Live and carcass leg characteristics of F1 wether lambs were investigated to determine whether there were terminal-sire breed differences. Over a 3-yr period, Columbia, MARCIII, Suffolk, and Texel rams were mated with mature Rambouillet ewes to produce the lambs (n = 521). Lambs were harvested at comparable ages. Before transport to slaughter, width of hind legs was measured at the widest point of the hind legs above the twist and BW was recorded for all lambs. For each carcass, live weight and leg width were measured and a subjective leg score was assigned. Carcasses were fabricated into subprimal cuts, which were weighted. Live leg width (LLW), carcass leg width (CLW), leg score (LS), bone-in leg weight (BIL), and boneless leg weight (BLL) were described using mixed models that included fixed effects of breed of sire (breed), year of birth (YR), age of dam (ADAM), and type of rearing (TR) to wean progeny. The ADAM was not significant in any model, but YR and TR affected (P < 0.01) LLW, CLW, BIL, and BLL. The TR, but not YR, affected (P < 0.01) LS. Leg widths, scores, and weights were greater for single-reared than for twin-reared lambs. Breed effects (P < 0.01) LLW, CLW, and LS. Texel-sired lambs had the greatest leg widths, and MARCIII-sired lambs had the least. Texel-sired lambs had the greatest LS, and Columbia-sired lambs had the least. The BIL and BLL differed with breed (P < 0.01). Suffolk-sired lambs had the heaviest weights and MARCIII-sired lambs had the lightest. Even though breed of terminal sire affected F1 lamb live and carcass leg traits, breeds that excelled for carcass leg shape differed from those that excelled for progeny leg weights. With this information, producers could select a terminal sire breed that would fit their production system to improve market lamb leg shape or weights.

**Key Words:** lamb, leg traits, terminal sire

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**754** Evaluating roughage level in lamb finishing diets containing 40% distillers dried grains: Carcass characteristics, meat fatty acid profiles, and sensory panel traits.  T. R. Whitney*, M. G. Williamson, and J. K. Mceachern, Texas AgriLife Research Center, San Angelo.

Cottonseed hulls are a common roughage source used in lamb finishing diets, especially in Texas, because of their high concentrations of NDF and ADF. Cottonseed hulls also contain condensed tannins, which can reduce rumen solubility and degradability of protein. Effects of increasing concentrations of cottonseed hulls in diets containing high concentrations of DDG on carcass characteristics, meat fatty acid profiles, and sensory panel traits are unknown. Rambouillet wether lambs were completely shorn on d −1 and 83 and wool characteristics were evaluated. Lambs fed CSH, CSHJ, and JUN grew the same amount of wool when measured as greasy fleece (P > 0.18), clean fleece (P > 0.45; 0.85, 0.88, 0.81 kg ± 0.06), and clean wool production per unit of BW (P > 0.54; 15.2, 15.8, 16.0 g/kg of BW ± 1.0). Average fiber diameter measured on mid-side samples quadratically decreased (P = 0.04; 20.6, 20.8, and 19.7 μm ± 0.28) as percentage of juniper increased in the diet. Sensory panel traits were similar (P > 0.36) among lambs, except for off-flavor linearly increasing (P = 0.02) as percentage of juniper increased in the diet. Results suggest that replacing cottonseed hulls with dry juniper leaves can reduce fiber diameter and negatively affect meat flavor, but can increase CLA.

**Key Words:** carcass characteristics, juniper, wool
lambs (n = 33 ± 2.3 kg) were individually fed ad libitum pelleted diets for 100 d containing 40% distillers dried grains and other ingredients, with 10% (CSH10), 20% (CSH20), or 30% (CSH30) cottonseed hulls replacing an increasing amount of ground milo. On d 100, 8 randomly selected wethers per treatment were humanely slaughtered and evaluated. Quadratic trends (P < 0.07) were observed for hot carcass weight (27.7, 29.3, and 27.4 kg ± 1.56) and body wall thickness (1.5, 1.8, and 1.4 cm ± 0.04) as percentage of cottonseed hulls increased in the diet. The LM area was similar (P < 0.59) among lambs. Quadratic trends (P < 0.05) were also observed for oleic acid, CLA cis-9,trans-11 isomer (0.19, 0.26, and 0.27% ± 0.01), CLA isomers other than cis-9,trans-11 (0.13, 0.13, 0.12% ± 0.01), myristic acid, palmitoleic acid, arachidic acid, and arachidonic acid as percentage of cottonseed hulls increased in the diet. The cis-vaccenic acid linearly decreased (P = 0.04) as percentage of cottonseed hulls increased in the diet. Sensory panel traits were similar (P > 0.13) among lambs except for initial juiciness and sustained tenderness linearly decreasing (P < 0.05) as percentage of cottonseed hulls increased in the diet. Results suggest that increasing percentage of cottonseed hulls in lamb finishing diets affects some carcass characteristics, meat fatty acids, and sensory traits and can increase meat CLA concentrations.

