Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Winter 2016*

From the Director's Desk

I pen this missive as I sit in the warmth of my home as the university is closed today for a "rare" snow day. I put rare in quotes because it seems that in recent years, we have had more snow-day closings than in past years. In Oklahoma, we receive a small to moderate amount of snow/ice each winter. I have to ask, "Is this snow-day phenomenon a result of cautiousness or changing climate?" As a society, I think that we have become more cautious because of an increased awareness of risks and also because we have become more litigious. Concerning climate change, I am not saying that it is nor am I saying that is not. I want to keep an open mind, and I hope that our elected officials keep an open mind too. Framing climate change in terms of Pascal's Wager, if we as a society believe that climate change exists and it does or we believe that climate change does not exist and it doesn't, then we have chosen wisely. However, the two other scenarios are not as pleasing. If we believe that climate change exists and it doesn't, then we have wasted time, efforts, and money on a situation that will not happen. Likewise, if we believe that climate change does not exist and it does then we have chosen to ignore a potentially dangerous situation and future generation will pay the price. The debate between the relative risks/dangers of false positives and false negatives has raged for centuries. In the U.S. legal system, the premise of innocent until proven guilty puts the onus on the prosecutor rather than on the defendant and is echoed in the writings of English jurist William Blackstone, who reported said "It is better that ten guilty persons escape than that one innocent suffer", that is, it is far better to have ten false negatives than one false positive. A counterpoint to Blackstone is former Vice President Dick Cheney who said, "I'm more concerned with bad guys who got out and released than I am with a few that in fact were innocent." For Cheney, it is far better to have ten false positives than one false negative. So are we, as a society, more Blackstonian or Cheneyian? Well that is enough of my musings regarding climate change.

Back to research, we welcome Dr. **Haiying Liu** who will be joining us for a yearlong sabbatical. Dr. **Liu** is an associate professor in College of Animal Science and Veterinary Science at Shenyang Agricultural University of China. Dr. **Liu** will be working on an experiment entitled "Effects of lespedeza condensed tannins, monensin, soybean oil, and coconut oil alone and in combinations on ruminal methane emission, feed intake, feeding behavior, digestion, energy metabolism, and growth performance by growing Alpine doelings" under the guidance of Dr. **Art Goetsch**.

We also welcome Mr. **Angel Miguel Rojas Pardo**. Mr. **Pardo** is from Instituto Na-

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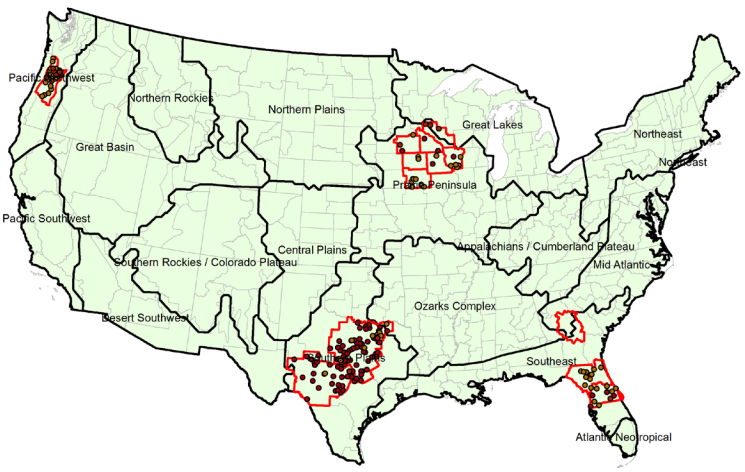
cional de Seguro Agrario and the Association of Holstein Producers Bolivia. Mr. **Pardo** will be working on several projects in assisted reproductive technologies under the guidance of Dr. **Erick Loetz**.

One last musing on climate change, on the next page you will find preliminary research that we have conducted to establish research protocols for the USDA National Institute of Food and Agriculture funded project entitled "Genomics of Resilience in Sheep to Climatic Stressors" and is being led by Dr. **Arthur Goetsch**. The long-term goal of this project is to provide necessary knowledge and tools to improve resilience of sheep to environmental stressors. The central hypothesis is that adaptation to environmental pressures is largely based on genetics and considerable variation exists among and within current sheep populations. Four locations in the U.S. were identified for each of three hair sheep breeds (i.e., Katahdin, St. Croix, and Dorper) to achieve a wide gradient of climatic conditions. Females over 1½ years old are being evaluated for resilience to three types of stress related to climate change projections: minimization of energy use with a limited nutritional plane; water conservation with restricted availability; and heat tolerance with high heat load index.

