



# Goat Newsletter

Cooperative Extension Program  
Langston University

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

Winter 1998

## From the Director's Desk

Photo #1

*Dr. Tilahun Sahlu*

Considerable research has been conducted recently, and many experiments are underway. This summer, Dr. **Manuel Lachica** (Visiting Scholar from Spain) performed a study to determine effects of grazing activities with native summer pasture on energy use. Dr. **Roger Merkel** (Visiting Scholar from Illinois) just completed an experiment in which polyethylene glycol supplemented goats consuming lespedeza. Dr. **Jun Luo** (Visiting Scholar from China) is studying the influences of warm season grass species and of different supplements of low-quality grass hay on feed intake and metabolism. Dr. **Veneta Banskalieva** (Visiting Scholar from Bulgaria) and Mr. **Kesete Tesfai** (Lab Coordina-

tor) are developing new lab methodology to study the fat concentration and fatty acid composition of goat meat and to characterize its unique nutritional attributes. **Maxine Cameron** (Visiting Scholar from Canada) is studying growth and carcass attributes of different types and ages of meat goats. Dr. **Ryszard Puchala** and Dr. **Isabel Prieto** (Visiting Scholar from Spain) is studying the hormonal controls of mohair growth and live weight gain. Dr. **Steve Hart** is conducting a trial with different flushing treatments to increase reproductive performance of Spanish does. Drs. **Tilahun Sahlu** and **Arthur Goetsch** have an experiment in progress to study influences of different late lactation and dry period nutritional planes on subsequent lactation performance of Alpines, which is partially supported through an ADGA research grant.

Seeking and obtaining outside support is very important to our research program. Recently, notification from the USDA was received for funding of two grant proposals submitted last January. Both

projects will be initiated in the next few months. Titles of the projects are "Postruminal Nitrogen Supply for Fast Growing Meat Goats" and "Nutrient Requirements of Goats: An Update and Reevaluation".

The E (Kika) de la Garza Institute also has an international charge, which is especially appropriate considering the much greater number of goats in other countries than in the US. Approval was received from the USAID for a cooperative project, designed by Dr. **Roger Merkel**, between the Institute and Awasa College of Agriculture in Ethiopia. The project's primary objectives are to increase the research and extension capabilities of staff at Awasa College and to establish women's groups for goat production in the southern region of Ethiopia. The Institute has also received additional support for its international activities from the USDA to evaluate nonconventional anthelmintic treatments for goats.

Please look for updates and reports on these and other institute activities in future newsletters.



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

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## Meet the Faculty & Staff

Photo #2

*Dr. Marvin Burns*

With this issue of *Goat Newsletter*, we will launch a new series in which a faculty or staff member of the E (Kika) de la Garza Institute for Goat Research will be introduced. The goal of this series is to better acquaint readers with GIGR personnel.

Marvin Burns was born in Ty Ty, Georgia and was raised on a farm. He received a B.S. in Agronomy from Fort Valley State University, an M.S. in Agronomy from the University of Wisconsin, and a Ph.D. in Plant Breeding and Pathology from the University of Arizona.

After receiving his doctorate, Dr. Burns served as Head of the Department of Plant Science at Prairie View A&M in Texas for four years. In 1978, he moved to Tuskege University in Alabama and served as Head of the Department of Agricultural Sciences for the next 10 years.

In 1988, Dr. Burns was a Visiting Professor at the University of Delaware and in 1989, he was a Visiting Scientist in the Discovery Group at

American Cyanamid in Princeton, NJ. During both of these Visiting Professor positions, Dr. Burns learned valuable biotechnology skills and techniques that he later used to establish the first biotechnology laboratory at Tuskege University.

In 1991, Dr. Burns embarked upon a long and illustrious international career when he became the Plant Breeder/ Pathologist with the RAV II Extension and Research Project in Zaïre (now Congo) for two years. He then moved to Cameroon where he served as the Plant Breeder/Pathologist with the Root and Fiber Crop research program for two years. Dr. Burns has also had short-term assignments in Guyana, El Salvador, Burkina Faso, Chad, Zaïre, South Africa, Nigeria, Liberia and Rwanda.

