Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Fall 2010*

From the Director's Desk

Fall is upon us once again, which means that breeding season is here. We have been busy this breeding season because our research on residual feed intake needs a broad cross section of sires to evaluate. Normally, we would have 25 to 30 females per sire in our breeding groups but for this project we have about 10 females per group and 12 sire groups. We have been stretched to the limit to equip our bucks with breeding harnesses. I don't know if you use breeding harnesses or not but they are a necessity on our farm. It is helpful to know which females have been bred at which time in the breeding season. This helps us better manage our females in the spring when they are kidding. Also, by putting different color crayons on different bucks, it is easier to identify mismatings, which do occur even in our tightly managed research herd. In fact recently, a group of females was accidently exposed to the wrong buck but with breeding harnesses, we were able to identify correctly the matings. If you do use breeding harnesses, I would encourage you to inspect them carefully. Look for any malfunctioning buckles or worn straps that may break and injure the buck or render the harness ineffectual. Make sure that you have the correct crayon, also. Cold weather crayons, if used in the warm season, will melt and be quickly used up. Conversely in cold weather, a warm weather crayon will be too hard and will not leave a mark on the female. We like to use a 45-day mating season and to switch crayon period midway through the breeding season. In the past, we used leather harnesses but we have switched to lightweight nylon harnesses. Both types have their advantages and disadvantages.

Many other research projects are ongoing. Dr. **Abdelhafid Keli** of the National Institute for Agricultural Research (INRA) of Tangier, Morocco has been with us since early summer conducting a grazing experiment. The objective of this research trial is to see if grazing after the dew evaporates reduces the exposure to parasite larvae. We are just finishing this experiment and will soon be analyzing the data. We used Alpine dairy does for this experiment and we assigned them to one of four treatments; 1) normal management where the does grazed after the morning milking and up until the afternoon milking and then housed overnight in a barn, 2) continuous grazing, 3) does were allowed to graze after the dew or other moisture had evaporated until the afternoon milking and then housed overnight in a barn, and 4) does were allowed to graze after the dew or other moisture had evaporated until the afternoon milking, returned to grazing until dusk and then housed overnight in a barn. To objectively measure the presence or absence of dew, we used some leaf wetness sensors. These sensors resemble a leaf and use a pulse of electric current across their surface to

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

measure conductivity; the wetter the surface the higher the conductivity. On some rainy days, the goats in treatment 3 and 4 were confined in the barn all day. The rationale behind this experiment is that parasite larvae ride the moisture up the plant where it has a greater chance of being eaten by the grazing goat. When the dew has dried off, we hope that there is less risk of the goat consuming parasite larvae. This experiment should be able to tell us if restricting grazing to during dry grass times will reduce the parasite load in the goat.

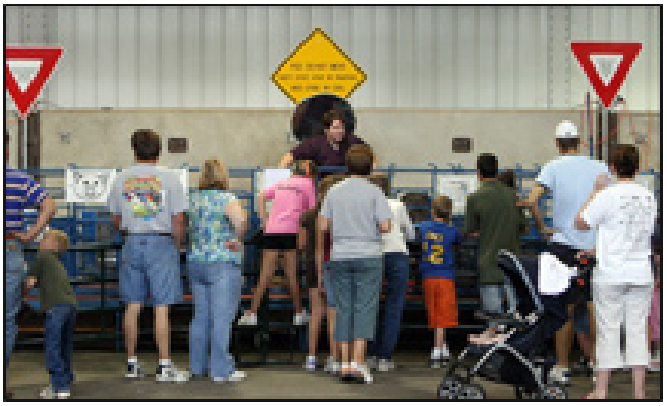
On the subject of parasite control, Dr, **Zaisen Wang** has been conducting a trial to compare responses of Boer and Spanish goats naturally infected with nematode parasites to garlic supplementation. Because of widespread parasitic resistance to dewormers and the increasing demand for "organic" animal products in the consumer market, alternative approaches for parasite-control for sustainable small ruminant production are increasingly receiving attention. Relatedly, Dr. **Wang** recently welcomed Dr. **Rongzhen Zhong** from the Northeast Institute of Geography and Agroecology of Chinese Academy of Sciences. Dr. **Zhong** will be working with Dr. **Wang** for six months studying goat farm management and internal parasite control.

