Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Fall 2011*

From the Director's Desk

Life is full of changes and we have had considerable change here at the University.

In early August, President JoAnn Haysbert announced her resignation and returned to Hampton University as provost. In August 2005, Dr. Haysbert was appointed the fifteenth, and the first female, president of Langston University by the Board of Regents for Oklahoma State University and the A&M Colleges. She came to Langston University after a long and successful 25-year career at Hampton University. We shall miss the energetic leadership of JoAnn Haysbert.

Slightly before Dr. Haysbert's departure, Langston University alumnus Dr. Henry Ponder was named as acting president. Dr. Henry Ponder received his Bachelor of Science in Agricultural Education from Langston University, a Masters of Science from Oklahoma State University, and, a Ph.D. from The Ohio State University. Dr. Ponder, a native Oklahoman, advanced through the ranks of higher education, serving as both Chair and Assistant Professor for the Department of Agriculture and Business at Virginia State College in Petersburg, Virginia. He also served as the Chairman of the Department of Business and Economics of Fort Valley State College in Fort Valley, Georgia. Additionally, Dr. Ponder was the Vice President of Alabama A&M University in Normal, Alabama. In 1973, Dr. Ponder become President of Benedict College in Columbia, South Carolina and President of Fisk University in Nashville, Tennessee in 1984. While President of Fisk University, Dr. Ponder was selected as one of the "One Hundred Most Effective College Presidents in the United States." He has been recognized with countless outstanding awards and honors, including the Oklahoma State University Alumni Association's Distinguished Alumnus Award and the Oklahoma State University Agricultural Economics Alumni Award. We are excited about Dr. Ponder's leadership and his prior experience in agriculture and we look forward to working with him.

We have also had comings-and-goings at the Institute level. Recently, Dr. **Liping Wu**, a Visiting Scholar working under the direction of Dr. **Steve Zeng** on the research project entitled "Impact of Subclinical Mastitis on Quality and Production of Goat Milk and Cheese", completed her research commitment and departed the Institute. Dr. **Yoko Tsukahara** recently joined the Institute as a Visiting Scholar to work on a project entitled "Establishing a Langston University Testing Center for Electric Fence Modifications of Cattle Barb Wire Fence for Goat Containment." Dr. Tsukahara recently completed her Ph.D. at Kyoto University in Japan and published her thesis work in the Journal of Animal Science in a scientific article entitled "Development and application of a crossbreeding simulation model for goat production systems in tropical re-

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gions." Dr. Tsukahara will be working with Dr. **Art Goetsch** on the fencing project.

These two aforementioned projects are funded by a grants program of USDA; however, we also conduct research using in-house funding. An example of this is our recently launched project entitled " Influence of trace mineral supplementation on goat reproductive performance following estrus/ovulation synchronization and different sites of semen placement." This research is important because using trace mineral supplementation (TMS) prior to the breeding season may improve some aspects of reproductive performance. Because there is very scant published information concerning TMS use in the context of goat reproduction, it seems reasonable to generate scientifically-based information to increase available knowledge in this area. Also, assisted reproductive techniques (ART) used in goat reproductive management often results in decreased reproductive performance (e.g., fertility, prolificacy, and fecundity) compared to what can be attained through use of conventional natural service. The reduced efficiency can be experienced when goats are hormonally estrus/ovulation synchronized and are bred using thawed-frozen semen. For this reason there are continued efforts to adopt new procedures and/or technology that may improve results.

This research is at the interface between nutrition and reproduction, which is an area that affects all producers. We hope to disseminate the finding of this ongoing research project in future issues of the newsletter.

Recently, we received representatives from the Governor of the State of Guerrero, Mexico, from Baptist Churches in the State of Guerrero, and from the Baptist General Convention of Oklahoma. Baptist churches in Mexico and Oklahoma are exploring the possibility of partnering on a developmental project in the State of Guerrero. The Baptist General Convention of Oklahoma would like to work with the State of Guerrero to introduce Boer goats for use in villages to upgrade existing animals and as a potential project in prison ministry to train prisoners on goat husbandry and production. The Baptist General Convention of Oklahoma desired the initial meeting to be conducted at Langston University, so that the delegates from Mexico could visit the Institute and learn about our research, extension, and international activities.

