

T336 Effect of supplemental energy level on performance, blood parameters and carcass characteristics of steers finished on pasture. H. O. Patino^{*1}, F. S. Medeiros¹, K. C. Swanson², and M. A. Sierra¹, ¹Dep. Zootecnia, UFRGS, Porto Alegre, RS, Brazil, ²Dept. Animal and Poultry Science, University of Guelph, Guelph, ON, Canada.

To evaluate the effect of supplemental energy levels on performance, blood parameters and carcass characteristics, 24 Aberdeen Angus × Charolais steers were used. The experimental treatments were levels of feeding (0, 0.4, 0.8 and 1.2% BW) of a corn based supplement in a winter pasture of annual ryegrass (*Lolium multiflorum* L) and oats (*Avena strigosa* Schreb) managed in order to avoid constraints to animal performance. Animals were supplemented daily (14:00 – 16:00) in individual pens and slaughtered when they achieved 4.5 mm of fat cover on the rump point. No differences were observed in fat deposition,

measured in live animals with ultrasound at the end of the performance period, and in live weight gain, which had average values of 3.9 mm and 1.54 kg/d, respectively ($p > 0.05$). Blood serum levels of urea were linearly decreased ($p < 0.01$) and cholesterol linearly increased ($p < 0.01$) by energy supplementation, with no differences in the serum levels of glucose and triglycerides ($p > 0.05$). Energy supplementation linearly increased dressing percent ($p < 0.06$) and carcass weight gain ($p < 0.05$), but no differences were observed for rib eye area, slaughter weight and hot carcass weight, which averaged 67.85 cm², 438.95 kg and 227.75 kg ($p > 0.05$). Increasing the levels of energy supplementation resulted in greater dressing percent and greater carcass daily gains, without changes in performance and carcass parameters.

Key Words: blood parameters, energy supplementation, winter pasture

Small Ruminant: Lactation, Physiology, Reproduction, Health

T337 Long-term effects of lipid supplementation on milk concentration of conjugated linoleic (CLA) and vaccenic acid (VA) in dairy goats. G. A. Gagliostro^{*1}, M. A. Rodriguez², V. I. Cejas², M. Martinez³, A. V. Cano¹, P. Gatti², G. Muset², R. A. Castañeda³, and Y. Chilliard⁴, ¹Instituto Nacional de Tecnología Agropecuaria, Balcarce, Buenos Aires, Argentina, ²Instituto Nacional de Tecnología Industrial, PTM San Martín, Buenos Aires, Argentina, ³Instituto Nacional de Tecnología Agropecuaria, Salta, Salta, Argentina, ⁴Institut National de la Recherche Agronomique, Theix, Ceyrat, France.

The objective of the study was to test the persistency in milk of fatty acids (FA) that have potential benefits to human health over 150 d after lipid supplementation in Saanen goats. Six animals/treatment grazed a grass based pasture and were individually supplemented with : T1) 1 kg/d cracked corn grain, T2) 1 kg/d corn grain + 30 g/d fish oil (FO) + 109 g/d soybean oil (SO), and T3) 0.5 kg/d corn grain + 0.5 kg/d cracked soybean grain (SG) + 30 g/d FO. Milk samples were collected every 15 d. Data were analyzed using a model including treatment, sampling time, and the interaction. Concentrations of individual FA in milk were expressed as g/100 g of total FA. Protein and lactose concentrations in milk were not affected. Milk fat content increased ($P < 0.06$) by 8.3 g/kg in T2 compared to T1 and T3. In T2, pre-treatment basal concentrations of de novo FA (C4:0-C15:1), C12:0, and C14:0 decreased ($P < 0.01$) after lipid supplementation, but C16:0 concentration did not change. The basal atherogenicity index (AI) decreased ($P < 0.01$) from 2.91 to 1.30 in T2, and from 2.57 to 1.53 in T3. Supplementary lipids decreased C12:0 (-1.31) and C14:0 (-1.74) in T3 ($P < 0.01$). Compared to T1 (2.29 g/100 g) concentrations of VA increased ($P < 0.01$) in T2 (+11.9) and T3 (+9.15) and remained high throughout the experiment. Trans-10 C18:1 ranged from 0.21 to 0.24 g/100 g FA in T1, and from 0.98 to 1.10 in T2 and T3. Basal 9-cis 11-trans CLA averaged 1.27 g/100 g (T1), 1.03 (T2), and 1.26 (T3). The average increase in CLA after 150 d was 4.28 g/100 g in T2 and 3.75 in T3. In T1, CLA concentrations ranged from a minimum of 0.83 g/100 g FA in samples taken at d 135 to a maximum of 1.84 at d 15. SO combined with FO were the most effective to increase milk concentration of trans-11 C18:1 but differences between effects of SO or SG on milk CLA contents were not observed. Feeding SG or SO combined with FO reduced the concentrations of FA linked to cardiovascular risk disease and the AI of milk, and increased the concentrations of CLA and VA over an extended period after lipid supplementation.

Key Words: goat milk, conjugated linoleic acid, vaccenic acid

T338 Effects of mechanical processing of sugarcane on performance and milk composition of dairy goats. V. P. Santos^{*}, L. G. Nussio, G. B. Muraro, S. G. Toledo Filho, R. C. Amaral, J. L. P. Daniel, R. S. Goulart, I. Susin, G. B. Mourão, R. S. Gentil, and C. Q. Mendes, *University Of Sao Paulo/ESALQ, Piracicaba, SP, Brazil.*

The experiment was conducted to evaluate the effects of mechanical processing of sugarcane on milk production and composition in dairy goats. Twelve Sannen × Boer goats (20 ± 5 d in milk) were assigned to a three latin square 4×4 design. Experimental diets were formulated to meet the AFRC (1998) requirements for energy, protein, Ca, and P, and consisted of four treatments (diets). Treatment 1 contained corn silage (C) in a 50:50 (concentrate:roughage ratio) total mixed ration, and the three other treatments were based on sugarcane chopped to mean particle size 0.52, 6.53, 12.40 mm, mixed in a 44:56 ration. Each period consisted of a 10-d period of adaptation followed by 4-d for sample collection. The goats were fed ad libitum individually once daily at 0800 h to allow at least 5 to 10%orts and milked twice daily at 0730 and 1530 h. Milk weight was recorded for each goat and samples were collected for composition during the morning and afternoon across the last 3-d of each sampling period. There were no differences ($P > 0.05$) for intake of DM (kg/d) and DMI (%BW), where the values found for C were 1.63 and 2.73% BW, DM animal/d, and mean values for other treatments (chopped sugarcane) were 1.55, and 2.5% BW, respectively. Differences between treatments were not observed for milk yield (kg/d). However, the percentage of milk fat (%) and 3.5% milk corrected yield (3.5 FCM; kg/d) was higher for C treatment (4.32 and 2.57, respectively) when compared with treatments containing sugarcane. It might be related to the smaller particle size of sugarcane when compared to the corn silage. For the treatments containing sugarcane processed in sizes 0.52, 0.63, 12.4 mm, the observed values for 3.5 FCM and milk fat were 2.09, 2.24, and 2.07 kg/d and 3.92, 3.82, and 3.75%, respectively.

