



# Goat Newsletter

Cooperative Extension Program  
Langston University

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

Summer 2010

## From the Director's Desk



Summer is upon us and the heat is starting to rise. This is a time of the year that goat producers must pay special attention to their animals. A typical mature goat needs at least two gallons of clean water daily to help cope with the heat. You should make sure that your waterers are kept clean and full at all time in the summer. As you know, goats do not require much shelter but shade at this time of the year is essential. The hot weather will also limit their grazing time, so monitoring body condition score is a good way of assessing nutritional status. We are doing those tasks here at Langston University.

We had a successful Goat Field Day and you can read more about it on page 6 but I would like to add personally

how much I enjoyed Dr. Frank Pinkerton's presentations. You see, Frank was here at Langston University at the beginning of the goat program and he is still very much involved in the goat industry. He speaks at numerous goat conferences annually. His travel itinerary is exhausting. Frank was already a leader of the goat industry when I arrived at Langston University and as a young scientist, I learned much from him. It was a privilege to have Frank as our invited speaker for our 25th annual Goat Field Day and to honor him for his contributions to Langston University and to the US goat industry. Dr. Ocleris Simpson, former dean and founder of the goat institute here at Langston University, was also honored but unfortunately was unable to attend due to health issues.

Regardless of the heat, research activities are continuing in the summer. Recently, Dr. **Abdelhafid Keli** from the National Agricultural University in Morocco joined us for a short sabbatical and is working on a project entitled "Management of lactating Alpine goats to minimize internal parasitism and the activity energy cost".

Dairy goat production systems based on grazing offer many advantages over conventional confinement systems. However, a great disadvantage is greater exposure to internal parasites. Therefore, the objectives of this study are to determine effects of different pasture access schemes conceivably impacting ingestion of infective larvae of *Haemonchus contortus* and the activity energy cost on production and behavior of Alpine dairy goats. Treatments on this study are 1) set pasture access (e.g., 8 AM to 4 PM), 2) continuous pasture access, 3) pasture access from the time of no dew on forage until milking and pasture access is initiated sometime between 8 AM and 4 PM when dew is absent, and continues until the PM milking; there may be days that these animals are not given access to pasture, and 4) pasture access from the time of no dew on forage until milking, and then potential continuation of grazing until dark; there may also be days that these animals are not given access to pasture. We will keep you informed as this study progresses.

We said goodbye to Dr.



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

Dr. Marvin Burns,  
Dean,  
School of Agriculture and  
Applied Sciences

Dr. Vernon Jones,  
Associate Dean,  
School of Agriculture and  
Applied Sciences

Dr. Tilahun Sahlu,  
Director,  
E (Kika) de la Garza  
American Institute for  
Goat Research

E (Kika) de la Garza  
American Institute for  
Goat Research  
Langston University  
P.O. Box 730  
Langston, OK 73050  
Phone: (405) 466-3836  
FAX: (405) 466-3138  
<http://www2.luresext.edu>

Newsletter Editor  
Dr. Terry A. Gipson

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**Wenping Hu**, who was the Visiting Scholar working on the Residual Feed Intake (RFI) project with Drs. **Goetsch** and **Gipson**. Dr. **Hu** took a nutrition position with Provimi North America, Inc. in Ohio and we wish him well. The RFI project involves the buck performance test which started on June 5. You can read more about the buck performance test on page 7.

Summer is also a time for several of us to attend the national meetings of the American Animal Science Association and the American Dairy Science Association and to present research findings. This year the meetings were in Denver, CO and Langston University scientists presented on "Effects of shearing on energy use by growing Angora goats", "Optimum duration of performance testing growing Boer bucks for growth rate, feed intake, and feed efficiency", "Conditions to test electric fence modifications of cattle barb wire fence for goat containment", "Accuracy of calculated distances between consecutive fixes of GPS collars worn by goats", "Effects of garlic supplementation on nematode parasite infection in grazing goats", and "Using FAMACHA and alternative dewormers to manage gastrointestinal nematodes in a dairy goat herd". You can see that our research topics are varied and hopefully will be beneficial to goat producers. These meetings not only allow us to present our research findings but also to interact with fellow scientists and to learn

new ideas.

