

Small Ruminant: Sheep and Goat Production 1

402 Effects of endophyte-infected fescue seed on physiological parameters of mature female meat goats. A. R. Boyer*¹, T. L. Mays¹, G. W. Webb¹, M. A. Brown², and E. L. Walker¹, ¹Missouri State University, Springfield, ²USDA Grazinglands Research Center, El Reno, OK.

The objectives of the study were to determine if consumption of endophyte-infected (E+) fescue seed would affect thermoregulation and DMI in mature female goats. During a 4 wk study, a total of 18 goats (Boer type) were assigned to treatments (n = 6 per treatment); endophyte-free KY-31 (E-), endophyte-free STF-43 (E43-), or E+ seed. Goats were fed a ration consisting of a 2:1:1 ratio of alfalfa pellets, a commercial sweet feed, and 1 of 3 types of fescue seed. All goats were fed 2% of BW, and orts were collected and weighed daily on a DM basis. At the initiation of the study, age and BCS were recorded. Temperature loggers designed for intravaginal insertion were used and temperature (T) collected. Average temperatures for 0400, 1000, 1600, 2200 h were recorded. Urine, blood, and BW were collected weekly. Ergovaline levels in the urine increased after 1 wk on treatment ($P \leq 0.03$). Dry matter intake was affected by age ($P \leq 0.01$). A treatment \times week interaction ($P \leq 0.05$) occurred in wk 1 of the study, with E43- having greater DMI than E-, and E+ being intermediate. Seed intake was affected ($P \leq 0.02$) in E+ throughout the study and in E- wk 1 and 4 of study. Treatment ($P \leq 0.03$), treatment \times week ($P \leq 0.01$), and age ($P \leq 0.007$) also had an effect on seed intake for E+ and E- treatments. Intake of alfalfa pellets and sweet feed did not differ ($P \leq 0.56$) among treatments. No difference in ADG among treatments ($P \leq 0.22$) occurred. A date effect on T occurred at 1600 h ($P \leq 0.002$) in E- and E43- treatments and at 2200 h ($P \leq 0.0003$) in E- and E+ treatments. At 0400 h, E43- maintained a greater T than other treatment groups ($P \leq 0.03$). At 1000 h, there was a treatment \times week interaction ($P \leq 0.01$) and E43- maintained a greater ($P \leq 0.06$) T than the other treatments. Treatment affected DMI, seed intake, T, and urine concentrations of ergovaline. However, goats may handle ergovaline differently than other species and more research is required to evaluate these potential differences.

Key Words: endophyte, goat, intake

403 The effects of protein supplement on leptin concentrations in lambs and meat goat kids grazing bermudagrass pastures in central Oklahoma. E. L. Walker*¹, S. A. Nusz², D. H. Keisler³, and M. A. Brown⁴, ¹Missouri State University, Springfield, ²Redlands Community College, El Reno, OK, ³University of Missouri, Columbia, ⁴USDA Grazinglands Research Center, El Reno, OK.

Lambs and kids weaned and pastured on bermudagrass (BG; *Cynodon dactylon*) may not receive enough protein to reach maximal growth during mid to late summer when protein in BG declines. Leptin is an adipocyte-derived hormone that increases as body condition increases and is involved in body temperature regulation. Our objective was to determine the effects of protein supplementation on leptin status in lambs and meat goat kids grazing on summer BG pastures. In 2007, 10 Boer type (BT) and 13 Spanish \times Savanna (ST) kids (start bw = 14 ± 5 kg) and 23 Katahdin (KK), 14 Katahdin \times Suffolk (KS), 14 Suffolk \times Katahdin (SK), and 21 Suffolk (SS) lambs (start bw = 30 ± 5 kg; start age for sheep and goats = 100 ± 10 d) were used. In 2008, 27 BT and 28 ST kids (start bw = 18.8 ± 0.6 kg) and 11 KK, 15 KS, 21 SK, and 25 SS lambs (start bw = 25.8 ± 0.7 kg; start age for sheep and goats = 100 ± 5 d) were used. Animals were allotted by weight, breed, and gender to one of 2 treatments: 1.22 ha of BG with no protein supplement (NP;

n = 2) or with 21% molasses-based protein blocks (PT, n = 2). Animals were weighed and blood samples collected every 2 weeks. Data were analyzed using proc mixed as a split plot design and the analysis included the fixed effects of treatment, species, breed nested within species, gender, and all possible interactions. In 2007, serum concentrations of leptin did not differ by treatment ($P = 0.94$) or between species ($P = 0.60$) or gender ($P = 0.29$). There was a breed within species interaction ($P = 0.01$). Serum leptin values tended to decline from June to August ($P = 0.10$). In 2008, serum leptin tended to be greater in PT than NP animals ($P = 0.08$) and greater in kids than lambs ($P \leq 0.001$). No breed within species interaction was observed ($P = 0.49$) nor did gender affect serum leptin ($P = 0.33$). There was a strong association between date and serum leptin concentrations ($P \leq 0.001$) and there was a breed by date within species interaction ($P = 0.009$). In both trials, serum leptin values declined from June to August as forage quality decreased throughout the summer.