In 1995, Dr. Burns left Tuskege University to become the Associate Administrator of Extension at Langston University. In 1997, he was named the Acting Dean for Research and Extension and in 1998 was named the Dean of the newly formed school of Agriculture and Applied Sciences, where the E (Kika) de la Garza Institute for Goat Research is now housed.

Dr. Burns is married and has two sons. In his limited leisure time, he enjoys tennis, golf and fishing.

# In the Dairy Barn

**Langston Goat DHI Update.** The Langston Goat Dairy Herd Improvement (DHI) Program operates under the umbrella of the Texas DHIA. In February, the Langston DHI program introduced paperwork in goat terminology to dairy goat producers. This is the first program to offer all reports in goat terms in the United States. The Langston DHI program has grown significantly since its establishment in 1996. Figures 1 and 2 shows the growth of the DHI lab in terms of number of samples processed and of herds and states enrolled.

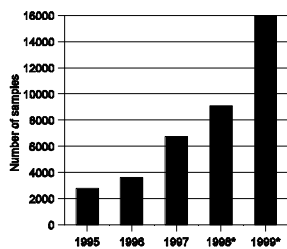


Figure 1. \*estimated

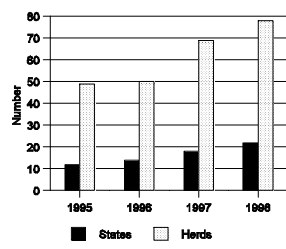


Figure 2. \*currently

A 35-minute video tape is available to those interested in the Langston testing program. 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.

*For information regarding the Langston DHI laboratory, contact Dr. Irene Brown-Crowder at (405)466-3836 or [ibcrowder@mail.luresext.edu](mailto:ibcrowder@mail.luresext.edu)*

**New Electronic Identification System for Goats.** The E (Kika) de la Garza Institute for Goat Research recently installed a 10-unit machine milking system, replacing the previous 3-unit system. This will increase research capabilities with lactating dairy animals and decrease labor requirements. In addition, a new electronic animal identification system has been installed to complement the new milking parlor. The system antenna is mounted at the entrance of the parlor and reads transponders mounted on a neck band as does enter the parlor. The information is then transmitted to the milking machine station, which records milk weight for a doe when milking is complete. *For information regarding electronic identification, contact Dr. Steve Hart at (405)466-3836 or [shart@mail.luresext.edu](mailto:shart@mail.luresext.edu)*

**Goat Cheese Workshops.** Seven goat cheese workshops were conducted in 1998. In the workshops, basic cheesemaking principles were instructed using Colby, Cheddar, Mozzarella and soft cheeses as demonstrations. At the end of each workshop, participants were able to evaluate their own products and to take some cheese home as well. *For information regarding future goat cheese workshops, return form on page 7 or contact Dr. Steve Zeng, at (405)466-3836 or [szeng@mail.luresext.edu](mailto:szeng@mail.luresext.edu)*

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## Sustainable Agriculture Grants Workshop

The Southern Sustainable Agriculture Research and Education (SARE) Producer Grant program and the Kerr Center for Sustainable Agriculture are soliciting grant proposals from Southern/Oklahoma farmers, ranchers and farmer/ranch organizations to conduct research, education and marketing projects that promote

sustainable agriculture. The deadlines for this year's producer grants are January 29, 1999 for SARE and February 17, 1999 for the Kerr Center.

In order to facilitate grant writing, the E (Kika) de la Garza Institute for Goat Research will host a Sustainable Agriculture Grant writing workshop on January 12,

1999 at 10:00 a.m. This two-hour workshop will be held on the Langston campus and will provide page-by-page application information and examples of successful proposals. *For information regarding the SARE workshop, return form on page 7 or contact Dr. Nelson Escobar or Dr. Terry Gipson at (405)466-3836.*

# Research Spotlight

Abstracted by A. Goetsch

**Milk Replacer for Orphaned Angora Kids.** Angora goats are valued for mohair production, which through selection has resulted in poor mothering and frequent occurrence of abandoned kids. Kids of dairy goat breeds are often raised by hand, and orphan lambs are frequently reared artificially as well. But, it is unclear if similar management techniques can be used for Angora kids. In this 11-week experiment, with twice daily feeding of acidified milk replacer and offering of a dry starter diet in week three, Angora kids consuming milk replacer free-choice gained weight 28% more rapidly than did kids fed 500 milliliters (17 fluid oz.) of milk replacer. Kids in the restricted group appeared to break down more body protein for energy than did kids consuming milk replacer free-choice. However, under commercial conditions with weaning at seven to eight weeks of age, this difference in growth rate could be of lesser magnitude. Furthermore, mohair production was similar between the two groups. Thus, restricted milk replacer feeding could reduce cost of mohair production by lessening feed expenses, and possibly could speed rumen development by hastening and promoting greater dry feed consumption than with

free-choice intake of milk replacer.

