Spring is a time when activities change markedly. Spring-time is a time when there are deadlines for a number of grant programs, so Institute personnel have been working hard to prepare proposals that will provide resources the program needs to maintain a high degree of excellence and hopefully to grow and become even better.

In this regard, Dr. Grant Tomita recently received a grant from the Oklahoma Center for the Advancement of Science and Technology (OCAST) for a project entitled “The Detection of Mastitis in Dairy Goats.” The primary goal of the 2-year study is to identify a method of mastitis detection in dairy goats using a test kit on the farm.

Drs. Tilahun Sahlu and Art Goetsch recently received final approval from the USAID Middle East Regional Cooperation (MERC) program for an international project entitled “Multinational Approaches to Enhance Goat Production in the Middle East.” The overall objective of this 5-year project is to revitalize and develop the Middle East goat industry via cooperative research and technology transfer to increase income and improve the standard of living of the indigenous people.

Lastly, Dr. Terry Gipson has received a USDA-FSIS grant to develop extension materials on animal production food safety. This is an outreach program oriented toward small food animal producers in Oklahoma and New Mexico.

Drs. Roger Merkel, Goetsch, and Sahlu traveled to Ethiopia to visit Debub and Alemaya universities, and also to participate in a regional conference on constraints to goat production in East Africa (see page 7 for details of the conference).

Two of the Visiting Scholars from Ethiopia, Dr. Adugna Tolera and Mr. Mengistu Urge, have recently returned to their respective universities in Ethiopia. We benefitted a great deal from their stay and hope they gained as well. We will miss them.

Spring is also the time for our annual Goat Field Day. This year our field day will be on Saturday, April 28. Drs. Rick Machen of Texas A&M and our own Grant Tomita will be the featured speakers. Dr. Tomita will be speaking on mastitis and Dr. Machen will be speaking on the meat goat industry. We will also have afternoon workshops where you will be able to learn more about specified topics. This year we will also have a concurrent cheesemaking workshop. For complete details of this year’s field day, see page 3.

Make plans today to attend the Goat Field Day
Dr. Arthur L. Goetsch

Dr. Goetsch was born in Springfield, Illinois. While attending grade and high schools, Dr. Goetsch raised cattle and hogs on a small farm and worked on a nearby purebred Angus, commercial swine, and grain farm. He received the B.S. degree in Agricultural Science at Illinois State University, his M.S. degree in Animal Husbandry at the University of Missouri, and his Ph.D. degree in Animal Nutrition from New Mexico State University.

Dr. Goetsch was a Postdoctoral Research Associate at Oklahoma State University. In 1984, he was appointed as an Assistant Professor in Ruminant Nutrition at the University of Arkansas, Fayetteville, and advanced to Associate and Full Professor in 1990 and 1994, respectively.

In the Fall of 1995, Dr. Goetsch became a Research Animal Scientist with the USDA-ARS Dale Bumpers Small Farms Research Center near Booneville, Arkansas. In early 1998, Dr. Goetsch joined the E (Kika) de la Garza Institute for Goat Research of Langston University as a Research Scientist, and currently serves as Research Leader. Also, in 1998, Dr. Goetsch received the American Society of Animal Science Southern Section Outstanding Young Animal Scientist Award.

Dr. Goetsch instructed graduate and undergraduate courses in the Department of Animal Science of the University of Arkansas, including classes such as Ruminant Nutrition and Forage/Ruminant Relations.

Dr. Goetsch's research at the E (Kika) de la Garza Institute for Goat Research is varied, but primarily concerns nutrient requirements and utilization by goats, produced for meat, milk, or fiber. In addition to on-campus activities, he participates in international activities of the Institute.

Dr. Goetsch has authored or coauthored over 150 refereed journal articles, 8 book chapters or symposia proceedings, and more than 100 abstracts. Dr. Goetsch is recognized nationally and internationally as a leader in relevant research areas. Most of his research has dealt with feed intake, digestion, metabolism and performance by ruminants consuming forage-based diets typical of the south-central U.S. Attention has been given to utilization of broiler litter in ruminant diets and characterization of interactions between animal and forage properties in relationships between energy metabolism and feed intake.