Our Web-based Meat Goat Certification Program is growing stronger. We now have 202 certified Quality Producers from almost every state in the union plus 20 certified Quality Producers from nine foreign countries. If you do not know about our Quality Producer program, please visit our web site for more information.

Research Spotlight

Milk Review.

Differences between production systems based on grazing and browsing vs. use of harvested feedstuffs in confinement largely depend on specific feedstuffs and plants available and being consumed. Low forage nutrient ingestion should have relatively greater impact on tissue mobilization than milk production in early than later periods of lactation, with a transition to proportionally greater change in milk production in late lactation. However, low body condition at kidding would limit tissue energy mobilization and restrict impact of level of nutrient intake to milk yield and, likewise, tissue mobilization would be less with one vs. two or three milkings per day. As lactation advances after freshening, fat and protein levels decrease with increasing milk yield, and when production declines in mid- to late lactation, fat and protein concentrations increase. Milk production generally peaks at a parity of 3 or 4, thereafter declining slowly. Elevated somatic cell count alone in dairy goats is not a valid indication of mammary infection. Extended lactations offer opportunities to minimize or avoid seasonal fluctuations in milk production and lessen production costs. If differences in performance between suckled and machine-milked dairy goats occur, they may be restricted to or of greater magnitude during the suckling period compared with post-weaning, and differences in milk yield will either be absent or less with one kid compared with greater litter sizes. The magnitude of effects of milking frequency on milk yield is less for goats of low vs. high production potential and with low vs. high diet quality. Likewise, the effect of milking frequency is greater in early and mid-lactation when yield is higher than in late lactation, along with a shorter period of peak production with one vs. two daily milkings. Physical form of the diet can affect production and composition of goat milk, although effects appear of smaller magnitude than in dairy cattle.

Goetsch, A.L., S.S. Zeng, and T.A. Gipson. 2011. Factors affecting goat milk production and quality. Small Ruminant Research doi:10.1016/j.smallrumres.2011.09.025.

Meat Review.

Deposition of relatively less subcutaneous fat by goats than sheep adversely affects storage properties of meat, most importantly dehydration and cold-shortening. High concentrate diets increase internal and carcass fat in goats, including intramuscular fat though levels are less than in cattle or sheep. Levels of saturated and monounsaturated fatty acids are greater in goats consuming concentrate in confinement compared with rangeland grazing. Because the botanical composition of the diet selected by goats is more reflective of plant species available compared with cattle and sheep, changes in the botanical and chemical composition with high vs. low stocking rate or as forage mass declines with increasing stocking rate should be smaller compared with cattle and sheep, with greatest differences when browse plant species are available. The magnitude of effect of castration on carcass fatness varies considerably with plane of nutrition, although some gender comparisons have not considered stage of maturity. Limited nutrient intake maximizes lean tissue accretion and minimizes fat deposition regardless of gender. Pre-weaning growth rate is greater for single-kid litters compared with kids of multiple births depending on factors influencing milk production. Concentrate supplementation should increase pre-weaning growth when milk yield is low regardless of litter size but not with moderate-high milk yield when concentrate substitutes for milk. Genetic variability in performance traits is considerable and has been the target of various breed improvement and crossbreeding programs. Breed and genotype differences in carcass traits also exist; however, few improvement programs have included these traits in selection objectives.

Goetsch, A.L., R.C. Merkel, and T.A. Gipson. 2011. Factors affecting goat meat production and quality. Small Ruminant Research doi:10.1016/j.smallrumres.2011.09.037.

