Proceedings of the 25th Annual Goat Field Day, Langston University, April 24, 2010

Extension Overview

Dr. Terry A. Gipson
Goat Extension Leader

The year 2009 was a busy year for the Langston Goat Extension program. The goat extension specialists have answered innumerable producer requests for goat production and product information via the telephone, letters and e-mail, have given numerous presentations at several state, regional, national and international goat conferences for potential, novice and veteran goat producers, and have produced a quarterly newsletter. They have also been busy with several major extension activities. These activities include the annual Goat Field Day, Langston Goat Dairy Herd Improvement (DHI) Program, grazing demonstrations, the eighth annual meat buck performance test and various goat workshops on artificial insemination and on internal parasite control.

Goat Field Day

Our annual Goat Field Day was held on Saturday, April 25, 2009 at the Langston University Goat Farm with registration beginning at 8:00 a.m. This year’s theme was Breeding for the Future in the Dairy and Meat Goat Industries. Last year our featured speakers were Ms. Lisa Shepard who spoke on Performance Programs - Your “Genetic Toolbox”, and Dr. Richard Browning, Jr., who spoke on Breed Evaluation for Commercial Meat Goat Herds: A Research Update. Ms. Lisa Shepard currently works for the American Dairy Goat Association under contract as the Performance Programs Coordinator. This involves efforts with the DHI Production Testing, Linear Appraisal, Sire Development, DNA Typing, Artificial Insemination, and Type programs. Prior to this, she was employed in the laboratory genetics field for 30 years which evolved into the areas of quality assurance and regulatory affairs. Ms. Shepard is also a representative to the California Dairy Goat Advisory committee, officer in the National Saanen Breeders Association, and on the Board of New Mexico’s caprine DHIA. Lisa and her husband raise a small seedstock herd of Saanens in Northern New Mexico. Dr. Richard Browning, Jr. is a faculty member in the Department of Agricultural Sciences at Tennessee State University (TSU) in Nashville. Dr. Browning earned a B.Sc. (1989) from Prairie View A & M University and M.Sc. (1992) and Ph.D. (1994) from Texas A & M University. Dr. Browning initiated meat goat breed evaluation research at TSU in 2001. The main focus of the research has been to study fitness and performance traits among Boer, Kiko, and Spanish does doing straightbred and F1 kids raised under commercial, pasture management conditions. The work has also included postweaning performance and carcass merit of the offspring. In the afternoon session, participants broke into small-group workshops. Last year’s sub-theme was “Globalization/Internationalization of Goat Production”. Collaborators on the International Collaboration in Goat Research and Production Web-Based Decision Support Aids project were at the 2009 Goat Field Day to discuss goat production in their respective countries. The Web-based Goat Nutrient Requirement Calculators are currently being translated into Chinese, Spanish, Arabic, and French versions and installed on servers in China, Mexico, Jordan, and Rwanda. Dr. Jun Luo of the Northwest Agriculture and Forestry University in Yangling, China is the collaborator for the Chinese version and presented on dairy goat production in China. Dr. Ignacio Tovar-Luna of the Universidad Autónoma Chapingo in Bermajillo, Mexico is the collaborator for the Spanish version and presented on dairy goat production in Mexico. Dr. Laith al Rousan of the Jordan University of Science and Technology in Irbid, Jordan is the collaborator for the Arabic version and presented on goat production in Jordan, with emphasis on meat goats. Mr. Juvenal Kanani of the National University of Rwanda in Butare, Rwanda is the collaborator for the French version and presented on meat goat production in Central Africa.