Meet the Faculty & Staff

The Cooperative Extension Program at Langston University provides educational programs to individuals regardless of race, color, national origin, religion, sex, age, disability or status as a veteran. Issued in furtherance of Extension work, Act of September 20, 1977, in cooperation with the U.S. Department of Agriculture.

Dr. Art Goetsch can be reached at (405) 466-3836 or at goetsch@luresext.edu.
2001 Goat Field Day

Our annual Goat Field Day will be held on Saturday, April 28, 2001 at the Langston University Goat Farm with registration beginning at 8:00 a.m. In the morning session, Drs. Marvin Burns and Tilahun Sahlu of Langston University will welcome field day participants and give a goat research update.

Dr. Rick Machen of Texas A&M and our own Dr. Grant Tomita will be the featured speakers. Also during the morning session, Dr. Tomita will be speaking on mastitis and Dr. Machen will be speaking on the meat goat industry.

In the afternoon session, Dr. Tomita will conduct a workshop on the detection & diagnosis of mastitis in dairy goats, which will include sterile sampling techniques and the California Mastitis Test. Dr. Machen will conduct a workshop on judging and conformation of meat goats.

Also in the afternoon session, participants will break into small-group workshops in addition to the two aforementioned workshops. There will be a total of eight workshops; however participants will only have time enough to attend three. Afternoon workshops include: 1) Dairy Herd Improvement overview & tester training, 2) basic goat husbandry, 3) predator control, 4) fencing for goat production, 5) international goat activities, and 6) nutrition for meat goat production.

For youth, there will be a Fitting & Showing for Youth in the morning. This workshop will be conducted by Mr. Tim McKinney. Each youth will have the opportunity to fit and show a goat during this workshop. We will have a showring and a judge to assess showmanship.

For lunch, you can bring your own lunch and picnic on the grounds or you can pre-register for a lunch of barbecued goat, beans, potato salad, refreshments and goat milk ice cream. Cost of the lunch is only $6.00 per person.

There will be a youth program for youth too young to participate in the morning Fitting & Showing workshop or for the afternoon workshop. The younger youth will do a craft project and play games during the morning and afternoon. Therefore, the parents of young children will be able to enjoy the morning and afternoon session while their children are entertained.

This year we will also have a concurrent cheesemaking workshop. Pure Luck Texas of Dripping Springs, Texas will be our instructors. Pure Luck crafts award-winning artisan, handmade cheeses come from milk from their own French Alpine & Nubian Dairy Goats. In 1998, Pure Luck entered the American Cheese Society competition and won first place with their Del Cielo in the "Farmstead Goat Cheese" category. In 1999, Pure Luck won another first place, this one for Basil Pesto Spread, made with fresh organic basil grown on the farm. Their chevre and Sainte Maure, both took second place red ribbons. This year Pure Luck will demonstrate cheesemaking using their Sainte Maure, which is an authentic French regional cheese with a dry, robust texture and sharp flavor.

Registration for the Goat Field Day is FREE but there is a $6.00 per person charge for the optional barbecued goat lunch. Please make plans to attend the Goat Field Day now. A pre-registration form is enclosed in this newsletter for your convenience.

For information regarding the 2001 Goat Field Day, contact Dr. Terry Gipson at (405)466-3836 or at tgipson@luresesext.edu or http://www2.luresesext.edu/goats/library/fd2001.html.
Goat Management Tips - Diseases

Entrotoxemia by Lionel Dawson, D.V.M.

Enterotoxemia is a very important, and is some areas very prevalent, disease of goats that can be fatal. Enterotoxemia also occurs in cattle and sheep, causing similar symptoms. Despite the fact that the disease is also called “overeating disease” it is not caused by overeating. It is caused by toxins produced by the bacteria *Clostridium perfringen* Type C or D. These bacteria are normally present in the soil and intestine of animals in small quantities. Under certain conditions, these bacteria multiply in the small intestine and produce toxin in lethal quantities. These conditions are those that provide an ideal environment and food for bacterial proliferation and those that slow down the normal movement of food through the intestinal tract. This may occur when an animal ingests a large amount of starch when the intestinal tract is not accustomed to it. The disease is often associated with lush, growing pasture or cereal crops, heavy grain feeding, access to a lot of milk or with conditions that slow down the rate of feed passage. This will lead to an accumulation of dangerous toxins in the intestine.

