Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Winter 2008*

From the Director's Desk

This is a special time of the year when we look back over the year's accomplishments and plan for the coming year. I am happy to report that one of the major activities of the past year was the revitalization of our Advisory Committee. Due to scheduling conflicts within the committee and inattentiveness on our part, our Advisory Committee had failed to meet for awhile. In early October, our reconstituted Advisory Committee met on campus and we had a wonderful dialogue. The function of the Advisory Committee is to make recommendations to the Research Director of the E (Kika) de la Garza American Institute for Goat Research concerning the Institute's research and extension activities. Advisory Committee member are Dr. **Ronald Kensinger** representing Oklahoma State University, Mr. **Dwight Guy** representing USDA/NRCS, Ms. **LuAnn Hansen** representing the Oklahoma Meat Goat Association, Dr. **Dave Sparks** representing the Oklahoma Veterinary Medical Association, and Mr. **Duff Sandness** representing the Meat Goat Producers Association of Southeast Kansas and Northeast Oklahoma. If you have any feedback for us, you can always email them to me at *sahlu@luresext.edu* or call me at 405-466-6148. If you are a member of any of the aforementioned organizations, you can send your feedback through them. We are planning a spring 2009 Advisory Committee meeting to coincide with the 2009 Goat Field Day.

Speaking of which, I hope that you are making plans to attend the next Goat Field Day on April 25, 2009. This year's theme will be "Breeding for the Future in the Dairy and Meat Goat Industries". We will have a detailed program for you in the Spring newsletter. This next Goat Field Day we will have a special afternoon session that I am sure that you will not want to miss. Our USDA International Science and Education Competitive Grant Program supported project entitled "International Collaboration in Goat Research and Production Web-Based Decision Support Aids" is coming to a close. This project involved the translation into Arabic, Chinese, French, and Spanish of some of our web-based tools, primarily the nutrient requirement calculators. Dr. **Laith al Rousan** of the Jordan University of Science and Technology in Irbid, Jordan is our collaborator for the Arabic version; Dr. **Jun Luo** of the Northwest Agriculture and Forestry University in Yangling, China is our collaborator for the Chinese version; Dr. **Valentine Yapi** of the Centre National de Recherche Agronomique in Abidjan, Cote d'Ivoire and Mr. **Juvenal Kanani** of the National University of Rwanda in Butare, Rwanda are our collaborators for the French version; and Dr. **Ignacio Tovar-Luna** of the Universidad Autónoma Chapingo in Bermajillo, Mexico is our collaborator for the Spanish version. We have invited Drs. **al Rousan**, **Luo**, **Yapi**, and **Tovar-Luna**, and Mr.

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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

Kanani to join us for our 2009 Goat Field Day. We will have an exciting afternoon session dedicated to understanding goat production in these five countries and in their respective regions of the world. You don't need to know Arabic, Chinese, French or Spanish to understand the presentations as all are fluent English speakers. However, if you want to practice your Arabic, Chinese, French or Spanish, we invite you to do so at the 2009 Goat Field Day.

We also have some other research projects coming to a close. They are "Decreased Methane Emission by Ruminants Consuming Condensed Tannins" with Dr. **Ryszard Puchala** as principal investigator, "Evaluation and Modeling Extended Lactations in Dairy Goats" with Dr. **Terry Gipson** as principal investigator, "Nutrient Requirements of Goats: Composition of Tissue Gain and Loss" with myself as principal investigator, and "Quality, Safety, and Shelf-Life of Dairy Goat Products in the U.S. Market" with Dr. **Steve Zeng** as principal investigator. You will also learn more about these projects at the 2009 Goat Field Day.

We regularly modify our Web-based Training and Certification Program for Meat Goat Producers and it continues to certify producers. The certification rate for 2008 has increased over that of 2007 and we now have nearly 100 certified producers. Please look in the table to the right and see how your state is doing.