*Davis, J. J., T. Sahlu, R. Puchala, and K. Tesfai. 1998. Performance of Angora goat kids fed acidified milk replacer at two levels of intake. Small Ruminant Research 28:249-255.*

**Somatic Cells in Dairy Goats.** Major milk components (e.g., fat and protein), somatic cell count, and daily milk yield depend on numerous factors such as morning versus evening milking, stage of lactation, and breed. However, there is a lack of data on daily variation in milk composition, especially for the somatic cell count in goat milk. Proper testing plans and sampling procedures are critical for accurate milk testing. In the current investigation with Alpine milking does, concentrations of milk components changed with stage of lactation, although daily variations were not significant. The somatic cell count was high in the early (two to three weeks) and late (four to five months) segments of lactation, and exhibited considerable daily variation. A monthly testing plan for inflammation may be inappropriate if the somatic cell count serves as the indicator. Rather, somatic cell count records for consecutive months should be examined, and a culture test may be advisable, before a milking doe is treated

or culled.

*Zeng, S. S., E. N. Escobar, and T. Popham. 1997. Daily variations in somatic cell count, composition, and production of Alpine goat milk. Small Ruminant Research 26:253-260.*

**Amino Acid Utilization.** Knowledge of mechanisms of amino acid utilization and its hormonal regulation in tissues such as the skin will provide insight into fiber production at the tissue level. Results of this experiment with Angora goats suggest that insulin regulates skin methionine metabolism via local effects, whereas triiodothyronine (i.e., T<sub>3</sub>) influences amino acid metabolism via centrally regulated mechanisms. In skin of Angora goats, demand for methionine may be greater than provided by average blood concentrations of methionine. In the future, knowledge of skin metabolism, such as derived in this study, will lead to diet formulation to optimize mohair production, provide the basis for genetic selection for mohair production, and facilitate development of products that regulate nutrient uptake by skin.

*Puchala, R., S. G. Pierzynowski, and T. Sahlu. 1998. Effects of methionine and hormones on amino acid concentration in the skin of Angora goats. Small Ruminant Research 29:93-102.*

# Meat Buck Performance Test

by E.N. Escobar

The identification of superior sires is essential for genetic progress and a time-tested method of identifying superior sires is the central performance test. A central performance test involves bringing young males from several different farms together to a central location to be evaluated in a common environment.

In an effort to identify superior meat bucks, Langston University, in cooperation with the Oklahoma Meat Goat Association (OMGA), recently completed its second annual meat buck performance test.

For 1998, 10 meat bucks from ranches in Oklahoma, Arkansas and Texas were grouped in pens by weight. Following a 14-day adjustment and training period, all bucks commenced a 70-day performance test. On-test, mid-test and off-test weights were the average of two weights taken on the same day. From these weights average daily gain (ADG) was calculated.

Feed efficiency (FE; lbs. of feed per one lb. of gain) was calculated using Calan feeder gates to measure individual daily feed intakes. This is the first time that efficiency was included in indexing in Oklahoma buck testing. The Calan gates feature an electronic recognition system

which allows access to feed to only one particular goat per feeder. Thus, individual daily feed intake can be measured and used to calculate feed efficiency. A performance index was also calculated using the following formula:

*Index Score (IS) = 40% FE + 20% ADG + 20% depth of the longissimus muscle (loin) at the first lumbar site as measured by real time ultrasound + 20% circumference of the widest part of the hind left leg as measured with a tailor's tape adjusted for the goat's metabolic body weight:*

$$\frac{\text{Circumference of hind left leg}}{\text{Body weight}^{0.75}}$$

This body weight adjustment gave lighter goats a fair comparison of muscling to heavier goats.