Key Words: silage corn, roughage, fat

T339 Thyroid hormones and blood metabolites of dairy goats supplemented with dietary iodine. A. Nudda¹, G. Battacone¹, G. Bomboi², B. Floris², and G. Pulina^{*1,3}, ¹Dipartimento di Scienze Zootecniche, University of Sassari, Italy, ²Dipartimento di Biologia Animale, University of Sassari, Italy, ³Agricultural Research Agency of Sardinia - AGRIS Sardegna, Sassari, Italy.

The supplementation of dairy animals with iodine should be a valuable method to increase iodine content in milk. Aim of this work was to determine if long-term potassium iodide (KI) supplementation to dairy goats, used to increase milk iodine content, can influence important metabolic and hormonal parameters. Thirty crossbred dairy goats were divided into 3 groups and each goat was supplemented with 0 (control; group 0), 450 (group 1), or 900 (group 2) µg of KI/d. The dose of KI (76.5% of iodine) was administered every day for 8 wk as iodized salt dissolved in water. Blood contents of nonesterified fatty acids (NEFA), urea, glucose, insulin, free triiodothyronine (FT3) and free thyroxine (FT4) were determined. Data were analyzed with a GLM procedure including iodine level, week and the interaction in the model. There was a significant effect of the increasing iodine intake on the level of FT3 hormone, which represents the biologically active form of thyroid hormones. Iodine supplementation had no effects on plasma FT4 levels and NEFA. The blood urea nitrogen (BUN) and insulin were significantly lowered by iodine supplementation (groups 1 and 2), whereas blood glucose concentration was decreased only by low iodine supplementation (group 1). In conclusion, the daily supplementation of low doses of KI can influence the level of T3 and BUN in dairy goats.

Table 1 - Concentration of glucose, insulin, NEFA, urea and thyroid hormones (T3, T4) in goats supplemented with KI

	group			P value		
	control	1	2	group	sampling	Inter
glucose, mg/dL	63.3A	60.0B	64.0A	**	**	**
NEFA, mmol/L	0.13	0.14	0.14	ns	**	*
UREA, mg/dL	7.5A	6.3B	6.7B	**	**	ns
FT3, pg/mL	4.2A	4.5A	5.4B	**	**	ns
FT4, pg/mL	10.8	9.1	11.2	ns	ns	ns
Insulin, mU/L	29.9A	11.1B	17.4B	**	**	ns

Means within a row with different superscripts differ (P<0.01)

Key Words: iodine, thyroid hormones, goat

T340 Effect of duodenal soybean small peptides infusion on lactation performance, peptide-bound amino acid and free amino acid metabolism in lactating goats. H. Liu, Z.-J. Cao, L. Wang, and S.-L. Li*, *College of Animal Science and Technology, China Agricultural University, Beijing, China.*

The objective of the study was to determine the effect of soybean small peptides infusion on lactation performance, peptide-bound amino acid (PBAA) and free amino acid (FAA) metabolism. Eight Chinese Saanen lactating goats were used in crossover design. Four treatments were control, duodenal infusion of 0.9% sodium chloride solution (700 mL/d), duodenal infusion of 60 g/d, 120 g/d and 180 g/d of soybean small peptides which was dissolved in 700 mL/d of 0.9% sodium chloride solution through duodenal fistulas, respectively. Data were analyzed by the one-way ANOVA procedure using SPSS 10.0. Multiple comparisons were done by Duncan's test. Concentrations of arterial amino acids increased by soybean small peptides infusion (p < 0.05) except Thr, Arg, Gly, and Ala. Total essential amino acid (TEAA) and total nonessential amino acid (TNEAA) concentrations in arterial plasma were increased (p < 0.01). Except for PB-Ile, PB-Thr, and PB-Ala, concentrations of all PBAA were increased (p < 0.05) and those of total peptide-bound amino acids (TPEAA) and total peptide-bound nonessential amino acids (TPNEAA) were increased (p < 0.05) with grade soybean small peptides infusion. The mammary uptake (MU) of the PB-AA increased

with the increase of soybean small peptides infused except for PB-Gly and PB-Glu; the uptake of most FAA were increased in 60 and 120 g/d treatment and unchanged in the 180 g/d treatment. The mammary uptake of TPEAA and TPNEAA were increased by soybean small peptides infusion. PB-His and PB-Lys were extracted more efficiently (p < 0.05). PB-Ser and PB-Pro extraction efficiency had significant differences. Milk protein yields were slightly increased and mRNA expression of β-casein, αs1-casein and κ-casein in mammary gland were obviously increased (p < 0.05). Based on the current data, small peptides can be efficiently utilized by mammary gland.

Key Words: soybean small peptides, mammary metabolism, duodenal infusion

T341 The effects of shearing on milk production traits and milk fatty acid profile in Sarda dairy ewes. S. P. G. Rattu, M. G. Manca, R. Boe, R. Rubattu, A. H. D. Francesconi, and A. Nudda*, *Dipartimento di Scienze Zootecniche, University of Sassari, Italy.*

The present study aimed to investigate the metabolic response of dairy ewes to shearing by monitoring their milk yield, milk fat content and milk fatty acid (FA) profile. Twelve 2-4-year-old Sarda ewes, in mid-late lactation, were used. The trial lasted from 30th May to 9th June 2006. The pre-experimental period (pre-shearing, PrS) was from 30th May to 5th June (shearing day), being followed by the experimental period (post-shearing, PoS) until 9th June. Four milk samplings during PrS and another four during PoS periods were performed. Daily milk production was recorded and daily milk samples were collected for analysis of fat content and FA profile. Shearing did not influence milk yield but increased milk fat content (6.37 vs. 6.94% for PrS and PoS, respectively; P<0.01). Shearing modified the FA profile of milk (Table 1). The concentration of C8, C10, C12 and C16 increased from PrS to PoS. On the other hand, the content of long-chain FA (>C18:0) did not change between PrS and PoS. These results suggest that the increase of milk fat after shearing was related to the increase of the main FA synthesized by the mammary gland. However, the mechanism involved in the modification of the FA profile caused by shearing in dairy ewes needs further investigation.

Table 1 - Fatty acid profile in milk of dairy ewes before and after shearing

Fatty acid (g/100 g of FAME†)	pre-shearing	post-shearing	P level
C8	1.2	1.54	**
C10	4.9	5.5	**
C12	3.0	3.3	*
C14	10.1	10.0	ns
C16	27.9	26.7	**
C18	13.9	13.9	ns
>C18	42.3	46.4	ns

†FAME = fatty acid methyl ester; **P<0.01; *P<0.05; ns = not significant

Key Words: shearing, dairy sheep, fatty acids

T342 Goat colostrum chemical composition evolution during 7 h postpartum. D. Sanchez-Macias¹, N. Castro¹, J. Capote², I. Moreno-Indias¹, and A. Argüello*¹, ¹Las Palmas de Gran Canaria University, Arucas, Las Palmas, Spain, ²Instituto Canario de Investigaciones Agrarias, La Laguna, Tenerife, Spain.

