AMERICAN INSTITUTE FOR GOAT RESEARCH
LANGSTON UNIVERSITY
E (Kika) de la Garza

Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Winter 2012*

From the Director's Desk

The year 2012 quickly comes to an end. Everything seems to be in hyperdrive. It has been said that we are living in exponential times. Many consider the current digital age to be the fourth age of mankind, following printing, language, and toolmaking, in reverse order. Moore's Law, which states that computing power doubles approximately every two years, seems to be the axiom of this fourth age. Many futurists agree that we are currently preparing students for jobs that do not yet exist. Think about this, two decades ago the first commercial text message was sent. Today, the number of text messages sent every day exceeds the number of people now living on Earth. Some of today's most innovative companies did not exist twenty years ago: Amazon and eBay were founded in 1995, Google in 1998, Wikipedia in 2001, Skype and iTunes in 2003, Facebook in 2004, YouTube in 2005, Twitter in 2006.

Let's look at YouTube, which is a video sharing website. YouTube has over 120 million videos, more than 800 million unique visitors per month, and during that month, over four billion hours of video are watched. In 2011, YouTube had more than one trillion views or around 140 views for every person on Earth.

I remember when audio first appeared on the internet. The complete file had to downloaded before you could listen to the audio and it was a painfully slow process; later came video, which was even slower. Advances were made and streaming multimedia files became available but servers needed to be specially configured. If you don't recall, a streaming multimedia file can begin playing before the entire file has been completely transmitted. Videos on YouTube are excellent examples of streaming multimedia files.

I mention YouTube because our Extension personnel strive to deliver content in the most efficient and productive way possible. We recently inaugurated a YouTube channel, which you can read more about in this newsletter. By developing videos and distributing them on YouTube, we can ensure that we will reach the widest audience possible and we do not have to worry about the maintenance of a streaming server. I hope that you will be able to watch some of our YouTube videos. If you are a smartphone owner, of which there are more than 100 million in the United States, then you will be able to take advantage of the QR code that is displayed next to the description of the videos on pages 6 and 7.

A QR (Quick Response) code, also known as a 2D barcode is a readable barcode recognized by many smartphones and other mobile devices. The QR code was first developed in Japan, has become very popular in Europe, and recently has gained traction here in the United States. Unlike the older one-dimensional barcode that

Goat Newsletter is published quarterly by the Cooperative Extension Service of the E (Kika) de la Garza American Institute for Goat Research, Langston University, Langston, Oklahoma.

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

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

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

was designed to be mechanically read by a narrow beam of light, the QR code is read as a two-dimensional digital image. The scanner app locates the three distinctive squares at the corners of the image and then uses a smaller square near the fourth corner to adjust the image for size and camera angle. A QR code can contain a website address, a phone number, a text message, an e-mail address or message, contact data, or just plain text.

The QR codes on pages 6 and 7 of this newsletter will open a web browser to the video in YouTube. The QR codes on page 5 will open an e-mail application with a ready-made e-mail complete with e-mail address, subject, and message awaiting to be sent to one of our Extension personnel. The colored QR code to the left will take you to our web site. The QR code below has my contact information. Please try it. You can scan it and it will save my contact information into whatever application you use, such as Outlook, Contacts, etc.

I remember reading Alvin Toffler's Future Shock in the 1970's and I think of it today as I pen this piece. For Toffler and other futurists of his generation, the term "future shock" was what happened to people when they were no longer able to cope with the rapid pace of change or as he stated "too much change in too short a period of time." Toffler also coined the phrase "information overload," which is commonly heard in today's world.

For modern society, e-mail is a major source of information overload. I know personally that I struggle to keep up with the rate of incoming messages. A recent report entitled "Dealing with a bloated inbox" stated that in 2010 there were 294 billion e-mails sent each day, up 50 billion from 2009. A workplace productivity expert stated "We are more wired than ever before, and as a result need to be more mindful of managing e-mail or it will end up managing us."

Toffler stated that the symptoms of future shock would range from depression to absolute emotional breakdown. However, he forgot to mention that we always have the option of rejecting technology and its associated future shock. As ironic as this may seem, the Millennials have done just that. Millennials prefer to text or tweet and often shun e-mails. A Millennial recently tweeted "Our generation doesn't ring the doorbell. We text to say we're outside ..."

