

- 677 Prevalent weeds in a southern-pine silvopasture system managed with Kiko wethers.** U. Karki\*, S. Poudel, Y. Karki, and A. Tillman, *Tuskegee University, Tuskegee, AL.*

Kiko goats are considered to use a wide variety of vegetation present in the grazing land. However, not much information is available about weeds that are present in grazing systems managed with goats. The objective of this study was to document the major weeds present in a Southern-pine silvopasture system grazed with Kiko wethers. Southern-pine silvopasture plots (3; 0.4-ha each) were planted with cool- and warm-season forages to develop year-round grazing for goats. Trees in the silvopasture consisted of longleaf (*Pinus palustris*) and loblolly pine (*Pinus taeda*) species (longleaf:loblolly ratio of 0.59) with 261 trees/ha; the trees were 11 yr old. Twenty Kiko wethers (21–23 m old) were rotationally stocked in the silvopasture plots to use the available forages from January to August 2016. Goats had free access to fresh water, mineral supplements, and shelters. Animals were taken off the plots when available forages were limited and were brought to other grazing sites. At the end of warm-season grazing in August, observations were taken on weeds present in the study plots, and the percentage of defoliation that occurred on those weeds was recorded on a preformatted sheet. Data were analyzed for prevalence and extent of defoliation in SAS 9.4 using the GLM procedure. Thirty-two weed species were detected in the study plots, among which 9 species were prevalent. Poorjoe (*Diodia teres* Walter) was the most dominant species covering the greatest plot area ( $14.8 \pm 1.02\%$ ) and tropic croton (*Croton glandulosus* L.) was the least occurring species among the prevalent weeds. Horseweed (*Coryza* Less.) was the most defoliated species ( $21.5 \pm 1.79\%$ ) followed by common ragweed (*Ambrosia* L.;  $17.8 \pm 1.79\%$ ) and poorjoe ( $11.5 \pm 1.79\%$ ). Results suggest that goats may not readily eat several plant species present in the grazing system, and appropriate management strategies need to be considered to deal with these species.

**Key Words:** goats, horseweed, poorjoe  
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- 678 Effect of solar radiation and increased salinity on Awassi ewe adaptation and production.** B. Al Masri<sup>1</sup>, K. Houchaymi<sup>2</sup>, and P. Y. Aad<sup>3</sup>,  
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With the recent changes in environmental patterns with climate change, higher maximum summer temperature, increased solar radiation, and lower water quality are anticipated; indicators for such changes are already being detected in Lebanon. With Awassi sheep managed in a transhumant system where

animals walk for at least 4 to 5 h in the summer sun, and little research on the effect of heat/sun stress and water quality in transhumant animals, 30 lactating Awassi ewes were assigned from LARI from June to August, the hottest summer months, to 6 treatment groups in a  $2 \times 3$  factorial treatment arrangement where water salinity (high salt vs. no salt) and solar/heat stress exposure were tested. Calcium carbonate was added to the feed and  $MgSO_4$  was added to drinking water of the salt-treated ewes (SALT) and drinking water to the control, whereas for solar/heat stress, animals were kept in the sun (SUN) or provided partial (Control) or full shade (SHADE). Awassi ewes were allowed 2 wk of adaptation to the experimental plot under control conditions of partial shade and diet and exposed to experimental conditions for 1 mo, which was followed by 2 wk of recovery from heat and salt stress. Feed and water intake was measured twice a week on 2 consecutive days to estimate daily intake. Respiration (RR) and heart rate, body temperature, and panting scores (0 to 5) were recorded twice a week AM and PM and BCS, BW, and milk quantity were recorded. Body condition score and BW did not differ ( $P < 0.05$ ) between all treatment groups. Results showed that animals consumed the entire ration, and SALT animals drank less water per hour ( $P < 0.05$ ) than control animals irrespective of the sun exposure or time of measurement (noon vs. all day). Heart rate, RR, and panting scores did not differ ( $P > 0.1$ ) between SHADE and Control ewes but was significantly higher ( $P < 0.05$ ) in SUN ewes; however, panting scores did not exceed 2.5 for the duration of the experiment, attesting to the adaptation of the Awassi breed to sun exposure and heat stress. Milk production slightly decreased ( $P < 0.05$ ) in animals exposed to both sun and high salt with no difference between the Control and SHADE ewes. Therefore, Awassi sheep have the potential to withstand the anticipated changes in sun radiation and salt content.

