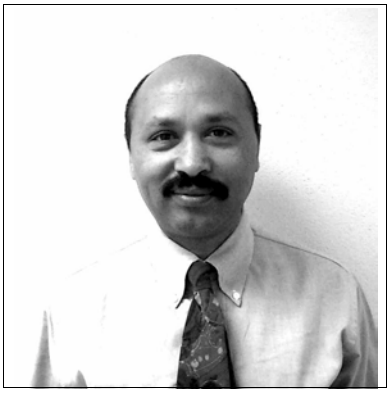
Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Summer 2003*

From the Director's Desk



Dr. Tilahun Sahlu

Even though this year's Goat Field Day was a huge success, it does not mean that we can slow our pace down even a little. In fact, themes for field days in the next two years have already been seriously discussed. And future research plans are being developed as well.

On continuing with the approach of highlighting one or a few of our research projects in each newsletter, for this quarter. I think it is most appropriate to address first the one entitled "Nutrient Requirements of Goats: An Update and Reevaluation." An important reason for this is that the key player, Dr. **Jun Luo**, returns to his research position at Northwest Science and Technology University of Agriculture and Forestry in China in the latter part of June. This project has been funded by the USDA 1890 Institution Capacity Building Research Grant Program, to which we give our sincere thanks and appreciation. The project actually began in the fall of 1998, but because of various factors, initial progress was slow. It was not until the arrival of Dr. Luo in the summer of 2000 that the pace rose to the level necessary. The first major task, and one that continued throughout the project, was to develop a large database of research findings from the literature. Dr. Luo studied and entered data from hundreds and hundreds of research papers and reports on nutrition and feeding experiments with goats. Next, this database was used to determine expressions or estimates of energy and protein requirements of and feed intake by goats. This activity is definitely not as simple as it may sound. Each study entailed numerous statistical procedures, careful checking and rechecking of data, intensive interpretation, trying different approaches, rethinking of assumptions and hypotheses, etc. In addition to Dr. Luo, there have been a number of other researchers involved. Investigators in the original proposal were Drs. **A. L. Goetsch**, **T. Sahlu**, **M. L. Galyean** (Texas Tech University), **C. L. Ferrell** (USDA ARS Meat Animal Research Center), **F. N. Owens** (Pioneer Hi-Bred International, formerly Oklahoma State University), and **Z. B. Johnson** (University of Arkansas), each making important contributions throughout the life of the project. However, the bulk of the work on individual studies was conducted by Drs. J. Luo, **I. V. Nsahlai** (University of Natal, South Africa), and **J. E. Moore** (formerly University of Florida). Dr. Nsahlai spent 7 months with us on sabbatical in 2001/2002, and Dr. Moore managed to squeeze time from his busy schedule for the project during the entire period. Another reason for mentioning this project now is that it is near-

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.

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ing completion. Hopefully by early or mid-summer, the last of an anticipated 10 manuscripts will have been submitted to the official journal of the International Goat Association, Small Ruminant Research. These papers are undergoing the normal peer review procedure of the journal, and will appear in a Special Issue, hopefully in late 2003.

As I mentioned earlier, our 2003 Goat Field Day was a huge success. All of our invited speakers did a wonderful job. The Goat Field Day is a team effort and I want our hard-working staff to know how much I appreciate their efforts. A summary of this year's Goat Field Day is on page 3 of this newsletter. Next year's Goat Field Day will be on April 24, 2004. It is not too early to put it on your calendar. For our 2004 Goat Field Day, we will focus on the topic of using goats to control unwanted vegetation, which is also the subject of our USDA Sustainable Agriculture Research and Education project. However, other extension activities require our present attention.

In early May 2003, 52 young bucks were enrolled in our annual Buck Performance Test. The vast majority of the bucks are fullblood Boer; however, a few percentage Boer were also enrolled. We have 2 bucks enrolled from Nebraska, 22 from Oklahoma, and 28 from Texas. Bucks from 16 different ranches are represented in this year's Buck Performance Test. The Buck Performance Test will end on August 16, 2003. A detailed report on the Buck Performance Test will appear in the next newsletter.

This summer and fall, we will have several workshops and two of them are highlighted in this newsletter.

We will be having workshops to highlight the second and final year of grazing for the USDA Sustainable Agriculture Research and Education project. We will be holding these workshops at the six research and demonstration locations of the project.