Mortality Composting Train-the-Trainer

In 2010, Langston University was awarded a grant entitled "Training Farmer Educators On Goat Mortality And Butcher Waste Composting, A Regional Approach." The issue of disposing of goat mortality and butcher offal is one of increasing importance to goat producers, especially those with few animals, and for facilities that process small ruminants. Finding a rendering company that accepts small ruminants is difficult and other legal disposal options, such as incineration, burial, and landfills, can be costly. Indiscriminate disposal of mortality above ground can spread disease and damage the environment through water and soil pollution and is unlawful. Mortality composting is an easy to use, beneficial management option that can result in reduced disposal costs and assist small farmers become better stewards of natural resources. Three regional program centers on mortality composting, one each in Oklahoma, Florida, and Virginia will be established. Composting bins and demonstration piles for composting mortality and butcher waste will be made at each site. Each site will train in-state extension educators and educators from neighboring states. This regional approach allows for a broader extension of knowledge on proper means of mortality composting to producers in areas of the U.S. that raise significant numbers of meat goats. A manual on small-scale mortality composting will be written, published and be available on the websites of all collaborating institutions. Activities will enhance the ability of all institutions involved, as well as 1890 institutions as a whole, to promote and teach mortality composting to their clientele.

On October 5, 2011, Langston University held a meeting of representatives from several 1890 universities and one breed organization. The Director of the American Institute for Goat Research, Dr. Tilahun Sahlu, welcomed the attendees to the meeting. Dr. Roger Merkel gave an overview of the grant and its activities. One main purpose of the meeting was to view training materials developed for use in grant activities. The objective of the grant is to train farmer educators in mortality composting in a train-the-trainer model with these educators then training producers. The grant proposes to use this model to increase adoption of mortality composting by producers.

Dr. Merkel gave a presentation on mortality composting that is the basis for the training to be given. The attendees asked many questions and gave feedback on the presentation. Suggestions for improvement to clarify information and add additional information were noted. Some of these suggestions included more information on reduction of pathogens in mortality composting piles to reduce chances of disease transmission, how to best use resulting compost, and bin construction. The group toured the composting facility at Langston University in the afternoon and held more discussions. Langston University is currently constructing a three-bin permanent composting structure that will be used in training and future research into mortality composting of small stock.

Those attending included (left to right in photo) Dr. Terry Gipson (Langston University), Ms. Angela McKenzie-Jakes (Florida A&M University), Dr. Charlotte Clifford-Rathert (Lincoln University), Mrs. Annette Maze (US Boer Goat Association), Mr. Hugh Soape (Prairie View A&M University), Dr. Nelson Escobar (University of Maryland Eastern Shore), Dr. Sebhatu Gebrelul (Southern University), Dr. Yemane Ghebreyessus (Southern University), Dr. Roger Merkel (Langston University), and Dr. Adnan Yousuf (Virginia State University).

Goats to Work for City of Stillwater

The City of Stillwater, OK is similar to many other cities in that it has places that cannot be easily reached by mowing crews and brush has proliferated. So Stillwater turned to Langston University in an effort to stem this problem. Several meetings between the City of Stillwater and Langston University yielded a plan that was agreeable to both parties and in mid-October, Langston University delivered a dozen goats to a drainage ditch in the western part of the city. The City of Stillwater provided materials and labor to fence the drainage ditch, which is 250' x 20', and Langston University provided the goats. Both parties provide labor to maintain the goats while they are reducing the unwanted vegetation. Langston University has worked with various organizations in utilizing goats to control unwanted vegetation; however, this joint project is a first because it entails the use of goats within a city limits. This demonstration site is just off Western Road in Stillwater. The goats will remain at the site for a week or two trimming back the vegetation and then will return to Langston University. The City of Stillwater will have a cleaner drainage ditch, all without the added noise and expense of a crew of city workers.

View of site from West Sherwood Ave. in Stillwater

Ben Allen of KOSU radio was on hand to witness the delivery of the goats and the following paragraphs are adapted from his reporting.

"There's a lot of brush in the drainage ditch that's very desirable for them, very palatable. Now they're just going through and selecting the highly desirable brush and stripping those leaves off and then they'll come back and finish off with some of the ones that are less palatable", said Terry Gipson, Extension Specialist at Langston University as he delivered the goats.

