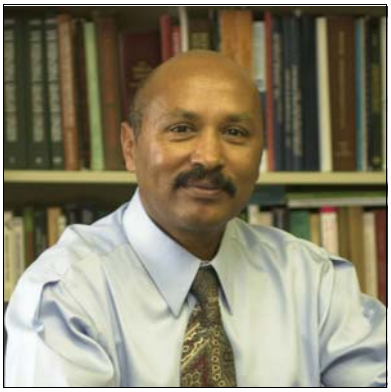
Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Winter 2004*

From the Director's Desk



Dr. Tilahun Sahlu

The end of the year is always a busy time of the year for us. It is a time when we plan research and extension activities for the coming year.

Since the last newsletter, we have had a number of personnel changes. Drs. **Asefa Asmare** and **Maria Yiakoulaki** returned to their home institutions in Ethiopia and Greece, respectively, after each spent nearly 6 months with us conducting research.

Dr. **Amlan Patra**, however, recently joined the Institute to work on a project, with Drs. **Puchala** and **Goetsch**, comparing grazing measures between tethered and unrestrained goats. Dr. Patra recently completed his Ph.D. at the Indian Veterinary Research Institute. I am very pleased to announce that Mr. **Getachew Animut** completed his Ph.D. degree in December 2004 through our cooperative graduate student program with the Animal Science Department of Oklahoma State University. Academic training was at Oklahoma State and research was performed here. Getachew's research project involved determining effects of stocking rate on diet selection, grazing behavior, and performance while grazing and later when consuming a concentrate-based diet.

For other research not mentioned in the last newsletter, Dr. **Zaisen Wang**, assisted by Drs. **Steve Hart** and **Lionel Dawson** and Ms. **Susan Stacy**, are running an experiment investigating the physiology behind interactions between infection with *Haemonchus contortus* and dietary protein level. Internal parasitism is an important problem to the goat industry that we plan to continue giving attention to.

Dr. **Mario Villaquiran** is continuing his work with Dr. **Terry Gipson** on a goat production simulation model that we hope will eventually be a useful decision-support tool for goat producers in the southern US. As is true for most of our researchers, sometimes long-term focus on one specific project can get a bit tedious, so Mario often helps out others with their research and extension projects.

One of the experiments nearing completion deals with the effects of stocking rate of meat goat does with twin kids, as well as creep grazing of pastures with the tree legume mimosa, on subsequent growth of the kids after weaning when consuming a forage high in nutritive value. We are using our automated feed intake recording system for this trial. In addition to all of the experimentation underway, we are getting started on three new projects.

One deals with effects of condensed tannin-containing plants on methane emission by goats, with Dr. **Ryszard Puchala** as the Principal Investigator. In a previous pre-

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Dr. Marvin Burns,
Dean,
School of Agriculture and
Applied Sciences

Dr. Vernon Jones,
Associate Dean,
School of Agriculture and
Applied Sciences

Mr. Sherman Lewis
Associate Administrator
Cooperative Extension

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

liminary study, methane emission by goats consuming sericea lespedeza, fairly high in condensed tannins, was considerably less than methane production by goats consuming a mixture of cool season grasses.

Another project will study the physiology of extended lactation in goats, including production comparisons with goats dried off each year. Dr. **Terry Gipson** is the leader of this work. The other new project, headed by Dr. **Steve Zeng**, will focus on quality, safety, and shelf-life of dairy goat products in the U.S. market.

An important aspect of our program is training. Be it long-term training of scientists involved in our research projects as Visiting Scholars as was mentioned above or producer-oriented training workshops for a single day, the transfer of knowledge from the university is always a priority with us. In this newsletter, you will be able to read about three important training projects that we recently completed or are embarking upon.

We recently completed two training programs designed specifically for scientists from foreign countries. The first program involved scientists from Iraq and the second scientists from the Democratic People's Republic of Korea. You can read more about these two training projects on pages 3 and 4 of this newsletter.

