



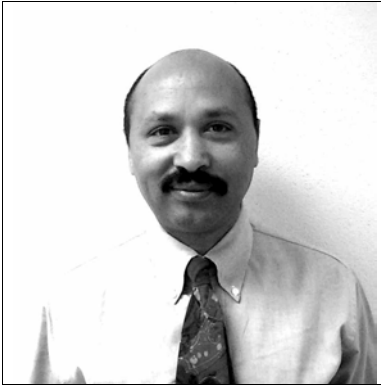
Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza Institute for Goat Research

Fall 2002

From the Director's Desk



Dr. Tilahun Sahlu

What a summer it has been! We have been very busy with a wide array of extension, research, and international activities.

Regarding activities this summer, the milk technology training for the Middle East project "Multinational Approaches to Enhance Goat Production in the Middle East" was a huge success. Participants were Dr. **Hassan El Shaer** and Ms. **Marwa Desouky** from Egypt, Drs. **Uzi Merin** and Ms. **Solange Bernstein** from Israel, and Dr. **Khalil Ereifej** from Jordan. Many people helped in this function, notably Drs. **Steve Zeng** and **Kamal Soryal**.

I wish to congratulate Ms. **Rowena Joemat** for complet-

ing her M.S. degree and Thesis entitled "Effects of Various Supplementation Strategies on Performance of Goats Consuming Low Quality Forage." Rowena recently returned home to South Africa, where she will be working in the Agricultural Research Council.

Pertaining to research, all of the studies mentioned in the last newsletter went or are going well. And we have some exciting new trials starting now or in the very near future. For example, there is an experiment addressing effects of flushing on reproductive performance of meat goat does in different body conditions, directed by Dr. **Roger Merkel**. Dr. **Chuntian Zheng** has initiated an experiment to determine energy requirements for mohair-fiber growth by Angora goats, being ably assisted by Drs. **Ryszard Puchala** and **Ignacio Tovar-Luna**. Mr. **Getachew Animut** will be placing goats and sheep currently co-grazing in the West Pasture area on a subsequent compensatory growth phase with a

concentrate-based diet. One last topic to highlight is our goat vegetation management project, with grazing at six locations in the state. This first grazing season has been challenging, with all the work involved in preparing each site, initial vegetation measures, placement of animals, weighing, etc. This has necessitated a team approach, with considerable inputs from Drs. **Steve Hart**, **Jamus Joseph**, and **Art Goetsch** and Messrs. **Henry Stevenson, Jr.**, **Glenn Detweiler**, and **Jerry Hayes**. Because of their fine efforts, everything has gone well, and the goats are doing their job. We look forward to telling you more about the findings from this project this fall at field days at each site, which are addressed later in the newsletter.

The sixth annual buck performance test, supervised by Dr. **Terry Gipson** and assisted by Ms. **Hong Guo**, recently ended. A report is included in this newsletter. For a complete report, visit our web site at

<http://www2.luresext.edu>



Goat Newsletter is published quarterly by the Cooperative Extension Service of the E (Kika) de la Garza Institute for Goat Research, Langston University, Langston, Oklahoma.

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Meet the Faculty & Staff



Mr. Jerry Hayes

Mr. Jerry Hayes was born in Guthrie, Oklahoma. After graduating from the Faver High School in Guthrie, he served four years in the United States military. Mr. Hayes was a Morse code interceptor. His job was to eavesdrop on Russian and Chinese military communications so as to follow troop movements in those countries. As a Morse code intercept operator, he spent two years based in Texas, one year in Mississippi, and one year in Pakistan.

After completing his military service, Mr. Hayes worked eight years as a fieldman/operator working on natural gas pipelines and compressor stations for the public utilities department of Colorado.

Mr. Hayes then spent two years as a ship's mechanic on a private yacht. Although he

was based out of San Diego, CA, Mr. Hayes traveled extensively throughout the South Pacific and visited many islands and ports including Guam, Philippines, Singapore, and Indonesia.

Mr. Hayes then moved back to Colorado and started his own long-haul trucking business. However, Oklahoma beckoned and Mr. Hayes returned to his family's home place and built his present house. In 1985, he started working in the custodial services at the E (Kika) de la Garza Institute for Goat Research and in 1986 was appointed as an animal technician, working primarily in the milking parlor. In 1998, Mr. Hayes was appointed as interim farm manager and served in that capacity until Mr. Erick Loetz was appointed farm manager in 2000. Mr. Hayes currently serves as the assistant farm manager. His duties include management of the meat and fiber-producing goat herds located on the 160-acre South Farm complex, supervision of farm staff, maintenance of feed and supply inventories of the South Farm complex, and overall day-to-day operation of the South Farm complex.