State	No. Certified
AB	1
AL	1
AR	5
BC	1
CA	1
CO	1
FL	7
GA	2
IA	1
IL	1
IN	2
KS	3
KY	5
MA	1
MALAYSIA	2
MB	2
MI	1
MN	2
MO	3
MS	2
MT	2
NC	3
NE	1
NJ	1
NV	1
OH	1
OK	14
ON	1
OR	2
PA	1
SC	1
SD	1
TN	6
TX	12
VA	3
WA	1
WV	2
WY	2
Total	***99***

Did you know that the Spanish word for goat is "cabra"? Look in this newsletter for other translations of the word for goat.

Research Spotlight: Tethering

Tethering: herbage selection, intake and digestibility.

Twenty-four yearling Boer × Spanish goats were used in a crossover experiment to determine the effects of tethering on herbage selection, intake and digestibility, grazing behavior, and energy expenditure (EE) with high-quality herbage. Four 1.8-acre paddocks of wheat (*Triticum aestivum*) and berseem clover (*Trifolium alexandrium*) were grazed in the spring. Each paddock hosted 6 animals, 3 with free movement and 3 attached to a 10-foot tether that was moved daily and provided access to an area of 314 ft^2. One animal of each treatment and paddock was used to determine herbage selection, fecal output, or grazing behavior and EE. Herbage DM mass in tethered areas before grazing averaged 1.2 and 1.3 ton/acre in periods 1 and 2, respectively. The CP concentration in ingesta was greater (23.1 and 20.3 ± 0.82%) for free vs. tethered animals, although *in vitro* true DM digestion (75.7 and 76.5 ± 1.20%, respectively) did not differ between treatments. Intake of ME based on *in vitro* true DM digestion and fecal output was greater for free vs. tethered animals (3.0 and 2.5 ± 0.21 Mcal/day). No treatment effects were observed for time spent ruminating or grazing (405 and 366 ± 42.5 minutes/day, respectively), although mean EE was greater for free vs. tethered animals (0.07 and 0.05 ± 0.003 Mcal/lb of $BW^{0.75}$ for free and tethered, respectively), with differences between treatments at each hour of the day. Tethering animals may be acceptable to model those with free movement for some measures such as ingesta composition but appears inappropriate for others, such as energy metabolism.

Patra, A. K., R. Puchala, G. Detweiler, L. J. Dawson, T. Sahlu and A. L. Goetsch. 2008. Effects of tethering on herbage selection, intake and digestibility, grazing behavior, and energy expenditure by Boer x Spanish goats grazing high-quality herbage. Journal of Animal Science, 86:1245-1253.

Chinese character for goat: 山羊

Tethering; forage value and mass.

Twenty-four yearling Boer × Spanish goats were used in a crossover design experiment to determine effects of tethering on forage selection, intake and digestibility, grazing behavior and energy expenditure (EE) with forage high in nutritive value and low to moderate in mass. Four 1.8-acre pastures of wheat (*Triticum aestivum*) and berseem clover (*Trifolium alexandrium*) were grazed in December and January. Each pasture hosted six animals, three with free movement and three attached to a 13.5-foot tether for access to a circular area of 572 ft^2. Tethering areas were moved each day. One animal of each treatment and pasture was used to determine forage selection, fecal output or grazing behavior and EE; therefore, there were eight observations per treatment. Mass of forage DM before grazing in tethered areas averaged 0.6 and 0.5 ton/acre in periods 1 and 2, respectively. Intakes of DM (2.2 and 2.1 lb/day; SE = 0.17), NDF (1.1 and 1.1 lb/day; SE = 0.09) and ME (2.60 and 2.55 Mcal/day; SE = 0.215) were similar between treatments, but CP intake was greater for free vs. tethered animals (0.5 and 0.4 lb/day; SE = 0.04). There were no treatment effects on time spent ruminating or grazing (346 and 347 minutes/day for free and tethered, respectively; SE = 42.5), but EE was considerably greater for free vs. tethered animals (0.06 and 0.05 Mcal/lb $BW^{0.75}$; SE = 0.001). In conclusion, with forage of high nutritive value and low to moderate in mass, tethering can offer a production advantage over free grazing of less energy used for activity despite similar grazing time. With forage removal considerably less than that available for grazing, effects of tethering on chemical composition of selected forage were small and less than needed to markedly affect digestion. Tethering may offer a means of studying some aspects of grazing by ruminants, but would not seem suitable for energy metabolism.