As a consequence of the extreme importance of the quality of colostrum in dairy goat production when goat kids are separated from their dam at birth, the objective of present work was to study the evolution of the chemical composition of colostrum for 7 h postpartum. Forty Majorera breed goats were milked at birth and once an hour until 7 h postpartum. Colostrum production was recorded and the chemical composition was analyzed for protein, fat and lactose using a MIRIS[®] device. An ANOVA was performed using time as an independent variable on SAS (V9.0). Colostrum production was higher at 0 h postpartum than the following hours and no significant differences were shown after 0 h. A tendency of decreasing colostrum secretion was observed (see table). The percentage of colostrum protein fell between 0 and 4 h (45%) and subsequently stabilized, whereas colostrum fat percentage increased postpartum and then decreased, remaining stable from 4 to 7 h postpartum. The percentage of colostrum lactose increased from 0 to 4 h postpartum, and remained stable from 5 to 7 h postpartum. The chemical composition of the colostrum changed drastically in a few hours, therefore to ensure the passive immune transfer it is incorrect management when kid goats do not receive first milking colostrum within the first few hours of life (whether through stored first milk colostrums or suckling directly).

Table 1. Colostrum chemical composition during the 7 h postpartum

h PP	0	1	2	3	4	5	6	7	SEM
Colostrum production (g)	2505.7 ^a	174.3 ^b	169.3 ^b	165.1 ^b	165.1 ^b	132.7 ^b	115.7 ^b	117.9 ^b	116.9
Protein (%)	10.4 ^a	9.7 ^{a,b}	7.8 ^{b,c}	6.9 ^{c,d}	5.7 ^d	5.1 ^d	5.4 ^d	5.3 ^d	0.3
Fat (%)	8.7 ^{a,b}	10.3 ^a	9.7 ^{a,b}	8.6 ^{a,b}	7.3 ^b	6.8 ^b	6.9 ^b	6.9 ^b	0.3
Lactose (%)	2.1 ^a	2.2 ^a	2.7 ^{a,b}	3.1 ^{b,c}	3.3 ^{b,c}	3.6 ^c	3.6 ^c	3.5 ^c	0.1

^{a,b,c,d}Means within a row with different superscripts ($P < 0.05$)

Key Words: goat, colostrum, chemical composition

T343 Somatic cell count in milk of goats enrolled in Dairy Herd Improvement Program in 2007. L. Zhang^{1,2}, G. R. Wiggans³, J. Clay⁴, R. LaCroix⁵, J. Z. Wang¹, T. Gipson¹, and S. S. Zeng*¹, ¹Langston University, Langston, OK, ²Agricultural Research Center of China, Changchun, Jilin, China, ³Animal Improvement Programs Laboratory, USDA-ARS, Beltsville, MD, ⁴Dairy Records Management Systems, North Carolina State University, Raleigh, ⁵AgSource Cooperative Services, Verona, WI.

The effects of breed, parity, stage of lactation (mo), herd size, and regions/states on somatic cell count (SCC) and production of milk from dairy goats enrolled in the Dairy Herd Improvement (DHI) program in the United States in 2007 were investigated to monitor the current status of SCC and to help goat producers improve their herd management and receive premiums for high quality goat milk. Statistical analysis of composite DHI data ($n = 29,000$) indicated that SCC and production of goat milk were affected by many non-infectious factors. Significant variations ($P < 0.05$) in SCC were found among breeds, with Toggenburg and Nubian being the highest, and Pygmy and Nigerian Dwarf being the lowest. The mean SCC of milk from Toggenburg and Nubian goats were near the current regulatory limit of 1.0×10^6 /mL for Grade "A" goat

milk. As parities increased, SCC in milk increased steadily ($P < 0.05$). Significant differences ($P < 0.05$) in both SCC and milk production were discovered among regions. Large herds of goats tended to have higher milk production and SCC than the small herds ($P < 0.05$). The above findings suggest that consideration be given to culling goats with high somatic cell score (SCS) in their 5th lactation as SCS is expected to increase as they age, that year-round breeding and lactation programs be practiced, if dairy goat producers in the United States are to meet the Grade "A" goat milk requirements. All factors that contributed to variations in SCC and production of goat milk should be taken into consideration when establishing price incentive systems for goat milk.

Key Words: goat milk, somatic cell count, DHI

T344 Excretion pattern of aflatoxin M1 in milk of goats fed a single dose of aflatoxin B1. G. Battacone*¹, A. Nudda¹, M. Decandia², A. Mazzette¹, M. Acciaro², and G. Pulina^{1,2}, ¹Dipartimento di Scienze Zootecniche, Università di Sassari, Sassari, Italy, ²Agenzia AGRIS Sardegna, Sassari, Italy.

A single dose (0.8 mg/head) of aflatoxin B1 (AFB1) was administered per os to five Saanen goats in mid lactation in order to investigate the consequent excretion of aflatoxin M1 (AFM1) in milk. In all goats, the AFM1 was detected at the first milking performed 1 h after the AFB1 intake. The highest concentrations of AFM1 were reached in milk collected 3 and 6 h after the AFB1 administration. After the maximum concentration of AFM1 was reached, the pattern of clearance in milk was fitted by a decreasing exponential function. The coefficient of determination of the equation was quite high ($R^2 = 0.90$), despite the great individual variability observed. AFM1 values were below 50 ng/L, that is the maximum allowed level by EU, in milk collected 36 h after the AFB1 administration. The AFM1 in milk sampled at 72 h after dosing was near the LOD value (0.04 ng/mL) of our analytical method. The mean percentage ratio of AFM1 excreted in milk within the 72 h to the amount of AFB1 ingested was 0.17%, with a high individual variability (st.dev. = 0.064). About the 85% of AFM1 was excreted in milk collected within 24 h after the AFB1 administration. The hypothesis that the transfer of AFM1 from blood into milk is due to a passive permeability is confirmed by the pattern of concentrations of main milk constituents.

Key Words: aflatoxin M1, goat, milk

T345 Lamb production in the Northern Patagonia with or without winter supplementation. L. Villar*¹, E. Pavan², M. Zimmerman¹, C. Giraudo¹, and F. Santini³, ¹INTA-EEA Bariloche, Bariloche, Rio Negro, Argentina, ²INTA-EEA Balcarce, Balcarce, Buenos Aires, Argentina, ³INTA-CIA Castelar, Hurlingham, Buenos Aires, Argentina.