We will have more research projects in the near future. The USDA Capacity Building Grants program informed Dr. **Arthur Goetsch** that his proposal entitled "Establishing a Langston University Testing Center for Electric Fence Modifications of Cattle Barb Wire Fence for Goat Containment" and informed **Dr. Zaisen Wang** that his proposal entitled "Effects of Selected Nutritional Components on Immunity to Haemonchus Contortus in Goats" were selected for funding. As the next few years evolve, I will keep you informed about these two research projects. We were successful with two extension proposals funded by the same agency. A proposal entitled "Enhancing the Capabilities of Socially Disadvantaged and Underserved Farmers via Low Literacy Materials in English and Spanish" submitted by Dr. **Terry Gipson** and a proposal entitled "Training Farmer Educators on Goat Mortality and Butcher Waste Composting, A Regional Approach" submitted by Dr. **Roger Merkel** were also selected for funding.

On the extension front, the fall is a time when we start to wind down our activities and begin planning for the next cycle. One extension activity that is year-round and one in which we have been heavily involved is eXtenion, which is a national initiative of USDA. The web site for eXtension is *www.extension.org*. Did you know that in a flood, fire ants can group together and form rafts so that they can float to new locations and form new colonies? That fact and many more, I learned at the eXtension web site. I would encourage you to visit it.

The Miracle of Birth:
Goats at the Birthing Centers at the State Fairs

The miracle of birth is one that few children get to see. With the help of Langston University and Oklahoma Veterinary Medical Association (OVMA), children get to view various farm animals being born. The OVMA hosts two birthing centers, one at the State Fair of Oklahoma in Oklahoma City and the other at the Tulsa State Fair. The OVMA and the fair obtain farm animals, including goats, sheep, pigs and sometimes a cow, that are bred to give birth during the State Fair. Langston University provides goats to both fairs that have their reproduction "programmed" for breeding so that they will give birth during the fairs. The goats are verified as being pregnant before being taken to the fair. Goats have been the birthing stars during the fair. During the fair, when a live birth is happening, children get to watch the live event. The birth is also video taped and the video is played when no animal is in the birthing process. The animals are taken care of by volunteer veterinarians and veterinary technicians so that the animals receive the best of care during the fair. Children often laugh at the antics of the young kid goats as they jump on their mothers and bounce around the pen and sleep in feed troughs. Children learn about how a new life is born into the world and become more familiar with what farm animals look like and how baby farm animals play.



No privacy for this expectant mom.

First check-up.

Newborn kid enjoying the fair.

These triplets were a big hit.

Goat Leather Research at Langston University

In 2008, Dr. Roger Merkel was awarded an 1890 Institution Capacity Building Grant to establish a pilot tannery at Langston University to conduct research on goat leather. Funds from this grant have been used to purchase a fleshing machine, tanning drum, staking machine and a dry shaving machine. The fleshing machine has a rotating blade to mechanically remove any meat, fat and membrane left on the flesh side of the skin in preparation for tanning. The tanning drum is used for all chemical tanning processes – unhairing and liming, deliming and pickling, application of tanning chemicals, dyeing, and fat liquoring. The staking machine mechanically softens the tanned skin and the dry shaving machine buffs and evens the thickness of the dried, tanned skin.

Drs. Roger Merkel and Anton El A'mma with skins tanned in the pilot tannery.

An animal trial has been conducted to evaluate two nutritional treatments on pasture on the amount of fat found in the skin and effects on leather characteristics. Animals were harvested at three ages. The skin of each animal was split down the back and the left half was sent to a commercial tannery in the state of New York for chrome tanning and the right half was salted and preserved for tanning in the pilot tannery using synthetic tanning chemicals.

In September, 2010, Dr. Anton El A'mma, a leather chemist, traveled to Langston University to provide training in tanning skins to Dr. Roger Merkel as part of grant activities. Drs. El A'mma and Merkel worked through a tanning procedure using commercial tanning chemicals and tanned four goat skins. Currently, Dr. Merkel is continuing to experiment with the tanning procedure and equipment in preparation for working on the experimental skins.

Fleshing machine to remove unwanted tissue from the flesh side of the skin.

Tanning drum in which all chemical tanning steps are carried out.

