during 40 d prior to ovulation. Goats had access to water, shade, mineral salts, and a basal diet of alfalfa hay (2.0% BW, 14.8% CP). Once synchronized (PGF2a, 2 injections 11 d apart), blood samples were collected 36 h later at 15-min intervals during a 6-h period to evaluate serum INS levels. On d 15 post-ovulation, OA was evaluated by transrectal ultrasonographic scanning. Overall means for total follicles (TF), corpus luteum (CL), and total ovarian activity (TOA; TF+CL) were 2.31, 2.34 and 4.65, respectively. While TF was not affected (P>0.05) by BC, both CL (P=0.03) and TOA (P=0.01) favored HBC-goats. Similarly, HP goats showed higher values for TF (P=0.04), CL (P=0.06) and TOA (P=0.01). While HBC-goats had greater serum INS than LBC goats (1.92 vs. 0.81 ng mL-1), HP-goats had greater INS values than NP goats (1.04 vs. 1.69 ng mL-1), and INS and CL were positively correlated (r=0.46; P<0.01). Results suggest that high serum INS levels may have prevented atresia and enhanced ovarian activity in both the high body condition and the protein supplemented goats.

Key Words: Goats, Insulin, Ovarian activity

Management

W132 Performance of lactating does fed different levels of ruminally undegradable intake protein.

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The objective of this study was to evaluate effects of supplemental ruminally undegradable intake protein (UIP; derived from mixtures of blood, fish, and soybean meals) on BW change, DM intake, serum insulin concentration and milk yield and composition in lactating Alpine does. Twenty-five does (BW 46.6 ± 5 kg, 10 ± 3 d of lactation) were stratified by age, day of lactation, and BW, and randomly assigned to supplements with different levels of UIP (UIP: 0, 25, 50, 75 100 g/d; CP: 0, 73, 101, 130, and 179 g/d). Does were individually fed (*ad libitum* intake) a basal diet (44.1% alfalfa hay, 18.5% corn stover, 20.7% flaked corn grain,7.8% ryegrass hay, 7.4% molasses, and 1.5% minerals; 12% CP, 2.42 Mcal ME/kg) for 58 d. Diets CP and UIP contents were 12.1, 13.0, 13.8, 14.8, and 15.6%; 3.7, 4.1, 4.8, 5.6, and 6.2% for 0, 25, 50, 75, and 100 g/d of UIP, respectively. Data were analyzed as a completely randomized design. No significant treatment differences were detected in BW ($P = 0.20$; 44.7 ± 1.05 kg) or DM intake ($P = 0.40$; 5.8 ± 0.17% BW). Milk yield increased quadratically ($P < 0.05$) as UIP increased in the diet (3.41, 4.01, 4.36, 4.34, and 4.17 kg/d for 0, 25, 50, 75, and 100 g/d of UIP, respectively; SE = 0.193). Milk concentrations of protein, lactose, fat, solids non-fat, and total solids, and serum insulin concentration were not affected by UIP level ($P > 0.05$). In summary, with a diet containing 12% CP and 70% forage, milk yield was greatest with 50 to 75 g/d of supplemental UIP. Addition of UIP in the diet of lactating does may result in greater milk production when fed to animals and diets similar to this trial.

Key Words: Goats, Milk, Undegradable intake protein

W133 Effect of recombinant bovine somatotropine (rBST) on milk production in goats of the North of Mexico.

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The ability of recombinant bovine somatotropin (rBST) to enhance milk production is well established in cows. However, there is a lack of information about the effect of rBST in goats. In order to evaluate the effect of rBST on milk production in dairy goats raised in northern Mexico (26°06' NL, 103°26' WL, 1092 masl), 56 does were used in two groups, balanced by days in milk and number of previous kiddings. One group (BST) was administrated 169 mg of recombinant bovine somatotropin at 14-d intervals, three consecutive times, whereas, the control group (CON) did not receive the rBST. Milk production was measured on the first experimental day and 7, 14 and 21 days after of the first rBST administration. Data was analyzed with the GLM procedure to evaluate the treatment effect on milk production and the interactions of production by days in milk, by number of previous kiddings, by measurement day and by goat. Treatment with rBST did not affect milk production (P>0.10), which was 1.51 L by the BST group and 1.58 L by the CON group. Nor was there an effect (P>0.10) of days after kidding or of measurement day on milk production. However, there was an effect of number of kiddings on production (P<0.001), with greater production in multiparous than in primiparous goats. Any of the studied interactions were not significant (P>0.10), which is congruent with the absence effect of treatment on milk productions. This finding suggests that goats don't respond to rBST in a similar fashion than cows, and that several factors that were not controlled in this experiment, for example, body condition and the individual feed consumption, might have an effect.