In January and February of 2015, Drs. **Goetsch** and **Terry Gipson** traveled to Katahdin, St. Croix, and Dorper breeders located in the four distinct climatic zones (dot clusters) represented in the map below to discuss the project and to purchase females. Later that year, Drs. **Goetsch**, **Ryszard Puchala**, and **Yoko Tsukahara** returned to those breeders to transport the animals back to the university.

In case you are wondering about the map, the National Ecological Observatory Network, which is funded by the National Science Foundation, has statistically partitioned the continental US into 17 ecoclimatic domains that represent distinct regions of vegetation, landforms and ecosystems.

I am hopeful that this project will help us with climate change whether it is really true or just a false positive.



Research Spotlight

Resilience to water restriction.

With the current rate of climate change, rainfall is expected to decrease in some areas of the world. With limited drinking water availability, ruminant livestock production is more difficult. Therefore, the primary objective of this experiment was to study appropriate conditions to evaluate differences among individual sheep and goats of two breeds in resilience to restricted drinking water availability. Yearling Boer goat and Spanish goat and Katahdin sheep wethers were used. A moderate quality grass hay was free-choice and supplemented with a small amount of a corn-soybean meal mixture. Baseline conditions were first determined in the last 2 weeks of a 3-week period when water was given free-choice. Then, the amount of water offered was decreased by 10% every 1 week (1X) or 2 weeks (2X) to 40% of baseline intake (i.e., 90, 80, 70, 60, 50, and 40% levels). In addition there were 2 weeks with water given at the 40% level for the 1X restriction treatment. There was some indication that feed intake by Katahdin sheep wethers was more subject to adverse effects of very low water availability but not mild restriction compared with goats. This agrees with findings of other studies in the world showing considerable capacity of goats to conserve water. There were a number of variables indicating that periods 2 weeks long would be much more valuable in evaluating resilience than 1 week. In fact, periods longer than 2 weeks could increase meaningfulness and value of measures like body weight. Furthermore, a smaller number of different levels of restriction before the lowest level(s) would seem feasible. The blood level of cortisol as an indicator of stress suggested that the 50% restriction level would be more appropriate than 40%. Blood concentrations of various constituents differed considerably when collected before watering and a two later times, and it appeared that there should be at least one sample collected before and after watering.

Urge, M., R. Puchala, T. Sahlu, T.A. Gipson, L.J. Dawson, and A.L. Goetsch. 2016. Comparison of different levels and lengths of restricted drinking water availability and measurement times with Katahdin sheep and Boer and Spanish goat wethers. Small Ruminant Research 144:320–333.

Resilience to heat load.

One of the most significant and widespread environmental stress factors is high temperature and(or) humidity. Breeds of ruminant livestock vary in tolerance to high heat load index (HLI; similar to temperature-humidity index), and the same is true for animals of breeds adapted to specific environmental conditions, resulting in 'ecotypes.' Therefore, objectives of this experiment were to determine conditions appropriate for a method of evaluating resilience to HLI of individual animals of one hair sheep breed and two breeds of meat goats. Katahdin sheep and Boer and Spanish goat wethers were fed a grass hay free-choice supplemented with a corn-soybean meal supplement. There were five periods, the first with mild conditions both during the day and night (66 HLI). Then there were 1-week periods with increasing HLI, but with higher values in the day than night to simulate typical conditions in many areas of the world (actual values during the day/night of 80/75, 92/84, 97/86, and 101/89 in periods 2, 3, 4, and 5, respectively). Based on the results, HLI conditions in the range of periods 4 and 5 seemed appropriate as relatively high levels to evaluate differences among individuals of each of these animal types in resilience, although inclusion of one or more lower HLI regimes could be considered as well. An adaptation period to the highest HLI conditions of 5 days was adequate for respiration rate. However, with this regime 1 week or more was required for adaptation of physiological conditions to achieve stable rectal temperature. There were considerable differences in variables measured early in the morning compared with early and late afternoon, and change with advancing day of the week at the highest HLI in some cases differed among times. Overall, to adequately characterize resilience responses to elevated HLI there should be at least one measurement time during the nighttime when HLI is relatively low and a minimum of one time in the latter part of the daytime period with high HLI.

