



Goat Newsletter

Cooperative Extension Program
Langston University

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

Summer 1999

From the Director's Desk

Photo #1

Dr. Tilahun Sahlu

Even though, we are busy throughout the year with research and extension activities, the spring-kidding season is probably the most hectic because of the numerous concurrent activities

Our annual Goat Field Day was a huge success with more than 200 participants from Arkansas, Arizona, Colorado, Kansas, Kentucky, Louisiana, Minnesota, Missouri, New Mexico, Oklahoma, Tennessee and Texas with 60% of the participants coming from Oklahoma. To assess the transfer of knowledge, pre- and post questionnaires with 12 multiple choice questions were given. The average pre-questionnaire score was 51% and the average post-questionnaire was 85%. That is a significant increase of 34%.

Our extension staff are busily involved in the meat buck performance test co-sponsored by Langston University and the Oklahoma Meat Goat Association. This year there are 47 young bucks enrolled in the test. Other Extension activities include a Cheesemaking workshop to be conducted by Dr. **Steve Zeng** on June 19 and Controlling Internal Parasites workshop conducted by Drs. **Lionel Dawson** and **Terry Gipson** on July 24.

Regarding current experimentation, Dr. **Roger Merkel** started an experiment investigating sites of binding and potential release of condensed tannins in the digestive tract. Relatedly, Dr. Merkel has underway an experiment near Cheyenne in the Black Kettle National Grasslands of the US Forest Service. The experiment will determine effects of polyethylene glycol supplementation on performance of different types of yearling goats grazing shinnery oak pastures and the ability of polyethylene glycol to enhance the use of goats to control such undesirable pasture plants. Dr. **Steve Hart** is

in the second year of an experiment evaluating potential interactions between level of supplemental ruminally undegradable protein and type of cool season grass on spring performance of Angora does and kids. Dr. **Tumen Wuliji** is conducting an experiment with Spanish doelings investigating seasonal manipulation of breeding and cashmere production. Dr. **Amey Adams** has begun an ambitious project to reevaluate and update the nutrient requirements of goats. Dr. **Sergio Soto-Navarro**, a new Visiting Scholar, is beginning an experiment to compare different supplemental protein sources in high-grain diets for Boer × Spanish wethers. Mr. **Glenn Detweiler** and Dr. **Arthur Goetsch** are nearing completion of an experiment to evaluate effects of common management practices on performance of bottle-fed Alpine kids.

We would like to thank the California Dairy Goat Council for their monetary support of our research and extension activities.



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. Lionel Dawson

Lionel Dawson was born in Rangoon, Burma (now Myanmar) and lived there his first five years. Dr. Dawson's father was in the British Army and stationed in Rangoon during the Second World War. After the war, his father stayed in Rangoon as the port engineer for the Port of Rangoon. With Indian independence and the political conditions in Burma, Dr. Dawson's family moved to Madras, India and Dr. Dawson continued his primary and secondary education there. During Dr. Dawson's undergraduate studies at Madras Christian College and professional studies at the Madras Veterinary College, he played cricket and soccer. In fact, he was the captain of the cricket team his last two years and was named "cricketer of the year" his senior year.

After completing veterinary school, Dr. Dawson moved to Iowa where he did graduate work in

Theriogenology at the School of Veterinary Medicine at Iowa State University. Dr. Dawson then did his residency in Theriogenology at the School of Veterinary Medicine at the University of Missouri specializing in reproduction of farm animals.

Since 1982, Dr. Dawson has been a faculty member in the Department of Veterinary Medicine and Surgery in the College of Veterinary Medicine of Oklahoma State University. He has taught a number of courses including Reproductive Herd Health, Obstetrics, Theriogenology and Male Breeding Soundness, and has been an advisor to more than 25 graduate students and residents. Dr. Dawson is board certified with the American College of Theriogenologists.

In July of 1998, Dr. Dawson received a joint appointment between Oklahoma State University and Langston University. Dr. Dawson's responsibilities at Langston University include participating in research trials, conducting and assisting in experimental surgeries, managing the health program for the fiber, meat and dairy goat herds and provide veterinary extension education for our clientele.

Dr. Lionel Dawson can be reached at (405) 744-8580 or at dlionel@okstate.edu.

Another Link Is Established with Ethiopia

by Roger Merkel

In March, 1999 Langston University was awarded a grant to establish an International Development Partnership with Alemaya University of Agriculture, Ethiopia. The grant is administered by the United Negro College Fund while the funding agency is the United States Agency for International Development. Included in this grant are aspects of research, training and agricultural development. Research will be conducted at both Langston University and Alemaya University of Agriculture. Three visiting scholars from Alemaya will stay six months each at Langston where they will conduct research and receive training in the areas of nutrition and breeding. The agricultural development aspect of the project will be carried out through the extension of goat packets along with appropriate technology and training to women farmers in the area surrounding Alemaya. Goats will be provided to the women cooperators with the stipulation that an equal num-

ber of goats received be returned to the project in the future to form packets for further project expansion.