Stillwater's Storm Water Programs Manager Cody Whittenburg first proposed the program and got a lot of long stares. Whittenburg says with a strong fence and residents on alert, he doesn't expect any problems keeping the goats in the ditch. Whittenburg didn't have to do a whole lot of convincing of his bosses. John McClenny is the city's Director of External Services. After getting the initial proposal, he read up on the history of animals acting as lawnmowers. And once he heard one story, he was sold…


View of site from West Arrowhead Dr. in Stillwater

"They used sheep to maintain the White House lawn during World War One, so I thought if they could do it there, we could do it here."

The goats should go through the plants and grass in a little over a week. Whittenburg says they'll see how the program works out, and then decide whether to send the goats to take on other areas in Stillwater.

Ethiopian Sheep and Goat Productivity Improvement Program

In 2005, Prairie View A&M University, Prairie View, TX and the E (Kika) de la Garza American Institute for Goat Research of Langston University were awarded a grant from the USAID Mission in Ethiopia for a 5-year project entitled "Ethiopia Sheep and Goat Productivity Improvement Program." The project was extended for 1 year into 2011. The role of the Institute has been in initial project design, preparation of annual work plans, implementation management, and providence of technical expertise and direction.

The project entailed collaboration with the Ministry of Agriculture and Rural Development of the Government of Ethiopia. The overall goal of the program was to conduct research and extension activities in the areas of production and marketing that will result in a sustainable increase in small ruminant productivity in Ethiopia to improve food and economic securities. The project worked in six regions of Ethiopia (Tigray, Amhara, Oromia, Southern States, Afar, and Somali) and addressed a number of factors including human and institutional capacity building, research and technology transfer, and introduction of improved animal genetics.

There were four major components of the project: Genotype, Animal Health, Production, and Training. In this issue, accomplishments of the Genotype and Training components will be highlighted and in the next issue of the newsletter, the Animal Health and Production components will be Highlighted.

Genotype

In 2007, the Genotype component worked with Ethiopian officials to import Boer goats and Dorper sheep from South Africa. The broadest genetic base possible was selected from the top stud producers in South Africa as represented in the Table below.

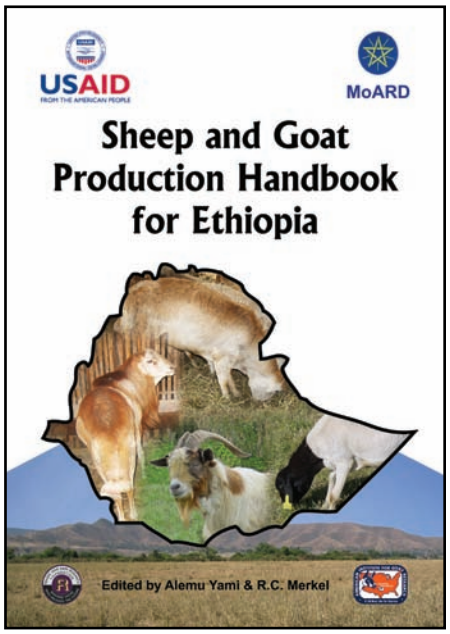
Breed	***Province***	***Studs***	***Males***	***Females***	***Total***
Boer	Eastern Cape	5	12	60	72
Boer	Northern Cape	4	8	40	48
Dorper	Free State	2	4	20	24
Dorper	Northern Cape	7	15	84	99
Total			*39*	*204*	*243*

These animals formed the backbone of purebred and crossbreeding programs designed to utilize the fast growth rate and larger carcass of these animals with the native adaptability and toughness of local breeds. The resulting crossbreds will be able to supply the export market with the desired frame size and carcass characteristics. The ESGPIP built a quarantine facility and nucleus and crossbreeding facilities to carry

Imported Dorper rams at Melkawarer Agricultural Research Center.