Our work on the Ethiopia Sheep and Goat Productivity Improvement Program is bearing fruit. USAID, the funding agency, is pleased with the project and in fact, has granted Prairie View A&M University and Langston University a one-year extension with additional funding. The extension will allow us to further meet the expanding market for the cross-bred goats and sheep. As you may recall, we imported Boer goats and Dorper sheep into Ethiopia for grading-up their indigenous breeds.

Our other international activities continue. We are very pleased that we can work in the Mideast and are able to help in that troubled area. Our BARD/MARD project will help smallholders produce safe, wholesome goat's milk and will allow scientist to collaborate across borders. Also, collaborative research continues with Egypt and we hope to build further upon this partnership.

From the extension side, summer is a time for workshops and preparing for fall workshops. Dr. **Terry Gipson** is busy preparing for his artificial insemination workshops this fall and plans to add the use of fresh semen as well as frozen semen to the workshop curriculum. The September AI workshop at Langston University is full but he informs me that there are still places available for the October AI workshop in Antlers, OK. You can contact Dr. **Gipson** for more information if you are interested.

# Research Spotlight

## ***Energy Expenditure of Meat Goat Does.***

Sixteen Boer and 16 Spanish multiparous does were used to determine how stocking rate (SR), breed and stage of production influence energy expenditure and behavioral activities on pasture and to develop a simple method of predicting energy used for activity. The experiment began in late spring at an average of 24 d after kidding. Litter size was two and kids were Boer and Spanish. Two does of each breed resided in eight 1.25-acre grass/forb pastures. There were five periods, 56, 60, 63, 64 and 73 days in length, corresponding to mid-lactation, early post-weaning, the late dry period, early gestation and mid-gestation. Energy expenditure (EE) was estimated from heart rate (HR) on pasture and EE:HR for each doe determined in a calorimetry system. A leg position/movement monitoring system and a GPS collar with position and movement sensors were used to estimate distance traveled and time spent grazing/eating, resting while lying, resting while standing and walking without grazing/eating. EE attributable to activity (EEa%), expressed as a percentage of the ME requirement for maintenance plus activity in confinement, was determined. Kid ADG at weaning after 73 days was lower for the High vs. Low SR. Distance traveled was not influenced by SR or breed. Time spent grazing/eating tended to be greater for Boer vs. Spanish does (7.9 vs. 6.7 hour/day). Total EE was greater for Boer than for Spanish does. EEa% was not influenced by SR, breed or period, averaging 49%. Behavioral activities were not highly related to EEa%, Although EEa% was not affected by treatments of this experiment or highly related to behavioral activities monitored, it represents a sizeable cost of energy deserved of further study.

*Beker, A., T.A. Gipson, R. Puchala, A.R. Askar, K. Tesfai, G.D. Detweiler, A. Asmare, and A.L. Goetsch. 2009. Effects of stocking rate, breed and stage of production on energy expenditure and activity of meat goat does on pasture. J. Appl. Anim. Res., 36: 159-174.*

## ***Energy Expenditure on Pastures.***

Eight animals each of yearling Angora, doeling Boer goats, yearling Boer wether goats, yearling Spanish wether goats and Rambouillet wether sheep slightly more than 2 years of age were used. Two animals of each type were randomly allocated to one of the four pastures 23, 30, 11 and 3 acres in area. Forage conditions varied markedly among pastures. The experiment was conducted in the summer with three periods, 30, 26 and 26 days in length. Energy expenditure (EE) was estimated from heart rate (HR) on pasture and EE:HR for each animal determined in a calorimetry system. A leg position/movement monitoring system and a GPS collar with position and movement sensors were used to estimate distance traveled and time spent grazing/eating, resting while lying, resting while standing and walking without grazing/eating. ADG was similar among animal types. Distance traveled was affected by an interaction between animal type and period (Angora goats: 1.85, 1.45 and 1.53; Boer goats: 1.97, 2.15 and 1.66; Spanish goats: 1.77, 3.28 and 2.05; sheep: 1.89, 2.13 and 1.40 miles per day in periods 1, 2 and 3, respectively. Time spent grazing was lowest among animal types for Angora goats (4.3, 8.4, 7.8 and 6.8 hours/day) and time spent walking without grazing was lower for Angora goats and sheep than for Boer goats (1.7, 2.4, 2.1 and 1.2 hours/day for Angora goats, Boer goats, Spanish goats and sheep, respectively). Total EE was affected by an interaction between animal type and period, with the Angora goats generally lower than other types and sheep generally higher than the goats during each period. Boer goats tended to have higher EE for activity than did Spanish goats. EE for activity of goats was predicted with moderate accuracy and without bias, however, these methods were not suitable for sheep.