Toffler did raise important questions about the impact of technology and the way it has engulfed our lives. However, all in all, life is grand and it is a wonderful and exciting time in which we are living.

Research Spotlight

Heart Rate and Energy Expenditure.

Measurement of heart rate (HR) is often used to predict heat production (HP) by livestock in settings with unrestricted movement. Because of differences among individual animals in factors such as stroke volume that affect cardiac output, most accurate prediction of HP from HR is achieved by application of HP:HR determined for each individual animal. However, measurement of HP:HR is time consuming and requires considerable equipment. Therefore, it is of interest to determine the decrease in accuracy from predicting HP based on the average HP:HR of a group of animals. In this regard, HR of 163 Boer goat bucks was used to predict HP based on the HP:HR for each animal vs. the average. Average body weight and age of bucks were 91.5 ± 1.50 lb and 164 days, respectively. Animals consumed a 50% concentrate pelleted diet ad libitum (3.4 ± 0.94 lb/day) during two buck performance tests, 84 days in length. HP:HR was determined once over a 1 day period while in metabolism cages with a head-box respiration calorimetry system to measure O_2 consumption and production of CO_2 and CH_4. HR was measured at the same time using a Polar RS 400 monitoring system. HP predicted based on the average HP:HR was moderately correlated with that based on individual HP:HR. When using the average HP:HR, 21.7% of the bucks had HP not different from the estimate using individual HP:HR. The number of animals with maximum error of 5, 10, 15, and greater than 15% was 29.6, 22.6, 14.3, and 11.8% , respectively. When using the average HP:HR to calculate HP, the percentage of under- and overestimates was similar. However, the distribution pattern of HP observations differed between method of determination. These results support the advantage of using HP:HR of individual animals to predict HP from HR, but suggest potential use of average ratio in some instances, such as with large expected treatment differences in HP.

Puchala, R., A.L. Goetsch, A. Manley. T. Gipson, and T. Sahlu. 2012. Prediction of heat production in Boer goats using heart rate. Proceedings of the 11th International Conference on Goats. p. 70. International Goat Association.

Green Tea and Internal Parasites.

Effects of (-)-Epigallocatechin-3-gallate (EGCG; a polyphenol in green tea extracts) on viability of third-stage larvae (L3) of *Haemonchus contortus* and cytokine gene expression in white blood cells (WBC) of goats were investigated in *in vitro* experiments. Approximately 20 viable L3 in 10 μl phosphate buffered saline (PBS) were delivered to each well of a culture plate containing 200 μl of PBS with EGCG at concentrations of 0, 50, 100, 250, 500, 1000, 3000, or 5000 μg/ml in triplicate. Plates were incubated in a humidified incubator. Viability of larvae was determined by microscopy at 12, 24, 48, 72, and 96 h after exposed to EGCG. Viability decreased with increasing dose of EGCG and with increasing time. The reduction of viability after 96 h was 3, 21, 41, 48, 45, 92, 100, and 100% for 0, 50, 100, 250, 500, 1000, 3000, and 5000 μg/ml of EGCG, respectively. To test the effect of EGCG on cytokine gene expression in goat WBC stimulated with L3 *H. contortus* antigen, 1.5×10^6 of isolated WBC in 3 ml of RPMI-1640 were seeded into 75-ml flasks in duplicate. Cells were cultured in a humidified incubator. Treatments were control (without antigen or EGCG), antigen (20 μg protein/ml) only, antigen plus 5 μg/ml EGCG, and antigen plus 50 μg/ml EGCG. Cells were harvested at 0, 1, 2, 4, 12, and 24 h after treatment for gene expression analysis. Total RNA of cells was extracted and reverse-transcribed for first strand cDNA. Real-time PCR amplification was performed. L3 antigen up-regulated expression of IL-4, IL-6, IL-10, IL-12, IL-17, IFN-γ, and TNF-α, but depressed IL-2. EGCG synergistically up-regulated expression of IL-4, IL-6, and IL-17, but downregulated IL-12 in the cells stimulated with L3 antigen. In conclusion, EGCG may have anthelmintic effect on *H. contortus* as well as indirect influence through regulating immune responses of lymphocytes. Further work is needed to investigate whether EGCG can exert anthelmintic effects in live animals.