Mr. Jerry Hayes can be reached at (405) 466-2522.

Research Spotlight

Abstracted by A. Goetsch

Broiler Litter Rations.

Residues from cereal grain production are important feedstuffs for ruminants throughout the world. They are, however, low in protein and high in fiber, which limit feed intake and digestibility. The nutritive value of cereal crop residues can be improved by various processing methods, such as treatment with alkalis like sodium hydroxide or ammonia. Another means of improving nutritive value of cereal crop residues is supplementation with other feedstuffs, particularly ones high in crude protein. Broiler litter is a low-cost agricultural byproduct available in many areas of the world. The crude protein concentration in broiler litter is usually between 15 and 35% of dry matter, and the available energy concentration in broiler litter is moderate. Thus, objectives of this experiment were to compare feed intake, average daily gain, and gain efficiency of growing Alpine doelings consuming diets based on wheat straw supplemented with different levels of broiler litter to wheat straw supplemented with a conventional protein source or ammoniated using urea treatment. Treatments were feeding of a corn-based concentrate at 1.5% of body weight (dry matter basis) with treated wheat straw and this supplement plus approximately 0.4% body weight of soybean meal or 0.8 or 1.6% body weight of broiler litter with untreated wheat straw. Soybean meal supplementation of untreated wheat straw supported average daily gain as much as urea-treated wheat straw, and with less total feed consumption. Dietary inclusion of broiler litter also resulted in gain similar to that of urea treated wheat straw and soybean meal supplementation of untreated straw, but with greater feed input particularly for the highest level of litter. Hence, availabilities and costs of urea for ammoniation and crude protein supplements such as soybean meal and broiler litter, along with practical considerations including labor and facilities, would dictate the choice between urea treatment of low quality forages such as wheat straw and different supplemental sources of crude protein.

Animut, G., R. C. Merkel, G. Abebe, T. Sahlu, and A. L. Goetsch. 2002. Effects of level of broiler litter in diets containing wheat straw on performance of Alpine doelings. Small Ruminant Research 44:125-134.

Prewaning Supplementation for Meat Goats.

The market weight for meat goats in the US is quite variable; however, sale weights near those typical of weaning time are common, possibly relating to the amount of disposable family income and yield of a quantity of meat suitable for consumption in a convenient period of time such as 1 or 2 weeks. Also, some consumers may prefer meat from young animals. Thus, means of enhancing growth of meat goat kids preweaning and in the early postweaning period are of interest to increase income for meat goat producers. In this experiment, Spanish does with Boer x Spanish or Spanish kids were used to determine effects of preweaning feeding of concentrate-based supplement on preweaning and early postweaning growth. In mid-April, from approximately 6 to 14 weeks after birth, animals grazed wheat forage (Phase 1), followed by 5 weeks on native grass pasture (Phase 2) and an 8-week postweaning period with a moderate level of supplemental concentrate (Phase 3). Forage availability was moderate to high throughout the experiment. Treatments were no supplementation in Phases 1 and 2 (C), ad libitum consumption of a concentrate-based supplement in Phases 1 and 2 (A), no supplementation in Phase 1 and ad libitum consumption of supplement in Phase 2 (A-2), and limit feeding of supplement (approximately 1% of body weight, dry matter basis) in Phases 1 and 2 (L). Results indicated that with ample availability of forage of at least moderate quality as in Phase 1, suckling meat goat kids may not quickly achieve high levels of consumption of concentrate-based supplement. In accordance, preweaning supplementation did not enhance preweaning growth while grazing wheat forage or later when on warm-season grass pasture, regardless of growth potential as influenced by Spanish and Boer sires. However, preweaning supplementation generally did improve growth in the early postweaning phase with a greater level of supplementation than previously. Nonetheless, preweaning supplementation did not impact overall gain in the entire experiment.

Goetsch, A. L., G. Detweiler, and T. Sahlu. 2002. Performance effects of preweaning concentrate supplementation of meat goats. Journal of Applied Animal Research 21:25-34.