*Beker, A., T.A. Gipson, R. Puchala, A.R. Askar, K. Tesfai, G.D. Detweiler, A. Asmare, and A.L. Goetsch. 2009. Energy expenditure and activity of different types of small ruminants grazing varying pastures in the summer. J. Appl. Anim. Res., 37: 1-11.*

# RREA Project - Years One to Three



*Demonstration plot at the Kiamichi Forestry Research Station. Inner line is fence line and outer is a buffer.*

The control of invasive plant species in forests, especially pine forests, is costly for landowners to control and many landowners simply do no control measures. Therefore, the objective of the Renewable Resources Extension Act (RREA) project is to compare the biological treatment using goats in a pine forest to control invasive species with no treatment. This project has great significance in a variety of ways. It will allow the demonstration of using goats to return forest land to a state of economic benefit, apart from economic gains from goat production during the time of rehabilitation. Information will be gained concerning vegetation and soil fertility changes over the rehabilitation period.

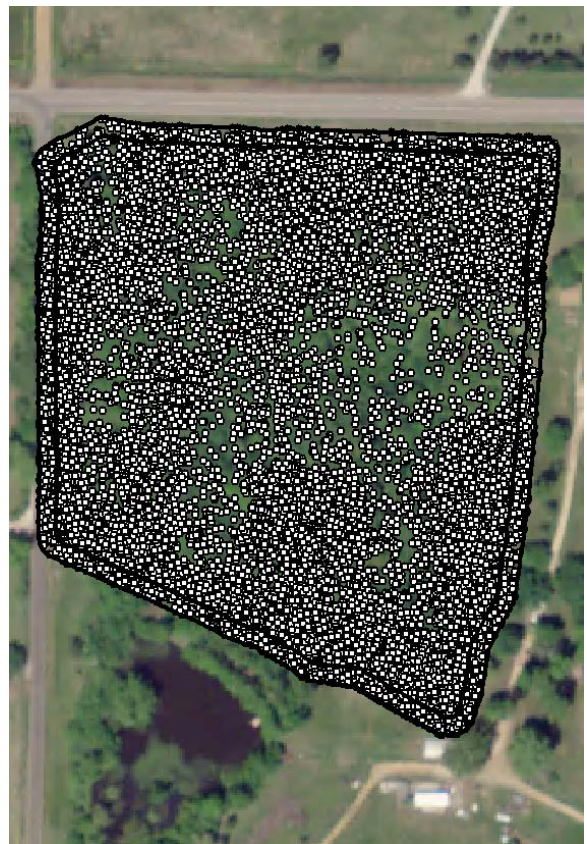
The third year of a forestry and goats demonstration site is currently underway in a pine forest at the Kiamichi Forestry Research Station of Oklahoma State University in Idabel, OK.

The demonstration site is about 13 acres that has been left for wildlife for several years (see map to left). The site has a very dense understory. The overstory is composed of green ash, sycamore, cottonwood, and loblolly pine plantings. The rest of the area is in sweetgum, water oak, and willow oak. Fencing to hold goats was constructed using both net wire and electric fence.

In 2008, twenty-five

young Boer-cross goats were placed on the demonstration site for 12 weeks. During the first week, the goats were fitted with GPS collars that recorded a fix (location within the plot) every five minutes. Goats spent 62% of their time within 30 ft of the fence, which was a cleared area, and 38% of their time within the interior of the site. All of the fixes for the first week can be seen on the 2008 photo to the right.

In 2009, fifteen Spanish wethers were placed on the demonstration site and fitted with GPS collars for the first week. Goats spent 55% of their time within 30 ft of the fence and 45% of their time within the interior of the site. These are significantly different times than in the preceding year of 62% and 38%, respectively. Based upon GPS attributes, goats actively foraged 39% and rested 61% of the time in 2009 which contrasted with 2008 values of 65% and 35%, respectively. In 2009, the preferred activity and locations were resting in the fence buffer at 35% of the time; resting in the interior at 26%; foraging in the fence buffer at 20%; and foraging in the interior at 19%. This contrasts sharply



2008



2009

to 2008 where the preferred activity and locations were foraging in the fence buffer at 39% of the time; foraging in the interior at 26%; resting in the fence buffer at 23% of the time; and resting in the interior at 12%. These behavioral differences may be attributable to the breed differences or to the change in vegetation from year one to year two of the study. All of the fixes for the first week can be seen on the 2009 photo to the left.