Patra, A. K., R. Puchala, G. Detweiler, L. J. Dawson, G. Animut, T. Sahlu, A. L. Goetsch. 2008. Tethering meat goats grazing forage of high nutritive value and low to moderate mass. Asian-Australian Journal of Animal Science, 21(9):1252-1261.

RREA at Langston University

Congress enacted the Renewable Resources Extension Act (RREA) in 1978. The legislative mandate for RREA is to provide an expanded and comprehensive extension program for forest and rangeland renewable resources. RREA funds allocated to Langston University are administered through the American Institute for Goat Research (AIGR) and address strategic issues of Economic Opportunities for Individuals and Communities, and Invasive Species.

Goats could be used to remove woody vegetation and underbrush so that forest land can be constructively and sustainably maintained. Goats can also improve soil fertility by the release of nutrients sequestered in woody plants. Although the 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. 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.

Therefore, the objective of this year's RREA project was to establish a demonstration plot using goats on forested land at the Kiamichi Forestry Research Station (33°53'40.51" N, 94°45'20.96" W) of Oklahoma State University in Idabel, OK.

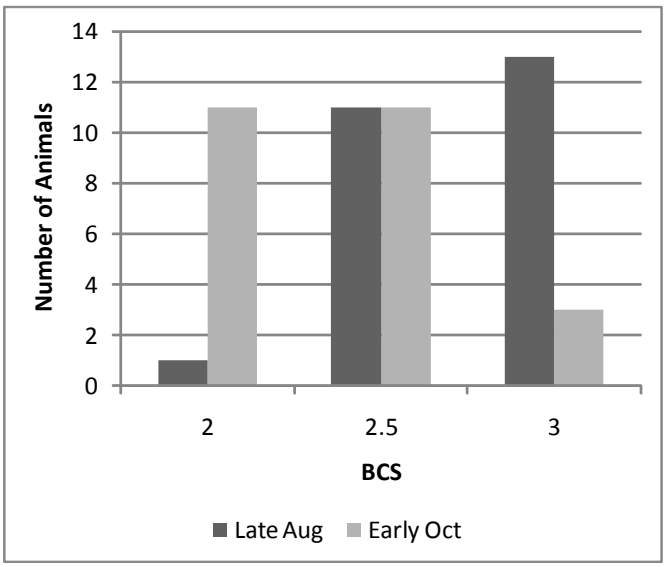
During the 2008 grazing season, twenty-five young wether goats and their accompanying guard dog were placed on the demonstration site for 12 weeks. During the first week, the goats were fitted with GPS collars that recorded their position every five minutes. These GPS collars allowed tracking of the goats within the site on a 24-hour basis and without the intrusive presence of a human observer. On page 6, one can see the aerial photo of the demonstration site. The nine-acre site was heavily overgrown and was difficult for a person to traverse on foot.

As expected, the goats lost weight and body condition score during the demonstration period. This was because they were accustomed to the open grass pastures of the university and not the heavily wooded demonstration site and to the fact that they were slightly overconditioned at the beginning of the project.

Attaching GPS collars.

Date	***Average Body weight (lbs)***
Early July	102
Late August	91
Early October	84