**Key Words:** adaptation, Awassi ewes, solar/heat stress  
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- 679 Effects of restricted periods of diet access on feed intake, behavior, and performance of Alpine goats in early lactation.** N. C. D. Silva<sup>1,2</sup>, R. Puchala<sup>1</sup>, T. A. Gipson<sup>1</sup>, T. Sahlul<sup>1</sup>, and A. L. Goetsch<sup>\*1</sup>,  
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Restricting periods of diet access to lactating dairy goats could influence level or efficiency of production and offer different management options. Therefore, 40 Alpine goats (12 and 28 of parity 1 and  $\geq 2$ , respectively) with initial BW of 58.0 kg (SEM 1.50) and 14.2 d in milk (SEM 0.72) were offered a 40% forage diet (16.6% CP and 37.5% NDF; 20% alfalfa pellets, 10% cottonseed hulls, 10% coarsely ground grass hay, 12.9% wheat middlings, 12.9% rolled oats, 12.9% rolled corn, 11.0% soybean meal, 3.0% soybean oil, 5.0% molasses, and

2.3% other ingredients) free choice in Calan gate feeders for 12 wk. Feed access was continuous other than during morning and afternoon milking (Control), during the day for 8 h (Day) or night for 16 h (Night), or for 1 or 2 h after morning and afternoon milking (2Hour and 4Hour, respectively). Digestibilities were not influenced by treatment (e.g., OM: 73.1, 76.9, 77.1, 76.3, and 77.3% [SEM 1.81]), DMI was greater ( $P < 0.05$ ) for Control than for most treatments (2.07, 2.23, 2.70, 2.33, and 2.01 kg/d [SEM 0.157]), and ADG was greater ( $P = 0.019$ ) for Control than for the mean of restricted feeder access treatments (39, 11, 73, 24, and 21 g [SEM 17.7] for 2Hour, 4Hour, Control, Day, and Night, respectively). Milk yield was similar among treatments (2.60, 3.24, 3.05, 3.07, and 2.58 kg/d [SEM 0.375]), fat concentration tended ( $P = 0.089$ ) to be lower for Control than for other treatments (3.88, 4.21, 3.41, 3.70, and 3.49% [SEM 0.208]), and milk energy yield was not affected by treatment (7.36, 9.53, 8.20, 8.56, and 6.91 MJ/d [SEM 1.071] for 2Hour, 4Hour, Control, Day, and Night, respectively). Intake of ME (22.69, 25.92, 31.25, 26.69, and 23.46 MJ/d [SEM 2.184]) and heat energy (13.34, 14.09, 17.51, 15.54, and 15.25 MJ/d [SEM 0.921]) were greater ( $P \leq 0.011$ ) for Control than for other treatments, resulting in milk energy that was 31.9, 37.6, 26.0, 31.4, and 30.0% of ME intake for 2Hour, 4Hour, Control, Day, and Night, respectively (SEM 3.08). In conclusion, continuous diet access may affect partitioning of nutrients between milk synthesis and tissue accretion differently than some restricted feeder access treatments, particularly 4Hour.