In 2010, twelve mature Alpine does, culled from the milk string, were placed on the demonstration site and fitted with GPS collars for the first week. Alpine goats spent 86% of their time within 30 ft of the fence and 14% of their time within the interior of the site. These are significantly different times than in the preceding two years. In fact, 94% of the fixes were within 150 feet of the southeastern corner of the plot, which is where the Alpines were introduced to the plot. Based upon GPS attributes, Alpine goats actively foraged 11% and rested 89% of the time. In 2010, the preferred activity and locations

were resting in the fence buffer at 78% of the time; resting in the interior at 11%; foraging in the fence buffer at 8%; and foraging in the interior at 3%. All of the fixes for the first week can be seen on the 2010 photo to the right.

The demonstration plot was divided virtually into approximately 475 33' x 33' squares. The number of fixes in each square was tabulated. The higher the number of fixes in a square indicates a high preference for that location. The table below depicts the number of squares that were never visited (0), were visited once or that the goats were nearby (single digit), were visited on more than one occasion (double digits), were visited on several occasions (triple digits), or were highly preferred locations (quadruple digits). The Boer-cross and Spanish explored the plot thoroughly; however, the Alpines found their preferred location early and did not venture far.



2010

Digits	2008 (Boer-cross)	2009 (Spanish)	2010 (Alpine)
0 (0 fixes)	9	0	260
1 (1 to 9 fixes)	64	65	143
2 (10 to 99 fixes)	301	282	41
3 (100 to 999 fixes)	93	115	18
4 (1000 to 9999 fixes)	3	3	5

# 2010 Goat Field Day

## Bridging the Future and the Past

The 2010 Goat Field Day was a resounding success with more than 250 participants attending. This was a special field day in two ways. Firstly, it was our silver anniversary and secondly, Dr. Frank Pinkerton was our invited speaker. Dr. Pinkerton was the organizer of the very first field day at Langston University back in 1985. Dr. Pinkerton is still very active in the goat industry and has a wealth of knowledge as was evident from his morning and afternoon presentations, which were very well-attended. Dr. Pinkerton's knowledge is so expansive that a couple of hours of lecture/discussion is not enough to give him justice. Fortunately, Dr. Pinkerton provided additional information in written form which is included in the 2010 Goat Field Day proceedings. They include:

- Goat Industry Update: Statistics, Trends, and Commentary
- Reducing Doe Maintenance (non-feeding) Costs
- Recordkeeping, Analysis, and Utilization of On-Farm Performance Data
- Management Influences on Break-Even Price/Pound of Slaughter Kids
- Target Marketing of Slaughter Goats
- Variations in Prices Received for Slaughter Goats



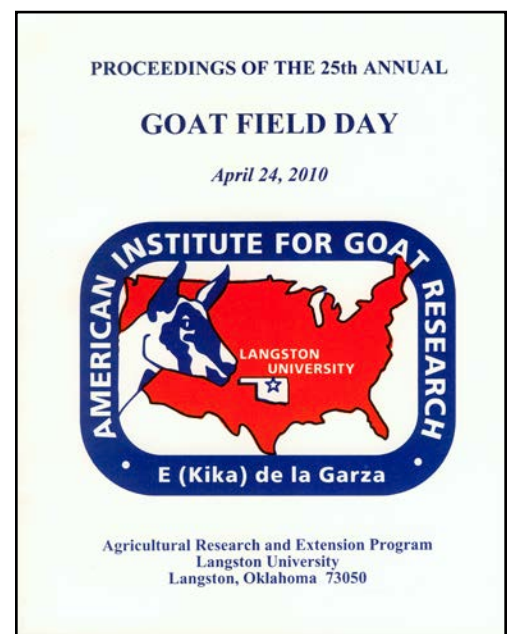
Dr. Terry Gipson (left) presents Dr. Frank Pinkerton with a certificate of appreciation.

As usual, we offered many choices for the afternoon sessions. A popular session was the pack goats workshop which was here for the second year.