Predisposing factors for the occurrence of enterotoxemia include sudden exposure to grain or large increases in the quantity of milk consumed without a gradual increase in the amount fed over several days. This sudden change in diet leads to indigestion and may slow the rate of passage of feed through the intestinal tract. This probably plays a large role in the disease in goats by allowing more time for toxins to accumulate within the intestinal tract.

*Clostridium perfringen* Type C is otherwise called Struck or Lamb/Kid dysentery. It usually affects the very young and older adult animals. This disease produces a toxin, called “Beta Toxin”, that causes intestinal necrosis and severe intestinal hemorrhaging.

*Clostridium perfringen* Type D is more common in goats than Type C. The toxin produced by Type D produces vascular damage and increases the blood vessel’s permeability thereby facilitating its own absorption. If large amounts of toxin are absorbed, goats will die quickly showing no outward signs.

**Symptoms**

*Type C*
- Not common in goats
- Seen in very young kids and older adults
- Hemorrhage or blood tinged diarrhea
- Dehydration
- Anemia
- Death

*Type D*

**Peracute Form:**
- Seen in young kids
- Either in milk fed kids or when feed is changed
- Course of the disease is < 24 hours
- Death in one or few animals

**Symptoms**
- Rise in temperature
- Severe abdominal pain
- Profuse slimy or watery diarrhea
- Tooth grinding
- Depression
- Wobbly gait or unsteady gait
- Lying down
- Convulsions and paddling
- Head thrown straight over the back
- Death

**Acute Form:**
- Similar signs as in the peracute form, but with less severity

**Symptoms**
- Abdominal pain and screaming may be absent or reduced
- Feces go from solid to pasty or from soft to watery
- Course of disease 3-4 days
- Severe dehydration and acidosis
- Most animals will die
- Some animals will undergo spontaneous recovery

**Chronic Form:**
- Seen in adult goats. These goats are dull and listless with reduced appetite and if lactating, reduced milk production. There is progressive weight loss with intermittent episodes of pasty or loose feces.
- Chronic form is extremely difficult to recognize as enterotoxemia, unless there is prior knowledge if acute or peracute cases in the herd.
In does, acute and chronic form occur in herds that have been routinely vaccinated against *C. perfringens* type D. So enterotoxemia should not be ruled out on the basis of previous vaccination.

**Diagnosis**
- Clinical signs or symptoms
- Necropsy – Enterocolitis, pestechial hemorrhages around the heart, small intestine, abdominal muscle and pulpy kidney may or may not be present.
- Isolation of *C. perfringens* from the feces (Culture)
- Impression smears from the lumen of the intestine
- High glucose levels in urine
- Improvement with intravenous injection of Type C and D antitoxin
- Identification of toxin in feces or gut lumen content

Sudden deaths in kids less than 3 weeks of age are not likely caused by Type D enterotoxemia as normal gut trypsin levels at that age may be inadequate to activate the epsilon toxin produced by Type D. However, Type C enterotoxemia may cause death in young kids. Diarrhea seen in the peracute and acute forms should be differentiated from diarrhea caused by coccidiosis, salmonellosis, cryptosporidiosis, and colibacillosis. In lactating does, the early stages of the acute form may look like milk fever.

Chronic forms of enterotoxemia and salmonellosis may be clinically similar and diagnosis depends on bacteriologic methods.

**Treatment**
Aggressive intervention is required.
- Keep the animal warm and dry
- Intravenous fluid with electrolytes to correct the dehydration and acidosis
- Nonsteroidal anti-inflammatory drugs such as Banamine may be helpful in stabilizing animals in toxemic shock and will alleviate pain.
- *Clostridium perfringens* C and D antitoxin give intravenously immediately
- In the chronic form of the disease, 2 doses of 20 ml of antitoxin given 4 days apart has been reported to be effective.
- Antibiotics
- Oral sulphas
- Injectable – Penicillin, Naxcel or excenel, Nuflor.