The afternoon workshops included:
• Using your Genetic Resources with Ms. Lisa Shepard.
• Using On-farm Performance Recording to Enhance the Meat Goat Herd Enterprise with Dr. Richard Browning, Jr.
• Dairy Goat Production in China - overview of the Chinese dairy goat industry and its production practices with Dr. Jun Luo.
• Dairy Goat Production in Mexico - overview of the Mexican dairy goat industry and its production practices with Dr. Ignacio Tovar-Luna.
• Goat Production in Jordan - overview of the Middle Eastern goat industry and its production practices with Dr. Laith al Rousan.
• Goat Production in Central Africa - overview of the Central African meat goat industry and its production practices with Mr. Juvenal Kanani.
• Basic Goat Husbandry - hoof trimming, injection sites, farm management calendar, disbudding, etc. with Mr. Jerry Hayes.
• Basic Herd Health - herd health program including vaccinations and other approved drugs with Dr. Lionel Dawson.
• Nutrition for Health and Production - calculation of energy, protein and feed intake requirements with Dr. Steve Hart.
• Internal Parasite Control - sustainable internal parasite control program with Dr. Dave Sparks.
• Pack Goats - basic goat training as a pack animal and equipment needs with Mr. Dwite Sharp.
• Managing External Pests - control of external parasites and pests on goats with Dr. Justin Talley.
• Goats from a Professional Buyer’s Viewpoint - learn to look at your goats as a buyer sees them with Mr. Mike and Ms. Katie Pershbacher.
• DHI Training - supervisor/tester training for dairy goat producers including scale certification with Ms. Eva Vasquez.
• Tanning Goat Hides - basic tanning and leather treatment of goat skins with Dr. Roger Merkel.
• USDA Government Programs - overview of USDA Natural Resource Conservation Service’s work with goats and its cost-sharing program with Mr. Dwight Guy.
• Fitting and Showing for Youth and Adults - tips and pointers on fitting and show ring etiquette with Ms. Kay Garrett (this is a full day workshop).
• Fun Tent Youth Activity: Ms. Sheila Stevenson hosted a full day of activities for youth ages 5-12 in the Fun Tent. This allowed the parents and older teens to enjoy the workshops knowing that their little ones are having fun in a safe environment.
• Fitting and Showing Youth Activity: Youth and interested adults were able to participate in a full-day clipping, fitting, and showing workshop conducted by Ms. Kay Garrett of the Oklahoma Meat Goat Association and a Vo-Ag teacher in Prague, OK. Participants had the opportunity to have hands-on practice of clipping, fitting, and showing a goat.

**Goat DHI Laboratory**

The Langston Goat Dairy Herd Improvement (DHI) Program is housed at the dairy farm, west of campus, operates under the umbrella of the Texas DHIA. In February 1998, the Langston DHI program became the first DHI program to introduce forms and reports in goat terminology to dairy goat producers in the United States. A national Dairy Herd Improvement Association (DHIA) has been in existence for a number...
of years. However, until 1996 DHIA catered only to cow dairies. The Langston DHI program has been very popular with dairy goat producers and has grown significantly since its establishment in 1996. Goat producers are now able to get records for their animals that reflect accurate information with the correct language. Currently we are serving a 29 state area that includes a majority of the eastern states. Currently, we have 81 producer herds in these 29 states enrolled in the Langston Goat Dairy DHI Program. In 2009, the DHI laboratory processed more than 8,000 samples. Langston University continues to serve the very small-scale dairy goat producer. The average herd size on test with Langston University is 10 animals. This is significantly smaller than the herd size average for the five other processing centers.

For those interested in becoming a Langston goat DHI tester, training is available either in a formal classroom setting or through a 35-minute video tape. Every tester is required to attend the DHI training session or view the tape and take a test. Upon completion of the DHI training, the milk tester can start performing monthly herd tests.

**Goat Newsletter**

To date, the Goat Extension program published four issues of the 8-page Goat Newsletter in 2009. Interest in the newsletter has grown and we currently have over 2400 subscribers to our free quarterly Goat Newsletter and the subscription list continues to increase every year. The Goat Newsletter is mailed to every state in the nation and to 10 countries overseas. Ninety-seven percent of the mailings go to American households. At least one newsletter is mailed to a household in every state in the nation. Fifty percent of the newsletters are mailed to Oklahoma households. An additional thirty percent of the newsletters are mailed to households to state adjacent to Oklahoma.