This fall, we will hold our annual artificial insemination workshops, which have been very popular with goat producers. One of the artificial insemination workshops will be held in Tahlequah, OK, which is more convenient for goat producers in eastern Oklahoma, Missouri, and Arkansas.

Please see page 6 for details of the workshops of the USDA Sustainable Agriculture Research and Education project and page 3 for details for the artificial insemination workshops.

Make plans today to attend the 2004 Goat Field Day

2003 Goat Field Day:

Export Potential, Market Outlook, and Value-Added Processing

Our annual Goat Field Day was held on Saturday, April 26, 2003 with more than 250 participants enjoying the speakers and activities.

Ms. Linda Campbell, owner and operator of Khimaira Farm, was our featured speaker for export potential, market outlook, and value-added processing of dairy goats and dairy goat products. Khimaira Farm, located in Luray, Virginia, is a family dairy and meat goat operation.

Dr. Joe David Ross, manager of the Cashmere America Co-Operative, was our featured speaker for export potential, market outlook, and value-added processing of fiber goat products. Cashmere America Cooperative recognizes that consistency in quality makes for a premium finished product.

Dr. tatiana Stanton, Extension Associate in the Department of Animal Science at Cornell University, was our featured speaker for export potential, market outlook, and value-added processing of meat goats and meat goat products. Dr. Stanton is a staff member of the Northeast Sheep and Goat Marketing Program, which was developed from a grant received by Cornell University from the USDA to improve sheep and goat marketing infrastructure in the Northeast.

The proceedings of the 2003 Goat Field Day are available online at http://www2.luresext.edu/goats/library/field/fd03.htm or a free paper copy can be obtained by contacting Dr. Terry Gipson at (405)466-3836 or at tgipson@luresext.edu.

Artificial Insemination Workshops

Artificial insemination is a valuable, yet inexpensive, tool for the livestock producer to increase the genetic merit of her/his animals. The average cost of a complete artificial insemination kit, minus semen tank and semen, is around $150. In addition, artificial insemination is a simple and easy skill to acquire. Usually after some instruction and practical experience, the average goat producer can expect good results.

For the instructional component, the Goat Extension program will be conducting two artificial insemination workshops this fall. The first will be at Langston University on Saturday, September 6, 2003 and the second will be at the Cherokee County Fairgrounds in Tahlequah, OK on Saturday, October 11, 2003.

Registration for the workshop is limited to 20 participants and the registration fee is $30 per person.

Participants at the AI workshop in Tahlequah listen to Dr. Dawson of Oklahoma State University talking about estrus synchronization.

AI Workshop Program (both locations)

7:30	Registration
8:00	Basic anatomy and physiology of goats
9:00	Estrus detection and synchronization in goats
10:00	Practice with fresh reproductive tracts
12:00	Lunch *(provided)*
1:00	Practice AI with live animals
2:00	Semen handling
2:30	Break
3:00	Practice AI with live animals

For information regarding the AI workshops, contact Dr. Terry Gipson at (405)466-3836 or tgipson@luresext.edu.

International Update: Animal Source Foods

by Roger Merkel

Animal source foods are known to play an important role in the growth, cognitive development, immune function and overall health of children. However, children in many parts of the world do not consume adequate quantities of these foods. In East Africa, diets are largely cereal-based and may not supply adequate quantities of the nutrients, particularly vitamins and minerals, that children need for healthy growth and development. Langston University is teaming with Oklahoma State University, UCLA, Debub University in Ethiopia and University of Nairobi in Kenya to ascertain why consumption of animal source foods is low in the diets of children in these countries. Oklahoma State University is the lead institution implementing the grant "Combating Micronutrient Malnutrition: Assessing Constraints to Including Animal Source Foods in Children's Diets in Rural Ethiopia and Kenya" that is funded through the Global Livestock Collaborative Research Support Program housed at the University of California, Davis. As part of grant activities, the women's groups for goat production near Debub University that were established through past grants with that institution will be surveyed to determine the use of goat products in the household and the impact that goats have made on family, and particularly child, nutrition.