The third training project involves the development of a web-based training and certification program for meat goat producers (page 5). Meat goat production is one of the fastest growing livestock enterprises in the United States. Many new meat goat producers do not understand food safety issues that arise from every day management practices. In addition, a quality assurance program does not exist for goats as it does for other livestock species. Langston University, in collaboration with several other universities, was recently awarded funding from the Food Safety and Inspection Service of USDA to develop such a quality assurance program for meat goat producers. The ultimate goal of this web-based training and certification program is to develop materials that will best serve meat goat producers in assisting them to produce a safe, wholesome, healthy product.

All in all, it's been a very successful year in research, extension, and international activities for 2004. I hope that your's has been also. And I hope that this holiday season brings joy and peace to you and your goats.

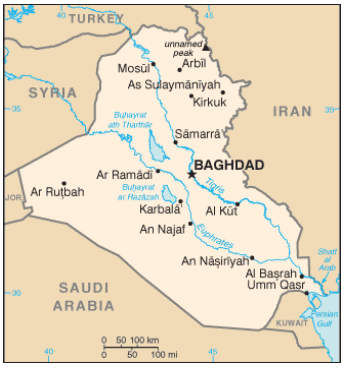
Happy Holidays!

Training Foreign Scientists in Goat Production

by R. Merkel

The E (Kika) de la Garza American Institute for Goat Research has recently completed two training programs designed specifically for scientists from foreign countries. The first program, Updating and Enhancing the Skills of Iraqi Scientists in Small Ruminant Production, was conducted through Langston University's involvement in a grant entitled "Al Sharaka Program for Higher Education in Iraq." This grant is led by the University of Oklahoma and includes Oklahoma State University, Cameron University, and Langston University. The second training program was instructing representatives from the Democratic People's Republic of Korea with an emphasis on dairy goat production and milk products and safety.

Updating and Enhancing the Skills of Iraqi Scientists in Small Ruminant Production

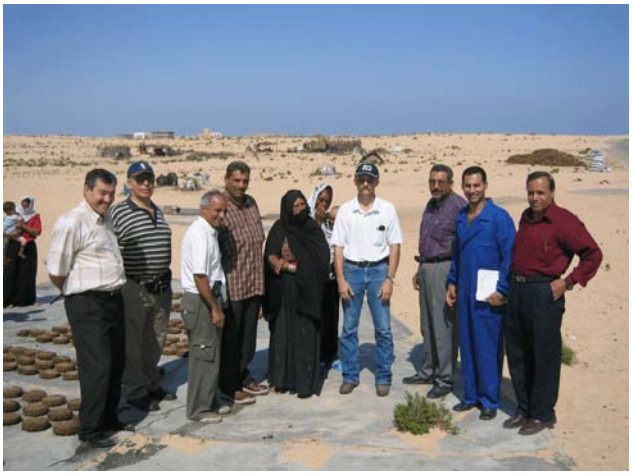


This training was held from September 7 through 29, 2004 at the Desert Research Center and Animal Production Research Institute in Cairo, Egypt. Langston University is currently collaborating with the Desert Research Center and Animal Production Research Institute of Egypt on a Middle East Regional Cooperation (MERC) Grant funded by the United States Agency for International Development.

Seven Iraqi scientists representing four universities, Salahaddin University, Arbil; Basrah University, Basrah; University of Babylon, Hilla; and Al Anbar University, Al Ramadi; attended the training. The main objectives of the training program were to impart technical knowledge to the Iraqi scientists; provide an opportunity for the Iraqi scientists to meet and establish contacts with Egyptian scientists and scientists from other Middle Eastern institutions who attended a concurrent MERC training program; demonstrate to the Iraqi scientists the extension component of the MERC program and; foster future relationships among all participating institutions.

Dr. Merkel (far right) discusses computer technologies with Iraqi scientists.

During the first week of training, the Egyptian partners trained Jordanian, Palestinian, and Iraqi scientists on a small ruminant record software package developed in the MERC program. Following that software training, an additional two weeks of training was given to the Iraqi scientists by Drs. Roger Merkel, Terry Gipson, and Arthur Goetsch of Langston University and Dr. Lionel

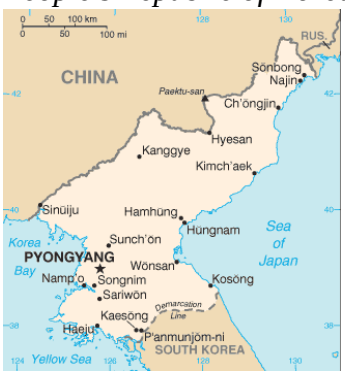


Dr. Goetsch (fourth from right) and Iraqi scientists visit the Sinai.