Urge, M., R. Puchala, T. Sahlu, T.A. Gipson, L.J. Dawson, and A.L. Goetsch. 2017. Conditions to evaluate differences among individual sheep and goats in resilience to high heat load index. Small Ruminant Research 147:89–95.

Institute hosts Philippine extension personnel

From January 8 to 14, 2017, the American Institute for Goat Research hosted five extension personnel from the Philippines for training in goat production and management. The group was composed of three veterinarians, Drs. Cathy Delima, Roche Barrios, and Darwin Sulay, and livestock extension agents Armando Lagasca and Cleare Galit. Their training program was sponsored by the Agricultural Training Institute of the International Training Center on Pig Husbandry (ATI-ITCPH) of the Philippine Department of Agriculture.

The group arrived on Sunday, January 8 and spent the day recuperating from travel and searching for warm coats to ward off the cold Oklahoma weather. Being in subfreezing temperatures was a new experience for all of the participants but they enjoyed seeing some snow on the ground, a first for each of them.

Their training program began the following day with a visit to the Institute Director, Dr. Tilahun Sahlu; an overview of the Institute's research, extension, and international activities; and a tour of the research laboratory facilities. The group then adjourned to the research farm to begin their training. Dr. Erick Loetz, Research Farm Manager, and Mr. Jerry Hays, Assistant Research Farm Manager, led sessions on how the research farm is organized and operations maintained along with animal management and recordkeeping. The group also was introduced to the artificial insemination program of the research farm through discussions on estrus detection and the detection methods used at the farm.

On Tuesday, January 10 the group was trained by Dr. Lionel Dawson of Oklahoma State University along with several veterinary students in how to conduct an epididymectomy to make a teaser buck. The group then learned the estrus synchronization protocols used at the farm along with semen evaluation with the opportunity to manually count spermatozoa in a semen straw by using a hemocytometer with Messrs. Miguel Rojas and Abiel Haile. Milking procedures of the farm were explained by Ms. Amanda Manley and mastitis detection methods were demonstrated by Mr. Italo Portugal and Dr. Roger Merkel.

Learning AI techniques.

Pregnancy detection using ultrasound

Evaluating semen.

On Wednesday Dr. Roger Merkel spoke about mortality composting, a practice that is being adapted and used at ATI-ITCPH. Dr. Terry Gipson then discussed genetic improvement, breeding schemes and animal selection. The afternoon was spent learning about herd health procedures and common goat diseases with Dr. Lionel Dawson.

The group learned about semen collection and the use of fresh semen in artificial insemination on Thursday morning with Dr. Terry Gipson and Mr. Miguel Rojas. An Alpine dairy buck was collected and semen used to fill straws as if they were to be used in insemination. The use of fresh semen is a good method for inexperienced AI technicians to hone their skills before using more expensive frozen semen. It is also a method of biosecurity to prevent the possibility of disease spread among breeding animals. The afternoon of that day was spent discussing internal parasites and goat nutrition with Dr. Steve Hart.

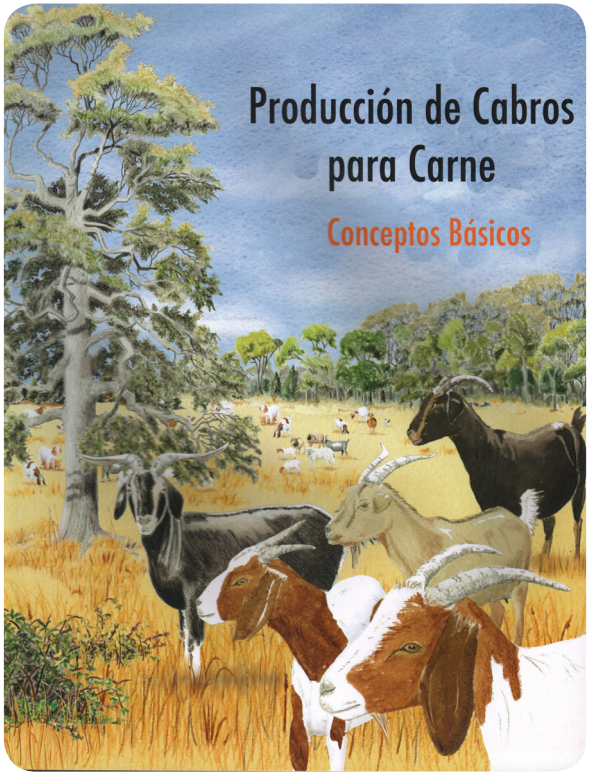
Dr. Erick Loetz led the participants in artificial insemination training on Friday, January 13. The participants utilized synchronized does to learn about AI kits, how to prepare and load an AI gun, proper speculum insertion, location of the cervical os, and practice insemination. Following the AI practice with Alpine does, the group moved to the South Barn of the Institute to ultrasound Boer does to determine pregnancy.