Lamb meat is the main ingredient of a variety of traditional dishes in the Patagonia region of Argentina. In recent years, tourism increase has boosted its demand. Sheep production systems in the Hills and Plateaus of Northern Patagonia are mainly aimed at producing fine wool; secondarily lambs are slaughtered at light weights (11 kg) and marketed as whole or half carcasses. If a heavier slaughter weight were reached, total meat production could be increased, and meat could be marketed as commercial cuts. The objective of this study was to evaluate winter supplementation effects on performance, carcass traits, meat and wool quality of heavy lambs on extensive grazing conditions. Forty-six Merino male lambs (8 mo of age) were randomly divided into two

groups; one group was not supplemented (CTRL), whereas the other one (SPPL) received 200 g alfalfa pellet and 150 g oat grain daily for 95 d. Each group had free access to a 70 ha plot of shrub grass steppe; groups switched plots every 15 d. Lambs were sheared and wool samples taken. When the mean LW of each group reached 35 kg, 12 lambs from the group were randomly selected for carcass and meat evaluation. At 24 h postmortem, carcass traits and longissimus muscle (LM) pH, color and water holding capacity (WHC) were determined and LM samples were taken for Warner-Bratzler shear force (WBSF) evaluation. Data were analyzed by ANOVA using GLM procedure of SAS software; LW at slaughter was used as a covariate when significant. Animals from the SPPL group were slaughtered after 130 d on grazing, while those of the CTRL group, 27 d later. ADG for SPPL was greater ($P < 0.001$) than for CTRL during the first 95 d and the overall grazing period, but lower ($P < 0.05$) from the end of supplementation to slaughter. CTRL had greater ($P = 0.04$) ribeye area and L^* value than SPPL. No differences ($P > 0.05$) were observed for wool quality traits, HCW, dressing percentage, carcass and leg compactness, fat thickness, pH, WHC, WBSF. Our data suggest that a low level of winter supplementation would allow marketing heavy lambs in advance without major changes in wool traits or carcass and meat quality.

Key Words: performance, carcass traits, meat quality

T346 Relationship between body condition score and fertility of Saanen goats under intensive conditions. A. Ata*¹, M. Saatci², and M. S. Gulay³, ¹Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, Department of Reproduction and Artificial Insemination, Burdur, Turkey, ²Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, Department of Animal Science, Burdur, Turkey, ³Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, Department of Physiology, Burdur, Turkey.

The present study was undertaken to investigate the relationship between body condition score (BCS) and some fertility parameters of goats kept under intensive conditions. The data were obtained from brucellosis-free Saanen goats (61 primiparous and 71 multiparous). All goats were housed in a free-stall barn allowing 2 m² spaces for an individual goat. The goats were fed a commercial diet that provided 88% dry matter, 9% ash, 18% crude protein, 14% crude fiber, and 2700 kcal/kg of metabolizable energy. Water was given *ad libitum*. Body weight (BW), BCS and presence of horns were recorded at mating. Does were grouped according to their BCS (thin BCS = 2-2.5; normal BCS = 3-3.5; and fat BCS = 4.0-4.5) and BW [thin BW < 30 kg (primiparous) and 45 kg (multiparous); normal BW = 30-40 kg (primiparous), 45-60 kg (multiparous); and fat BW > 50 kg (primiparous), 60 kg (multiparous)]. Primiparous and multiparous does were analyzed separately by proc FREQ and LOGISTIC procedure. The pregnancy rates (PR; number of pregnant does/number of does inseminated) for primiparous and multiparous does were 90.16 and 86.66%, respectively. BCS or BW at mating did not affect the PR. Similarly, no effects of BCS or BW were detected on abortion rates (AR; number of observed aborting goats/number of goats pregnant) in primiparous does. However, the AR for multiparous does were significantly affected by BCS ($P < 0.02$). Thin (25%) and fat (39.1%) does had higher AR than normal (6.7%) does. Kidding rate did not affect reproductive losses negatively in primiparous or multiparous does. Likewise, AR were similar for polled goats when compared with horned goats in primiparous group. On the other hand, polled goats were more likely to abort (33.3%) compared with horned goats (9.4%) in multiparous group ($P < 0.02$). In conclusion, it is clear that does are able to conceive even when their body energy reserves are

too low or too high. However, inadequate BCS are expected to have a dramatic impact later on the abortion, especially in multiparous does. Thus, it is necessary to establish a target BCS at mating (3-3.5; 5-point scale) for goats under intensive conditions.

Key Words: intensive management, Saanen goat, BCS

T347 Preliminary results of a comparison between Texas Rambouillet sheep and Australian Merino F1 crosses. C. J. Lupton¹, F. A. Pfeiffer*¹, W. S. Ramsey², M. Salisbury³, D. F. Waldron¹, J. W. Walker¹, and T. D. Willingham¹, ¹Texas AgriLife Research, San Angelo, TX, ²Texas A&M University, College Station, ³Angelo State University, San Angelo, TX.

The objectives of the study were to produce a smooth-bodied sheep that is well adapted to western ranges and capable of growing more and finer wool than the Rambouillet (R) without compromising lamb production. Commercial R ewes ($n = 187$, 2-5 yr of age, BW = 61.5 ± 6.9 kg, average fiber diameter [AFD] = 21.3 ± 2.1 μ m) were bred to selected Australian Merino (M) rams ($n = 5$) via laparoscopic artificial insemination (LAI) in June 2007. Purebred lambs were produced by exposing similar R ewes ($n = 115$) to highly productive, performance-tested R rams ($n = 4$) for 3 wk prior to and 3 wk after the LAI date. Lambs were born and raised under range conditions. Their paternity was confirmed by DNA analysis of blood. Lambs were weighed at 5 (BW1) and 10 (BW2) mo of age. Three fiber characteristics (AFD, average staple length [ASL], and average fiber curvature [AFC]) were determined using an OFDA2000 on mid-side samples shorn at 7 mo of age. Data were analyzed using PROC MIXED of SAS. The model included fixed effects of genotype and sex and a random effect of sire within genotype. The low number of lambs weaned was attributed to conception rate (LAI, 75%; naturally bred, 84%), subsequent fetal losses, and predation. Least squares means are presented in Table 1. Female lambs had lower BW than males but produced longer wool. BW at 5 mo of age and ASL at 7 mo of age were not different between the 2 genotypes. R lambs were heavier than M X R lambs at 10 mo of age. The crossbred lambs produced finer wool than R lambs. Thus, preliminary data indicate that at least one of the 5 objectives appears to be attainable with this approach.