	Treatment			
	BST	Con	SE[1]	OSL[2]
Overall milk production	1.51	1.58	0.050	0.23
Milk production by days in milk				
40 to 55 d	1.50	1.56	0.056	0.48
56 to 83 d	1.53	1.59	0.056	
Milk production by previous kidding				
Primiparous	1.17	1.32	0.107	0.001[3]
Multiparous	1.86	1.83	0.095	

[1]SE, most conservative standard error is presented. [2]Observed significance level. [3]Significance between primiparous and multiparows goats

Key Words: Recombinant bovine somatotropine, Milk, Goats

W134 Growth performance by Alpine, Angora, Boer, and Spanish wether goats consuming 50 or 75% concentrate diets.

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Forty-six weaned wether goats (12 Alpine, 12 Angora, 10 Boer [87.5%], and 12 Spanish) were used to determine differences in growth performance with consumption of a 75% concentrate diet for 24 wk (75C) or for 12 wk subsequent to 12 wk of feeding a 50% concentrate diet (50C). Initial BW was 20.2, 12.2, 20.7, and 19.2 kg (SE = 0.73) for Alpine, Angora, Boer, and Spanish, respectively. There were no interactions between genotype and dietary treatment in DM intake, ADG, or gain efficiency in wk 1-12 or 13-24. Dry matter intake in wk 1-12 ranked (P < 0.05) Alpine and Boer > Spanish > Angora (703, 436, 689, and 567 g/d) and in wk 13-24 was greater (P < 0.05) for Alpine and Boer vs Angora and Spanish (712, 515, 702, and 456 g/d for Alpine, Angora, Boer, and Spanish, respectively). Dry matter intake as g/d was similar between dietary treatments. Average daily gain in wk 1-12 was greatest among genotypes (P < 0.05) for Boer (59, 59, 90, and 49 g); in wk 13-24 ADG was lowest among genotypes (P < 0.05) for Spanish and tended to be greater (P < 0.10) for Boer vs Alpine (58, 63, 82, and 25 g for Alpine, Angora, Boer, and Spanish, respectively). Gain efficiency (ADG:DM intake) was greater (P < 0.05) for Angora and Boer than for Alpine and Spanish in wk 1-12 (85, 132, 127, and 85 g/kg), and in wk 13-24 was lower (P < 0.05) for Spanish than for Angora and Boer (80, 121, 104, and 51 g/kg for Alpine, Angora, Boer, and Spanish, respectively). Average daily gain and gain efficiency were greater (P < 0.05) for 75 vs 50% dietary concentrate in wk 1-12 (ADG: 73 and 55 g; gain efficiency: 122 and 92 g/kg), and tended to be greater (P < 0.11) for 50C than for 75C in wk 13-24 (ADG: 49 and 65 g; gain efficiency: 77 and 101 g/kg for 75C and 50C, respectively). In conclusion, a moderate vs high dietary concentrate level did not impact differences among Alpine, Angora, Boer, and Spanish wether goats in growth performance.

Key Words: Goats, Growth performance, Dietary concentrate level

W135 Economical feedstuffs for on-farm meat goat diets.