Key Words: roughage level, distillers dried grains, carcass characteristics


The FAMACHA system is designed to provide sheep producers with tools for on-farm detection and treatment of Haemonchus contortus infection. The objective of this study was to evaluate accuracy of the FAMACHA system for categorizing ewes on the basis of severity of anemia as measured by packed cell volume (PCV). A total of 1,507 records was collected on Hampshire (n = 414), Polypay (PP; n = 385) and percentage White Dorper (WD; n = 708) ewes from 2005 through 2009. Eyelid scores based on color of the ocular conjunctiva (1 = red, healthy to 5 = white, anemic) were assigned by the same trained technician using the FAMACHA card. Blood samples were collected and PCV were determined using a digital microhematocrit reader. Percentages of eyelid score values in each category (from 1 to 5) were 19, 38, 31, 10 and 2%, respectively. PCV decreased linearly as eyelid scores increased; however, the magnitude of change (percentage of red cells per unit change in eyelid score) was dependent upon breed (H: −2.26 ± 0.28, PP: −4.06 ± 0.22, WD: −3.69 ± 0.18; P < 0.01). Similarly, strength of the linear association between PCV and eyelid score varied among breeds (H: −0.388, PP: −0.671, WD: −0.610; P < 0.01) as per Chi-squared test of homogeneity). Across breeds, measured PCV were higher than expected within each eyelid score. Percentages of PCV exceeding the expected lower limits in any eyelid score category. These data confirm the FAMACHA system will allow detection of anemic animals. However, if ewes with eyelid scores of 3, 4 and 5 are considered anemic, many non-anemic ewes will be treated for parasite infection. Also, the association between eyelid score and PCV may be influenced by face color.

Key Words: anemia, Haemonchus contortus, sheep

756 Using FAMACHA and alternative dewormers to manage gastrointestinal nematodes in a dairy goat herd. S. P. Hart†1 and L. J. Dawson†2, †E (Kika) de la Garza American Institute for Goat Research, Langston University, Langston, OK, †Oklahoma State University CVM, Stillwater.

Gastrointestinal nematodes (GIN) are the greatest health problem in goat production. FAMACHA eye color scores have been developed for selective treatment of animals to reduce the rate of development of anthelmintic resistance. Alternative anthelmintics generally are only moderately effective (40–60% fecal egg count reduction; FECR) which may not be adequate for use with FAMACHA. The purpose of this study was to test the use of alternative anthelmintics in a FAMACHA program. Lactating Alpine dairy goats (n = 91) were FAMACHA scored at 2 wk intervals from June 10 to October 15. Does with FAMACHA scores of 4 were administered one of 3 alternative anthelmintics and those with FAMACHA score of 5 were treated with levamisole HC1 at 12 mg/kg BW (L). Fecal samples were taken for fecal egg counts (FEC) and blood samples were taken for packed cell volume (PCV) and serum total protein (TP). The 3 alternative anthelmintics were: 1) 2.0 g of copper oxide wires in a gelatin capsule (W), 2) 2.0 mL of a 4% solution of copper sulfate per 4.5 kg of BW as an oral drench (S), and 3) 4.0 g of cayenne pepper in a gelatin capsule (P). At least 3 animals in each period that had FAMACHA score of 3 were used as controls. FECR was low and not significantly different (P > 0.10)among anthelmintics (35, 52, 3, 1, and −11% for L, W, P, S, and C, respectively). FAMACHA score was improved (P < 0.05; except for treatment P) by administering an anthelmintic (−0.48, −0.41, −0.16, −0.37, and +0.67, for L, W, P, S, and C, respectively). TP was improved (P < 0.01) by administering an anthelmintic (0.45, 0.10, 0.08, 1.20, and −0.96 for L, W, P, S and C respectively). PCV was improved (P < 0.05) by administering an anthelmintic (−1.2, 1.0, 0.3, 1.6, and −2.4% for L, W, P, S and C, respectively. Most anthelmintics improved physiological values above the control, but W appeared superior to other alternative anthelmintics and comparable to L and would be the alternative anthelmintic of choice to use with a FAMACHA program.