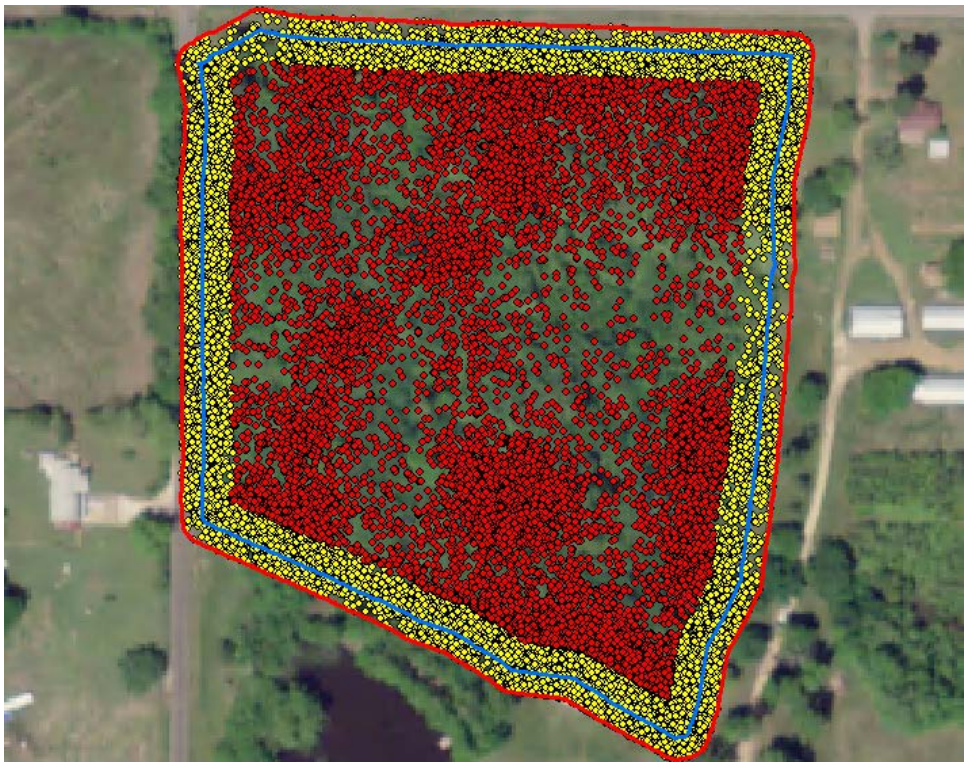
As can be seen in the first figure below, the shift in body condition score was dramatic, maybe even more so than the decrease in body weight. At the mid-point (August) and at the end (October) of the demonstration period, there were an equal number of goats with a body condition score of 2.5, which is a moderate score. However, the values on either side of that score changed. A body condition score of 2 tends toward "skinny" and a score of 3 toward

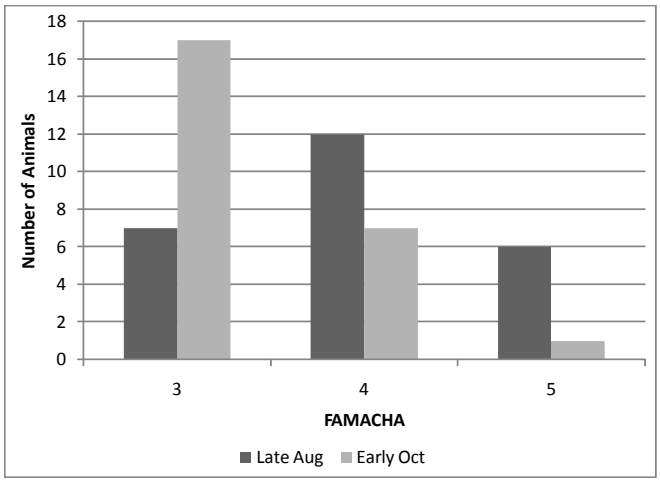


(cont. on page 6)

Above: The demonstration site is about 9 acres that is located on the northwest corner of the station and has been left for wildlife for several years. The area has a very dense understory. The overstory is composed of green ash, sycamore, cottonwood, and loblolly pine plantings (each about ½ acre in size). The rest of the area is in sweetgum ,water oak, and willow oak. (Approximate average age of the planted trees species is 10 years but there is scattered old growth oak and pine as well all stages of natural sweetgum regeneration.). The line denotes the fence line for the demonstration site.

Below: Goats spent 62% of their time within 30 feet of the fence (lighter yellow dots in photo), which was a cleared area, and 38% of their time within the interior of the site (darker red dots). Based upon GPS data, goats were more active in foraging within the interior and rested more in the fence buffer. Also, activity was bimodal with a peak at 9:00a and another at 2:00p. As can be seen, goats explored nearly every square foot of the demonstration site.