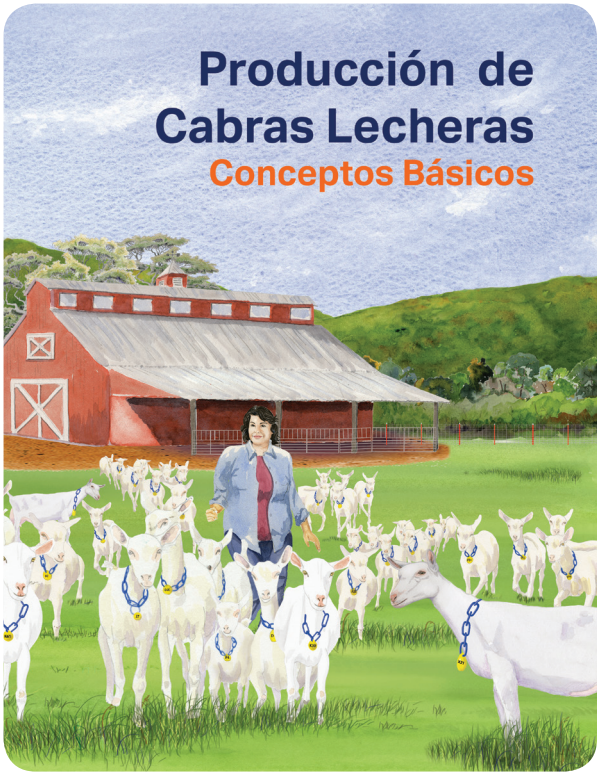
The group learned a great deal during their time at the Institute. The hands-on nature of the training was very beneficial to the group in the transfer of knowledge from trainers to participants. It was an enjoyable and fun-filled week. The Institute would like to thank Dr. Ruth Miclat-Sonaco of the ATI-ITCPH for sending the participants and the Institute hopes to continue a collaborative relationship with that organization.

Dr. Tilahun Sahlu (center) presented training certificates.

Looking for Goat Information in Spanish?

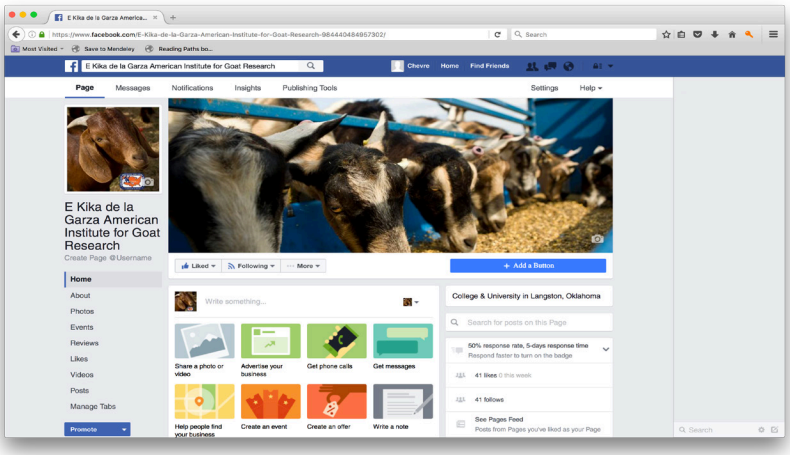
If you have been looking for quality, unbiased information on meat or dairy goat production in Spanish, your search is over. The Institute has published Producción de Cabras para Leche Conceptos Básicos in collaboration with the University of Puerto Rico at Mayagüez (UPRM) and Producción de Cabros para Carne Conceptos Básicos was published by UPRM in collaboration with the Institute. Both publications are the scaled down versions of our full handbooks. In these versions, information from the most important chapters of the full handbooks is condensed and presented in a bulleted, easy-to-read format appropriate for youth and producers who may not wish the additional content found in the full English handbooks. Ordering information for the two Spanish handbooks can be found at http://goats.langston.edu/Library.