In May, 1999 Mr. Getachew Animut from Alemaya University of Agriculture and Dr. Girma Abebe of Awassa College of Agriculture, Awassa, Ethiopia, arrived at Langston University. Mr. Animut's visit is sponsored through the aforementioned grant whereas Dr. Abebe is visiting as part of a grant received from the Association Liaison Office for University Cooperation in Development reported on in the Spring 1999 Goat Newsletter. Both scholars will stay at Langston for a period of six months conducting research and receiving training. Their research focus will be the utilization of poultry litter as a protein supplement to wheat straw diets. Dr. Abebe will compare feed intake and digestibility in Spanish of a wheat straw diet supplemented with soybean meal or a low or high level of poultry litter versus urea-treated

wheat straw with the same supplements. Mr. Animut will evaluate animal performance in terms of intake, weight gain and feed efficiency in Alpine doelings of the untreated diets listed above along with urea-treated wheat straw. Research on underutilized by-products such as straw and broiler litter could be beneficial not only to US producers but is also applicable to conditions found in Ethiopia. In addition to research and training activities, both Dr. Abebe and Mr. Animut will present a series of seminars on Ethiopian agriculture to Langston University faculty and students. These cross-cultural activities help our staff and students to learn about agricultural practices and constraints in other countries as well as enhancing the understanding of and appreciation for other peoples, their customs and cultures.

For information regarding these projects in Ethiopia, contact Dr. T. Sahlu at (405)466-3836.

Cheese Making Workshop Rescheduled

The annual Cheesemaking Workshop for dairy goat producers has been rescheduled to Saturday, June 19 from 8:30 a.m. to 4:30 p.m. The location of the workshop will remain unchanged and will be held at Langston University.

For information regarding the cheese workshop, contact Dr. Steve Zeng at (405)466-3836 or szeng@luresext.edu

Research Spotlight

Abstracted by S. Zeng

Antibiotic Residue Test Kits for Goat Milk Validated and Approved

Mastitis is the most common disease syndrome in the dairy industry. Treating mastitic animals with antibiotics is a common veterinary practice. However, antibiotics may persist in the milk for varying periods of time, depending on the drug selected, the dosage applied, the route administered, the body weight of the animal treated, etc. There are currently 18 test kits approved for screening antibiotic residues in cow milk. However, none has been validated for dairy goats. According to the Food and Drug Administration (FDA), test kits which provide high sensitivity and specificity for testing antibiotic residues in goat milk are needed on the farm, in processing plants and in regulatory laboratories.

Test kits validated at Langston University were Penzyme Milk test, Delvotest P, SNAP test, LacTek test (B-L and CEF), Charm Bacillus *sterothermophilus* var. *calidolactis* disk assay (BsDA), and Charm II Tablet Beta-lactam sequential test following the protocol for test kit validations of the FDA's Center for Veterinary Medicine. Penzyme Milk test is an enzyme assay and results are

obtained in 20 min. Delvotest P is a culture medium screening test and takes 2.5 to 3 hour to obtain results. SNAP test is an enzyme-linked receptor binding assay and screens antibiotic residues in milk in approximately 10 min.

LacTek test is an enzyme linked immunosorbant assay. There are two separate test kits, LacTek CEF for ceftiofur and LacTek B-L for other beta lactam drugs. Results can be obtained in approximately 10 min. Charm BsDA is a microbial inhibition assay and takes more than three hours to obtain results. This assay is recognized by the FDA as the standard reference test for cow milk. Charm II is a microbial receptor assay for detection of beta lactam drugs in milk and results can be obtained in approximately 12 min. This assay involves several technical procedures and thus is complicated to run as a routine screening test, particularly on farm.

Penzyme Milk test, Delvotest P, SNAP, LacTek CEF, Charm BsDA and Charm II Tablet Sequential tests were sensitive and reliable in detecting antibiotic residues in goat milk. All these six assays showed more than 90% sensitivity and specificity at tolerance and detection levels. These tests were approved by the FDA for use

in dairy goats. In other words, goat milk producers, processors, and regulators can legally use the above tests for screening antibiotic residues in goat milk. However, caution should be taken in interpreting test results at detection levels. Because of the high sensitivity of these tests, false-violative results could be obtained in goat milk containing antibiotic residues below the tolerance level. Goat milk testing positive by these tests must be confirmed using a more sophisticated methodology, such as high performance liquid chromatography (HPLC) in a central laboratory, before the milk is condemned. However, LacTek B-L test did not detect several antibiotics, including penicillin G, in goat milk at tolerance levels and thus was rejected by the FDA for use in dairy goats.