Zhong R.Z., Z. Wang, D.W. Zhou, A.L. Goetsch, and T. Sahlu. 2012. Effects of (-)-Epigallocatechin-3-gallate (EGCG) on viability of Haemonchus contortus and immune responses in white blood cells of goats in vitro. Proceedings of the 11th International Conference on Goats. p. 362. International Goat Association.

Farmer to Farmer Service

by T. Gipson

Farmer-to-Farmer (F-t-F) is a program of the United States Agency for International Development, which provides for the transfer of knowledge and expertise from U.S. volunteers to farmers, farm groups, and agribusinesses in developing countries. The F-t-F program relies upon short-term volunteers to implement its goals.

In July, Dr. Lionel Dawson and I travelled to Lilongwe, Malawi at the invitation of CNFA and Small Scale Livestock and Livelihoods Program (SSLLP). The former is the implementor of the F-t-F program for Malawi and the latter was the host organization. SSLLP is a local non-government organization that provides poor families in Malawi with the means to combat poverty in a sustainable and long-term manner. Dr. Lionel Dawson and I conducted in a three-day Artificial Insemination workshop at Bunda College of Agriculture, where we trained 14 governmental and university personnel.

Emanuel Nasasara, CNFA Country Director; Lionel Dawson; Patrick Chimungu, participant; Terry Gipson; and Bernet Lwara, SSLLP Head of Programs (left to right) at the closing ceremony of the training.

In August, I travelled to Bougouni, Mali at the invitation of Winrock International and the Farmers Cooperative of Bougouni. The former is the implementor of the F-t-F program for Mali and the latter was the host organization. While in Bougouni, I conducted a basic goat husbandy training. One of the biggest concerns that producers had was the feeding of animals, especially during the dry season when grazing areas have been depleted. To tackle this problem, we demonstrated the treatment of crop residues, such as corn stover, with urea to increase the feed's digestibility for goats during the dry season. We noted that other crop residues, e.g. sorghum stover or rice straw, could also be used. Mali grows sugar cane and molasses is available; however, we could not find any molasses in the market at this time of the year to use in making urea molasses blocks as supplements for goats, especially during the dry season. So we experimented with molasses substitutes but advised the farmers' cooperative that when molasses be used when available. Both of these adaptive technologies are well-documented through our past Ethiopia Sheep and Goat Productivity Improvement Program (UMB at http://www.esgpip.org/PDF/Technical bulletin No.1.pdf and ammoniation at http://www.esgpip.org/PDF/Technical bulletin No.2.pdf).

I would encourage interested faculty, staff, and farmers to volunteer whenever possible and share your knowledge and skills with your neighbor across the road or across the ocean.

Experimentation in the making of urea-molasses blocks.

Ammoniation of chopped corn stover.

2013 Producer Workshops

Tanning Goatskins Workshop

Have you ever wondered how to tan a skin? On Saturday, March 23, 2013, 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. Participants can practice fleshing, will apply tanning chemicals in two different methods, and soften a goatskin prepared for the workshop. 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. While the tanning of goatskins will be demonstrated, the tanning processes learned can be used on sheep, deer, coyote, and other skins. *Registration is limited to 10 participants. A registration fee of $20 is charged.* Refreshments will be provided.

Dr. Merkel and participant holding a washed goatskin.

For more information regarding the tanning hides workshop, contact Dr. Roger Merkel at (405) 466-6134 or rmerkel@langston.edu. A registration form is available online at http://www2.luresext.edu/goats/extension/tanning.htm.

Scan this QR code with your smartphone to send Roger an email about the workshop.

Artificial Insemination Workshops

The Goat Extension Program will be conducting two artificial insemination workshops in the fall of 2013. The schedule will be:

- **Langston University**
  - **September 7, 2013**
  - **October 12, 2013**
  - **Both dates are Saturdays.**
- **Both workshops will be hands-on and will follow the same format.**

Practice with live animals.

Workshops will present basic anatomy and physiology of 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 for each workshop is limited to 20 participants. Registration fee is $45 per person.* Included in the cost of registration are handouts and snacks for breakfast and breaks.

For information regarding the AI workshops, contact Dr. Terry Gipson at 405-466-6126 or tgipson@langston.edu. Registration forms are available online at: http://www2.luresext.edu/goats/extension/workshops_field_day.htm.