Goats attacking brush.

"fleshy". There were obliviously more skinny goats at the end than when we started the demonstration. The situation with FAMACHA score was very different. For FAMACHA, a higher score means a more "wormy" goat. In August, we tended to have wormier goats than in October. This probably was due to the fact that some of the goats were dewormed by the forestry crew between those two dates and may not reflect a natural shift in parasitism.

Agroforestry & Alternative Forest Practices Workshop

At the end of the demonstration, a workshop was held with sixty-two participants attending. The workshop focused on agroforestry with results of the goat demonstration site highlighted as a culminating presentation.

SUNUP, a weekly television show on the Oklahoma Educational Television Authority (OETA) network, produced a video segment (http://sunup.okstate.edu/video/11-8-08/seg2.html) about the goat demonstration.

"This year's Agroforestry and Alternative Forest Practices Field Day showcased the goat cooperative and was the best attended of these annual workshops." – Dr. Bob Heinemann, Senior Superintendent, OSU Kiamichi Forestry Research Station

For more information regarding the RREA program, contact Dr. Terry Gipson at (405) 466-6126 or tgipson@luresext.edu.

French word for goat is
chèvre
and it is feminine.

Tanning Goat Hides Workshop

Dr. Merkel examines a tanned Angora hide.

Finished goat, deer, and elk hides.

Have you ever wondered how to tan a hide? On Saturday, March 28, 2009 a tanning hides workshop will be held at Langston University from 8:00 a.m. to 12 noon. The focus of the workshop will be tanning hair-on hides but the process of dehairing hides and making leather and buckskin will also be discussed. The workshop will begin by reviewing skin structure as it relates to tanning and the supplies and tools needed. All stages of tanning will be presented from how to handle and store a raw hide to softening and finishing a tanned skin. Goat skins in several of the different tanning steps will be prepared so that participants can see, feel and better understand the process. Participants will have the chance to practice some of the procedures such as fleshing, applying tanning chemicals in two different methods and softening on goat skins prepared for the workshop. Various tanning methods will be discussed and examples of tanning kits and chemicals displayed. All of the tanning procedures presented and chemicals used are appropriate for home tanning with all of the work done by hand. While the tanning of goat hides will be demonstrated, the processes learned can be used on deer, coyote and other skins. Registration is limited to 10 participants. A registration fee of $10 is charged. Refreshments will be provided.

Liquid tanning method.

All ages are invited to attend the workshop.

For more information regarding the tanning hides workshop, contact Dr. Roger Merkel at (405) 466-6134 or rmerkel@luresext.edu. A registration form is available online at http://www2.luresext.edu/goats/extension/tanning.htm.

الماعز is the Arabic word for goat.

Noteworthy News

►In October, Dr. Steve Hart traveled to Porter, OK to present on Internal Parasites at a producer conference hosted by Heifer Project.

►In October, Dr. Roger Merkel traveled to Addis Ababa, Ethiopia to work on training activities of the Ethiopia Sheep and Goat Productivity Improvement Program and then on to Kigali, Rwanda to attend the USAID Africa Regional Higher Education Summit.

►In October, Dr. Steve Hart traveled to Ada, OK to present on Internal Parasites at the OSU Goat Boot Camp.

►In October, Dr. Tilahun Sahlu traveled to Cyprus to attend the closing conference of the Middle East Regional Cooperation Program.

►In October, Dr. Steve Hart traveled to Poteau, OK to present on Internal Parasites at the end of the OSU Forage Based Buck Test.

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

►In November, Dr. Terry Gipson traveled to Tallahassee, FL to work with the leadership team of the Goat Industry Community of Practice of the eXtension initiative.

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

►In December, Dr. Terry Gipson traveled to Trinidad and Tobago as a member of the Small Ruminant Technical Assistance Team to improve small ruminant production in Trinidad and Tobago.

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P.O. Box 730
Langston, OK 73050