the OD sera positive and negative of about 0.5. This result enables the development of this test. Considering the results, it was found that the use of affinity chromatography is a viable alternative, especially when one need a hoghly purified antigen.

### **PRESENCE OF PRESERVATIVES IN GOAT'S MILK OF MINI-PLANTS IN THE CARIRI REGION OF PARAÍBA STATE, BRAZIL**

SIQUEIRA, I. N.1, NARDELLI, M. J.1, CARVALHO, M. G. X.1, SOUZA, D. R. M.1, SILVA, L. M.1, SILVA, A. C.1  
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#### **Abstract / Resumo:**

The purpose of this study was to investigate the presence of formaldehyde in fresh goat's milk delivered to mini-plants in Cariri region of Paraíba state, Brazil. Were chosen seven mini-plants located in Cariri region which were registered in a surveillance. Were investigated 662 samples during the period of January 2006 to March 2007. The research of formaldehyde Was performed according to methodology of the Institute Adolfo Lutz (IAL, 2005). Was observed in September (0.13%) positive samples for testing of formaldehyde. Even as a small index, but because it is a prohibited substance in milk, requires more attention to producers to avoid the use of such fraud.

### **MILK SENSORIAL CHARACTERISTICS OF GOAT FED WITH SUGARCANE PULP IN SUBSTITUTION OF TIFTON HAY (*cynodon spp*)**

Vitor, I., Morais, D.M.A., Beltrão Filho, E.M, Cruz, S.E.S.B.S, Cruz, G.R.B, Beltrão, F.A.B

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#### **Abstract / Resumo:**

The objective of this study was evaluated the sensorial characteristics of the milk of goats fed with growing levels of sugarcane pulp at substitution of the hay tifton. The experiment was driven in the Federal University of Paraiba, Campus III, with 8 multiparous Saanen goats distributed in two Latin squares (2 squares x 4 experimental periods x 4 treatments). The used treatments consisted of the use of four levels (0, 33, 67 and 100 %) of sugarcane pulp like bulky food of substitution of the hay of tifton. The sensory analyses were driven in individual cabins. The middle scores attributed for the descriptive quantitative analysis of the milk of goats, they did not present variation siguinificativa ( $P > 0,05$ ). The substitution of the Tifton hay by sugarcane pulp reduced linearly ( $P < 0.05$ ) the taste of the milk, which values varied of 6,88 for 5.52. However, this reduction was significant only in the level of 100 % of substitution, when significant variation not is to taste of the milk when it was used up to 67 % of sugarcane pulp in the diet of the goats, relevant result where it is possible to use up to 67 % of substitution of the tifton hay in the diet of lactating goats.

### **EFFECT OF THE CASTOR BEAN HULLS IN DAIRY GOAT DIETS ON HEMATOLOGIC PROFILE AND HEPATIC**

## **AND RENAL FUNCTIONS**

SANTOS, S.F.1, CÂNDIDO, M.J.D.2, PINHEIRO, R.R.3, BRITO, R.L.L.4, OLIVEIRA, L.S.5, FONTELES, L.O.6, PEREIRA, L.P.S.7, GOME, G.M.F.8, BOMFIM, M.A.D.9

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### **Abstract / Resumo:**

The experiment was assigned to evaluate complete hemogram (red and white cells counts) and hepatic and renal functions parameters in dairy goats feeding increasing levels of castor bean hulls. Eight Nubian goat weighting 45 kg were used. The animals were distributed in metabolic cages, using an experimental design in double latin square 4x4. The treatments consisted in three levels of substitution of the hay for castor bean hulls as roughage (33, 66 and 100%) and one control diet (100% of Bermuda grass hay), keeping a roughage:concentrate ratio of 50:50. Each experimental period was 21 days, being 14 days of adaptation and seven days to collect data. There were not significative difference among treatments on hematologic parameters. The content of aspartate aminotransferase as well direct and total bilirrubin was higher in animals feeding diets with 100% of replacement of Bermuda grass hay by castor bean hulls compared to control diet ( $P < 0.05$ ). Serum urea showed linear positive effect as castor bean hulls increase in diets and was kept above normal levels (8 to 20 mg/dL). Castor bean hulls containing 6% of seeds fragments should be used carefully to dairy goats feeding, respecting limits of 33.0% of replacement of grass hay.