Table 1. Fiber characteristics and BW of lambs

Dependant variable	Genotype			Sex		
	M X R (n = 47)	R (n = 44)	P	Female (n = 45)	Male (n = 46)	P
BW1, kg	27.8	29.3	0.357	27.0	30.0	0.011
BW2, kg	44.0	48.4	0.049	41.7	50.7	0.001
AFD, μ m	18.1	19.5	0.005	18.8	18.8	0.896
ASL, mm	51.6	49.3	0.596	54.8	46.2	0.001
AFC, deg/mm	73.4	80.8	0.042	75.6	78.6	0.124

Key Words: Merino, Rambouillet, wool

T348 Two seasonal lambing in spring and fall increases reproductive efficiency of range sheep flock. T. Wuliji*¹, H. Glimp¹, and T. Filbin², ¹University of Nevada, Reno, ²Rafter 7 Ranch, Yerington, NV.

Although ewes can complete a lambing and lactation cycle within 8 mo, they are normally bred only once a year in the fall or spring. While feed, forages, labor, facilities and other resources are available, seasonality constitutes a major waste in productive opportunity. Therefore, program-

ming a two-seasonal lambing regime in spring and fall will increase sheep production efficiency and farm profits. We have initiated a spring and fall two-seasonal lambing program since 2006 on Rafter 7 ranch (Yerington, Nevada). Two-seasonal lambing system was experimented for three consecutive years in 2006, 2007 and 2008. Spring lambing range ewes (n = 850, 1100, 1319) were bred during late November to December in 15, 21 and 23 single sire mating groups (1 ram: 50 ewes) for 2 estrus cycles (35 d). All fall bred ewes were ultrasound scanned for pregnancy diagnosis during the second trimester of gestation. The non pregnant, non lamb rearing ewes and a selected number of yearling ewes were separated from spring lambing flocks and scheduled for spring breeding flock (n = 350, 476, 500) and mated in 6, 8, 10 single sire groups for one estrus cycle in late May to early June of 2006, 2007 and 2008 respectively. Data were analyzed with chi-square statistics. For spring lambing, 714, 703 and 1081 ewes lambed with lambing percentage of 131%, 130% and 129%, and weaned 1.2 ± 0.2 , 1.0 ± 0.1 and 1.1 ± 0.2 lambs/per ewe in 2006, 2007 and 2008 respectively. While fall lambing, 315 (1.35 ± 0.3 lamb/ewe lambed), 185 (1.29 ± 0.2 lamb/ewe lambed) and 218 (1.33 ± 0.3 lamb/ewe lambed) lambs were weaned correspondingly in 2006, 2007 and 2008 fall born crops. These experiments indicate that two-seasonal lambing reduce reproductive waste in the sheep flock, and advance the reproduction by a season for the first breeding yearling ewes, and increase the total number of lambs weaned per ewe/year ($P < 0.05$). The two seasonal lambing systems should reduce the product turn over time, spread the labor intensity on farm, and provide an extra opportunity to market lambs at a premium price, and increase farm profit margin over one seasonal lambing practice.

Key Words: sheep, lambing, breeding

T349 A daily exposure for 4 hours to the male effect is sufficient to induce ovulatory activity in goats. J. A. Delgado*¹, M. Bedos¹, J. A. Flores¹, G. Fitz-Rodriguez¹, and B. Malpau², ¹*Centro de Investigacion en Reproduccion Caprina, Universidad Autonoma Agraria Antonio Narro, Torreon, Coahuila, Mexico*, ²*Physiologie de la Reproduction et des Comportements, UMR 6175 INRA-CNRS-Universite de Tours-Haras Nationaux, Nouzilly, France*.

The objective of the current study was to determine whether 4, 8, 12 or 16 h of presence of males rendered sexually active by exposure to long d stimulate the ovulatory activity in anovulatory goats. Males were exposed to 2.5 mo of long d (16 h of light by d) from November 1 to stimulate their sexual activity during the non-breeding season. One group of does remained isolated from males. Four other groups were exposed for 4, 8, 12 or 16 h per d to the long-day treated males during 15 d. Ovulation was inferred from plasma progesterone levels and transrectal ultrasonography. The proportion of does having ovulations, the proportion of does displaying normal or short ovulatory cycles were all compared using the χ^2 test. Ovulation rates were compared using the Mann-Whitney U test. The proportion of females that ovulated at least once during the whole experiment were greater in all groups exposed to sexually active bucks compared to the control group ($P < 0.001$). However, the proportion of females that ovulated did not differ ($P > 0.05$) between does exposed daily for 4 (100%), 8 (100%), 12 (100%) or 16 h (94%) to the males. Moreover, the proportion of females that displayed short or normal ovulatory cycles and the ovulation rates at the second male-induced ovulation were similar between groups exposed to long-day treated bucks. These results indicate that a reduction of the daily contact between sexes does not modify the ovulatory response of female goats exposed to the male effect.

Key Words: goats, teasing, duration of contact

T350 Estrus and mating response after estrus synchronization protocols in meat goats. J. L. Eierman*¹, D. J. O'Brien¹, E. K. Crook¹, R. A. Barczewski¹, and N. C. Whitley², ¹*Delaware State University, Dover*, ²*North Carolina A&T State University, Greensboro*.

The objective of the present study was to examine the effectiveness of using melengestrol acetate (MGA) or a controlled internal drug releasing device (CIDR) in combination with the buck effect and PMSG, when compared to no hormonal priming before buck introduction in synchronizing estrus during the breeding season in goats. Fifty-eight Boer and Boer-crossbred meat-type does and 4 bucks located at Delaware State University were used in the experiment. To facilitate the use of the buck effect, males were removed from sight, sound and smell of females for 3 wk prior to the beginning of the study. All goats were housed in dry lot areas and separated into 3 groups. The MGA group (n = 20) were fed an 8% CP diet with MGA to provide 0.25 mg MGA/d each for 9 d (first d of feeding = d-9). Both the control (CON; n = 20) and CIDR (n = 18) groups received a similar ration without MGA daily. On d-9, CIDRs were inserted vaginally into females in the CIDR group. At progesterone removal (d 0), both MGA and CIDR groups received 300 IU of PMSG i.m., and all females were grouped for mating with 4 mature bucks wearing marking harnesses for 13 d. Females were checked twice daily for mating and number of does marked was recorded to determine day to first mating and percentage mated. Data were analyzed using the FREQ and GLM procedures of SAS with means separated using LSMEANS. There was no effect of treatment on percentage of females mated, averaging $60.0 \pm 0.1\%$, $66.7 \pm 0.1\%$, and $70.0 \pm 0.1\%$ for CON, CIDR and MGA-treated females, respectively. In addition, of the females mated, the MGA-treated does (3.8 ± 0.3 d) came into heat later ($P < 0.001$) than both the CON (1.41 ± 0.3 d) and CIDR-treated (2.3 ± 0.3 d) does. Females mated in the CON group tended ($P < 0.06$) to come into heat earlier than the CIDR-treated group. In conclusion, under the conditions of this study, neither hormonal estrous synchronization protocol tested was as effective as the buck effect alone in synchronizing estrus.