Goats for Vegetation Management

by Art Goetsch

There is much land in Oklahoma and throughout the US that has become overgrown with undesirable plants that cattle do not readily eat. Causative factors may include periods of abandonment, inappropriate cultivation or grazing practices, erosion, lack or misuse of fire, exclusion of browsing animal species, and high costs or concerns about safety or environmental degradation with conventional control methods. Means available to control, manage, and(or) eliminate undesirable plants in grazing lands include mechanical, chemical, and fire techniques, which are often not effective, economical, practical, or environmentally preferred.

Goats offer an alternative method of vegetation management. They consume numerous plants not extensively utilized by cattle or sheep and have greater capacity to tolerate antinutritional factors often found in such brushy plant species. Nonetheless, use of goats for sustainable vegetation control is not widespread. Therefore, we applied for and received a grant from the USDA Sustainable Agriculture Research and Education program to conduct a project with the primary goal of increasing appropriate use of goats in sustainable vegetation management in grazing lands of the south-central US.

To achieve this goal, we are working with six Native American Nations: Caddo, Cherokee, Choctaw, Greater Seminole, Osage, and Sac and Fox. Sites are on tribal lands or land of tribal

members. Each location is unique, in terms of vegetation, soil characteristics, topography, etc. Likewise, particular grazing treatments chosen were those felt to be well suited for each specific site, as well as to achieve a broad base of information on vegetation management with goats.

The Caddo Nation site is located north of Anadarko. There are 10 acres of tribal land, with two 4-acre pastures for grazing and one 2-acre control, ungrazed area. There is much lovegrass and sumac, which has not been grazed for many years. Because of the large amount of grass, one treatment entails co-grazing with 12 sheep and 12 goats. The second grazing treatment is stocking of 24 goats (6 per acre). In addition, at this site Global Positioning System (GPS) collars are being placed on two goats and two sheep in the co-grazing pasture, as well as on a guard dog, to monitor spatial behavior in the grazing season, which is a collaboration with a biology class of Gracemont High School.

The Cherokee Nation site is located south of Tahlequah. The 20-acre plot is divided into eight pastures. Two 5-acre pastures are being grazed by goats at 6/acre (30 in each pasture); two 2-acre pastures have been mowed as normally done; two 2-acre pastures were treated with conventional herbicides; and two 1-acre pastures will not receive intervention. In addition, at this site GPS collars are being placed on two goats in each pasture and a guard dog to monitor spatial behavior early and late in the grazing season, which is collaboration with a biology class of Sequoyah High School.

The Choctaw Nation site is located southeast of Antlers. The approximately 22-acre pasture consists of a wooded area, predominantly post oak with a brushy understory vegetation component. Grasses include bermudagrass and bahiagrass with significant weed presence. The pasture has been previously grazed by cattle and used for hay production. The area was divided into three pastures. The objective of this activity



Drs. Steve Hart (left) and Jamus Joseph quantifying forage at one of the sites.

will be to compare effects of grazing goats alone, co-grazing of goats and cattle, and grazing cattle alone. Stocking rates were set to allow hay production. The goats are keeping the brushy understory of the woody area under control and spend most time in the open grassy area.

The Greater Seminole Nation site is south of Seminole. As with many of the other sites, this one has not been used in agriculture recently and, thus, has become overgrown with many different brushy plant species and trees of various sizes. The site was divided into two approximately 4.5-acre pastures plus an ungrazed 2-acre control area. There are two stocking rate treatments being used with the 4.5-acre pastures in the first year, 4 (18 total) and 8 goats per acre (36 total).

The Osage Nation site is located east of Fairfax. The site is tribal land at Grayhorse Village. The site has a variety of brushy plants and trees, such as honey locust, sumac, and eastern red cedar. The objective of the activity is to determine effects of different stocking rates. The 15-acre area was divided into three 5-acre pastures, one being an ungrazed control. Different stocking rates being employed in this first year are 4 and 8 goats/acre (totals of 20 and 40 goats, respectively).

The Sac and Fox Nation site is located north of Stroud. The site is a 20-acre plot of tribal land, without grazing for many years. The objective of this research/demonstration activity is to compare effects on vegetation conditions of an overgrown site and animal growth of continuous moderate stocking of goats with short periods of high stocking rates. This activity has particular relevance to the potential for custom grazers moving goats from farm to farm for short periods of time. The site was divided into four pastures, one 8 acres in size and the other three each 4 acres. One 4-acre pasture is not being grazed, and the other two are being grazed by goats with 3 or 6 goats per acre in the first year. The 8-acre pasture was subdivided into four 2-acre paddocks. Goats were placed in this area at a rate of 6 per acre, with the 48 goats occupying each 2-acre paddock in the 8-acre pasture. The initial rotations were every 10 or 11 days, slightly more

frequently than initially planned.