***If you could not attend the 2010 Goat Field Day but would like a copy of the proceedings, please email Dr. Terry Gipson at [tgipson@luresext.edu](mailto:tgipson@luresext.edu) with your mailing address and he will send you a free copy. Please hurry because copies are limited. Or you can access the complete proceedings at the web site listed below.***



Pack goats ready to go.



<http://www2.luresext.edu/goats/library/field.htm>

# 2010 Buck Performance Test

The twelfth annual meat buck performance test started June 5, 2010 with 40 bucks enrolled from 9 different breeders (28 bucks from private producers and 12 from Langston University). Geographical distribution is 3 from Missouri, 5 from Nebraska, 16 from Oklahoma, and 16 from Texas. Breed distribution is 35 Boer; 1 Boer Cross; 2 Ranger; and 2 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 booster or initial vaccinations for enterotoxemia and caseous lymphadenitis. Weights at entry averaged 46 lbs and ranged from 22 to 73 lbs. Age at entry averaged 105 days and ranged from 65 to 147 days of age.

Bucks were assigned to one of four Feed Intake Recording Equipment (FIRE) feeders based upon weight at entry. The FIRE feeder is an electronic feeder that is pictured below. The buck wears an radio-frequency ID eartag in his right ear and, which is read by the feeder antenna. When the buck enters the feeder and the eartag is read that activity logs an event into the system. The animal id, date, entry time, and the weight of the feed trough are recorded. When the buck exits the feeder that activity ends the event and the exit time and weight of the feed trough are added to the event. The amount of feed consumed is calculated as the difference in the two feed trough weights.

All bucks underwent a two-week adjustment period and the test officially started on June 23, 2010. Weights at the start of the test averaged 56 lbs and ranged from 19 to 91 lbs. Body weight gains averaged 9 lbs for the 18 day adjustment period. The adjustment period is necessary for performance testing because some bucks coming from a low-nutrition plane may have compensatory growth that would bias the end results or some bucks might need that extra time to adjust to a new environment.

The end of the buck test will be September 18, 2010. If you are looking for a performance-proven herd sire, then any of these bucks would be an ideal candidate. *For more information on the buck performance test, please contact Dr. Terry Gipson at [tgipson@luresext.edu](mailto:tgipson@luresext.edu) or at 405-466-6126.*



*Bucks at the FIRE feeder.*

# Noteworthy News

► In April and June, Dr. **Tilahun Sahlu** traveled to Addis Ababa, Ethiopia to work on administrative activities of the Ethiopia Sheep and Goat Productivity Improvement Program.

► In May, Dr. **Steve Hart** traveled to Porum, OK to give a presentation on Parasite Control with Multispecies and Rotational Grazing at the Kerr Center's Multi-species Grazing (Cattle and Goat) Field Day.

► In May, Dr. **Steve Hart** traveled to Neosho, MO to give a presentation on goat nutrition at the SW Missouri Goat Conference.

► In May, Dr. **Art Goetsch** traveled to Ethiopia to work on research activities of the Ethiopia Sheep and Goat Productivity Improvement Program.

► In May, Drs. **Steve Hart** and **Zaisen Wang** traveled to Auburn, AL to attend the annual conference of the Southern Consortium for Small Ruminant Parasite Control.

► In May, Dr. **Steve Hart** traveled to Ada, OK to give a presentation on goat management.

► In June, Dr. **Art Goetsch** traveled to Egypt to collaborate with scientists of the Desert Research Center on a project being supported by the U.S.-Egypt Joint Board on Scientific and Technological Cooperation. This project is entitled "The Grazing Activity Energy Cost of Goats".

► In June, Dr. **Steve Hart** traveled to Poteau, OK to give a presentation on parasite control at the Kerr Center for Sustainable Agriculture.

► In June, Drs. **Marvin Burns** and **Art Goetsch** traveled to Carlsbad, NM to discuss potential collaboration on microalgae research.

► In June, Dr. **Steve Hart** traveled to Prague, OK to give a presentation on parasite control at the South-Central Katahdin Conference.

► In July, Drs. **Terry Gipson**, **Art Goetsch**, **Steve Hart**, **Ryszard Puchala**, **Tilahun Sahlu**, **Zaisen Wang**, and **Steve Zeng** attended the joint national meetings of the American Society of Animal Science and the American Dairy Science Association in Denver, CO to make research presentations and attend scientific sessions.



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E (Kika) de la Garza American Institute for Goat Research  
Langston University  
P.O. Box 730  
Langston, OK 73050