**Table of ADG, FE and IS of 1998 tested bucks.**

ID #	ADG lb./day	FE feed/gain	IS
29	0.69	5.00	104.0
31	0.59	5.50	93.1
32	0.61	5.93	97.3
33	0.67	5.99	106.7
34	0.64	6.12	98.1
35	0.83	6.13	99.3
36	0.64	6.23	84.5
37	0.80	6.29	102.8
38	0.80	6.33	99.0
39	0.79	6.89	96.9

ADG averaged .71 lb./day

and FE averaged 6.04 lb. feed/lb. gain. As can be seen from the table, both traits had a wide range in values. For calculating the IS of each individual, the deviation from the average of the parameters was used. Thus, the average of the IS was forced to be 100.

## **Prepare now for the 1999 meat buck performance test.**

Plans are underway for the 1999 performance test. Goat producers interested in bringing bucks for evaluation need to contact OMGA president:

Mr. Eddie Harrison  
Rt. 3 - Box 249B  
Pauls Valley, OK 73075  
(405) 867-4147

The test is open to purebred and crossbred bucks born between December 15, 1998 and March 31, 1999. Bucks must be weaned at least two weeks prior to the entry date of May 15, 1999. At delivery to the test station, live weight of each buck must be at least 30 lbs. at the test site.

Breeders pay expenses of the test including feed, medications, veterinary services (check-in inspection, vaccines, emergency treatment, etc.) and other expenses related to the performance test. An information package with registration forms and complete details will be mailed at a later date (use form on page 7 for more information).

# Goat Management Tips

**Feeding Goats from Breeding to Kidding** by *S. Hart and M. Cameron.*

The challenge this winter is to figure out how to feed your goats cheaply. Corn grain is relatively cheap and is a good source of energy. However, you must remember that a goat is a ruminant and about half of their diet should come from forage. Otherwise, you can get a very sick goat. The protein content of corn is low (8-10%) and may not be adequate for the last month of pregnancy.

A fetus (unborn kid) will gain 70% of its birth weight the last six weeks of pregnancy. This makes the last month of pregnancy the most important time nutritionally. Therefore, plan for your best nutrition at this time, which may mean saving your best hay to feed at this time. For economics, it means that you pinch on feed costs during the early part of the winter to spend it on critically needed nutrition during the last month of pregnancy. Poor nutrition prior to kidding will cause a host of kidding problems including poor milk production and ketosis. This is particularly true for dairy goats and does carrying a large number of kids.

Feeding whole shelled corn is cheap and provides significant energy. Never feed more than about 1.5 lbs./day. A number of producers have discovered that cattle cubes are considerably cheaper than commercial goat feed as a supplement. Many mills offer pelleted byproduct feeds such as corn gluten feed, soyhulls and wheat midds. These can be quite a bargain, especially corn gluten feed, which not only provides a source of roughage and energy, but is a good source of protein as well (20% CP). Soyhulls, wheat midds, screenings and shorts are an excellent source of energy, but since they are easily digested in the rumen, it is necessary to limit the amount fed and feed them with hay. Cottonseed hulls and oat hulls are good sources of fiber and often cheap. Many of these byproduct feeds are used in the formulation of cattle cubes. Remember to not feed more than about 1.5 lbs./day maximum and to slowly adapt animals to new feeds to avoid bellyaches, sickness or death.

Vitamin A is very important for maintaining pregnancy and having a normal kid. Most of the hay this year is very short on vitamin A due to the very hot summer cooking the vitamin A out. There are a number of ways to provide your goats with vitamin A. Vitamin A is included in most cattle cubes. Green grass such as the cheat coming out has considerable vitamin A. Many vitamin/mineral supplements contain vitamin A. Vitamin A can also be given as an injection (usually a combination of vitamins A, D and E) that will provide sufficient vitamin A for a couple of months. Animals that have been eating green grass can store several months of vitamin A in their liver. Remember that your goats need vitamin A if you plan on them having healthy kids.

There have been a lot of cool season pastures (wheat, rye, and many mixtures) planted because of the drought and hay shortage. Goats do very well on these cool season pastures. At Langston, we have learned that cool season pasture can be stretched (costs reduced) by limit grazing. We did one study comparing limit grazing for two hours/day as compared to feeding 1 lb. of a 16% protein supplement (both groups had free access to medium quality grass hay). The goats on pasture did much better than those fed the supplement. A number of producers implemented this by grazing their goats 3-4 hours/day every other day. Remove the goats when they start lying down. This management works well when pasture is short for the number of animals.