This and next fall, there will be field days at each site. The program at each site entails discussing activities at each particular site, as well as presentation of information on goat management and an overview of results at the other sites. In addition, the program is designed to allow the opportunity for informal discussion between attendees and Institute personnel, during and after lunch. Lunch will consist of goat products. The general program schedule and dates for this year are given below. We hope you can attend one or more of these information exchange events and learn more about this exciting project.



Goat browsing on small oak trees at one of the sites.

Dates and locations of the workshops:

- **September 21** **Sac and Fox site**
- **October 2** **Caddo site**
- **October 5** **Greater Seminole site**
- **October 9** **Cherokee site**
- **October 12** **Osage site**
- **November 2** **Choctaw site**
(Tentative)

For further information regarding the vegetation management project or field days, contact Dr. Steve Hart at (405)466-3836 or shart@luresext.edu.

2002 Meat Buck Performance Test

by T. A. Gipson

The sixth annual meat buck performance test started May 4, 2002 with 51 bucks enrolled from 17 different breeders. Forty-six of the bucks were fullblood Boers, three Kiko bucks, one Kiko-cross, and one Boer-cross buck. Twenty-eight bucks were from Texas, 17 from Oklahoma and 6 from Illinois. The test was open to purebred and crossbred bucks born between December 1, 2001 and March 31, 2002. Bucks were given a thorough physical examination at check-in.

On May 4, the entrance weight for the 51 bucks averaged 51.8 lbs with a range of 31.0 to 82.5 lbs.

Adjustment Period

All bucks underwent an adjustment period of eighteen days immediately after check-in. During the adjustment period, bucks were acclimated to the test ration and to the Calan feeders. Nine bucks were assigned to each 20' x 20' inside pen equipped with nine Calan feeders. Each pen also had a 20' x 30' outside run. The inside and outside pen space was separated by an overhead door, which can be raised or lowered as the weather dictates. Every other pen was also equipped with a fan to circulate air in the barn complex whenever needed. The grass in the outside pens was mowed often, and grazing was negligible. Each buck wore a collar with an electronic "key" encased in hard plastic. The key unlocks the door to only one Calan feeder, thus enabling the buck to eat out of his individual feeder. Each morning, the feed remaining in the Calan feeder from the day before is weighed and removed from the Calan feeder. Fresh feed is weighed and placed into the Calan feeder. The difference in weights between the fresh feed placed in the Calan feeder one morning and the remaining feed the next morning is the amount consumed. Because only one goat is capable of opening the Calan door and eating, it is possible to calculate the feed intake of the individual

bucks. The area immediately around the Calan feeders and waterers is concrete, however, the large majority of the inside pen is earth and is covered by pine shavings. Pine shavings were periodically added as needed to maintain fresh bedding. Bucks had free access to water provided by a float-valve waterers.

The official performance test started on May 23 after the adjustment period was finished. Weights at the beginning of the test averaged 58.3 lbs with a range of 36.3 to 91.4 lbs.

Ration

The ration was fed free-choice during the adjustment period and during the 12-week test. The crude protein content of the ration was 16% with 2.5% fat, 20.4% fiber and 60.6% TDN. Calcium, phosphorus and sodium levels were .74%, .37% and 1.07%, respectively.

ABGA Approved Performance Test

The Oklahoma performance test has been designated by the American Boer Goat Association Board of Directors as an ABGA Approved Performance Test. Qualified fullblood or purebred Boer bucks will be eligible to earn points toward entry into the "Ennobled Herd Book".

Gain

Weights at the end of the test averaged 105.8 lbs with a range of 72.7 to 150.9 lbs. Weight gains for the test averaged 47.5 lbs with a range of 20.9 to 67.2 lbs.

Average Daily Gain (ADG)

For the test, the bucks gained on average .57 lbs/day with a range from .25 lbs/day to .80 lbs/day.

Feed Efficiency

For the test, the bucks consumed an average of 338.6 lbs of feed with a range of 168.5 lbs to 548.8 lbs. For the test, the bucks averaged a feed

efficiency of 7.2 (feed efficiency is defined as the number of lbs of feed needed for one lb of gain), with a range of 4.5 to 10.3.