Research Spotlight

Feeding Dairy Goats - Feed Intake

Thirty-six lactating Alpine does were used to determine effects of stage of lactation and level of feed intake on energy utilization. Twelve does were assigned to measurement periods in early, mid, and late lactation (week 5, 13, and 27, respectively). For 6 does of each group, after ad libitum consumption of a 60% concentrate diet, feed intake was restricted to near the energy requirement for maintenance for 8 days followed by fasting for 4 days. For other does, fasting immediately followed ad libitum consumption. Intake of energy was similar among stages of lactation with ad libitum intake. The efficiency of energy use for maintenance averaged 81%. Fasting heat energy was greater for ad libitum consumption than for near maintenance consumption and was lowest among stages in late lactation and ad libitum consumption. The efficiency of use of dietary energy for lactation was greater for consumption near maintenance than for consumption ad libitum and with ad libitum consumption tended to decrease with advancing stage of lactation. Estimated maintenance was greater for ad libitum intake than for near maintenance intake and was lowest during late lactation. However, because of increasing body weight as the experiment progressed, maintenance was similar among stages of lactation with both levels of intake. The efficiency of energy use for maintenance and lactation was similar among stages of lactation and greater with near maintenance intake than ad libitum intake. In conclusion, the energy maintenance requirement of does in late lactation was less than in early and mid lactation. A marked effect of restricted feed intake prior to ad libitum consumption on efficiency of energy use for maintenance and lactation was observed compared with use of nonlactating animals. Level of feed intake can have substantial effect on estimates of energy utilization by lactating dairy goats.

I. Tovar-Luna, R. Puchala, T. Sahlu, H.C. Freetly and A.L. Goetsch 2010. Effects of stage of lactation and level of feed intake on energy utilization by Alpine dairy goats. J. Dairy Sci. 93:4829-4837.

Feeding Dairy Goats - Level of Concentrate

Twenty-four lactating and 13 nonlactating Alpine goats were used to determine effects of stage of lactation and dietary concentrate level on energy utilization. Diets comprising 60 or 20% concentrate were consumed ad libitum by lactating animals and at a level of intake near maintenance by nonlactating animals. Measurement periods were days 25 to 31 (early), 87 to 94 (mid), and 176 to 183 (late) of lactation. Eleven observations were made in early and mid lactation for each diet, and 8 and 7 were made in late lactation for the 60% and 20% diets, respectively. Efficiency of energy use for maintenance (66.9, 71.4, and 61.1% for early, mid, and late lactation, respectively) and the maintenance energy requirement determined with nonlactating animals differed among stages of lactation. The efficiency of energy use for maintenance was similar between diets, but the maintenance requirement tended to be greater for the 60% than for the 20% diet. The latter difference may have involved greater energy intake for the 60% diet, resulting in a slightly greater difference between energy intake and total heat energy for the 60% compared with the 20% diet. Intake of energy by lactating goats was greater for the 60% than for the 20% diet. Efficiency of use of dietary energy for lactation differed among stages of lactation and tended to be greater for the 60% than for the 20% diet. Predicted milk yield from National Research Council requirements was reasonably accurate. In conclusion, using data of nonlactating goats to study energy utilization for maintenance in lactation has limitations. Efficiency of energy use by lactating dairy goats consuming diets high in concentrate appears greater than that by goats consuming diets low in concentrate. Despite differences in nutrient requirement expressions, observations of this study support National Research Council recommendations of energy requirements of lactating dairy goats..

I. Tovar-Luna, R. Puchala, T. Sahlu, H.C. Freetly and A.L. Goetsch 2010. Effects of stage of lactation and dietary concentrate level on energy utilization by Alpine dairy goats. J. Dairy Sci. 93:4818-4828.

2010 Buck Performance Test Results

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 was 3 from Missouri, 5 from Nebraska, 16 from Oklahoma, and 16 from Texas. Breed distribution was 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, if needed, booster or initial vaccinations for enterotoxemia and caseous lymphadenitis. All bucks underwent a two-week adjustment period and the test officially started on June 23, 2010.

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.

Adjustment Period

All bucks underwent an adjustment period of two weeks immediately after check-in and the test officially started on June 23, 2010. During the adjustment period, bucks were acclimated to the test ration and to the FIRE system. Feed intake is automatically recorded every time a buck enters into the FIRE system to eat.

The area immediately around the FIRE feeders and waterers is concrete, however, the large majority of the inside pen is earth and is covered by pine shavings. Bucks had free access to water provided by automatic waterers. Whenever the weather was permitting, the bucks had access to the outside pens as well as the inside pens.