**Control**
Goats are considered highly susceptible to enterotoxemia and it is recommended that all goats be vaccinated against the disease.
- Vaccinate with *Clostridium perfringens* type C and D toxoid.
- Vaccinate unvaccinated adults twice 4 weeks apart.
- Vaccinate the does again 2-4 weeks before kidding, to booster immunity and provide colostal antibodies for the immediate protection of the newborn kids.
- Vaccinate kids at 2-3 weeks of age and repeated at 8 and 12 weeks of age.
- Vaccination with good feeding practices of making diet changes, e.g., increasing feed and milk gradually, will provide excellent prevention of this disease.
- It should be kept in mind that the vaccination of goats does not provide the same level of protection that occurs in sheep.
- Vaccination should be done at a maximum of a 6-month interval in dairy goat herds.
- Herds with a history of the disease should be vaccinated every 3-6 months.

*For more information regarding goat diseases, contact Dr. Lionel Dawson at (405) 744-8580 or at dlionel@okstate.edu*
Research Spotlight

Abstracted by A. Goetsch

Fleece Traits in Angora Goats.
Although Angora goats do not visibly shed fiber, seasonal changes in fiber growth driven by photoperiod have been observed in Australia and New Zealand. Seasonal changes in mohair growth by US Angoras have not yet been characterized. Fiber growth in Angora does was evaluated over a 1-year period, with the conclusion that a seasonal cycle of fiber growth in US Angora goats does exist. Primary follicle activity was lower in winter than summer, and clean fiber growth rate and fiber diameter were lowest in winter, greatest in summer, and intermediate in autumn and spring. Fleece fiber medullation was greatest among seasons in summer, and medullated fiber diameter was greater in spring and summer than in winter. These results should be useful to design optimal feeding programs for mohair production and shearing times for minimal medullated fiber contamination. For example, based on these findings the optimal time of shearing US Angoras for minimal contamination with medullated fibers may be just before spring and autumn equinoxes when it is likely that medullated fibers have been recently shed.


Protein and Dairy Goats.
Increased dietary levels of ruminally undegraded protein (RUP) in early lactation have in many instances improved milk yield by dairy cows. There is need for experimentation to determine what experimental conditions are conducive to milk yield responses by dairy goats to RUP. A group of Alpine does and doelings were fed diets with 40 or 80% forage in weeks 3 to 19 of lactation. Diets were 18-19% crude protein, with or without added RUP, which was supplied by a mixture of blood, fish, and feather meals that provided two-thirds of the protein from soybean meal in control diets. Milk yield and protein concentration for these doelings and does, which were in low to moderate body condition, were greater with 40 vs 80% forage throughout the 16-week early lactation. RUP affected milk production only early in lactation and the response to RUP was greater with 40 vs 80% forage. Over the entire 16-weeks, body weight gain was greater with 40 vs 80% forage, and doelings increased in body weight slightly more than does. Responses to dietary forage and RUP levels were similar for doelings and does. In summary, with low to moderate body condition, moderate to high dietary concentrate levels may support greater milk production by Alpine goats throughout early lactation compared with less concentrate, whereas there appears potential for benefit from added RUP only very early in lactation.


Milk Replacer and Dairy Kids.
Current management systems for kids fed milk or milk replacer do not facilitate rapid transition at weaning to dry feeds. To investigate feeding options, Alpine male and females at 3 to 9 days of age were fed a commercial sheep/goat milk replacer for 8 weeks, with free-choice intake or with slight restrictions in consumption or water or water and dry matter. Levels of restriction in weeks 4-8 were approximately 70% of free-choice intake. Restriction treatments did not improve performance after abrupt weaning, and restricting intake of water alone did not enhance growth. Growth rate of males was greater than that of females, but an adverse effect of restricting both water and dry matter intake only on growth of males only suggested less susceptibility of females to nutrient intake restriction.