## **CASTOR BEAN MEAL DETOXIFIED BY EXTRUSION IN DAIRY GOAT DIETS ON MILK FATTY ACID PROFILE**

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### **Abstract / Resumo:**

This present work was carried out to evaluate the different levels of replacement of soybean meal by castor bean meal detoxified by extrusion on fatty acid profile of goat`s milk. The experimental design was a completely randomized with four treatments based on levels of soybean meal replacement by castor bean meal detoxified by extrusion as follow: 0.0, 33.0, 66.0 and 100.0%, with five repetitions. There was no influence of treatments on milk production ( $P > 0.05$ ) such means was 1.081 kg/day. Also no effects were observed on milk composition ( $P > 0.05$ ). The means were 28.57 g.kg<sup>-1</sup> (crude protein), 27.15 g.kg<sup>-1</sup> (fat), 26.04 mg.dL<sup>-1</sup> (urea nitrogen), 39.87 g.kg<sup>-1</sup> (lactose), 103.66 g.kg<sup>-1</sup> (total solids), 76.42 g.kg<sup>-1</sup> (total solids non fat). The increase of replacement of soybean meal by castor bean destoxified on butiric acid (C4:0) content demonsteread a quadratic effect, ( $P < 0.05$ ). There was no effect of treatment for others individual fatty acids. Furthermore, no effects were observed to saturated, unsaturated, poliunsaturated, essential fatty acid or their rations. Castor bean meal

detoxified by extrusion can replace 100% of soybean meal in dairy goat diets without negative effects on milk quality.

### **Induction of estrus in crossbred goats Anglo-Nubian by male effect interspecies**

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#### **Abstract / Resumo:**

The induction and synchronization of estrus in goats are important technologies for the organization of reproductive management and planning of livestock production on tropical climate. From the standpoint of practical and economic effect of the male allowing has the advantage of the advance of the breeding season about four to six weeks or more, providing a good synchronization of calving and weaning later. This study aimed to evaluate the effect of male interspecies induction of estrus in goats using a breeding ram Morada Nova. 21 nulliparous goats crossbred Anglo-Nubian were exposed to a ram Morada Nova and a Saanen male goat for 42 days, twice a day. Were recorded: interval introduction of the male and first observation of estrus and the number of females that showed estrus. The number of females in estrus Was Assessed by Pearson Chi-square at 5% significance using the statistical program SYSTAT version 12 (USA). The results of this experiment showed that the male effect with the ram was highly effective in inducing estrus, obtaining a percentage of 95% compared to the male effect with the goat, which had 100% efficiency, with the first estrus detected from from day two and three in the first week to the goat and sheep respectively. We concluded that the male effect interspecies shows good efficiency for induction of estrus in nulliparous females, which may constitute an efficient option for conducting the male effect in herds of dairy goats.

### **Effect of natural compound on microbial quality of soft goat cheese**

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#### **Abstract / Resumo:**

Not available.

### **Effects of essential oils on the microbial and technological quality of soft goat cheese**

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#### **Abstract / Resumo:**

The aim of the study was to contribute to the improvement of quality and diversification of goat's milk cheese in north of Morocco. This objective was to study the effects of incorporation of essential oils on the quality of fresh cheese (Jben) made from goat's milk. Results show that the three EO studied, did not affect lactic acid bacteria. Essential oils of Thymus and Origanum affect the coliform count. However, Rosmarinus did not affect the microbiological quality of the investigated cheese.

Technological, microbial and sensorial quality will be considered for a complete shelf life evaluation.  
Key words: Fresh goat cheese, essential oils, shelf life, quality.

### **Modeling and simulation applied to goat production systems: potential and challenges**

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#### **Abstract / Resumo:**

Knowledge in the field of Animal Science, Operation Research and Information Systems is able to provide construction of simulation models that will result in benefits for strengthening and directing the activity of the goat production in Brazil. Computer simulation allows the development of models to manage farms; to help identifying the main variables to be searched; to assess public policies; and also to be used as a teaching tool. The objective of this paper was to analyze the academic production of the use of modeling and simulation applied to Goat Production, and to discuss the main insights regarding this technique. The survey considered scientific papers published in journals related to Animal Science. SCIRUS data base and the Brazilian Journal of Animal Science, during 1990 to 2010, were the source of investigation. The survey identified some papers that used simulation tools in livestock production. The journals with higher contributions were Agricultural Systems, Brazilian Journal of Animal Science, Journal of Animal Science, Livestock Science and Journal of Dairy Science. During the 90's decade hardly some papers were observed, however a higher number of publications could be observed since 2005. Most papers that used the simulation technique have focused on some events of production system and not the system as whole. Reproductive and nutritional management were the topics most studied. However, some papers have employed simulation technique to assess: effects of genetic improvements, potential for producing goat's milk cheese, effects of changes in production characteristics on the profit of the activity. Recently in Brazil was developed research with simulation for dairy goats system with objective to identify how the mortality, feed quality, animal age among others factors affect the profitability. The scarce of papers and the fact that the simulation has applicability in various fields justifies the development of research in this area and reinforce the huge potential to explore simulation in goat production.