This year we were fortunate to hire Ms. Amanda Manley to help with the bucks. This May, Amanda graduated from Langston University and is now a joint Oklahoma State University and LU graduate student.

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.

Ingredient	Percentage (as fed)
Cottonseed hulls	29.07%
Alfalfa meal	19.98%
Cottonseed meal	15.99%
Ground corn	15.99%
Wheat midds	9.99%
Pellet Partner (binder)	5.00%
Ammonium chloride	1.00%
Yeast	1.00%
Calcium Carbonate	0.95%
Salt	0.50%
Trace mineral salt	0.50%
Vitamin A	0.02%
Rumensin	0.01%
TOTAL	*100.00%*

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 As-

(cont. next page)

Complete results of the 2010 Buck Performance Test can be found at http://www2.luresext.edu/goats/extension/demonstrations.htm.

sociation, Inc.

Gain

The official performance test started on June 23 after the adjustment period was finished. Weights at the beginning of the test averaged 55 lbs with a range of 19 to 91 lbs. Weights at the end of the test averaged 99 lbs with a range of 57 to 138 lbs. Weight gain for the test averaged 43 lbs with a range of 18 to 60 lbs.

Average Daily Gain (ADG)

For the test, the bucks gained an average of 0.51 lbs/day with a range of 0.21 lbs/day to 0.71 lbs/day.

Feed Efficiency (Feed Conversion Ratio)

For the test, the bucks consumed an average of 295 lbs of feed with a range of 169 to 423 lbs.

For the test, the bucks averaged a feed efficiency of 7.04 (feed efficiency is defined as the number of lbs. of feed needed for one lbs. of gain), with a range of 4.85 to 14.84.

Muscling

The average loin eye area as determined by ultrasonography was 1.7 square inches with a range of 1.0 to 2.4 square inches and the average left rear leg circumference was 14.2 inches with a range of 11.0 to 18.0 inches.

Index

For 2010, 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 ($BW^{0.75}$)
- 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:

- Mrs. Wanda Shurley of Sonora, TX
  for having the Top-Indexing buck

Also, deserving congratulations are:

- Mrs. Wanda Shurley of Sonora, TX
  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 Rosenbaum of Gainesville, TX
  for having the #3 (tie) Fastest-Gaining buck
- Mrs. Wanda Shurley of Sonora, TX
  for having the #5 Fastest-Gaining buck
- Morrison Farms of Monett, MO
  for having the Most-Feed-Efficient buck
- Mrs. Wanda Shurley of Sonora, TX
  for having the Most-Heavily-Muscled buck

Acknowledgments

The Buck Test supervisor wishes 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 for custom mixing the feed.

Buck # 62077 was the top-indexing, fastest growing, and seventh-most feed efficient buck in the 2010 buck performance test.

Noteworthy News

►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.

►In July, Dr. **Steve Hart** traveled to Vinita, OK to give a presentation on Goats for Brush and Weed Control to USDA-NRCS staff.

►In August, Dr. **Terry Gipson** traveled to Mali to conduct an artificial insemination workshop for Winrock International's Farmer-to-Farmer program.

►In September, Dr. **Steve Hart** was the superintendent for the Boer Goat Shows at the State Fair of Oklahoma in Oklahoma City, OK.

►In September, Drs. **Terry Gipson** and **Steve Hart** attended the National Goat conference in Tallahassee, FL to make extension presentations and attend producer sessions.

►In September, Dr. **Steve Hart** gave a presentation on general goat production to participants at a production sale in Springfield, MO.

►In September, Drs. **Terry Gipson**, **Art Goetsch**, **Roger Merkel**, **Ryszard Puchala**, **Tilahun Sahlu**, **Zaisen Wang**, and **Steve Zeng** attended the 10th International Conference on Goats in Recife, Brazil to make research presentations and attend scientific sessions.

►In October, Drs. **Art Goetsch** and **Tilahun Sahlu** traveled to Cyprus to participate in a participants' meeting of a project funded by United States – Israel Binational Agricultural Research and Development (BARD) Fund as a Facilitating Grant in the MARD (Multinational Agricultural Research and Development) program

►In October, Dr. **Terry Gipson** traveled to Kentucky State University to participate in a Goat Industry Community of Practice Leadership meeting for the national eXtension initiative.

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