For labeling purposes, the FDA's approval has been forwarded to respective test kit manufacturers. According to FDA, it is manufacturers who must submit applications to FDA for adding goats to the label. As of now, no progress has been made.

S. S. Zeng et al., 1998. Validation of antibiotic residue tests for dairy goats. J. Food Protection, 61:344-349.

The mention of trade names is not meant as an endorsement by Langston University.

Internal Parasite Workshop

Are internal parasites one of your management nightmares? Are you uncertain about which dewormer to use and how much you should be using? Do you sometimes wonder if your dewormer is really effective? Is there really any way to tell? If you have ever voiced these or similar questions, then you may want to attend a workshop on controlling internal parasites in goats conducted by the Cooperative Extension program of the E (Kika) de la Garza Institute for Goat Research.

Drs. Lionel Dawson and Terry Gipson will be the presenters of this workshop that will be held on July 24, 1999 from 10:00 a.m. until 3:30 p.m. During the morning session, Dr. Dawson will guide participants through the biology of various internal parasites that affect goats, the anthelmintics that are available to goat



Can you identify this object? If not, you might want to attend the internal parasite workshop.

producers and their judicious use. After lunch, Dr. Gipson will conduct a hands-on session for conducting fecal egg counts using the modified McMaster technique and how to use counts in the management of goat herd health. Participants will use live animals in order to learn how to collect samples. They will also prepare flotation solutions, learn how to mix samples for counting and how to conduct the count. **Registration for the workshop is limited to 12 participants and the registration fee is \$25 per person.** Included in the cost of registration are hand-outs, lunch featuring barbecued goat sausage and one McMaster counting chamber.

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

Sustainable Agriculture Grants Workshop

The Southern Sustainable Agriculture Research and Education (SARE) Producer Grant program and the Kerr Center for Sustainable Agriculture will soon be 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 next year's producer grants are late January, 2000 for SARE and mid-February, 2000 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 December 4, 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 grantwriting workshop, contact Dr. Terry Gipson at (405)466-3836 or tgipson@luresext.edu.

AI Workshop

The Cooperative Extension program of the E (Kika) de la Garza Institute for Goat Research will present an Artificial Insemination Clinic on September 3, 1999. Participants attending this workshop will acquire hands-on experience in estrus synchronization and artificial insemination

of goats. **Registration for the AI workshop is limited to 20 participants and the registration fee is \$30 per person.**

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

Goat Management Tips

Understanding Internal Parasites in Goats by Lionel Dawson.

Internal parasites could easily be ranked as the number one health problem in goats in the Southern United States, especially around Oklahoma. Our relatively mild climate and yearly rainfall provide a good environment for parasites to survive and be available to grazing goats during most of the year. Thus, goat producers are constantly fighting against internal parasites.

To help win the battle, one should gain a better understanding of the life cycle and optimum environmental development conditions for parasites, as well as the symptoms, preventive management programs, and treatment associated with parasitism in goats.

Losses caused by internal parasites in goats ranges from death to unthriftiness. Difference in losses may be due to geographic, genetic, or husbandry practices. Genetic differences between breeds and among individuals within breeds may greatly determine the effect the parasites have on their hosts. More important is the system of management, which will lead to greater or lesser exposure to potentially damaging parasites. The management of rearing young varies depending on whether the animals are being raised for production of meat, milk, or fiber and therefore disease is reflected by these differences.

In Oklahoma, the number one cause of parasitism in goats is the roundworm or the large stomach worm called *Haemonchus contortus* (barber pole). Other internal parasites like the black scours worm or *Trichostrongylus colubriformis*, *Ostertagia circumcincta*, and *Coccidioses* in recently weaned kids can be a major problem.

Most of the roundworms have the same basic 28-day life cycle. Adult worms are found in either the fourth stomach (abomasum) or intestines, depending on the type. The adults lay eggs which are passed in the feces. A larvae develops within the egg and then hatches. Larvae feed on fecal bacteria and molts to the infective stage. The infective larvae leave the fecal pellet only when the feces are moist, as they can move to the

forage and to a film of moisture such as dew. The larvae then become available to the grazing host. Within the host, the larvae molt and become egg-producing adults approximately three weeks after ingestion.

Desiccation or extremes of heat or cold are detrimental to the development and survival of eggs and larvae in the environment. The egg and first two larval stages are especially vulnerable to desiccation and will not develop or survive if the fecal pellet dries too quickly. The first two stages of larvae feed on fecal bacteria and molt to the infective stage. The infective stage of larvae are much more resistant to drying. Energy reserves in the infective larva are depleted in direct relationship to the ambient temperature. So the survival of the infective stage is short during the summer (30 to 60 days) and prolonged during the winter (4 to 8 months).