Key Words: anthelmintic, alternative dewormer, gastrointestinal nematodes


Effects of garlic supplementation on internal parasitism and performance of lactating goat does grazing grass/forb pastures in the summer were determined. Forty multiparous Boer does (2 to 5 yr of age) naturally infected with nematode parasites, mainly Haemonchus contortus, 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 each of the 8 0.4-ha pastures. Treatments were control and garlic, with 4 pastures per treatment. 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. Means were separated by LSD. Initial mean fecal egg count (FEC; number per gram) of does was 448 (range of 0 to 1,450) and 500 (range of 0 to 2,450) for control and garlic, respectively. SEM = 119; P > 0.05). On d 42, doe FEC was less (P < 0.06) for garlic vs. control (2,837 and 6,105, respectively; SEM = 927). Does with high FEC and appreciable percentage of cottonseed hulls increased in the diet. Results suggest that increasing percentage of cottonseed hulls in lamb finishing diets affects some carcass characteristics, meat fatty acids, and sensory traits and can increase meat CLA concentrations.
with the control (1,739, 1,689, and 1,303 for garlic and 1,532, 2,340, and 1,967 for control at d 56, 70, and 84, respectively; SEM = 280, 517, and 340, respectively). Doe BW was similar between treatments ($P > 0.05$). These data suggest that garlic supplementation of lactating meat goats grazing grass/forb pastures in the summer can lessen level of nematode parasitism.

**Key Words:** garlic, goats, internal parasitism

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Efficacy of ginger and pumpkin seeds in controlling internal parasites in meat goat kids.

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Twenty-two naturally infected Boer crossbred kids (mixed sex), averaging 144.4 ± 1.1 d of age and 17.6 ± 0.6 kg were used to determine the effect of 2 possible natural dewormers on BW, packed cell volume (PCV) and fecal egg counts (FEC). Goats were randomly assigned to treatments of water (CON; n = 7), 170 g pumpkin seed drench/34.0 kg BW (PUM; n = 10) or 3 g ginger/kg BW (GIN; n = 5). Treatments were administered orally to individually penned animals every other day starting at d 0 and ending on d 40. All treatment groups received a 15% CP meat goat feed daily fed at approximately 3% of their BW daily and BW and blood and fecal samples were collected weekly throughout the study period. Blood PCV were measured using microhematocrit tube centrifugation and FEC were determined using the Modified McMaster’s technique (reported as eggs per gram; epg) with a sensitivity of 50 epg. Data for FEC were log-transformed for analysis but actual means ± SEM are reported. Goat BW were influenced by day, increasing over time such that d 42 BW (20.1 ± 0.6 kg) were greater ($P < 0.01$) than d 0 BW (17.6 ± 0.6 kg). Goats in the CON group had greater ($P < 0.05$) FEC than both the PUM and GIN groups (4,683 ± 483 epg, 3,409 ± 404 epg, and 2096 ± 572 epg, respectively). Goat FEC were also influenced by day with d 0 (6194 ± 750 egg) and d 7 (3749 ± 750 epg) FEC greater ($P < 0.01$) than d 35 (661 ± 750 epg) and d 42 (1308 ± 750 epg). Treatment influenced PCV with PCV for GIN (31.4 ± 1.2%) treated animals being greater than that of both CON (25.2 ± 1.0%) and PUM (27.4 ± 0.9%) treated animals. In conclusion, under the conditions of this study, additional research using ginger and pumpkin seeds are needed to further evaluate the efficacy of these natural dewormers in controlling internal parasites in goats.

**Key Words:** parasite, pumpkin, ginger