**Artificial Insemination Workshop**

The use of superior sires is imperative in improving the genetic composition of breeding stock. Artificial insemination has long been used in the dairy cattle industry and is a simple technology that goat producers can acquire. However, opportunities for goat producers to the necessary skills via formal and practical instruction are not widespread. Langston University has instituted a practical workshop for instruction in artificial insemination in goats. Producers are instructed in the anatomy and physiology of the female goat, estrus detection and handling and storage of semen. Producers participate in a hands-on insemination exercise. An understanding of the anatomy and physiology enable the producer to devise seasonal breeding plans and to troubleshoot problem breeders. An understanding of estrus detection enables the producer to effective time inseminations for favorable conditions for conception and to effectively utilize semen. An understanding of semen handling and storage enables the producer to safeguard semen supplies, which can be scarce and costly. The experience of actually inseminating a female goat enables the producer to practice the knowledge that they have gained. The acquisition of these inseminating skill will allow producers the use of genetically superior sires in their herds that they normally would not have access to. It also allows producers to save money by conducting the inseminating themselves instead of hiring an inseminator. In 2009, AI workshops were held in September at the Langston University campus and in October at the county fairgrounds in Antlers.

**Meat Goat Production Handbook**

The Meat Goat Production Handbook, which is a companion to the Web-based Training and Certification Program, both of which were funded through an USDA/FSIS grant. The 400-plus page Meat Goat Production Handbook is an answer to the paucity of information, especially on the aspect of quality assurance, which will be a key production element as the meat goat industry grows and evolves. A quality assurance program ensures the production of a safe, healthy product that satisfies consumers and increases profit for the
production industry. Conventional topics such as herd health, nutrition, herd management, and many others are covered comprehensively, yet remain clear and easy-to-read. Additional topics generally not covered in conventional handbooks are also included, topics such as disaster preparedness, legal issues, and organic meat goat production. Even though Langston University has taken the lead in this project, this handbook is not the product of one person nor of a single university. Our collaborating project institutions/organizations, which include Alcorn State University, American Boer Goat Association, American Meat Goat Association, Florida A&M University, Fort Valley State University, Kentucky State University, Langston University, Prairie View A&M University, Southern University, Tennessee Goat Producers Association, Tennessee State University, Tuskegee University, United States Boer Goat Association, University of Arkansas Pine Bluff, and Virginia State University. Handbook contributing institutions/organizations include Allen Veterinary Clinic, American Boer Goat Association, American Meat Goat Association, BIO-Genics, Ltd., Bountiful Farm, Cornell University, Fort Valley State University, Kentucky State University, Langston University, Law Office of Wheeler and Mueller, Louisiana State University, Louisiana State University AgCenter, NCAT / ATTRA National Sustainable Agriculture Information Service, North Carolina State University, Oklahoma State University, Texas A & M University, United States Boer Goat Association, and Virginia State University.

Controlling Internal Parasites Workshop

Internal parasites (Barberpole worm, *Haemonchus contortus*) is the leading cause of death in goats in the Southern US, accounting for as many deaths as the total of the next three leading causes of death in goats. Several factors contribute to the high mortality caused by internal parasites.

Goats which originated in dry areas where there was no internal parasite challenge have been brought to the humid South where there is great parasite challenge. Only a few animals have good genetic resistance against internal parasites. In addition, goats are forced to graze rather than browse which provides greater opportunity to consume infective larvae and especially so when animals overgraze. Producers are not familiar with monitoring animals for signs of parasitism and do not understand how animals get infected. In addition internal parasites have developed a high level of resistance to dewormers from the overuse of dewormers in goats. To address these concerns, Langston developed a parasite workshop to educate producers about internal parasites. It includes 3 hours of lecture on biology of the parasite, pasture management to avoid worms and monitoring parasite infection using the FAMACHA chart which assesses the degree of anemia. This is a cooperative effort with OSU Extension Veterinarian who addresses dewormer resistance and correct use of dewormers. Producers get hands-on instruction in use of the FAMACHA card, taking fecal samples and running fecal egg counts.