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Eighteen intact male crossbred Boer meat goats were utilized to demonstrate the use of barley (an inexpensive, alternative local grain) as the primary feedstuff in an economical on-farm meat goat diet. At approximately 161.0 ± 1.3 days of age and 28.4 ± 0.5 kg body weight, goats were placed into two groups for a 14-day adjustment period and fed 17%

CP diets consisting of a pelleted commercial goat feed (COM; 17% Goat Feed, Southern States, Inc.; n = 9) or a barley-based feed mixed on-farm (BAR; n=9) with ad libitum grass hay and water. The BAR diet was 76.2% barley, 20% protein supplement pellet (40% CP) and 3.8% medicated mixing pellet (Deccox). At the end of the adjustment period, 3 goats were placed in 4.6 x 1.5 m pens with 3 pens per treatment. Animals were hand fed pre-weighed diets (twice daily) and grass hay (once daily) at levels adjusted to provide approximately 110% of the amount previously fed. Body weights were measured and recorded weekly for 42 days. There was no effect of diet on body weight, with average weights increasing ($P < .01$) from 29.7 ± .86 kg (week 1; day 0) to 35.7 ± .95 kg at the end of the study (week 6; day 42). Hay consumption was not influenced by treatment and averaged 0.54 ± .02 kg/d. Average daily gain was also similar between diets, averaging approximately 0.16 ± .06 kg/d. Feed intake (measured as feed offered) was influenced by week only ($P < .01$), increasing ($P < .01$) from 1.0 ± .09 kg/d to 1.5 ± .09 kg/d per goat from the first to the last 2-week period, respectively. Cost of feeding hay was not influenced by treatment but overall grain cost per goat per day was influenced by a treatment by week interaction ($P < .01$) in which cost was higher ($P < .01$) for all 2-week periods for the COM compared to BAR diets. Average cost per goat per day was \$0.17 ± .03, \$0.26 ± .03 and \$0.23 ± .03 for BAR and \$0.30 ± .03, \$0.43 ± .03 and \$0.50 ± .03 for the COM for the first, second and third 2-week periods, respectively. In this study, the barley-based diet provided similar gains for meat goats but was more economical than the commercial diet tested.

Key Words: Barley, Goat, Feed Costs

W136 Effect of breed type and feed level on production efficiency in meat goats.

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Feed intake was measured in goats, fed at an *ad libitum* level of intake (100%) or at restricted levels of 85% and 70% of *ad libitum* intake, from weaning to 13 mo of age. There were a total of 72 kids of three breeds: 24 Boer (BR), 24 Spanish (SP) and 24 Tennessee Stiff-legged (TS). Goat breeds were classified as large (BR), intermediate (SP) or small (TS) in size. Weights were taken biweekly. Cost of feed supplied over the period (calculated at \$0.22 per kg), change in weight from weaning until slaughter, and sale price per kg of live weight (based on the San Angelo livestock auction prices, estimated at \$1.98 per kg live weight), were used in evaluating revenue. The objective was to perform cost analysis of feed intake when three breeds of goats were raised at three different levels of a formulated ration. Average weaning ages for BR, SP and TS breeds, respectively, were 81, 77 and 88 days. Significant differences ($P<.01$) existed in 13 mo cumulative feed intake between BR (198.87 kg), SP (121.85 kg) and TS (146.39 kg). Goats fed at the 100%, 85% and 70% levels consumed 189.98 kg, 148.86 kg, and 128.27 kg, respectively. Revenue was calculated as: (selling price per kg x change in weight) - feed cost. Revenue calculated for the BR breed at the 100%, 85% and 70% dietary levels, respectively, were: \$28.42, \$29.26 and \$24.82; for the SP breed at the same levels, respectively, were: \$30.07, \$16.23, and \$16.47, and for the TS at the same levels, respectively, were: \$17.13, \$21.05 and \$16.36. ADG, from weaning to 13 mo slaughter, at 100%, 85% and 70% levels, respectively, for BR were: 0.120, 0.104, and 0.089 kg/d ($P<.01$), for SP at the same levels, respectively, were: 0.103, 0.068, and 0.064 kg/d ($P<.01$), and for TS at the same levels, respectively, were: 0.088, 0.080, and 0.066 kg/d ($P<.05$). Differences ($P<.01$) were also observed in ADG, averaged over all dietary levels over the 13 mo period, for BR (0.104 kg), SP (0.078 kg) and TS (0.078 kg). Significantly higher ($P<.05$) revenue could be generated in a production system using BR when compared to a system using SP or TS breeds. A production system using SP and TS breeds would generate about equal amounts of revenue.