Facebook

As was mentioned in an earlier newsletter, the Institute has established a Facebook presence. On February 4, 2017, Facebook will be 13 years old but this teenager is now a worldwide staple. Created by Mark Zuckerberg, Andrew McCollum, Dustin Moskovitz, and Chris Hughes in 2004, Facebook had a humble beginning in a dorm room at Harvard University. Originally, Facebook was open to only to Harvard students but then expanded to the rest of the Ivy League. In 2012, the number of active Facebook users surpassed 1 billion and currently there are just under 2 billion active users, although only about 150 million active users are from the United States.



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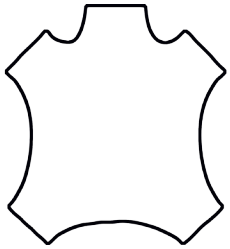
2017 Producer Workshops

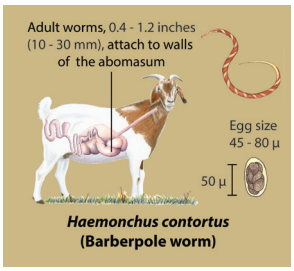
Tanning Goatskins Workshop



On Saturday, April 1, 2017, a tanning goatskins workshop will be held at Langston University from 8:00 a.m. to 12:30 p.m. The focus of the workshop will be tanning hair-on goatskins but the process of unhairing skins and making leather will also be discussed. After discussing the stages of tanning from how to handle and store a raw hide to softening and finishing a tanned skin, participants will have hands-on practice with goatskins in several of the different tanning steps. Various tanning methods will be discussed and examples of tanning kits and chemicals displayed. All of the tanning procedures presented and chemicals used are appropriate for home tanning with all of the work done by hand. The tanning processes learned can be used on goat, sheep, deer, coyote, and other skins. *Registration is limited to 10 participants. A registration fee of $20 is charged.* Refreshments will be provided.

For more information regarding the tanning goatskins workshop, contact Dr. Roger Merkel at (405) 466-6134 or rmerkel@langston.edu. A registration form is available online at: http://goats.langston.edu/Extension Activities

Parasite and FAMACHA® Workshop



On Saturday, May 20, 2017, a Parasite and FAMACHA® workshop will be held at Langston University from 9:00 a.m. to 3:00 p.m. The focus of the workshop will be biology and control of worms with management, proper use of dewormers, FAMACHA® eye scoring, and fecal egg counting.

For information regarding the Parasite and FAMACHA® workshop, contact Dr. Steve Hart at 405-466-6138 or shart@langston.edu. A registration form is available online at: http://goats.langston.edu/Extension Activities

Buck Collection Workshop

On Saturday, September 9, 2017, a buck collection workshop will be held at Langston University from 8:00 a.m. to 5:00 p.m. The focus of the workshop will be basic anatomy and physiology of male goats, artificial vagina construction, and semen collection and handling. Participants will have the opportunity to practice with live animals. *Registration is limited to 20 participants. Registration fee is $50 per person.* Included in the cost of registration are handouts and snacks for breakfast and breaks.

For information regarding the Buck Collection workshop, contact Dr. Terry Gipson at 405-466-6126 or tgipson@langston.edu. A registration form is available online at: http://goats.langston.edu/Extension Activities

AI Workshop

On Saturday, October 11, 2017, an artificial insemination workshop will be held at Langston University from 8:00 a.m. to 5:00 p.m. The focus of the workshop will be basic anatomy and physiology of female goats, estrus detection and synchronization in goats, and semen handling. Participants will have the opportunity to practice with harvested reproductive tracts and with live animals. *Registration is limited to 20 participants. Registration fee is $50 per person.* Included in the cost of registration are handouts and snacks for breakfast and breaks.

For information regarding the AI workshop, contact Dr. Terry Gipson at 405-466-6126 or tgipson@langston.edu. A registration form is available online at: http://goats.langston.edu/Extension Activities

Wishing you and your goats a happy and prosperous 2017!!

Oh my head!
No more rumen fluid
whiskey shots for me.

Will somebody please turn off the sun!

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