### **FAMACHA method on goat parasite control**

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#### **Abstract / Resumo:**

Gastrointestinal verminosis is very frequently in goat production and were a limiter factor for animal performance. FAMACHA method was development in South Africa by Van Wky to apply on sheep and has how objective to identify clinically animals with different anemia degree due Haemonchus contortus infection. This method enables selective treatments without laboratorials examinations. The indication of treatment is made with basis on FAMACHA card only by coloration of the animal conjunctiva. This research was developed by one year (05/2008 to 05/2009) in Campo Largo, Paraná,

Brazil being evaluated 86 female goats naturally infected by parasites. The deworming was realized with basis on FAMACHA card. Only on December/2008, in peri-parturient all the females were dewormed with closantel. Animals with FAMACHA degree 3 or 4 were dewormed with ivermectin 1% in dosis of 200 mcg/kg. The results showed that flock presented 2 how FAMACHA degree during the studied period. 86.05% of animals presented FAMACHA 3 at least a time during the year; 11.63% presented FAMACHA greater that 3. In 2009 only 26.7% of goats were dewormed. When analyzing average the flock FAMACHA degree in the period of 2009, was observed that it had greater number of dewormed in end of summer and autumn being 97.3% of goat dewormed in this period. This fact occurred because tropical grass was on end of cycle with low quality and did not have temperate pasture. The nutritional deficiency of animals may have hindered the immune system to act against parasites. The antihelmintic spend reduction was 75% in relation to previous year without use FAMACHA method with deworming realized without defined criteria. The FAMACHA method is a valuable tool for reduce number of deworming and spent with antihelmintic when the flock is in adequate diet.

### **INVESTIGATION OF DIFFERENT CHARACTERSTICS IN NATIVE NAJDY GOAT OF IRAN**

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#### **Abstract / Resumo:**

INVESTIGATION OF DIFFERENT CHARACTERSTICS IN NATIVE NAJDY GOAT OF IRAN ALEMZADEH, B.\* , B. TAHERI DEZFULI\*\*, A. KARDOONI\*, M.R MASHAYEKHI\*\*. \*Researchers and\*\*Member of scientific board of agriculture and natural resources of Khuzestan- Ahwaz- IRAN Abstract: This experiment was conducted in Safiabad animal science research station of Iran in which the recording of milk, body weight gain and reproduction and its efficiency in the sampling flock, was considered and evaluated. On the basis of the results obtained, the average milk production of Najdy goat during a period of milk production was  $135.48 \pm 15.25$  liters; daily average milk production was  $0.530 \pm 0.06$  liters. The average of weaning weight was 11.83, 10.30, 10.14 and 9.73Kg respectively, and its overall was  $10.50 \pm 0.92$  kg. The average of daily weight gain in Najdy goat during a period of fattening was 88 grams, and in all of the period was 10.6 kg. Key words: Najdi Goat- weight gain- Milk production

### **Effect of polyols blend supplementation to high grain diet on rumen fermentation and methane production in vitro**

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#### **Abstract / Resumo:**

Ruminal inoculum enriched with particle-associated microorganisms was collected from six rumen cannulated Santa Inês wethers fed high grain diet (concentrate: roughage, 80:20%) before feeding and used to evaluate effects of inclusion different levels from polyols blend (sorbitol and manitol) on

ruminal fermentation and methane emission in short-term in vitro incubations using semi automatic system of gas production for 16h. Five levels (0, 0.2, 0.4, 0.8 and 1.6%) from polyols blend were supplemented to the high grain diet for in vitro assay. The results showed linear increase in gas production with increasing levels of polyols blend supplementation to the high grain diet compared to the control diet without supplementation. The fourth concentration of polyols blend supplementation improved ( $P < 0.05$ ) gas production, while the lower polyols blend concentrations did not affect significantly on gas production. Methane production was declined by 5 and 9% when third and fourth concentrations of polyols blend were supplemented in comparison to the control diet, but this depression was not significant. Polyols blend inclusion in high grain diet increased ( $P < 0.05$ ) the mean values of pH compared to the control diet, while there was no significant effect on  $\text{NH}_3\text{-N}$  concentrations. True degradation of dry and organic matter and short chain fatty acids were improved ( $P < 0.05$ ) when polyols blend was supplemented by 1.6% compared to the control diet, while it was reduced ( $P < 0.05$ ) the partitioning factor which is consider an index of the microbial protein synthesis efficiency. It is suggested that polyols blend supplementation by 1.6% to high grain diet improved rumen fermentation, degradation and mitigate methane emission in vitro. Further, in vivo studies are necessary to examine the polyols blend inclusion to sheep high grain diet on feed intake, digestibility, performance and methane emission.