Scan this QR code with your smartphone to send Terry an email about the workshop.

The Goat Institute Inaugurates YouTube Channel

Created in 2005,YouTube is a video-sharing website on which users can upload, view and share videos. YouTube now has over 120 million videos, including movie clips, TV clips, and music videos, as well as amateur content such as video blogging and short original videos. The Goat Program at Langston University has created its own YouTube channel (https://www.youtube.com/user/taglu01) The following are the YouTube videos that are available and you can quickly access them on a mobile device by using the QR (2D barcode) to the right. Additional videos will be added to the channel in the future.

Artificial Insemination (AI) in Goats (length 8:47)

This video describes the steps involved in artificial insemination in goats.

AI Kit (length 6:28)

This video describes the equipment needed for artificial insemination in goats.

Basic Hoof Care (length 10:48)

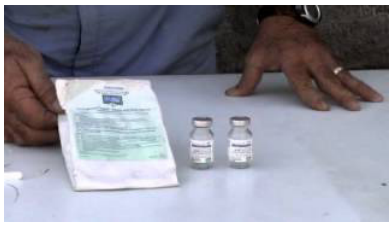
This video explains basic hoof care for goats.

Body Condition Scores in Goats (length 2:11)

This video describes how to evaluate body condition score in goats.

Buck Effect (length 1:53)

This video describes the buck effect and its use in estrus synchronization.

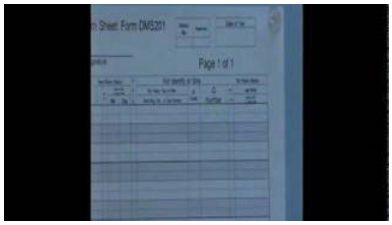


Estrous Synchronization in Goats (length 5:08)

This video explains estrous synchronization for artificial insemination in goats.

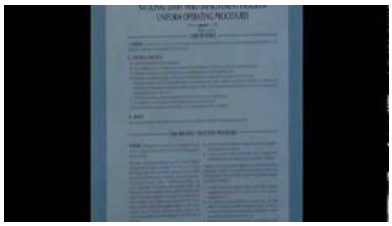
Langston DHI Tester Training - Part 1 (length 9:24)

This video describes how to conduct proper DHIA testing procedures for milk sampling.



Langston DHI Tester Training - Part 2 (length 9:48)

This video describes how to conduct proper DHIA testing procedures for milk sampling.



Langston DHI Tester Training - Part 3 (length 9:19)

This video describes how to conduct proper DHIA testing procedures for milk sampling.

Langston DHI Tester Training - Part 4 (length 8:28)

This video describes how to conduct proper DHIA testing procedures for milk sampling.

Semen Tank (length 6:39)

This video explains semen tank handling and semen storage for artificial insemination in goats.

Signs of Does (female goats) in Estrus (length 0:35)

This video shows an example of signs of estrus (flagging) in goats.

Noteworthy News

►In November, Regent **Rick Davis** and Director of State Government Relations **Jessica Russell** visited the American Institute for Goat Research. They met with several research scientists and toured the research farm. *"We are known throughout the international community as one of the premier programs in the world, and it is always an honor for us to show what we are able to do in the area of goat research,"* Dr. Marvin Burns, Dean of Langston University's School of Agriculture, said. *"We are pleased that the Regents allowed us the opportunity to present some of the research that takes place here at Langston University that is impacting the world."*

►In November, Dr. **Steve Hart** gave presentations on internal parasite control and on nutrition, at the Minnesota Dairy Goat Conference in Minneapolis, MN.

►In November, Dr. **Steve Hart** gave presentations on basic goat husbandry to students enrolled in the vet tech program at the OSU Career Tech.

►In December, Dr. **Steve Hart** gave presentations on internal parasite control to veterinary students from Oklahoma State University.

►In December, Ms. **Erin Parkinson** completed her semester as an undergraduate student research intern and returned to Washington state. Her internship supervisor was Dr. **Zaisen Wang**.

Season's Greetings and the Best to You and All Your Goats.

Goat Newsletter
E (Kika) de la Garza American Institute for Goat Research
Langston University
P.O. Box 730
Langston, OK 73050