Key Words: kids, lambs, leptin

404 Factors affecting birth, 60-day, and weaning body weights of commercial meat goat kids born in two different seasons. K. Andries* and E. Sherrow, Kentucky State University, Frankfort.

Little information is available on the impact of season of kidding on growth and performance of meat goat kids. However, seasonal market trends have many producers kidding in the late fall and winter. Because of this, a study was designed to evaluate kid performance using 2 kidding seasons. The objectives of the study were to evaluate kid growth from birth to weaning by comparing birth, 60 d, and weaning BW; rate of gain to weaning; and kid survival to weaning in 2 alternative kidding seasons. Five hundred and 40 3 Boer sired commercial meat goat kids born in either fall (October, November, and December) or spring (March, April, and May) of 2005 through 2007 were available for this study. Data collected included, birth type; sex; and birth, 60 d, and weaning weight. Data was analyzed using Proc Mixed in SAS. Season of birth had a significant effect on birth and weaning weight, and ADG between 60 d and weaning. Birth type was significant for all traits except ADG between 60 d and weaning. Single born kids were heavier at birth than twin or triplet born kids (3.91, 3.47, 3.20 kg, respectively). Spring born kids were lighter than fall born kids at birth and weaning (3.37 vs. 3.68 kg for birth and 16.86 vs. 18.09 kg for weaning, respectively). Fall born kids gained faster between 60 d and weaning (170 vs. 130 g/d, respectively). The interaction between year and birth type was significant for birth weight and the sex by birth type interaction was significant for 60 d weight and ADG to 60 d. Season of birth did not have an effect ($P = 0.105$) on survival to weaning, however type of birth was significant ($P < 0.001$) for survival. Single born kids were more likely to survive to weaning than all other birth types. Twin born kids were second most likely to survive and triplet and quadruples were similar in survival to weaning. This project indicates that season of birth and birth type have an effect on performance for meat goat kids.

Key Words: meat goat, preweaning growth, season of birth

405 Relationship between body measurements and milk yield and a method to predict the milk production of Saanen goats. S. Dikmen*, A. Orman, H. Üstüner, and M. M. Ogan, University of Uludağ, Bursa, Turkey.

Type traits are functional traits in dairy goats and have an indirect effect on production. Because of moderate to high heritability of these traits, they are valuable tool in breeding program of dairy cattle. In dairy cattle these measurements are used for prediction of some production traits. Despite the wide use of evaluations for type in goats, little is known about the association between body conformation and production traits. The objective of this study was to investigate the relationship between body measurements and milk yield in Turkish Saanen goats and to develop a method to predict the lactation milk yield. A total of 40 goats were used for this study. Body condition score (BCS), live weight (LW) and a total of 24 body measurements were recorded 7 d after birth. Milk yield was recorded fortnightly and 60, 90, 120, 150, 180, 210, 240 d and lactation milk yield (LM) were estimated using these records. Lactation milk yield was 689.8 ± 38.0 kg in 298.1 ± 2.3 d. The effects of birth month (February or March), birth type (single or twin), BCS, LW (kg), age (month), parity, DIM (day) and all interactions were investigated using PROC MIXED of SAS. The correlations between body measurements and milk yield were also determined. The effects of BCS ($P < 0.05$), LW ($P < 0.01$) and DIM ($P = 0.08$) on LM were found significant and these effects were determined as a base model for regression analysis. Afterward, LM corrected for age and stepwise regression analysis was used for identifying the most reliable model which has the highest determination coefficient degree ($r^2 = 0.45$) on age corrected LM (CLM) of Saanen goats. The prediction model of CLM was determined as; $CLM = -460.5 + (-379.6 \times BCS) + (51.9 \times \text{Chest depth}) + (-21 \times \text{Abdomen depth}) + (29.9 \times \text{Abdomen width}) + (31.7 \times \text{Shoulder joint-tuber coxae angle})$ ($P < 0.001$). Based on these results, this equation could be used to predict the CLM of Saanen goats. However, more data are needed to increase the reliability of the model.

Key Words: milk yield, prediction, Saanen

406 Effects of prepubertal growth rate of dairy ewe lambs on their subsequent lamb and milk production. D. L. Thomas* and Y. M. Berger, *University of Wisconsin-Madison, Madison.*

A study was conducted at the Spooner Ag Research Station of UW-Madison with 252 dairy ewe lambs born from 2004 to 06 to determine if ad libitum feed intake during the prepubertal period would be detrimental to their subsequent production. The lambs were of East Friesian and/or Lacaune breeding. They were raised on milk replacer and a high concentrate ad libitum diet until 30 d of age. At 50 d of age, they were randomly assigned to 1 of 2 growth treatments: full (F) or restricted (R) feed. Both treatment groups were fed a 13% CP grain mix of whole shelled corn and a high protein pellet in straw-bedded pens. Full treatment lambs received as much of the grain mix as they could consume, and R lambs received ~70% of the average per head intake of the F lambs. Treatments continued for ~100 d until lambs were ~5 mo of age. Ewe lambs were mated to lamb first at ~1 yr of age, and lamb and milk production was recorded through 2008. At the end of the treatment period, R lambs were 6.5 kg lighter ($P < 0.05$) than F lambs. However, R lambs had greater ($P < 0.05$) ADG from the end of the treatment period to their first mating and from their first mating to their first lambing and were slightly heavier ($P < 0.10$) than F ewes at first lambing. Ewe fertility and litter size were very similar between the F and R ewes when lambing at 1 yr of age and at older ages. Lactation traits (lactation length; yield of milk, protein and fat; and % protein and fat) were not significantly different between treatments, but mean values were actually slightly higher for F ewes compared with R ewes for all lactation traits (e.g., +9.2 kg for lactation milk yield). There were no differences between treatments for the proportion of ewes remaining in the flock on June 30, 2009 or the average age at which ewes left