#### **A goat production option with potential to reconvert degraded land in Zacatecas State, Mexico.**

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#### **Abstract / Resumen:**

The present study was focused on evaluating options for reconverting degraded lands by means of agronomic changes in the cropping patterns, combining annual crops with shrubs and cacti, to increase plant cover, reduce land degradation and enhance the feed base for goats, in addition to options to value addition to capture the market opportunities for goat products. The study was carried out during 2008 and 2009 in the Zacatecas Experimental field station of the National Institute for Forestry, Agricultural and Livestock Research (INIFAP)-Zacatecas, Mexico. The goat production option based on forage rainfed production, proposed as an alternative for production monoculture and sustainable management of land, showed its suitability in reducing water erosion and runoff while increasing soil water storage. The system could help farmers to sustain the feeding of their animals with less risk during years of drought. It will also help in overgrazing reduction and make use of recovered range during severe drought. Diversification of production such as shifting towards milk production and transformation is also a possible option for farmers to improve their livelihoods. However, this will require more consideration of marketing issues as milk processed products are not in great demand in the state of Zacatecas market though promising markets are offered by other states in Mexico.

#### **Suitability of supplementing milking goats with protected fat as a source of energy for designing diets with appropriate CP:ME during the milking season in La Comarca Lagunera**

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**Abstract / Resumo:**

The diet of milk producing goats in the semiarid conditions of La Comarca Lagunera, northern Mexico, has often an unbalanced protein:energy ratio during the milking period, which affects negatively on the milk produced per goat and flock basis, an important source of income for smallholder farmers in this region. Considering this problem, the suitability of using protected fat diets without affecting milk production in improving the milk production systems has been tested in a preliminary trial, as a preamble to incorporate protected fat into more comprehensive experiments that compare different protein:energy ratios in feeding milking goats. To this end, the effect of supplementation with protected fat on milk production and composition, body condition and live weight was evaluated in 12 local crossbreed multiparous 2.5-year old goats in La Comarca Lagunera, Coahuila State, Northern Mexico. A basic 300-g mix containing 80 g of protected fat and 300 of rolled corn was set to feed milking goats grazing on the range at three levels of protected fat supplementation: 100% (using 380 g of the mix/d/goat), 50% (using 190 g of mix/d/goat) and 0% (Control with no supplementation). Three diet-groups consisting each of 4 animals were fed with these diets for a period of 63 d after weaning. Supplementing with protected fat showed a slight increase in total milk produced in the 63-d milking period ( $P>0.09$ ): 66.9 kg and 61.7 kg milk/goat in the groups fed with 100 and 50% of protected fat, respectively, vs. 58.9 kg milk/period/goat in the Control group. There were no significant differences between diet groups for milk fat percentage (range from 4.05 and 4.42 %) and milk protein percentage (range from 3.06, to 3.15%). The results show that fat protected as a source of energy up to levels of 80 g/doe/d could be safely used in experiments with milking does under grazing, to formulate diets with suitability CP: ME ratios during the milking period.

**Influence of polyherbal supplementation on does and their kids performance in cross bred dairy goats**

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**Abstract / Resumo:**

Effects of polyherbal supplementation on cross bred does four weeks pre-partum to weaning, on milk yield, kid birth weight and growth rate were studied. Thirty does were divided into three treatments: low level supplementation (LS), high level supplementation (HS) and not supplemented treatment (NS). Low supplemented goats were given 125 mg/BW of doe/day of polyherbal combination; high supplemented goats were given 250 mg/BW of doe/day. The study was carried out in October, 2008. Fifty-nine kids were born from all the experimental animals. Milk yield was higher ( $P>0.05$ ) in LS compared to HS and NS groups of does. Although supplementation had positive effect on kid birth weights, growth rates. They were higher ( $P <0.05$ ) in the LS group than in the HS group. Weaning weights were higher ( $P <0.05$ ) in LS does than in the HS does. Mortalities were also lowest in kids born from LS and HS does compared to control group. It is concluded that pre-partum to weaning supplementation generally increases milk production which then increases kids growth rates and weaning weights, as well as reduce kid mortalities.