Imported does and buck at Adami Tulu Agricultural Research Center

ESGPIP (cont.)



out project activities. After the quarantine period expired, the Boer goats were divided equally across studs and transported to Nucleus Breeding Sites established at the Adami Tulu Agricultural Research Center and Hawassa University in central and southern regions of Ethiopia, respectively. The Dorper sheep were divided equally across studs and transported to Nucleus Breeding Sites established at the Melkawarer Agricultural Research Center and Somali Agricultural Research Institute in Fafen in central and eastern regions of Ethiopia, respectively. In addition to the four Nucleus Breeding Sites, initially 10 Breeding, Evaluation, and Distribution (BED) sites were established across Ethiopia with the express intent of propagating and disseminating crossbred animals. Later, in accordance with an increasing interest in the improved genotypes, a number of Satellite Nucleus Breeding and BED sites were added. In 2008 and 2010, Boer goat semen was purchased in South Africa, imported into Ethiopia and used in artificial insemination projects to broaden the genetic base of the purebred Boer goat Nucleus herds. Purebred Boer goats and Dorper sheep bred indigenous breeds and resulting crossbreds distributed to private farmers. Because of the great and increasing interest in the Dorper sheep and Boer goats that have been introduced, two of the regions (Amhara and Southern States) provided funds and requested that USAID through the ESGPIP import additional animals. Thus, in the final year of the project, Langston University and the ESGPIP imported more than 350 additional Dorper sheep and Boer goats, which arrived in Ethiopia from South Africa in July, 2011.

Training

The main aspect of the Training component of the project aimed to enhance the knowledge and ability of village development agents to assist farmers in raising small ruminants via direct training in small ruminant production. Village development agents received training in sheep and goat production and management. In latter years of the ESGPIP, training emphasis also was given to farmers and pastoralists in management and marketing of crossbreds of the improved genotypes. In support of these activities, the Sheep and Goat Production Handbook for Ethiopia was published in 2008. This text, written by Ethiopian scientists, is the first of its kind in Ethiopia and has over 350 pages of information that can be used by development agents. The depth of information in the book also allows its use as a classroom text by university faculty. In addition, technical bulletins of certain aspects of sheep and goat production were produced and distributed to development agents and institutions throughout the country. The technical bulletins are designed to contain material that a development agent could use directly in training village farmers. These bulletins are very popular and were translated into several different regional languages of Ethiopia to broaden their use. In 2008, the ESGPIP and Institute staff established a project website, www.ESGPIP.org, that contains the technical bulletins, handbook, and other materials and reports produced by the ESGPIP.

http://www.esgpip.org

Noteworthy News

►In July, Dr. **Arthur Goetsch** was awarded the prestigious 2011 American Feed Ingredient Association Award by the American Society of Animal Science at their annual meeting in New Orleans, LA.

►In August, Dr. **Terry Gipson** presented on Browsing and Grazing Behavior of Goats and How to Use It to Your Advantage at the Goat Conference at Kentucky State University.

►In September, Dr. **Steve Hart** presented on How to Start in the Goat Business at the Small Farms Program Beginning Farmers Conference in Muskogee, Hugo, Anadarko, and Tatums, OK.

►In September, Dr. **Steve Hart** provided goats for the State Fair of Oklahoma Birthing Center and was Superintendent of the Open Boer Goat Show sanctioned by ABGA

►In September, Dr. **Steve Hart** provided animals for the Tulsa State Fair for their Birthing Center.

►In October, Dr. **Steve Hart** presented on Goats for Vegetation Management at the Oklahoma Society for Range Management in El Reno, OK.

►In October, Dr. **Steve Hart** spoke on various topics at the American Dairy Goat Association annual meeting in Grand Rapids MI.

►In October, Dr. **Steve Hart** presented on Control of Internal Parasites and on Balancing a Goat Ration at a goat conference at the University of Wisconsin, Platteville.

►In October, Drs. **Tilahun Sahlu** and **Steve Zeng** traveled to various universities in China to discuss reciprocal study programs.

►In October, Dr. **Steve Hart** presented an invited paper on Effective and Sustainable Control of Nematode Parasites in Small Ruminants: The Need to Adopt Alternatives to Chemotherapy with Emphasis on Biological Control at the Fifth International Symposium on Sheep and Goat Meat Production in Joao Pessoa, Brazil.

►In November, Dr. **Terry Gipson** traveled to Ethiopia to work on activities of the project entitled "Establishing a New Partnership between Wollo University, Dessie, Ethiopia and Langston University, Langston, Oklahoma."

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