Key Words: buck effect, estrus synchronization, goat

T351 Complement system activity on goats, hemolytic assay possibilities. I. Moreno-Indias*¹, A. Argüello¹, N. Castro¹, J. Capote², A. Morales-delaNuez¹, and B. Sim³, ¹*Las Palmas de Gran Canaria University, Arucas, Las Palmas, Spain*, ²*Instituto Canario de Investigaciones Agrarias, La Laguna, Tenerife, Spain*, ³*Oxford University, Oxford, United Kingdom*.

Usually complement system hemolytic assays in human and veterinary species are performed with sheep red blood cells (SRBC), but goats and sheep are closed phylogenetically. The objective of the present study was to evaluate the best combination between the red blood cells species and presence or absence of antibodies for complement system hemolytic assay in dairy goats. Both goat plasma (GP) and goat serum (GS) samples (n = 10) from Majorera breed were used to develop the hemolytic assays. SRBC, SRBC plus rabbit antibody (RA), SRBC plus human antibody (HA), SRBC plus RA plus goat antibody, human red blood cells (HRBC) and HRBC plus RA were used as substrate of goat complement system on the hemolytic assays. An ANOVA procedure was performed. In a scale from 0 to 100%, the best results of hemolysis were observed when GP and HRBC plus RA were used ($82.4 \pm 0.8\%$). Medium hemolytic activity was displayed when GP and HRBC or GS and HRBC plus RA were used (38.85 ± 0.6 and $37.26 \pm 0.5\%$, respectively). Low hemolytic activity was observed when GS and HRBC were used ($7.53 \pm 0.2\%$), and no activity was observed in the other

combinations. In conclusion, SRBC is not a useful tool for hemolytic assay in dairy goats, being HRBC an adequate option.

Key Words: complement system, goat

T352 The use of internet-based tools in establishing scrapie resistant sheep flocks in Canada. D. G. Bishop and A. Farid*, *Nova Scotia Agricultural College, Truro, Nova Scotia, Canada.*

Genotypes of Canadian purebred sheep at the prion protein gene from various laboratories are assembled into a national database and are linked with pedigree information regularly obtained from the Canadian Livestock Record Corporation. Breeders have had password protected access to their flock data through a web-interface (genenovas.ca) since early 2005. The system is designed 1) to provide breeders with a fast and secure way of obtaining the genotypes of their sheep, 2) to be the depository of the official genotype of animals, 3) to establish a convenient system that breeders can use to manage their genotype results, 4) to detect genotype inconsistencies and measure the accuracy of the data when the genotypes of parents and offspring are available, 5) to allow flock owners to display the genotype of any number of their sheep to in a 'Marketplace', which is accessible by all prospective buyers free of charge, thus facilitating the purchase of sheep with a desired genotype, and 6) to determine the genotype of progeny of tested parents, when possible, thus avoiding unnecessary testing and reducing the cost of establishing resistant flocks. To date (1 Feb 2009), genotypes of approximately 18,000 sheep of 41 breeds from 490 farms have been added to the database. The genotypes of an additional 1,291 sheep (7.1% of animals tested) were predicted and added to the database. As the frequency of homozygous resistant animals increases by selection, the number of such animals is expected to increase. The proportion of breeders who never visited their page on the website was 46.0%, while others logged into their website between one and 144 times. The results show that the use of the Internet by the Canadian sheep breeders is reasonably high.

Key Words: prion protein gene, scrapie, internet-based tools

T353 Comparison of raw versus post-differentially corrected GPS collar fixes in free-ranging goats. T. A. Gipson*¹, S. P. Hart¹, and R. Heinemann², ¹*American Institute for Goat Research, Langston University, Langston, OK,* ²*Kiamichi Forestry Research Station, Oklahoma State University, Idabel.*

Even though selective availability of GPS signals was discontinued on May 1, 2000, there remains some debate as to whether GPS fixes need to be post-differentially corrected. The objective of this study was to determine the effect of post-differential correction on fixes of GPS collars worn by free-ranging goats. Twenty-one wether goats (46 ± 4.7 kg) were fitted with GPS collars that recorded a fix every 5 min and released into a novel environment ($35^{\circ}53'40''N$, $94^{\circ}45'21''W$) of 4.6 ha. Collars were downloaded after 1 wk and 41,744 raw (R) GPS fixes were post-differentially corrected (C). For fix status, C decreased 3-D fixes and increased 2-D fixes and No-fix compared with R fixes (R: 95.8, 4.0, and 0.2%; C: 69.1, 28.4, and 2.5% for 3-D, 2-D, and No-fix status, respectively; $\chi^2 = 10,270$, $P < 0.01$). A higher percentage of C fixes were located within the boundary of the study area compared with R (89.7 vs. 86.3%, $P < 0.01$). The correcting distance between R and C fixes was greater in daylight hours than at night (23.4 vs. 16.9 m; $P < 0.01$). With distance calculations restricted to fixes within the boundary, the minimum (straight-line) distance traveled between consecutive fixes

was greater for R than for C (29.5 vs. 27.6 m, $P < 0.01$). Therefore, the calculation of daily total minimum distance traveled per goat was greater for R than for C (4.16 vs. 3.82 km, $P < 0.01$). Inter-goat distance was greater for R than for C (19.9 vs. 15.4 m, $P < 0.01$). Analysis using R vs. C fixes may affect conclusions because more C than R fixes were within study area boundary, corrections were greater during daylight hours when animals were most active, and intra/inter-animal distance calculations were greater for R than for C. These differences may be especially important for researchers studying spatial distribution of grazing animals or calculating distance traveled such as in energy expenditure experiments.

Key Words: goats, GPS, post-differential correction

T354 Garlic as an anthelmintic for goats. Z. Wang*, A. L. Goetsch, S. P. Hart, and T. Sahlu, *American Institute for Goat Research, Langston University, Langston, OK.*

A previous experiment (*J. Anim. Sci.* 86 (E-Suppl. 2):292) showed that feeding garlic to Spanish goat wethers infected with *Haemonchus contortus* reduced fecal egg count (FEC). The present experiment was conducted to determine the anthelmintic effect of garlic in mature does. Twelve Spanish does (7 yr of age; 39 ± 2.2 kg BW) naturally infected with *H. contortus* were allocated to two treatments (six per treatment) and housed individually. Does were fed diets (ME = 8.7 MJ/kg and CP = 10% DM) of coarsely ground grass hay (73%) and concentrate (primarily corn and soybean meal) at a level of intake for BW maintenance without or with 2% garlic powder hand-mixed with concentrate for 28 d. Fecal samples were collected on d 0, 2, 4, 8, 11, 15, 18, 21, and 24 and blood was collected on d 0, 14, and 28; d-0 values were used as covariates in the mixed model. Statistical analysis of FEC entailed log transformation. Initial FEC averaged 6,167/g (SEM = 2,319; range = 600 to 13,050) for Control and 13,800/g (SEM = 5,301; range = 2,050 to 38,650) for Garlic. Average daily gain during the experiment was greater ($P < 0.02$) for Garlic vs. Control (74 vs. -42 g). Average FEC was decreased ($P < 0.02$) by garlic supplementation (6,395 vs. 1,290/g), although there was a trend for an interaction between treatment and day ($P < 0.06$). Effects of garlic on FEC on d 2 and 4 were nonsignificant ($P > 0.43$), whereas differences occurred on d 8 (5,819 vs. 912/g; $P < 0.03$), 11 (7,368 vs. 605/g; $P < 0.01$), 15 (6,114 vs. 658/g; $P < 0.01$), 18 (5,783 vs. 745/g; $P < 0.02$), 21 (8,571 vs. 1,777/g; $P < 0.07$), and 24 (9,362 vs. 1,720/g; $P < 0.05$). Serum concentrations of IgA, IgM, and IgG and the number of blood eosinophils were not influenced by feeding garlic ($P > 0.10$). However, the number of white blood cells tended ($P < 0.08$) to be greater for Garlic than for Control (11,153 vs. 8,783/ μ L). In conclusion, garlic appears to possess anthelmintic activity against *H. contortus* via cell mediated immunity, which requires a feeding period of at least 4 d for expression.