### **Conservation Program of the Pitiüsa-Ibizan Goat. Current status**

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#### **Abstract / Resumen:**

Pitiüsa or Ibizan goat breed is, certainly, one of the most endangered goat breeds in the world. A small number of females are still available for breeding; anyway its small census in purity (147 individuals) proposes the breed as extremely endangered. A scientific and technical collaboration agreement has been signed between the Institute of Animal Biology of the Balearic Islands and the Department of Genetics of the University of Córdoba, with a view to develop a genetic conservation program including intense in situ and ex situ actions. The objectives are the control of the average inbreeding rate per generation and the cryopreservation of genetic material to ensure the survival of the breed at long term and preventing any disaster due to its geographic concentration. Today we are working on a program of mating and a gene bank with 324 doses of semen from three Ibiza goat stallions. In this paper we are describing in detail the development and management of the program, mentioning the challenges for the near future.

### **Evolution of the Breeding Program of the Murciano - Granadina Dairy Goat Breed**

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#### **Abstract / Resumen:**

After ten years of work in the breeding program of the Murciano-Granadina goat breed developed by CAPRIGRAN Breeders Association, it is time to make a survey of its evolution. In 2000 we count with a database of more than 50000 lactations of 14526 goats distributed in more than 80 farms. It was theoretically a very good base to work, but after a deep auditory we detect a lot of defects in the database, mainly distributed in three main subjects: genealogy, connectivity, quality of the records. At this moment we had to take a hard decision what was the discarding of all the historical database with inter-herd breeding purposes (they were used in intra-herd calculation of dam selection index) and start from zero, developing a routine for the genealogical control by mean of microsatellite markers; improving the collection and management of the recording information and advancing in the use of the artificial insemination in the herds genetic connection. A previous step was the establishment of a selection nucleus with those farms with the best degree of participative attitude, and technological development. In this foundational nucleolus 37 herd were introduced. Was in 2008 when we could present the first sire catalogue using breeding values obtained with a BLUP sire model, based in a data set of 930 lactations of 410 goats of 12 herds. It permit us to present four top sires exceptional with breeding values for milk, fat and protein production in lactations of 210 days. It was a good stimulus for our farmer and their comprehension of the necessity of a professional collection of data. At 2009 the breeding program count with 1550 lactations from 1192 goats in 37 herds, the pedigree file count with 1889 animals, with 741 founders. It supposes an increasing of more than 40% in the information

and goats but more extensive in connected herds. We have to stand out that the connectivity of these herds is perfect (artificial insemination), all the genealogy sires and dams are checked with DNA markers, and all the recording is perfectly supervised. Summarising we could say that our data set shows the best quality. Maintaining these good conditions we count in 2010 with and increasing of more than 60% in the information, even when the year is still in course. Further advances introduced in 2010 is the marker assisted selection using the casein locus information, specially the two markers with relevance in protein production (qualitative and quantitative), Kapa-case<sup>na</sup> and <sup>1</sup>Á S1 caseine. Also we are introducing in the breeding program the routine of linear assessment collection of data. The present paper presents the technical details of the evolution in terms of genetic parameters, breeding values and precisions, standing out the challenges for the future.

### **Prediction of fetal number in Black Bengal goats by determining plasma progesterone and estrone sulphate concentrations during pregnancy period**

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#### **Abstract / Resumo:**

The study was carried out on 27 Black Bengal pregnant goats. Blood sampling was started from the day of breeding and collected at monthly interval during the pregnancy period and completed by collecting blood sample after one month of parturition. Pregnancy diagnosis and number of foetuses were determined using transabdominal ultrasound scanning on day 60 of pregnancy. The USG observation was also confirmed by recording the number of kid(s) after parturition. The plasma samples harvested from the collected blood samples were utilized for the estimation of progesterone and estrone sulphate using commercially available ELISA kit. Plasma progesterone values in goats with triplet pregnancies were significantly higher compared to those with twin pregnancies as well as single pregnancies. Plasma progesterone concentrations in goats carrying twin fetuses were also higher ( $p < 0.05$ ) than that of carrying single fetus. Plasma estrone sulphate concentration, an indicator of endocrine activity of the fetoplacental unit which secreted significant amounts of progesterone for the maintenance of pregnancy, did not differ ( $p > 0.05$ ) between does with single and multiple fetuses. Plasma estrone sulphate concentration started to increase to a level between 500- 1000 pg/ ml and the concentration reached at the level of 1500- 2000 pg/ ml between 2nd and 4th month of pregnancy. After parturition, plasma estrone sulphate concentration declined to a very low level. Few goats also aborted during the study and there was a sharp fall of estrone sulphate concentration in plasma. A considerable overlap in estrone sulphate values between does with single and multiple fetuses was found. Both plasma progesterone and estrone sulphate concentrations might be markers for pregnancy diagnosis. However, plasma progesterone concentration could only be a tool for the prediction of fetal number in goats during pregnancy.