Nutrient Requirements of Goats

Under a research project which developed equations for energy and protein requirements for goats, as well as prediction of feed intake, an extension sub-project developed a website calculation system for “Nutrient Requirements of Goats” (http://www2.luresext.edu/goats/research/nutreqgoats.html). Most calculators were based on studies of the project reported in a Special Issue of the journal Small Ruminant Research. For calculators with score inputs (i.e., grazing and body conditions), pictures are available to aid in determining most appropriate entries. Realistic examples are given, as well as discussion of appropriate and inappropriate usage. However, for the experienced user there is an option to hide text and examples and to view only inputs and outputs.

In 2005, a calculator for calcium and phosphorus requirements was added to the existing calculators for metabolizable energy, metabolizable protein, and feed intake for suckling, growing, mature, lactating, gestating, and Angora goats. Also in 2005, the interface of the calculators was unified into a single calculator with the English measurement system used. This will encourage the use of the calculators by American producers. The least-cost ration balancer was modified so that it incorporates the least-cost feed percentage
into the diet. Also, calculators are equipped with printable version commands to obtain inputs and outputs in hard copy format. In 2007, the calculators were continued to be updated.

In summary, for nutrient requirement expressions to be of value, they must be readily accessible and reasonably simple. Therefore, a web-based goat nutrient requirement system was developed based on findings of a recent project. It is hoped that this system will enjoy widespread usage and enhance feeding practices for goats.

**Internet Website**

http://www2.luresext.edu

The Agricultural Research and Cooperative Extension program of Langston University recently unveiled a new and improved Internet web site. The Internet address (URL) of the new web site is http://www2.luresext.edu.

Capabilities of the new web site include a document library with the complete proceedings of the annual Goat Field Day for the past three years and the quarterly newsletter for the past several years. Both the proceedings and newsletters are also available in portable document format (pdf), which allows for the viewing and printing of documents across platform and printer without loss of formatting.

Information, recent abstracts and scientific articles of completed and current research activities in dairy, fiber and meat production are available for online viewing and reading. Visitors will be able to take a Virtual Tour of the research farm and laboratories, complete with digital photos and narrative. Visitors will also be able to browse a digital Photo Album. Visitors will also be able to subscribe to our free quarterly newsletter online. Visitors will be able to test their knowledge of goats with the interactive goat quiz which covers nearly all aspects of dairy, fiber and meat goat production. For those questions that are lacking in the interactive quiz database, visitors will be able to submit a question to be included in the database. Visitors will be able to read about research interests of faculty and will be able to contact faculty & staff via email.

**Rehabilitation of Under-Utilized Forest Land by Goats for Economic Benefits**

In 2009 and for a second year, Langston University collaborated with the Oklahoma State University Forest Resources Center located in Idabel, OK to demonstrate that goats can be used to remove woody vegetation and underbrush so that forest land can be constructively and sustainably maintained. Moreover, meat goat production itself is profitable and an enterprise appropriate for smallholders. Besides this, goats can improve soil fertility by release of nutrients sequestered in woody plants. Nonetheless, although use of goats for vegetation management is gaining in popularity, it still is not widely prevalent; in part because of incomplete knowledge and probably more importantly a lack of familiarity with the method. Control of invasive species in forest and rangelands is costly for landowners. Recently, goats have been used as a biological means to control invasive and/or undesirable plant species on rangelands. However, their effectiveness in a forested environment is unknown. Twenty-five mature wether goats were fitted with a GPS collar and released upon the 9-acres study.

**Web-based Training for Meat Goat Producers**

Meat goat production is one of the fastest growing sectors of the livestock industry in the United States. New producers, as well as some established ones, have an expressed need for current, correct information on how to raise goats and produce safe, wholesome products in demand by the public. As the meat goat industry grows and evolves, a quality assurance program is essential. Such a QA program ensures the production of a wholesome product that satisfies consumers and increases profit for the meat goat industry.
Langston University was awarded funding by the Food Safety and Inspection Service of USDA to develop training and certification for meat goat producers. Langston University organized and led a consortium of 1890 universities and producer associations in this project. The consortium identified the subject topics most pertinent and pressing for the instructional modules. The consortium then identified experts on the selected subject topics and pursued these experts as module authors. These authors represent the most qualified persons in their field in academia as well as in the industry. Langston University translated the sixteen instructional modules into web pages with accompanying images, and pre- and post tests for those producers wishing to pursue certification. All modules are also available in pdf for easy printing and the introductory module is available as a podchapter for downloading and listening on your favorite mp3 player. The web-site (http://www2.luresext.edu/goats/training/qa.html) was unveiled in late 2005.