Ethiopian Grants

Activities are continuing on current grants with Debub University and Alemaya University. The grant "Enhanced Education and Computer Capabilities: The Foundation for Sustained Collaboration" with Debub University is due to end in June 2003. Through that grant one Debub University faculty member spent one semester at Oklahoma State University receiving training in adult education and extension and a second faculty member received training in establishing and maintaining computer networks. A small computer laboratory was also established through grant activities. Funding for these activities was through the Association Liaison Office for University Cooperation in Development (ALO), USAID, the Leland Initiative of USAID and the Education for Development and Democracy Initiative. As part of grant activities, Drs. Roger Merkel and Art Goetsch traveled to Ethiopia in February 2003. Dr. Merkel conducted a workshop on multimedia presentations and PowerPoint. Dr. Goetsch presented seminars on ruminant nutrition and scientific manuscript revision and review.

A faculty member from Alemaya University will soon travel to Langston for scientific training and to assist with a trial evaluating the milk production potential of Spanish and Boer x Spanish does. This grant with Alemaya University is funded through ALO. Activities are also continuing on a grant with Debub University and Fort Valley State University, Fort Valley, Georgia that is funded through the United Negro College Fund Special Programs. Preparations are being made to receive two faculty members from Debub University, one for a two-week period in late summer and a second for a four-month period in early fall. The person arriving in the fall will conduct the second year of a trial evaluating nutritional flushing of Spanish and Boer x Spanish does differing in body condition.

Research Spotlight

Abstracted by A. Goetsch

Out-of-Season Breeding.

Manipulation for spring breeding in goats would provide meat goats ready for the peak-demand market of the Christmas-Easter holiday season. In an experiment to investigate these factors, four Spanish bucks were conditioned for 2 months to long-day photoperiod, followed by a single melatonin implant. Eighty Spanish does were allotted to five treatments: control, melatonin implant; melatonin and bromocryptine implants; oral administration of melatonin; and oral administration of melatonin and bromocryptine implant. After the fifth week of melatonin administration, does were bred over a 35-day period. The artificial long daylight conditioning for bucks and melatonin administration stimulated breeding behavior, libido, buck effect, and fertility during spring mating. Melatonin and the buck effect induced out-of-season breeding in anoestrus does. Although there were not a large number of variables with significant treatment effects, the results of this study suggest that melatonin implanted or orally administered daily would be necessary to achieve a high percentage of does bred and a large number of fall born kids. Furthermore, kidding in both the fall and spring is feasible with an accelerated out-of-season breeding system. Such a system should increase total annual meat goat production as well as increasing meat goats available during the Christmas-Easter holiday season when prices are generally elevated. However, for rapid growth of fall-born kids, it may be necessary to utilize high quality forages productive in the fall-winter period, such as cool season annuals. Out-of-season breeding also offers potential to decrease age of first breeding and concomitantly improve lifetime reproductive efficiency.

T. Wuliji, A. Litherland, A. L. Goetsch, T, Sahlu, R. Puchala L. J. Dawson, and T. Gipson. 2003. Effects of melatonin and bromocryptine administration in Spanish goats. Small Ruminant Research 49:31-40.

Cashmere Production.

Eighty Spanish does were used to determine effects of melatonin treatment for spring breeding on cashmere fiber growth rate, length, and characteristics. Treatments were control (C), melatonin implant (MI); melatonin and bromocryptine implants (MIB); oral administration of melatonin; and oral administration of melatonin and bromocryptine implant (MOB). After the fifth week of melatonin administration, does were bred over a 35-day period. Cashmere growth rate was monitored by clipping fibers in a 10 x 10 cm patch on the mid-side of goats monthly from February, 1999 to January, 2000. Mean daily clean fiber growth rate (mg/day) was greater for melatonin-treated groups compared with C in April (41.5, 71.8, 76.1, 71.8, and 65.0 mg/day) and May (37.2, 64.0, 74.4, 58.4, and 57.9 mg/day); the overall 12-month period fiber growth of patches was 12.5, 15.9, 15.3, 13.1, and 12.9 g for C, MI, MIB, MO, and MOB, respectively. Total patch fiber growth was greater for MI and MIB than other groups. Cashmere fiber diameter was greater for MI, MIB, MO and MOB compared with C (17.4, 18.7, 18.9, 18.4 and 18.1 microns) during the spring. Fiber diameter of C was smallest among treatments (16.8, 18.6, 18.7, 18.4, and 18.8 microns for C, MI, MIB, MO, and MOB, respectively) during summer. These results suggest that melatonin administration for spring breeding is an effective means of increasing cashmere production from Spanish goats. Melatonin, given orally or in a slow release implant, increased fiber growth rate, fiber elongation, fiber diameter, and cashmere yield in spring months.