### **PRELIMINARY RESULTS OBTAINED BY RIA DETERMINATION OF THE PROTEINS ASSOCIATED TO PREGNANCY (PAG) IN GOAT AND SHEEP**

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**Abstract / Resumo:**

In goat and sheep, the glycoproteins associated to pregnancy (PAG) are little studied. Their study in these species is very important in the evaluation of prediction of early pregnancy. Even though numerous research has been done in order to investigate the physiological functions of placental proteins, the exact biofunction of the glycoproteins associated to pregnancy is still unknown. The objective of research was the study of the dynamics of PAG in goats and ewes in the first part of pregnancy (1-35 days after mating) and the determination of correlations with the reproductive status of females and to earlier the pregnancy. The experiment was realized on 49 Saanen x Carpatina goats and 72 Merinos of Palas sheep from the biostation of the Research and Development Institute for Goat and Sheep, Palas Constanta. The females in normal reproduction season were monitored for the detection of estrus and mated naturally. The blood was collected by puncture of the jugular vein on days 0, 7, 14, 25 and 35 after mating (day 0). The serum was obtained after centrifuging at 1500 x g for 15 minutes and stored at -20oC till the RIA determination. The RIA of the plasma with the purpose of detecting the concentration of proteins specific to pregnancy was realized in two experimental series in February and December 2008, at the Laboratory for Reproduction Physiology – The Faculty of Veterinary Medicine, Liege, Belgium. The RIA dosing was realized after the application of the method with the preincubation of the serums to test with specific serum (Atg°) and then with the marked antigen (Atg\*), considering the high sensitivity of this method to detect the smallest values of PAG from day 0 to day 35 after mating. The diagnosis of the pregnancy state was based on the principle of PAG antibodies binding to the specific antigen, establishing through RIA the quantity of free antigen. Non-pregnancy involves the attachment of the antigen marked by non-specific antibodies. The preliminary results have demonstrated that the sheep PAG were had values ranging between 4.197-15.985 ng/ml and 0.01-3.39 ng/ml in nonpregnant ewes. In the pregnant goats, the PAG concentrations ranged between 16.75±3.44-27.17±2.95 ng/ml, while in the nonpregnant goats, the PAG values were 1.38±0.35 – 2.03±0.51 6 ng/ml. The purpose of the experiments was to find one accurate method for early pregnancy diagnosis in goat and sheep. The conclusion was that ovine pregnancy can be reliably diagnosed on Day 25 after AI and goat pregnancy on Day 30, by using a heterologous radioimmunoassay of PAG.

**RESEARCHES REGARDING THE ULTRASTRUCTURAL MODIFICATIONS OF SPERMS CELLS BEFORE AND AFTER FREEZING IN DIFFERENT MEDIA**

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**Abstract / Resumo:**

Sperm cryopreservation is a method of ex situ preservation of gametes in all domestic animals, which is extensively used in artificial insemination. There are numerous factors on which the success of freezing sperm and of obtaining living products depends. The composition of seminal plasma, extenders used for dilution, cryoprotective concentrations, reactive oxygen species, and also the cooling rate, influence the quality of sperm cells frozen and thawed and of the number of viable products obtained after the insemination of the cryopreserved sperm. The research of recent years confirms that in sheep and goat, fertility outcome is still very variable, regardless of the conditions and