Dawson of Oklahoma State University. Topics discussed included computer applications, data handling and statistical analysis, herd health, reproductive management, and nutrition. Also during this time, the Iraqi scientists had the opportunity to visit Egyptian agricultural research institutes, Cairo University, and a research station located in Alexandria, Egypt. At the end of the training, Dr. Goetsch accompanied the Iraqi and Egyptian scientists to the north Sinai for a two-day visit to farmers participating in the extension component of the MERC grant.

Dr. Gipson instructs Iraqi scientists in statistical analysis of data.

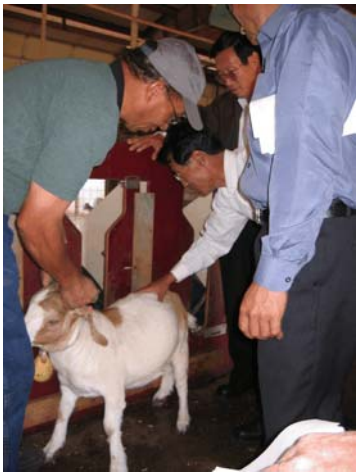
Training representatives from the Democratic People's Republic of Korea



From November 1 through 8, 2004 the American Institute of Goat Research hosted five persons from the Democratic People's Republic of Korea (DPRK) and four representatives of Global Resources Services, Inc. Global Resources Services, Inc (GRS) is a private international humanitarian aid and development organization and was the sponsoring organization for the training. GRS has been assisting the DPRK government in establishing a goat dairy to produce milk and goat milk products to increase the supply of these valuable foods in the DPRK. The goal of the training was to introduce the DPRK and GRS personnel to the important concepts of dairy goat production with a concentration on reproduction and dairy products. The visitors were welcomed by Drs. Marvin Burns, Dean of the School of Agriculture and Applied Sciences and Tilahun Sahlu, Director of the American Institute for Goat Research. Drs. Merkel, Goetsch, and Gipson then provided overviews of the Institute's international, research, and extension activities, respectively.

The rest of the training period was spent discussing and holding training sessions on aspects of dairy goat production and making of goat milk products. Drs. Merkel and Dawson began the training by presenting reproductive tract anatomy and basic reproduction in small ruminants. Dr. Tera Auchtung of the Institute presented information on photoperiod and its effects on reproduction and use for out-of-season breeding. These discussions were followed by a half-day hands-on training on artificial insemination of goats conducted by Mr. Les Hutchens of Reproduction Enterprises, Inc. The following day was spent at the Reproduction Enterprises, Inc. facility in Stillwater, OK where Mr. Hutchens and his staff introduced the procedures of semen collection, evaluation, and freezing as well as the conduct of a breeding soundness exam on bucks.

Mr. Loetz (right) instructs a Korean scientist in proper mastitis treatment.



Mr Hayes (left) demonstrates body condition scoring to Korean scientists.

Dairy goat nutrition and a discussion on management practices to control internal parasites was led by Dr. Steve Hart. Dr. Lionel Dawson returned to the training venue at the Institute farm to discuss herd health issues with the scientists. Mr. Erick Loetz, farm manager, along with Mr. Jay Stevenson provided training on goat milking, mastitis detection, and milk handling safety from the udder to creamery. Mr. Loetz also discussed farm management. Mr. Jerry Hayes, assistant farm manager, provided general management information and demonstrations on hoof trimming, horn tipping, body condition scoring, dehorning, and castration using an elastrator. Finally, Dr. Steve Zeng provided two days of training on milk safety and production of goat cheese.

The delegation stated that they were very impressed by the breadth and depth of the training as well as the quality of the training personnel. They left Langston University with updated knowledge on goat production that will be of great use as they implement their dairy goat plans in the DPRK.

For information regarding these international developmental project, contact Dr. Roger Merkel at (405)466-3836 or at rmerkel@luresext.edu.