Muscling

The average loin eye area as determined by ultrasonography was 1.65 square inches with a range of 1.22 to 2.17 square inches and the average right rear leg circumference was 20.2 inches with a range of 16.0 to 20.2 inches.

Index

For 2002, the index was calculated using the following parameters:

1. 30% on feed efficiency (units of feed per unit of gain)
2. 30% on average daily gain
3. 20% on area of longissimus muscle (loin) at the first lumbar site as measured by real time ultrasound adjusted by the goat's metabolic body weight
4. 20% circumference around the widest part of the hind right leg as measured with a tailor's tape adjusted by the goat's metabolic body weight:

The adjustment to metabolic body weight gives lighter weight goats a fair comparison of muscling to heavier goats.

Congratulations

The Oklahoma Meat Goat Association and the Agricultural Research and Extension Program at Langston University congratulate:

- Mr. Martin Peters of Barksdale, TX for having the Top-Indexing buck in the 2002 Oklahoma Meat Buck Performance Test



Top indexing buck for the 2002 Buck Performance Test.

Also, deserving congratulations are:

- Mr. Dan Wagner of Sonora, TX for having the #1 (tie) Fastest-Gaining buck
- Ms. Judy Hollis of Sonora, TX for having the #1 (tie) Fastest-Gaining buck
- Mr. Al Paul of Aubrey, TX for having the #3 Fastest-Gaining buck
- Ms. Lynn Farmer of Mullin, TX for having the #4 Fastest-Gaining buck
- L&W Boer Goats of Freedom, OK for having the #5 (tie) Fastest-Gaining buck
- L&W Boer Goats of Freedom, OK for having the #5 (tie) Fastest-Gaining buck
- South Forty Farms of Mt. Olive, IL for having the Most-Feed-Efficient buck
- Mr. Jim Rosenbaum of Gainesville, TX for having the Most-Heavily-Muscled buck

Acknowledgments

The Buck Test supervisor wishes to acknowledge Dr. Lionel Dawson of Oklahoma State University for his contributions as the admitting and on-call veterinarian, Ms. Hong Gou for her management and oversight of the day-to-day activities, Dr. Mario Villaquiran and Mr. Jerry Hayes of Langston University for aid and supervision, Mr. Les Hutchens and his associates at Reproductive Enterprises, Inc. for conducting the ultrasound measurements for the loin eye area and the breeding soundness exams, and Stillwater Milling for custom mixing the feed.

For further information regarding the 2002 Buck Performance Test, contact Dr. Terry Gipson at (405)466-3836 or tgipson@luresext.edu.

Noteworthy News

Drs. **Terry Gipson**, **Art Goetsch**, **Steve Hart**, **Ignatius Nsahlai**, **Dan Miller**, **B.R. Min**, **Ryszard Puchala**, **Tilahun Sahlu**, **Sergio Soto-Navarro**, and **Grant Tomita** traveled to Quebec, Canada to present scientific abstracts at the 2002 joint American Society of Animal Science and American Dairy Science Association meetings.

In June, Dr. **Roger Merkel** traveled to Debub University in Ethiopia and gave a short training on the basics of HTML and web design to Debub University staff.

On his return trip from Ethio-

pia, Dr. **Roger Merkel** traveled to Armenia for planning and monitoring of activities of Langston University's involvement with the USDA Marketing Assistance Project Dairy Goat Development Project in Armenia. Also traveling to Armenia to provide training and technical assistance were Dr. **Steve Zeng** in June and Dr. **Lionel Dawson** in July. Dr. Zeng conducted training in goat cheese making while Dr. Dawson gave seminars and training on goat herd health and veterinary procedures.

Dr. **Veneta Banskalieva**, faculty member at the Institute of Animal Science in

Kostinbrod, Bulgaria, recently rejoined the goat program to work with Dr. **Ryszard Puchala** on the project "Metabolic Changes Affecting Utilization of Poor Quality Diets by Goats". Veneta worked with us earlier in 1998-99.

Two new international grants involving Langston University were approved. The first is a grant for further work with Debub University in a collaborative project with Fort Valley State University, Fort Valley, GA. The second grant is to continue Langston University's presence with Alemaya University, Dire Dawa, Ethiopia and also involves Oklahoma State University.



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