media used for freezing-thawing. Researches show that, regardless of the solvent used, the motility and membrane integrity of sperm deteriorates during cooling and storage at low temperature. These degenerative changes may be the result of lipid peroxidation and excessive production of reactive oxygen species (ROS). Our study presents the results of changes in the integrity of sperm cells membranes of Saanen goats after freezing-thawing, after diluting the buck semen with Tris base extender enriched with 10mm L-cysteine (Sigma), 5 mg/ml BSA (Sigma) and 1mm vitamin E (DL- $\alpha$ -Tocopherol, Merck). After thawing, the highest motility was obtained in the vitamin E and cysteine versions (between 51-55%). Goat semen samples diluted with the 3 antioxidants were processed for examination and analyzed in terms of electron microscopic cellular integrity at all levels (head, middle piece, main piece and end piece). Electron photography analysis (X10.000) shows that full membranes were observed in a proportion of 49% of cells diluted with Tris-vitamin E at all levels of the cell and at a rate of 37% in sperm cells diluted with Tris-cysteine. Swollen but continuous membranes were considered to be normal. The cell sperm diluted with medium supplemented with BSA displays protein deposits with acicular aspect and membrane with small and frequent gaps. Future researches are targeted at in vivo testing of goat sperm cryopreserved with different antioxidants to determine its fecundity.

## **THE EFFECTS OF ANTIOXIDANTS ON THE SPERMATIC AND CRYOBIOLOGICAL PARAMETERS OF BUCK SEMEN**

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### **Abstract / Resumo:**

In mammals, the semen membrane contains a large number of unsaturated fatty acids, facilitating thus the lipid peroxidation in the presence of species reactive to oxygen. The consequence of this process is the reduction of the quality of the seminal material or even the death of the sperm cell. The antioxidant capacity of the sperm cell is insufficient to prevent the lipid peroxidation during the freezing-thawing process. The purpose of this study was to determine the influence of antioxidant additives (BSA, Cysteine, vitamin E) added in different concentrations to the freezing media on the semen cytological parameters post-thawing (motility, viability, membrane integrity, anomalies). The experiments were done on 60 ejaculates collected by artificial vagina from 3 bucks (Alpine) during the normal reproduction season. After collecting, the samples were washed of the seminal plasma and diluted in medium based on Tris in which antioxidants were added (6 experimental versions) or in medium without antioxidants (control). The diluted semen was cooled at 4° C, placed in vials and frozen in fine 0.25 ml French vials and then stored in liquid nitrogen. The 6 experimental versions were tested for each buck taking into account how suited each animal is for the freezing of the seminal material. The results show that adding BSA in a concentration of 5 mg/ml, cysteine (10mM) and vitamin E (1mM) have positive protection effects on the semen characteristics consequently to the freezing-thawing process for 2 of the 3 bucks, leading to the improvement of the technology to freeze buck semen. Since the international research regarding the involvement of the oxidative stress associated to freezing thawing in the reduction of the fertility of buck semen post-thawing is at its beginnings, other studies are necessary to confirm the obtained results.

## **Using of dendrograms for evaluation of behavior in sheep**

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### **Abstract / Resumo:**

We used dendrograms derived from CART – classification and regression trees analysis computed in the package rpart in R software for selection of the most significant predictors for ewes and lambs behavior. The R is a free, progressive open software for scientific statistical work and we found the rpart package useful for a first look at our behavioral data. We monitored maternal behavior of sheep during and after lambing and behavior of their lambs (n=177) in the same period in Merinolandschaf, Suffolk and Texel. Lambing took place indoor from Jan to Apr in 2008 and 2009. During lambing, the behavior was monitored continually 24 hours a day. Behavior resulted in the following categories of farming management of lambing: 1) lambing without problems, 2) assistance with the first feeding of lambs, 3) assistance on the several following days with feeding of lambs, 4) complete assistance with lambing. On the base of CART the significant predictors of the categories of management were: weight of lambs at birth, number of lambs in a litter and age of ewe. Category 1 was predicted i) by weight of lamb in the interval 2.25-3.55 kg, or ii) by the weight of lamb greater than 3.55 kg when the litter size was 1, or iii) by the weight of lambs lower than 2.25 kg when the litter size was 2 and the age of ewe was lower than 3.6 years. Prediction of the category 1 was very reduced in favor of the category 2 under conditions i) when the weight of the lamb was greater than 3.55 kg while the litter size was greater than 1 or ii) when the weight of the lamb was greater than 2.25 kg, a litter size is 2 and the age of the ewe was greater than 3.6 years. Sex of lamb or breed were not significant predictors.