Key Words: goat, garlic, parasite

T355 Comparison of copper sulfate and copper oxide wire particles as an anthelmintic for goats. S. P. Hart* and Z. Wang, *E Kika de la Garza American Institute for Goat Research, Langston, OK.*

Gastrointestinal nematodes are the leading cause of morbidity and mortality in small ruminants, especially those raised in warm humid environments. The overuse of anthelmintics has resulted in anthelmintic resistance of gastrointestinal nematodes to most of the available anthelmintics. Copper sulfate has been used as an anthelmintic early

in the previous century and more recently has been shown efficacious in sheep. Copper oxide wire capsules have been recently shown to be effective as an anthelmintic in both sheep and goats. The objective of this study was to compare copper sulfate at two dose levels as an anthelmintic to copper oxide wire particles. This study was conducted with Angora does that were two years of age or older. Fecal samples were taken for three consecutive days before treatments were administered and goats stratified by fecal egg count (FEC) and randomly assigned to treatments, 10 goats per treatment. Goats were fasted overnight prior to treatment administration. Four treatments were administered: N, negative control administered a water drench; C, 4 g of copper oxide wire particles administered in a gelatin capsule; L, low dose of copper sulfate (16.5 mg/kg bw); H, high dose of copper sulfate (33 mg/kg bw). Copper sulfate treatments were administered as a 1.5% drench. Fecal samples were taken at 7, 8 and 9 d post-treatment and fecal egg count reduction (FECR) calculated. Fecal egg counts were conducted by the McMaster procedure. Data were analyzed by the SAS NPARIWAY procedure for non-parametric tests. Mean FEC for the group before treatment was 5,350 eggs/g (range 200-29,900). FEC was not reduced by N (FECR = 44%; $P > 0.10$). FEC was reduced ($P < 0.05$) by L (FECR = 83%), C (FECR = 77%) and H (FECR = 67%). Copper sulfate drench at both dose levels was equally effective to copper oxide wire capsules in reducing FEC of Angora goats.

Key Words: copper, anthelmintic, gastrointestinal nematodes

T356 Performances of kids and calves grazing together and separately. S. Gebrelul*, R. Marshall, Y. Ghebreyessus, and V. Bachiredy, *Southern University Ag. Center, Baton Rouge, LA.*

A mixed-grazing project was designed to determine the performance of calves and kids grazing together and separately. In a 3x2 factorial, 100 Spanish goats and 28 Brangus cows were randomly assigned to continuous or rotational grazing systems and three grazing schemes: goat-alone (4 ha), cattle-alone (11 ha) or mixed (16 ha). Kid's preweaning records of 1200 and 384 of calves were available. Body weights, condition scores (BCS), FAMACHA scores (FS), fecal egg counts (FEC), packed cell volume (PCV), fresh (FFY) and dry (DFY) forage yields, plant height (PHT), crude protein (CP), acid (ADF) and neutral (NDF) detergent fibers, and dry matter (DM) were obtained every 28 d for 3 yr. Data were analyzed using mixed procedure of SAS and stepwise regression. Chi-square analysis was used for BCS and FS. All fixed effects were significant ($P < 0.05$) sources of variation for kid measurements. Kids in mixed grazing weighed more (16.9 ± 0.3 vs 13.2 ± 0.3 kg, $P < 0.01$) than kids grazing alone. PCV values were negatively correlated with FS ($P < 0.05$) but positively correlated with BCS. BCS had a high negative correlation with FAMACHA scores (-0.54 , $P < 0.01$) and FEC (-0.23 , $P < 0.01$). Kids that grazed alone on rotational pastures had higher PCV percentages (30.1%) than those grazing on continuous pastures (27%). Kids grazing alone averaged 2.03 ± 0.03 in BCS while those in mixed averaged 2.36 ± 0.04 ($P < 0.01$). Calves grazing alone were heavier (171.8 ± 2.6 vs. 156.0 ± 2.6 kg) than those grazing mixed with kids ($P < 0.10$). Calves grazing alone under continuous grazing were similar in weight (170.2 ± 3.5 vs 173.4 ± 3.8 kg) to those in rotation, but both were heavier ($P < 0.05$) than calves in mixed grazing in continuous (162.5 ± 3.8 kg) or in rotation (149.4 ± 3.4 kg). For calf weight, the order of variables that entered the regression model at $P < 0.05$ were ADF, PHT, NDF, FDY, and CP; and PHT, DFY, FFY and NDF for kid weights. Results indicated that calves required more time to adjust and perform when mixed with kids, but kids could graze with calves to efficiently

utilize available forage resources. More information is needed to evaluate mixed grazing systems under Louisiana conditions.

Key Words: mixed-grazing, goats, forages

T357 Small ruminant producer gastrointestinal nematode (GIN) management survey. N. C. Whitley*¹, R. M. Kaplan², J. M. Burke³, T. H. Terrill⁴, J. E. Miller⁵, W. R. Getz⁴, S. Mobini⁴, E. Valencia⁶, and M. J. Williams⁷, ¹*North Carolina A&T State University, Greensboro,* ²*University of Georgia, Athens,* ³*USDA, ARS, Booneville, AR,* ⁴*Fort Valley State University, Fort Valley, GA,* ⁵*Louisiana State University, Baton Rouge,* ⁶*University of Puerto Rico, Mayaguez, PR,* ⁷*NRCS, Gainesville, FL.*