Web-based Meat Goat Certification Project

Meat goat enterprises are one of the fastest growing livestock sectors in the United States. Increased demand for goat meat is evidenced by an ever-increasing amount of goat meat imported into the U.S. Domestic production of goat meat has increased as more producers see a viable market.

Industry growth in the U.S. meat goat sector has been accomplished through two means. Firstly, established meat goat producers have increased herd size, or shifted focus from fiber to meat production, to take advantage of favorable markets. Secondly, and more importantly, new producers are entering the goat business. Both the American Meat Goat Association and the American Boer Goat Association have experienced dramatic increases in membership in recent years. The majority of new producers entering the meat goat industry have little or no experience with goats, and other producers have entered the industry with no livestock raising experience at all.

These new producers, as well as some established ones, have an expressed need for current, correct information on how to raise goats and produce safe, wholesome products in demand by the public. Information is needed in all areas, from basic housing and management to nutrition, herd health, reproductive issues, marketing, product safety, and value-added products. There are few institutions or universities with personnel dedicated to providing goat production information to producers, county extension educators or, young farmer advisors.

Many producers obtain information from the World Wide Web. While proper, scientifically-based information does exist on the Internet, producers with little to no livestock experience have no background to discern "good" versus "bad" information. In some cases, information posted could be harmful to animals and to the economic viability of goat enterprises. As the meat goat industry grows and evolves, a quality assurance program, that is compatible with HACCP-like programs, will be essential. Such a program ensures the production of a safe, healthy product that satisfies consumers and increases profit for the production industry.

Langston University was recently awarded funding by the Food Safety and Inspection Service of USDA to develop such a program for web-based training and certification for meat goat producers. The ultimate goal of this proposal is to develop materials that will best serve meat goat producers in assisting them to produce a safe, wholesome, healthy product.

A project of this magnitude must be multi-disciplinary and multi-institutional. Therefore, several institutions are collaborating with Langston university in this project and they are:

- Alcorn State University
- American Meat Goat Association
- American Boer Goat Association
- Florida A & M University
- Fort Valley State University
- Kentucky State University
- Prairie View A&M University
- Southern University
- Tennessee State University
- Tennessee Meat Goat Association
- Tuskegee University
- University of Arkansas Pine Bluff
- USDA/FSIS
- USIBGA
- Virginia State University

The objectives are to develop a curriculum for meat goat technologies certification incorporating a Quality Assurance Program that is suitable for producers, county agents and other agriculture professionals, implement a self-paced on-line instructional system to deliver the devised curriculum, and establish tests allowing for certification of goat producers

The on-line certification program will provide needed training to goat producers and will result in certified personnel who can assist local producers with production questions. Such a resource is in great demand and its availability would result in a better educated production force that would then have the knowledge and tools necessary to raise a safer, more wholesome product.

In October, collaborators met in Atlanta, GA to develop an outline of the training modules needed for the web-based certification project and to identify potential authors of the training modules. The collaborators will meet again in the early Spring of 2005 to review the written content of the training modules and also in late summer of 2005 to review the transformation of the written content into web modules.

The meat goat producers certification web site will be made available to the public in late 2005. We will keep you informed on progress of this project in future newsletters.

Dr. Sahlu (standing center) leads the discussion for the planning group for the web-based training and certification group at the Atlanta meeting in October 2004.

Research Spotlight

Abstracted by A. Goetsch

Broiler Litter Feeding.

Ruminants in many areas of the world depend largely on crop residues at least during the long dry periods of the year. Various treatments have been used to improve utilization of crop residues. An alternative to treatment of crop residues to enhance utilization is supplementation. Broiler litter is a low-cost agricultural byproduct available in many areas of the world that has been used as a supplementary feedstuff for low and moderate quality forages. Therefore, objectives of this experiment were to determine effects on feed intake and digestion in yearling Spanish wethers of supplementation of wheat straw treated with urea for ammoniation or untreated with soybean meal or broiler litter. Addition of soybean meal (0.25% body weight, dry matter basis) or different levels of broiler litter (0.5 or 1.0% body weight) with a moderate level of a grain-based supplement (0.64% body weight) increased digestible organic matter intake, with magnitudes of change not affected by ammoniation and being greater for the high level of broiler litter compared with the lower level and with soybean meal. Change in digestible organic matter intake appeared primarily because of additional digestible organic matter provided by soybean meal and broiler litter, without substitution for wheat straw intake. However, with prolonged feeding of untreated crop residues, limited tissue nitrogen available for recycling might be conducive to effects of supplemental protein on intake and digestion. Ammoniated crop residues and concentrate supplements high in ruminally degraded crude protein can be used together when high nutritional planes are desired, although supplements with a lower concentration of crude protein might be more economical. A relatively high level of broiler litter to supplement untreated wheat straw, in addition to a moderate level of supplemental concentrate, may be necessary to achieve digestible organic matter intake comparable to that with ammoniated wheat straw and a moderate level of concentrate supplement.