Even though this web-site (http://www2.luresext.edu/goats/training/qa.html) was only unveiled in 2007, more than 1,000 producers have enrolled for certification and 157 have completed the certification process. These instructional materials will best serve meat goat producers in assisting them to produce a safe, wholesome, healthy product for the American consumer. Funding source for this project was USDA/FSIS/OPHS project #FSIS-C-10-2004 entitled “Development of a Web-based Training and Certification Program for Meat Goat Producers.”

<table>
<thead>
<tr>
<th>Breed Association</th>
<th>Number of Members Certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta Goat Breeder’s Association</td>
<td>2</td>
</tr>
<tr>
<td>American Boer Goat Association</td>
<td>52</td>
</tr>
<tr>
<td>American Kiko Goat Association</td>
<td>9</td>
</tr>
<tr>
<td>American Meat Goat Association</td>
<td>18</td>
</tr>
<tr>
<td>Empire State Meat Goat Producers Association</td>
<td>1</td>
</tr>
<tr>
<td>International Boer Goat Association</td>
<td>5</td>
</tr>
<tr>
<td>International Goat Association</td>
<td>2</td>
</tr>
<tr>
<td>International Kiko Goat Association</td>
<td>6</td>
</tr>
<tr>
<td>Spanish Goat Association</td>
<td>1</td>
</tr>
<tr>
<td>United States Boer Goat Association</td>
<td>21</td>
</tr>
<tr>
<td>None</td>
<td>66</td>
</tr>
</tbody>
</table>

The table above shows the association affiliations for the 157 certified producers. Please note that certified producers may be a member of more than one association.
Meat Buck Performance Test

The eleventh annual meat buck performance test started June 6, 2009 with 93 bucks enrolled from 16 different breeders (51 bucks from private producers and 42 from Langston University). Geographical distribution is given in the table below.

<table>
<thead>
<tr>
<th>State</th>
<th>Bucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS</td>
<td>7</td>
</tr>
<tr>
<td>NE</td>
<td>9</td>
</tr>
<tr>
<td>OK</td>
<td>18 (42)</td>
</tr>
<tr>
<td>TX</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>51 (93)</td>
</tr>
</tbody>
</table>

Breed distribution is 77 Boer (42 Boer from Langston University); 1 Boer Cross; 9 Kiko; 3 Ranger; and 3 Spanish. Bucks were given a physical examination by Dr. Lionel Dawson, dewormed with Cydectin (moxidectin), deloused with Atroban De-Lice, given a preemptive injection of long-acting antibiotic for upper respiratory infections, and those bucks that needed booster or initial vaccinations for enterotoxemia and caseous lymphandinitis. Half of the bucks were randomly assigned within breeder to either Calan feeders or Feed Intake Recording Equipment (FIRE) system.

Adjustment Period

All bucks underwent an adjustment period of two weeks immediately after check-in and the test officially started on June 24, 2009. During the adjustment period, bucks were acclimated to the test ration and to the Calan feeders or to the FIRE system. For the Calan feeders, each buck wears 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, yesterday’s feed that remains in the Calan feeder is weighed and removed from the Calan feeder. Fresh feed is weighted and placed into the Calan feeder. The difference in weights between the fresh feed place 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. For the FIRE system, feed intake is automatically recorded every time a buck enters into the FIRE system to eat.

This year we were fortunate to hire a Langston University undergraduate, Ms. Amanda Manley, to help with the bucks. Amanda did a wonderful job with the bucks.