International Conference on Goat Production

by R. Merkel

In November 2000, Langston University along with the Association Liaison Office for University Cooperation in Development (ALO), the United States Agency for International Development (USAID) and Awassa College of Agriculture of Debub University sponsored a conference on goat production entitled “The Opportunities and Challenges of Enhancing Goat Production in East Africa”. The conference was held on the Debub University campus, Awassa, Ethiopia and was part of activities undertaken through an ALO/USAID-funded institutional partnership grant between Langston University and Debub University. Over 50 participants attended the three-day conference and represented Ethiopian livestock research organizations and universities, Livestock Marketing Board of Ethiopia, Ethiopian Tanners Association, FARM-Africa a non-governmental development organization, International Livestock Research Institute, Agricultural Research Organization Bet Dagen in Israel, Global Livestock Collaborative Research Support Program based at the University of California-Davis and Langston University. The goals of the conference were to: 1) review the current state of small ruminant production in E. Africa; 2) identify the major production constraints and areas for research and extension; and 3) create a closer relationship among animal industry, research organizations and development/extension efforts to increase animal production.

The conference was opened by His Excellency the Vice Minister for Agriculture of Ethiopia. Day 1 presentations covered research strategies of the Ethiopian Agricultural Research Organization, current animal production status in Ethiopia, nutritional constraints and possible remedies, health concerns in goat production and breeding strategies to increase productivity. The morning of Day 2 was spent visiting two of the villages where goats and training have been given to women’s groups as part of the ALO/USAID funded Institutional Partnership between Langston University and Debub University. Conference participants were able to see the results of those development efforts. The afternoon session was devoted to progress reports on the goat extension projects conducted by Langston University with Debub University and Alemaya University and a report on projects conducted by FARM-Africa.

The remaining invited speakers presented talks on Day 2 and Day 3 concerning the marketing of hides and skins in Ethiopia and the current problems of the leather industry. Animal skins and hides are Ethiopia’s second leading foreign exchange earnings commodity following coffee. Current problems in the industry include poor management and nutrition of live animals, disease problems and substandard skinning, flaying and initial treatment techniques leading to a deterioration of the quality of raw materials entering the industry. These presentations and the discussion that followed emphasized the need to bring industry into closer cooperation with the research, academic and extension arms of animal production. The remainder of Day 3 was devoted to individual research reports ranging from animal growth to socioeconomic aspects of goat raising to alternative methods of internal parasite control. The conference proceedings are available on-line at the E (Kika) de la Garza Institute for Goat Research website, www2.luresext.edu, under the “Other Activities” section.

For more information regarding international goat activities, contact Dr. Roger Merkel (405) 466-3836 or at rmerkel@luresext.edu
Noteworthy News

Dr. Zinabu Gebre-Mariam, President of Debub University, Awassa visited Langston University. Langston University has an Institutional Partnership with Debub University that calls for collaborative research, training and a development/extension program in which goats and training are given to women farmers in the Awassa region.

Dr. Uzi Merin, a food scientist with The Volcani Center of the Agricultural Research Organization in Israel, visited the Institute. Dr. Merin is the Principal Investigator for the Israel location in the international project of the Institute entitled “Multinational Approaches to Enhance Goat Production in the Middle East”.

Drs. Steve Hart, B. R. Min, Sergio Soto-Navarro, Eric Ponnamon, Tumen Wuliji, Ryszard Puchala, and Art Goetsch each made one or more presentations at the annual meeting of the Southern Ag Workers and Southern Section of the American Society of Animal Science, as well as participating in symposia and discussion groups.

Dr. Steve Hart traveled to Chattanooga, TN to attend the Southern Professional Development Program of SARE.

Two visiting scientists from Ethiopia, Dr. Adugna Tolera and Mr. Mengistu Urge, recently completed short-term research/training courses and returned to Debub University and Alemaya University, respectively.

Mr. Terry Hutchens, USDA/Marketing Assistance Project in Armenia, visited the Institute. That project has recently established a Regional Dairy Goat Breeding Center.