Abebe, G., R. C. Merkel, G. Animut, T. Sahlu, and A. L. Goetsch. 2004. Effects of ammoniation of wheat straw and supplementation with soybean meal or broiler litter on feed intake and digestion in yearling Spanish wether goats. Small Ruminant Research 51:37-46.

Supplemental Protein.

The quantity and quality of protein reaching the small intestine are influenced by microbial protein synthesized in the rumen and by ruminally undegraded intake protein, which is feed protein flowing from the rumen intact. When amino acid requirements are high, ruminally produced microbial protein may not meet tissue amino acid needs. In addition to the importance of the quantity of protein reaching the small intestine, the array of specific amino acids can have impact as well. Different sources of protein are available that vary in both susceptibility to ruminal degradation and in amino acid composition. Therefore objectives of this experiment were to determine effects of dietary crude protein (CP) level (13 or 19%) and source of supplemental protein on growth performance of weaned Boer × Spanish wether goats. Diets were 70% concentrate, had a ratio of ruminally degraded intake protein (DIP) to total digestible nutrients (TDN) of at least 0.09 and were formulated to maximize ruminally undegraded protein from supplemental protein sources. Results of the experiment suggest that the dietary CP requirement of growing Boer crossbred wethers consuming a high concentrate diet is no greater than 13% and that a DIP:TDN ratio of 0.09 is adequate. Supplemental protein sources differing in amino acid profile may not impact DM intake or ADG with high concentrate diets at least 13% in CP.

Soto-Navarro, S., A. L. Goetsch, T. Sahlu, and M. R. Cameron. 2004. Effects of supplemental protein source and level on growth performance of Boer crossbred wethers. Small Ruminant Research 51:101-106.

Noteworthy News

In October, Dr. **Steve Hart** served as Superintendent of the wether goat show at the Tulsa State Fair. He also supported the Birthing Center at the fair by supplying goats.

In October, Dr. **Steve Hart** gave a seminar on internal parasites in Nebraska to the Nebraska Meat Goat Association, in northern Oklahoma to the Southern Kansas and Northern Oklahoma Meat Goat Producers Association, in eastern Oklahoma to the Oklahoma Meat Goat Association, and in southern Oklahoma to the McCurtain County Goat Growers Association.

In October, Drs. **Terry Gipson**, **Steve Hart**, and **Tilahun Sahlu** traveled to Atlanta, GA to meet with collaborators in the "Development of a Web-based Training and Certification Program for Meat Goat Producers" project for the initial planning meeting.

In October, Drs. **Terry Gipson** and **Mario Villaquiran** traveled to Fort Valley State University in GA to meet with collaborators in the "Enhanced Goat Production Systems for the Southern United States" project.

In October, Dr. **Tera Auchtung** gave a presentation on lactational physiology at the annual American Dairy Goat Association Convention in Albuquerque, NM.

In November, Dr. **Steve Hart** gave a seminar on internal parasites in Kansas to the Kansas Meat Goat Association.

In November, Dr. **Steve Zeng** participated in a Cheese Grading Short Course at the University of Wisconsin-Madison. Goat cheeses along with many varieties of cow cheeses were graded and evaluated.

In November, Dr. **Terry Gipson** was the rapporteur for the information systems session at the Ninth Discover Conference on Food Animal Agriculture entitled Protecting and Managing Animal Genetic Resources for Future Generations: The Next Steps in Cheyenne, WY.

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P.O. Box 730
Langston, OK 73050