In most environments, larvae are picked up from the pasture daily. In drier areas rains following periods of drought result in tremendous numbers of larvae being acquired in a short time. The numbers of larvae thus acquired are also increased because the animals are grazing closer to fecal pats and the ground.

Haemonchus larvae are inactive during cool conditions and are not available on vegetation for transmission. In arid areas, drying of the fecal pellet will prevent infective larvae from leaving the pellet, and will be released when the pellets are moistened after a rain.

Resistance to infection by *Haemonchus* is abrogated at the time of kidding and during early lactation. This results in the doe's inability to expel adult worms from the abomasum and subsequent rise in fecal egg counts leading to serious pasture contamination. The use of an anthelmintic at or near the time of kidding has proven to be of great value in preventing pasture contamination. If an anthelmintic, which had an effect against arrested larvae, is used during the winter before the larvae resume development,

pasture contamination will be minimized, especially if most of the infective larvae have died due to desiccation in the pasture.

Other principal parasites of goats in the southern U.S. include two species of *Trichostrongylus*. *Trichostrongylus axei* occurs in the abomasum of a number of species of grazing animals, but does not appear to be an important pathogen. The other species, *T. colubriformis*, causes black scours especially in Angora goats and may contribute to parasitic gastroenteritis in kids. In other parts of the world, this parasite assumes greater importance causing ill thrift, rickets and diarrhea in kids.

Producers are often concerned about the presence of tapeworms in kids. There are two species of tapeworms, the intestinal tapeworm, *Moniezia*, and the fringed tapeworm, *Thysanosoma*. Both of these parasites are trans-

mitted to their hosts by grass swelling arthropods consumed during grazing. In general tapeworms are of little importance, but under certain circumstances they may become important. In a feedlot if there are large numbers of tapeworms present the apparently slower movement of ingesta through the gut may exacerbate overeating disease. The worms are not the cause of the disease, but they may provide a more favorable environment for the proliferation of the causative bacteria. Under these conditions, removal of tapeworms may abort an outbreak of a disease faster than if vaccination alone is used.

This article is condensed from a presentation given by Dr. Thomas Craig at the 1999 Goat Field Day. For more information regarding internal parasite control, contact Dr. Lionel Dawson at (405) 744-8580 or at dlionel@okstate.edu

Remaining 1999 Activities

If you are interested in receiving future information regarding these events, please check the appropriate box in the form below and return. If you desire a free copy of the Proceedings of the 1998 Goat Field Day or the 1999 Goat Field Day, please check the appropriate box on the form. ***In compliance with the ADA Act, participants with special needs can be reasonably accommodated by contacting Dr. Terry A. Gips-on (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
June 19, 1999	Goat Cheese Making Workshop	
July 24, 1999	Controlling Internal Parasites Workshop	
Sept. 4, 1999	Demonstration Clinic: Artificial Insemination for Goats	
December 4, 1999	Sustainable Agriculture Grantwriting Workshop	

Please mail this form to:

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

ATTN: '99 EVENTS

9 Proceedings of the 1998 Goat Field Day.

9 Proceedings of the 1999 Goat Field Day.

Noteworthy News

Dr. **Sergio Soto-Navarro** recently joined the E (Kika) de la Garza Institute for Goat Research faculty as a Visiting Scholar. Dr. Soto-Navarro is working on a project entitled "Protein Requirements for Fast Growing Meat Goats". Dr. Soto-Navarro is a Native of Mexico and recently completed his Ph.D. studies at New Mexico State University.

Dr. **Terry Gipson** was the keynote speaker at the 2nd Annual Meat Goat Conference hosted by Garrett Community College in Oakland, MD on April 18, 1999. Dr. Gipson gave a presentation at the an-

nual meeting of the Oklahoma Meat Goat Association in Okemah, OK on May 8, 1999. He was also a judge of the OMGA's open goat show.

Dr. **Girma Abebe** and Mr. **Getachew Animut** are Visiting Scholars from Ethiopia and will be at Langston for six months. Dr. Abebe is from Awassa College of Agriculture and Mr. Animut is from Alemaya University of Agriculture. Dr. Abebe will be conducting research on feeding poultry litter to goats and Mr. Animut will conduct research on feeding urea-treated straw to goats.

Drs. **Vanetta Banskalieva** and **Jun Luo** recently return to Bulgaria and China, respectively, after completing extended research stays at Langston. Dr. Banskalieva returned to the Department of Biochemistry, Institute of Animal Science in Sofia, Bulgaria and Dr. Luo returned to Northwest Agricultural University in Shanxi province, China. While at Langston, Dr. Banskalieva conducted research on various fatty acids in goat meat/tissue and Dr. Luo conducted research on nutritional needs of fast growing meat goats.



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