## **CONSERVATION OF GOAT GENETIC RESOURCES**

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### **Abstract / Resumo:**

The current worldwide population of 861, 902, 000 goats appear to have diverged considerably from their predecessor types, the Bezoar, Savannah and Nubian and their respective wild ancestors, the Bezoar or Pasang (*Capra aegagrus aegagrus*), Makhol (*C. aegagrus falconer*) and Ibex (*C. aegagrus ibex*) into 1178 breeds following more than 10,000 years of exposure to the forces of evolution and creative human activity. Goats remain in the tropical, sub-tropical and high mountain climates exposed to humid, very dry, dry, and humid and cold environments and are widespread in small and large multiple species herds under nomadism and semi-nomadism in agro-pastoral production systems and arid rangelands. Husbandry and utilization may not be unique to each country but affiliated with economic status, social structure, religious rituals and most importantly, public policy. Small farmers and the landless in the developing countries through the ownership of goats are able to survive in the face of hunger, poverty, and the current food crisis. The proportion of goats in developing countries compared to the world has increased from 96% (445, 862,000) in 1980 to 98% (808,332,000) in 2006 accounting for 77% (882) of all the goat breeds. It has been estimated that 27% of the goat breeds in the world are at risk, and this is lower than those reported for cattle, pigs and horses, in fact it may be greater because of the difficulty in the identification and documentation of domestic goats located in

more remote habitats. There is clear evidence to suggest loss of traditional breeds in the industrialized nations and the continued replacement of locally adapted indigenous breed populations in the developing countries with high-input-high-output commercial breeding stocks, hence the erosion of domestic animal diversity. The United Nations Conference on Environment and Development in 1992 followed by the ratification of the Convention on Biodiversity brought national and international attention to the depletion of biological diversity. Goat genetic resources worldwide has the potential to sustain current production levels and address the changing demand of future market requirements for commodities, trade, breeding stocks, employment, recreation, and fertilizer, particularly in alleviating poverty among developing countries. A number of countries have initiated in-situ and ex-situ conservation schemes to sustain genetic diversity in goats. Furthermore, micro credit for the goat farmer along with favourable grazing rights, marketing of value-added products from rare breeds and support from governments are some of the important tools necessary for conservation and utilization. Active participation in the conservation of biodiversity cannot be achieved without cooperation among all concerned stakeholders, i.e. conservationists, biologists, geneticists, archaeologists, breeders and decision makers as well as international and national governmental and non-governmental organizations.

## **COMPLEMENTING DIVERGENT SHEEP AND GOAT GENETIC RESOURCES TO ACHIEVE OPTIMUM GENETIC MERIT**

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### **Abstract / Resumo:**

A major constraint for increasing efficiency of sheep and goat production is often the lack of inherent potential necessary to shorten the time required for rapid within-breed improvement of meat, milk, fiber, skin and hide, all known to influence the income and profitability. At the same time there is tremendous opportunity to exploit their biological potential for genetic improvement by complementing the colossal amount of variability available worldwide among breed populations (2378 sheep and 1160 goats) based on the application of quantitative genetic principles such as crossbreeding and synthesis of new breeds. Potential sources of germplasm need to be investigated before foundation breeding stocks are assembled, weighing initial costs of importation and evaluation against possible benefits to be realized from improvement in efficiency of production, while those selected for importation should be introduced without jeopardizing the animal health status of the country. Studies at the Centre for Food and Agriculture Research in Canada and the University of Minnesota, USA have demonstrated that systematic crossbreeding and the development of composite populations by complementing established breeds (Suffolk, Lincoln, Rambouillet, Targhee and Dorset) with fecund-type breeds (Finnsheep, Romanov, East Friesian and Ile de France) achieve the desirable objective. Similarly, published results from studies in many countries confirm goats from continental Europe (Alpine, Saanen and Toggenburg), South Africa (Boer), Syria and Lebanon (Damascus), Sudan and UK (Nubian), India (Jamunapari and Beetal), and Turkey (Angora) and their complementary crosses have potential genetic merit for increasing milk, meat and fiber production. Rapid and permanent increase of genetic merit of the parental breeds used for crossbreeding and the newly developed composite populations may be achieved from skillful breeding practices, avoiding inbreeding and genetic drift, and selection for economically important traits with the object of

capitalizing on additive and non-additive genetic variation, heterosis retention including interaction with environment. Despite the possibility of achieving genetic improvement of the established breeds and indigenous breed populations in the developing countries, failure to address important issues concerning socio-economic values, fiscal constraints, religious rituals, responsiveness to indigenous knowledge, as well as the traditional skill of the producer of small holdings under sedentary, nomadic and semi-nomadic management have resulted in responses that are less than expected. Finally, the choice of systematic crossbreeding strategy for the established breeds and indigenous breed populations as well as the development of multi-breed composite populations and selection for specific objectives in order to achieve genetic responses to efficiency of production would be contingent on availability of breed resources, skillful breeding practices, financial and technical assistance, environmental conditions, market requirements and economy of scale.