Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza American Institute for Goat Research *Summer 2015*

From the Director's Desk

It has been a wet spring for us, especially the month of May. The Oklahoma Climatological Survey reported 14.40 inches of precipitation state-wide; that is, averaged over all Sooner State reporting stations. That is the wettest month on record, beating the previous record of 10.75 inches set in October, 1941. There was some flooding in the state but we were spared any devastation here at Langston University. The positive side is that our pastures are in the best state that they have been in several years. However, the internal parasite problem will be a challenge with the increased rainfall and humidity. Before this year, we were experiencing the worst drought in modern times. In addition, June was 2 degrees hotter than average. Not quite a record breaker, as it was the 23rd hottest June on record, but the exceptional humidity resulted in a heat index that was punishing for all who work outdoors, especially our research farm crew.

I want to take this time to personally thank our fabulous research farm crew, who work long and tiring hours to ensure that the well-being of our goats and the proper conduct of experiments is maintained. I especially appreciate the work of our research farm manager, Dr. **Erick Loetz**, for the dedicated work he does in ensuring everything is done properly.

Dr. **Loetz** will soon be going to Kenya to conduct a follow-up visit with Dr. **Brigit Muasa**, who was here last fall for 12 weeks as an USDA Borlaug Fellow. You may remember that last fall we had two USDA Borlaug Fellows, Dr. **Muasa** learning more about assisted reproductive technologies with Dr. **Loetz** and Dr. **Chrilukovian Wasike** learning about feed efficiency in dairy goats with Dr. **Terry Gipson**. Dr. **Gipson** was just in Kenya to conduct his follow-up visit with Dr. **Wasike**. We hope to have more Borlaug Fellows in the future. As you will read further in this newsletter, you will see that we actively participate in the education of the next generation of goat scientists.

However, let me return to the topic of climate change because it is very important. Our research leader, Dr. **Arthur Goetsch**, will be busy transporting sheep this summer and will soon begin the important work of researching resilience to climate change. He will be studying three breeds of hair sheep, Dorper, Katahdin, and St. Croix. This research will enable the sheep industry to adapt to whatever climate changes that may arise in the future. We are hopeful that we will one day be able to conduct similar research with goats; however, we have not yet been successful in any of our proposal submissions on this topic in goats but we will keep trying. It is too important for us to give up.

I hope that your goats (and sheep) stay cool this summer and that you do too.

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.

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Visitor from Japan

Yoshimura gaining valuable experience in the dairy parlor.

Mr. Fumitaka Yoshimura, Farm Manager from Nagoya University, Nagoya, Japan visited the American Institute for Goat Research from April 24 to 27, 2015. Mr. Yoshimura came to the Institute to observe our management techniques and the day-to-day farm activities. On the morning of Friday, April 24, Mr. Yoshimura visited beef cow and feeder units of Oklahoma State University and Reproduction Enterprises, Inc. In the afternoon, he came to Langston University and had the opportunity to observe preparations for our annual Goat Field Day, which he attended.

Mr. Yoshimura spent Monday, April 27, receiving training and speaking with our Research Farm Manager, Dr. Erick Loetz, and members of the farm staff. Mr. Yoshimura was very interested in all aspects of how our research farm is run, from the identification system and recordkeeping system used to our milking and milk handling procedures. During his time at the farm, Mr. Yoshimura received information on general farm management, dairy goat parturition and nursery practices, dairy and meat goat feeding practices, meat goat kidding practices, reproduction and artificial insemination, pasture management, and spent time in our milking parlor.

Upon his return to Japan, Mr. Yoshimura wrote down some things that he learned during his stay at the Institute. One of the main differences in management practices between the two farms was related to the numbers of animals housed on each farm. With the small number of animals at Nagoya University, individual animal management is the norm whereas the Institute's management practices are on the herd level with attention paid to individual animals in terms of health and well-being. Information delivery systems to producers are also different between the two countries. In Japan, livestock extension information is provided under livestock service centers run by local governments rather than the university-led extension system of the land grant colleges in the U.S. Mr. Yoshimura was very impressed with the university-led extension system he saw both at Langston and Oklahoma State universities and the knowledge provided to producers.