**Key Words:** behavior, dairy goats, feed access  
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**680 Growth and FAMACHA scores in purebred and terminal sire crossbred lambs produced from landrace hair sheep under an accelerated mating system.** S. Wildeus\* and D. O'Brien, *Virginia State University, Petersburg.*

Landrace hair sheep (Barbados Blackbelly and St. Croix) are well suited for low-input, pasture-based production, but lamb growth rates and weaning weights are smaller than in more traditional breeds. This project evaluated the use of Dorset rams as terminal sires for lamb production with landrace hair sheep breeds under pasture-based production. A flock of 110 purebred Barbados Blackbelly and St. Croix ewes were mated with like-breed sires or Dorset rams in an accelerated breeding system. Rams were mated at 8-mo intervals in 3 single-sire groups per sire breed to 10 to 28 ewes. Lambs were born on pasture in April, December, and August during two 2-yr production cycles. Birth weights and litter size (birth type) was recorded within 24 h of birth. Lambs were not creep fed but had access to a corn/soybean meal supplement (16% CP) provided to ewes at 1.5% BW during lactation. Lambs were weaned at 9 wk of age, and weaning weights and FAMACHA anemia eye scores were measured and recorded. Records of

956 lambs were analyzed by ANOVA with breed type, birth type, lambing season, and year as main effects. Birth weights were heavier in crossbred lambs than in purebred lambs (3.34 vs. 2.73 kg;  $P < 0.001$ ) and in ram lambs than in ewe lambs (3.15 vs. 2.93 kg;  $P < 0.001$ ) and heavier in single than in twin and in twin than in triplet lambs (3.73 vs. 3.18 vs. 2.78;  $P < 0.001$ ). Crossbred lambs had heavier birth weights in August, whereas there were no differences between lambing seasons in birth weight of purebred lambs (breed type  $\times$  season interaction,  $P < 0.01$ ). Preweaning ADG and adjusted 60-d weaning weights were higher in crossbred lambs than in purebred lambs (144 vs. 121 g/d and 12.21 vs. 10.15 kg, respectively;  $P < 0.001$ ) and higher following August lambing than April and September lambing (12.2 vs. 10.6 and 10.7 kg;  $P < 0.001$ ). In contrast, FAMACHA scores were higher in crossbred lambs than in purebred lambs (1.41 vs. 1.24;  $P < 0.001$ ) and higher following April lambing than August and September lambing (1.44 vs. 1.26 and 1.27, respectively;  $P < 0.001$ ) regardless of breed type. FAMACHA scores were not affected ( $P > 0.1$ ) by litter size or sex. Results indicate that crossbreeding increased weaning weight by 20% despite indications of higher susceptibility to gastrointestinal parasitism in crossbred lambs. This suggests terminal sire mating as a viable management option in landrace hair sheep ewes.

**Key Words:** accelerated mating, crossbreeding, hair sheep  
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**681 Quality of fresh lamb from pasture-raised purebred and crossbred hair sheep lambs gradually removed from soy hull supplementation before harvest.** D. Kaffle<sup>\*1</sup>, J. H. Lee<sup>1</sup>, S. Wildeus<sup>2</sup>, A. Discua<sup>1</sup>, and C. Tripp<sup>1</sup>, <sup>1</sup>*Fort Valley State University, Fort Valley, GA,* <sup>2</sup>*Virginia State University, Petersburg.*

Soy hull supplementation (SH) in grazing lambs increased growth rate and altered carcass traits. Yet SH removal effect before harvest on the quality of fresh lamb has not been studied. This grazing trial with lambs grazing cool-season pastures evaluated the effect of SH removal before harvest on the quality characteristics of fresh lamb. Thirty-six 6-mo-old purebred hair (Barbados Blackbelly [BB;  $20.0 \pm 1.9$  kg BW] and St. Croix [SC;  $20.4 \pm 3.1$  kg BW]) and crossbred wool (Dorset)  $\times$  hair (BB [ $24.8 \pm 3.1$  kg BW] or SC [ $24.5 \pm 4.0$  kg BW]) sheep lambs rotationally grazed predominantly stockpiled tall fescue (13.3 to 19.4% CP) and ryegrass (16.5% CP) pastures. Lambs were allocated to 4 supplementation treatments (no supplementation and supplementation until 42, 21, and 0 d before harvest), and SH was provided at 2% BW daily at individual feeding stations. After 63 d of grazing, lambs were harvested using standard procedures. After 24 h cooler storage (2°C), each carcass was fabricated to obtain 2.5-cm thick loin chops (LM) for meat quality analyses. Data

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