Oklahoma is deficient in the trace mineral zinc. Although copper levels are adequate, an excess of molybdenum depresses copper absorption so that copper is needed. Oklahoma is considered adequate in selenium throughout the state. Trace mineral salt blocks will provide all the trace minerals needed in Oklahoma.

*For information regarding feeding goats, contact Dr. Steve Hart at [shart@mail.luresext.edu](mailto:shart@mail.luresext.edu), Ms. Maxine Cameron at [mrcamr@aol.com](mailto:mrcamr@aol.com) or call (405)466-3836.*

# Tentative Activities for 1999

The following are tentative dates and training activities with goat producers for 1999 sponsored by the Agricultural Research and Extension Program at Langston University. If you are interested in receiving future information regarding these events, please check the appropriate box in the form below and mail it as soon as possible. The names and addresses of those responding will be placed on a special mailing list and registration forms and other information will be mailed later. Due to space and equipment availability only a limited number of participants can be accommodated for each event. **A limited number of Proceedings of the 1998 Goat Field Day are also available, free of charge.** If you desire a free copy please check the appropriate box on the form below and return to Langston University.

Date	Activity
<i>January 12, 1999</i>	<i>Sustainable Agriculture Grants Workshop</i>
<i>To be announced</i>	<i>Nutrition Workshop for Dairy Goat Farm Managers</i>
<i>April 24, 1999</i>	<i>GOAT FIELD DAY</i>
<i>May 15, 1999</i>	<i>Meat Buck Performance Test</i>
<i>May 29, 1999</i>	<i>Goat Cheese Making Workshop</i>
<i>September 4, 1999</i>	<i>Demonstration Clinic: Artificial Insemination for Goats</i>

*In compliance with the ADA Act, participants with special needs can be reasonably accommodated by contacting Dr. E.N. Escobar (405) 466-3836, at least five business days prior to the scheduled event.  
(E Cut along line and mail form)*

## FORM TO REQUEST INFORMATION ABOUT FUTURE EVENTS

NAME: \_\_\_\_\_ TELEPHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

ZIP: \_\_\_\_\_

Date	Activity	T
January 12, 1999	Sustainable Agriculture Grants Workshop	
To be announced	Dairy Goat Nutrition Workshop for Dairy Goat Farm Managers	
April 24, 1999	GOAT FIELD DAY	
May 15, 1999	Meat Buck Performance Test	
May 29, 1999	Goat Cheese Making Workshop	
Sept. 4, 1999	Demonstration Clinic: Artificial Insemination for Goats	

### **Please mail this form to:**

Agricultural Research  
and Extension Program  
Langston University  
P.O. Box 730  
Langston, OK 73050

ATTN: '99 EVENTS

9 Please send me the **Proceedings of the 1998 Goat Field Day.**

# Noteworthy News

**Dr. Arthur L. Goetsch**, Research Program Leader, was honored with the Young Scientist Award - Research for the Southern Section of the American Society of Animal Science. Dr. Goetsch was recognized by his peers for his outstanding research in ruminant nutrition. Dr. Goetsch has an outstanding research publication record, which includes 125 refereed journal articles, eight book chapters or symposia proceedings, 85 abstracts and 50 state agricultural experiment station publications, conference proceedings, popular press

and regional publications. He has also been the major advisor for six M.S. and eight Ph.D. students.

**Dr. Steve Zeng**, Food Technologist/Dairy Extension Specialist, recently participated in the USDA/Cooperative States Research, Extension and Education Service Fellows Program in Washington, DC. Working with National Program Leaders, he assisted in the revision and editing of the Goat Industry Extension Handbook and published a Directory of State Contacts in

Value-Added Agriculture.

**Dr. Terry A. Gipson** recently joined the E (Kika) de la Garza Institute for Goat Research faculty. Dr. Gipson, an animal breeder/geneticist, was on faculty at Virginia State University, where he was a research scientist and extension specialist for the meat goat program. Dr. Gipson has a split appointment in the E (Kika) de la Garza Institute for Goat Research, which includes research and extension activities in meat/cashmere production.



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