T. Wuliji, A. Litherland, A. L. Goetsch, T, Sahlu, R. Puchala L. J. Dawson, and T. Gipson. 2003. Effects of melatonin and bromocryptine administration in Spanish goats. II. Effect on seasonal cashmere growth, yield, and fiber characteristics of does. Small Ruminant Research 49:41-49. 2003.

Vegetation Control Workshops

by S. Hart

The E (Kika) de la Garza American Institute for Goat Research is conducting a project using goats for vegetation control and management. Six research and demonstration sites have been established to collect information about the use of goats for vegetation control. These sites were prepared in 2001/2002 and first grazed by goats during the summer of 2002. Vegetation conditions were characterized before putting goats out in both 2002 and 2003. The same measures were made at the end of the grazing season last year.

Early in the spring, it looked like the goats had hurt the blackberries and smooth sumac, but after spring rains, the blackberries came back with a vengeance. Winged sumac, poison ivy, and small winged elm were top-killed, and the winged sumac is sprouting vigorously from the roots. Sand plum thickets that were grazed were so stressed that they did not produce any plums this spring whereas thickets in ungrazed areas produced fruit as usual. It was easier to walk through previously grazed sand plum thickets, an almost impossible task one year ago. In several areas, there were more cheat and broadleaf weeds this spring because the browsing of brush had reduced the amount of shade, enabling these plants to grow. This year, stocking rates have been reduced to improve the weight gains of goats and to gain information on the best stocking rate to control brush.

When goats were first put onto the sites, they consumed the tops of mares tail at every location and the tops of daisy fleabane. They also consumed significant amounts of young western ragweed.

Much of Oklahoma has brush and weed problems that goats can control. We partnered with Native American Nations in obtaining a USDA grant on sustainable vegetation management using goats. The partnering nations involved are listed below. The purpose of this work is to demonstrate the use of goats to control brush and how goats can be a useful farm enterprise, especially for small and limited resource farmers. Also, information is being collected on animal gains and to evaluate the effects of management factors such as stocking rate on vegetation conditions, including species of brush and weeds eaten and controlled.

Goat field days are going to be held to discuss the effect of goats on brush at each location. These are cosponsored by the Native American Nations with support from local county extension offices.

The goat field days and locations are as follows:

1. **July 9 - Caddo Nation at 12 miles North of Anadarko at the Caddo Nation Headquarters**

2. **August 2 - Choctaw Nation Southeast of Antlers at Hamden Community Center**

3. **August 6 - Seminole Nation at Miccosukee Mission area South of Seminole.**

4. **August 23 - Osage Nation at Grey Horse Village (East of Fairfax)**

5. **October 10 - Cherokee Nation at Cherokee Nation Headquarters in Tahlequah**

6. **October 18 - Sac and Fox Nation at West side of Stroud Lake**

Further information on the goat field days can be obtained by contacting Dr Steve Hart at 405-466-3836 ext. 240 or shart@luresext.edu.

DHIA Lab Update

The Langston Goat Dairy Herd Improvement (DHI) Program operates under the umbrella of the Texas DHIA. The Langston Goat DHI program has been very popular with dairy goat producers and has grown significantly since its establishment in 1996. In 1998, the Langston Goat DHI program became the first DHI program to introduce forms and reports in goat terminology to dairy goat producers in the United States. Additionally, Langston research has shown that laboratory instruments should be specifically be calibrated for goat milk. When goat milk is analyzed on laboratory instruments calibrated for cow milk, the resulting values overestimate somatic cell counts and underestimate butterfat and protein values. Figure 1 shows the growth of the Langston Goat DHI lab in terms of the number of herds processed and compared with all record processing centers in the United States. Generally, there is a decrease nationwide in the number of herds enrolled in the national DHIA program, except for the Langston Goat DHI program. Currently we are serving 27 states including a majority of the eastern states. We have over 100 herds in these 27 states enrolled in the Langston Goat DHI Program. Even though Langston University is one of the smallest certified DHIA laboratories, it recorded the largest increase in herds and numbers among the six certified DHIA processing centers that process goat records. In fact, only two processing centers showed an increase in these two categories. Langston University continues to serve the very small-scale dairy goat producer. The average herd size on test with Langston University is 10 animals (Figure 2). This is significantly smaller than the herd size average for the five other processing centers.