The objective was to determine, by survey, sheep and goat producer GIN management methods. Respondents from GA ($n = 62$), FL ($n = 30$), PR ($n = 7$), LA ($n = 14$) and other southern states ($n = 11$) had a total of 4434 goats ($67.4 \pm 3.9\%$ of responders) and 2821 sheep ($35.4 \pm 3.9\%$ of responders). New (non-sire) animals were brought to the farm by $71.4 \pm 3.5\%$ of responders. A moderate to severe parasite problem was indicated by $77.9 \pm 3.5\%$ of responders with $59.1 \pm 4.3\%$ indicating increased or no change in problem severity over the past 3 yr. For 87.2 ± 4.3 , 50.4 ± 2.9 , 60.1 ± 3.7 , 97.7 ± 3.9 , 23.5 ± 1.9 , 15.0 ± 3.1 and $18.0 \pm 2.4\%$ of respondents, anthelmintics used were benzimidazoles, imidazothiazoles, moxidectin, ivermectin, Eprinex or Dectomax, Rumatel and/or herbal/natural products, respectively. The following parasite management methods were reported by respondents: estimating individual animal BW for anthelmintic treatment ($54.2 \pm 4.6\%$); treating new animals ($77.4 \pm 5.2\%$) with the same routine as for existing animals ($65.0 \pm 4.9\%$); rotating anthelmintics ($42.9 \pm 3.5\%$); rotating pastures ($68.5 \pm 4.1\%$); treating at pre-set times ($24.1 \pm 3.7\%$), as needed ($35.3 \pm 4.2\%$) or both ($38.3 \pm 4.2\%$); moving weaned offspring to a new pasture ($55.8 \pm 4.7\%$) or back to the same pasture ($53.3 \pm 4.6\%$); testing for fecal GIN egg at least once/yr ($36.4 \pm 2.6\%$) and treating every 4, 8 or 12 wk (16.7 ± 4.1 , 17.9 ± 4.2 and $19.0 \pm 4.3\%$, respectively). Respondents reported treating animals 4.8 ± 0.4 times/yr. Factors influencing anthelmintic usage for greater than 75% of respondents included cost, ease of use, technical meetings, journal articles, producer and veterinarian recommendations, and good effects. Parasite management education can be developed to address issues determined by this and similar surveys.

Key Words: goat, sheep, parasites

T358 Leg bands and rumen boluses for the long-term electronic identification of goats. S. Carné, G. Caja, M. A. Rojas-Olivares, and A. A. K. Salama*, *G2R, Universitat Autònoma de Barcelona, Bellaterra, Spain.*

A total of 220 Murciano-Granadina dairy goats were used to assess the performance of electronic identification by half-duplex ISO transponders: 1) leg bands (LB) placed in the shank of the right hind leg (metatarsus), and consisting of plastic bands (181×39 mm, 21 g; $n = 220$) closed with 2 types of button electronic ear tags (LB1, 26.5 mm o.d. open female, 3.9 g, $n = 90$; LB2, 25 mm o.d. closed female, 5.5 g, $n = 130$); 2) rumen boluses (RB, 68×21 mm, 75 g, $n = 220$) containing 32×3.8 mm transponders. Shank perimeter of a sample of 6 mo of age ($n = 47$) and adult goats ($n = 103$) was measured to decide on the inner perimeter of fastened LB. Total time for tagging, reading and recording was measured using an ISO handheld reader. Readability [(read/readable) $\times 100$] was monitored monthly during 1 yr using the

handheld reader in the milking parlor. Data from dead or culled goats were excluded ($n = 23$). Perimeter and readability data were analyzed using the GLM and CATMOD procedures of SAS, respectively. Shank perimeters of young (70 ± 1 mm) and adult goats (88 ± 1 mm) were lower ($P < 0.001$) than the inner perimeter of the fastened LB (110 ± 1 mm). Young 6-mo goats were considered inadequate for LB application. Time for LB tagging and data recording was 53 ± 3 s, similar to the time reported for RB (49 s). After 1 yr, 2.5% RB ($n = 5$) were lost; 3.6% LB ($n = 7$) were open and unreadable due to the breakage of the electronic ear tags, and 1.5% ($n = 3$) had to be removed because of limping (1 leg was inflamed and the LB constricted the metatarsus, and 2 LB were too loose and got blocked on the pastern). Readability of LB transponders, excluding the LB removed, was 93.6 and 98.3% ($P = 0.11$) for LB1 and LB2, respectively. In total, no readability difference between LB and RB was detected (98.5 vs. 97.5%, respectively; $P = 0.48$). In conclusion, leg bands were not adequate for the identification of replacement goats although, adequately sized and closed, they may be an efficient method for adult goats. In our conditions, electronic ear tags placed on leg bands and rumen boluses were unable to achieve the ICAR reference value for official identification ($>98\%$).

Key Words: electronic identification, transponder, goat

T359 Natural plant anthelmintic fails to reduce internal parasites in meat goat kids. D. J. O'Brien¹, K. K. Mathews^{*1}, J. E. Miller², N. C. Whitley³, E. K. Crook¹, and J. L. Eierman¹, ¹*Delaware State University, Dover*, ²*Louisiana State University, Baton Rouge*, ³*North Carolina A&T State University, Greensboro*.

Worldwide reports of drug resistance in small ruminant gastrointestinal nematodes (GIN) have led producers to seek alternative parasite control

strategies such as the use of natural plants. Anecdotal evidence exists supporting feeding pumpkin as a possible GIN control method, so 22 mixed-sex, crossbred goats averaging 185.1 ± 1.9 d of age were used to evaluate the effect of pumpkin seeds on GIN indicators. Goats were placed in individual pens on solid concrete floors (d 0) and received pre-weighed rations of a commercially pelleted 15% CP meat goat feed daily for 21 d. Animals were supplemented with ground pumpkin seeds (PUM; $n = 11$) mixed into feed at a rate of 170 g/34.1 kg BW or were not supplemented (CON; $n = 11$). Goat BW was measured on d 0, 7, 14 and 21. Fecal samples were collected rectally from individual animals to determine fecal egg counts (FEC) using the Modified McMaster technique and blood samples were collected by venipuncture to determine packed cell volume (PCV) on d 0, 7, 14 and 21. Fecal samples were collected on d 0 and 21 and pooled by treatment for larval identification. Body weight was similar between the two groups at all time points measured and averaged 24.1 ± 1.0 kg for all animals. Goat PCV was not influenced by treatment and averaged 37.8 ± 1.2 , $30.8 \pm 1.8\%$, 34.1 ± 1.7 and $33.6 \pm 1.7\%$ for d 0, 7, 14 and 21, respectively. Goat FEC was also not influenced by treatment, averaging 5965 ± 796 , 6411 ± 1823 , 3425 ± 413 , and 3655 ± 631 eggs/g on d 0, 7, 14, and 21, respectively. On d 0, CON group fecal samples consisted of 6% *Haemonchus contortus* (HC) and 94% *Trichostrongylus* (Tric) while the PUM group had 2% HC and 98% Tric. By d 21, the CON group had 46% HC and 54% Tric while the PUM group had 28% HC and 72% Tric. In this study, feeding pumpkin seeds did not impact FEC or PCV in meat goat kids. More studies are needed to evaluate the use of natural plant dewormers in small ruminants.

Key Words: goat, natural anthelmintic, parasites