the flock. The results of this study indicate no detrimental effects of ad libitum prepubertal feeding of dairy ewe lambs to 5 mo of age.

Key Words: lactation, prepubertal, sheep

407 Milk production and lamb growth of hair sheep weaned at 63 or 90 d of age in an accelerated lambing system in the tropics. R. W. Godfrey* and K. Facison, *University of the Virgin Islands, St Croix.*

This study was designed to evaluate the impact of weaning age on lamb and ewe productivity in an accelerated lambing system. During a fall and summer lambing, St. Croix White ewes ($n = 19$ and 22) and lambs ($n = 30$ and 34), and Dorper \times St Croix White ewes ($n = 18$ and 27) and lambs ($n = 31$ and 39) were used. Lambs were assigned to be weaned at 63 (CTRL; $n = 70$) or 90 d of age (LATE; $n = 64$) based on breed, sex and litter size. In the summer 8 ewes/group were evaluated for milk production at 28, 63, 76 and 90 d postpartum (PP) using oxytocin and 4 h lamb removal. After weaning lambs were fed concentrate (2% BW/d) and grazed guinea grass. Ewes grazed guinea grass at all times. Weights were analyzed using breed and weaning age as main effects. Milk production was analyzed using breed, days PP and weaning age in a repeated measures model. Season was not significant for any trait so data were pooled. Ewe weight at breeding before the first lambing was the same ($P > 0.10$) as at the subsequent breeding (40.9 ± 1.1 vs. 41.9 ± 1.1 kg, respectively). At the start of the subsequent breeding 43% of LATE and 10% of CTRL ewes were nursing lambs ($P < 0.0004$). Pregnancy rate at the subsequent breeding, determined by ultrasound, was not different ($P > 0.10$) between LATE and CTRL ewes (97.4 vs. 97.8%, respectively). At weaning LATE lambs were heavier ($P < 0.0001$) than CTRL lambs (14.5 ± 0.4 vs. 11.2 ± 0.4 kg, respectively). There was no breed \times weaning age interaction. At 90 d of age LATE and CTRL lambs had similar ($P > 0.10$) weights (14.5 ± 0.4 vs. 13.9 ± 0.4 kg, respectively). Milk production on d 63 was not different between breed or weaning age ($P > 0.10$). By d 76 and 90 milk production of LATE ewes had decreased to 84 ($P < 0.07$) and 66% ($P < 0.0002$) of d 28 levels. Weaning at 90 d of age can be done in an accelerated lambing system with no detrimental effect on ewe productivity. Late weaning led to a decrease in the amount of time that lambs received high cost, imported feed without a reduction in their growth. There is potential to have a positive impact on the economics of producing hair sheep in the tropics.

Key Words: hair sheep, weaning, milk production

408 Economic impacts of ram mating behavior. L. K. Gardiner*, B. S. Rashford, J. P. Hewlett, and B. M. Alexander, *University of Wyoming, Laramie.*

Little is known about producers' perceptions of ram performance and ranch-level economic impacts of improved ram management. This research combines a survey of Wyoming sheep producers and a partial budget analysis to better understand producers' perceptions and the economic consequences of ram performance. We used a modified Dillman sampling design with a stratified random sample based on flock size to collect survey data on Wyoming sheep producers. Five strata were defined according to the number of bred ewes owned: small operations (<30 ewes), small to medium (30–49 ewes), medium (50–99 ewes), medium to large (100–299 ewes), and large operations (>300 ewes). The National Agricultural Statistics Service administered the survey to assure a statistically valid stratified sample. The survey's respondents represent approximately 40% of Wyoming sheep producers. The number of responses from each stratum is consistent with the actual distribution of sheep operations in Wyoming. Current ram management practices

and opinions about the importance of ram performance are included in the survey. Analysis of the data shows the majority of producers believe breeding competence is critical to flock productivity (56% of respondents strongly agree) and testing ram performance is important for profitability (45% of respondents strongly agree). Survey data suggests that producers may not be integrating beliefs into management. For example, 77% of the respondents listed age and not libido as the primary reason for culling rams. Less than 10% of respondents listed

ram libido as an important criteria for ram selection. Budget analysis indicated smaller high-performing ram batteries may increase profits. Profit increases are sensitive to the cost of identifying ram performance, operation type, and the flow of genetic characteristics. Our results suggest a need for producer education and research concerning the economic impacts of ram performance.

Key Words: sheep, economics, libido