Mr. Tim McKinney, lab manager of the Langston Goat DHI program, analyzes goat milk for fat and protein percentages.

For information regarding the Langston DHI program, contact Mr. Tim McKinney at (405)466-9962 or at langston_dhi@yahoo.com.

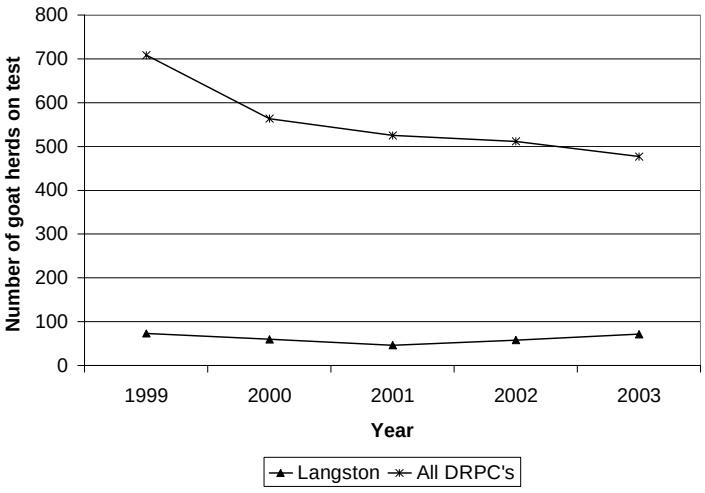

Figure 1. Number of goat herds on DHIA test.

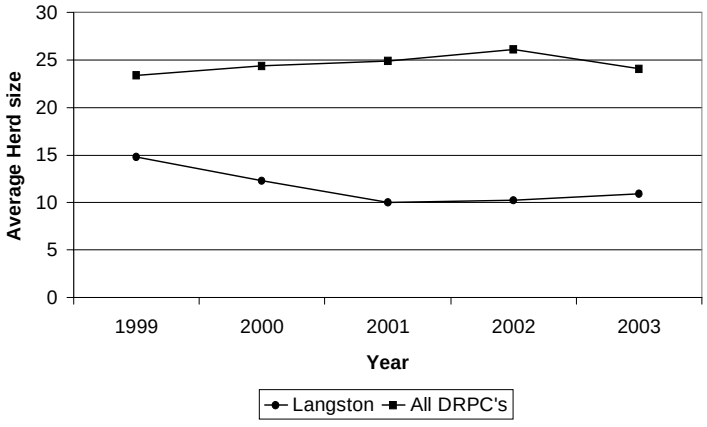

Figure 2. Average herd size for DHIA test.

Noteworthy News

Drs. **Lionel Dawson**, **Arthur Goetsch**, **Terry Gipson**, and **Mario Villaquiran** traveled to Fort Collins, Colorado in early May to participate in a meeting for the USDA-IFAFS funded project entitled "Enhanced Goat Production for the Southern United States".

Drs. **Roger Merkel** and **Terry Gipson** traveled to Armenia in March to provide support for grant activities conducted with the USDA Marketing Assistance Program and to discuss future plans.

Several Visiting Scholars completed their research and returned to their home institutions. Dr. **Fekadu Beyene** returned to Ethiopia and Dr. **Jun Luo** returned to China.

Ms. **Anne Manach**, Student Trainee from France, arrived to work on the vegetation control project.

Dr. **Steve Zeng** attended the National Conference on Interstate Milk Shipment (NCIMS) as a member of Other Species Committee in Seattle, WA. A resolution was passed to lower the somatic cell count limit for Grade A cow's milk from 750,000/ml to 400,000/ml effective in 2007. The standard limit for Grade A goat's milk will stay at 1,000,000/ml.

Dr. **Steve Hart** went to Arkansas to conduct a workshop on mineral nutrition of goats.

Drs. **Terry Gipson**, **Steve Hart**, and **Steve Zeng** traveled to Stillwell, OK in early May to conduct a producer field day on goat production and products.

Dr. **Steve Zeng** conducted cheesemaking workshops in Missouri and Kansas.

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