Ration

Nutritionists at Langston University formulated the test ration. The ration was fed free-choice during the adjustment period and during the 12-week test. The crude protein content of the ration is 16% with 2.5% fat, 20.4% fiber and 60.6% TDN. Calcium phosphorus and sodium levels are .74%, .37% and 1.07%, respectively. Zinc concentration is 33.04 ppm, copper is 17.15 ppm and selenium is .21 ppm.
ABGA Approved Performance Test

In the year 2000, the Oklahoma performance test was designated by the American Boer Goat Association Board of Directors as an ABGA Approved Performance Test. Qualified fullblood or purebred Boer bucks are eligible to earn points towards entry into the “Ennobled Herd Book”. Candidate bucks must pass a pre-performance test inspection conducted by one (1) or more ABGA approved breeders. Ten (10) points will be awarded to a Boer buck that shows an average daily weight gain (ADG) in the top five percent (5%) of the animals on test. Five (5) points will be awarded to a Boer buck that shows an average daily weight gain (ADG) in the next fifteen percent (15%) of the animals on test. All bucks must gain at least three tenths (.3) pounds per day to be awarded any points.

International Boer Goat Association, Inc. Sanctioned Test

In 2003, the Oklahoma buck performance test was sanctioned by the International Boer Goat Association, Inc.

Gain

The official performance test started on June 24 after the adjustment period was finished. Weights at the beginning of the test averaged 51 lbs with a range of 32 to 84 lbs. Weights at the end of the test averaged 92 lbs with a range of 65 to 139 lbs. Weight gain for the test averaged 41 lbs with a range of 18 to 64 lbs.

Average Daily Gain (ADG)

For the test, the bucks gained on averaged 0.49 lbs/day with a range of 0.21 lbs/day to 0.76 lbs/day.

Feed Efficiency (Feed Conversion Ratio)

For the test, the bucks consumed an average of 294 lbs of feed with a range of 154 to 496 lbs.

For the test, the bucks averaged a feed efficiency of 7.34 (feed efficiency is defined as the number of lbs. of feed needed for one lbs. of gain), with a range of 4.22 to 11.79.

Muscling

The average loin eye area as determined by ultrasonography was 1.8 square inches with a range of 1.2 to 2.3 square inches and the average right rear leg circumference was 14.9 inches with a range of 12.0 to 19.5 inches.

Index

For 2009, the index was calculated using the following parameters:

- 30% on efficiency (units of feed per units of gain)
- 30% on average daily gain
- 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 (BW0.75)
- 20% circumference around the widest part of the right rear 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.

The deviation from the average of the parameters measured from the goats in the performance test was used in the index calculation. Thus, the average index score for bucks on-test was 100%. Bucks that are above average have indices above 100% and those below average have index scores below 100%.
Congratulations

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

- Mr. Sam Stephens of Elm Creek, NE for having the Top-Indexing buck

Also, deserving congratulations are:

- Mr. Sam Stephens of Elm Creek, NE for having the #1 Fastest-Gaining buck
- Mr. Jim Rosenbaum of Gainesville, TX for having the #2 Fastest-Gaining buck
- Mr. A.L. Paul of Aubry, TX for having the #3 (tie) Fastest-Gaining buck
- Mr. Jim Hollinger of Lyons, KS for having the #3 (tie) Fastest-Gaining buck
- Mr. Ron Dilley of Stillwater, OK for having the #5 (tie) Fastest-Gaining buck
- Mr. John Scott of Lexington, NE for having the #5 (tie) Fastest-Gaining buck
- Mr. Jim Hicks of Bristow, OK for having the Most-Feed-Efficient buck
- Mr. Cody Gann of Sonora, TX for having the Most-Heavily-Muscled buck

Acknowledgments

The Buck Test was supervised by Dr. Wenping Hu and assisted by Dr. Terry Gipson. They wish to acknowledge Dr. Lionel Dawson of Oklahoma State University for his contributions as the admitting and on-call veterinarian, Ms. Amanda Manley for her management and oversight of the day-to-day activities, Mr. Jerry Hayes and Mr. Erick Loetz 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 Stillwater Milling of Stillwater, OK for custom mixing the feed.