Key Words: Boer Goats, Tennessee Stiff-legged, Goat Revenue

W137 Effect of level of dietary copper on the copper status of lactating does and their nursing kids.

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This study was conducted to evaluate the effect of feeding free-choice minerals containing 3 levels of dietary copper (Cu) on the Cu status of lactating does (halfblood and 3/4 Boer) and of their offsprings. Fifty-one pregnant does (BW: 56 kg) were separated into 6 equal groups 6 wk prior to kidding, assigned to 3 experimental treatments (free-choice minerals containing either 0, 1,000 or 3,000 mg Cu/kg DM) and pen-fed hay and a grain mix for 4 wk. Goats were then grazed on three separate perennial pastures starting 2 wk before the start of the kidding season (March 21 - April 17) until weaning (July 8). Intake of free-choice minerals by pregnant and lactating does was monitored weekly throughout the trial. Blood samples for the determination of plasma Cu were taken by jugular venipuncture from 24 pregnant does at the start of the trial, and from the same does and 15 kids at weaning. Kids were harvested at weaning and liver samples taken for the determination of liver Cu concentrations. From the start of the trial until the end of kidding, does consumed daily 22.3, 20.1, and 20.9 g free-choice minerals, corresponding to respective Cu intakes of 0.0, 20.1, and 62.6 mg/d. While grazed with nursing kids, does consumed daily 22.4, 23.4, and 21.9 g free-choice minerals, corresponding to Cu intakes of 0.0, 23.4, and 65.7 mg/d, respectively. Blood plasma Cu of does at the start of the trial (avg: 1.37 mg/L) and at weaning (avg: 1.27 mg/L), and of kids at weaning (avg: 1.15 mg/L) were not affected by treatment. Kid birth weight (avg: 3.6 kg), weaning weight (avg: 20.5 kg), daily gain from birth to weaning (avg: 160 g/d), live and carcass grade at weaning (avg 1.2; USDA scale), carcass weight (avg: 10.2 kg), and carcass yield (avg: 49.6%) were not affected by treatment. Liver Cu concentrations increased ($P < .01$) linearly with increasing dietary CU (110, 182, 247 mg/kg DM, respectively), but liver lesions were minimal and not affected by addition of Cu. Feeding these levels of Cu for 6 mo were not detrimental to does or their lactating kids and did not affect kid performance.

Key Words: Goat, Performance, Copper

W138 Evaluation of goat eye mucous membrane scoring for determination of the need for anthelmintic treatment.

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The major gastrointestinal parasite of goats in the southern U.S. is *Haemonchus contortus*, which is hematophagus, causes anemia, and therefore affects eye mucous membrane color (EMMC). The objective of this study was to evaluate EMMC as an indicator of the need for anthelmintic treatment. EMMC on the inside of the lower eyelid was scored using a color chart with four gradations of color (1 = dark, 4 = pale). EMMC was also captured with a digital camera with the values for red, blue and green determined from a selected digital picture area. Goats (n = 167) on a variety of pasture studies were evaluated for packed cell volume (PCV; microhematocrit) and fecal egg count (FEC; eggs/gram [epg]; McMaster). Data were analyzed by X^2 analysis and GLM procedures. Fecal egg counts averaged 212, 596, 816, and 2077 epg for the scores 1 through 4, respectively and were greater ($P < 0.01$) for a score of 4 than for other scores. EMMC scores correctly identified 22 of 30 animals with FEC greater than 2,000 (sensitivity 73%) but included 47 animals with FEC less than 2,000 (specificity 70%). Goats with score of 4 had lower PCV than scores of 3 or less ($P < 0.01$; 23, 26, 29, and 29%, respectively). Eye scores of 4 correctly identified 19 of 25 animals with PCV < 20% (sensitivity of 76%), but also included 50 animals with PCV > 20% (specificity of 75%). The red, blue, and green digital values from the image were poorly correlated to FEC or PCV ($R^2 < 0.11$). In conclusion, scoring EMMC with a chart correctly identified most animals needing anthelmintic treatment, but included a significant proportion not requiring treatment.

Key Words: Internal parasites, Mucous membrane, Anemia