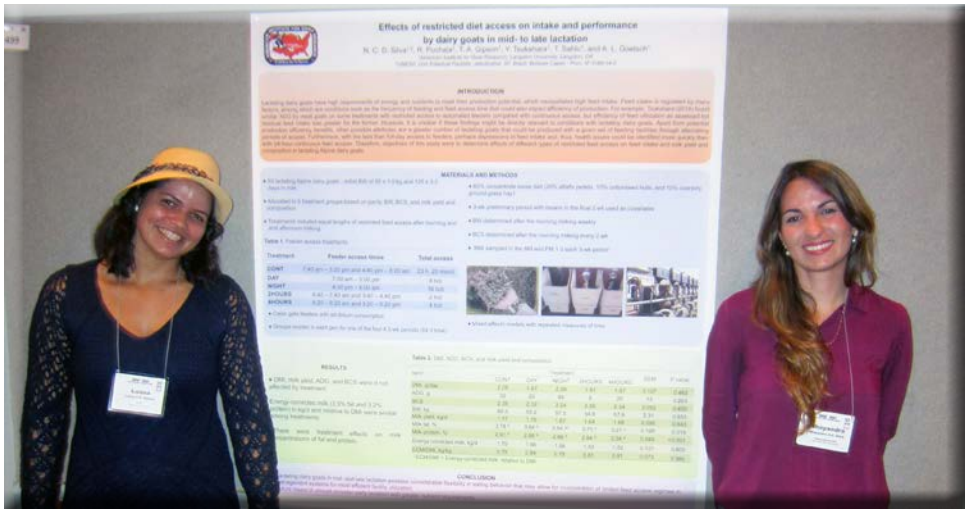
Mr. Yoshimura enjoyed his brief visit and hopes to receive additional funding to come spend a week or more working on the farm and learning additional techniques, particularly in the area of breeding and reproduction.

Training the Next Generation of Goat Scientists

The American Institute for Goat Research relies upon Visiting Scholars to assist us in the conduct of various research projects. These Visiting Scholar, generally, are recent Ph.D. students who have just completed their degrees and are desiring further research experience. However, sometimes the Visiting Scholar is in the middle of his/her Ph.D. program and the research conducted at Langston University is actually part of their Ph.D. program. Here are some examples of our Visiting Scholars, who have incorporated Langston research into their Ph.D. programs.

Marie prepares goats for the portable indirect calorimetry system.

In July 2013, Ms. Marie-Eve Brassard, a Ph.D. candidate from the Université Laval in Québec, Canada, joined us for a four-month scientific-study internship. Ms. Brassard worked with Dr. Ryszard Puchala on comparing and determining advantages and disadvantages of different methods of estimating the grazing activity energy cost of goats.



Luana (left) and Nhayandra (right) at Nhayandra's poster presentation at recent national meeting of the American Society of Animal Science.

In July 2014, Ms. Nhayandra Silva, a Ph.D. candidate from Universidade Estadual Paulista Júlio de Mesquita Filho in Brazil, joined us for a twelve-month scientific-study internship. While at Langston University, Ms. Silva conducted a research project entitled "Effects of restricted periods of diet access on production by lactating dairy goats" with participation of Drs. Arthur Goetsch, Ryszard Puchala, and Terry Gipson. The objectives of Ms. Silva's research are to determine effects of different types of limiting the time of access to feed on feed intake, milk yield and composition, efficiency of feed utilization, and feeding behavior of lactating Alpine dairy goats.

In July 2015, Ms. Luana P. S. Ribeiro, a Ph.D. candidate from Universidade Federal da Bahia in Brazil, joined us for a twelve-month scientific-study internship. Ms. Ribeiro will continue with some of Ms. Silva's research and will be soon drafting a research protocol of her own.

Langston is very proud of the role it has in forming the next generation of goat scientists.

[Editor's Note: For research results of Marie's and Nhayandra's projects, please see page 4 of this newsletter]

Research Spotlight

Grazing Activity Energy Expenditure.

Heat energy (HE) of small ruminants in free-moving settings such as grazing is often measured indirectly from heart rate (HR) and the ratio of HE to HR determined when situated once or periodically in a stationary calorimetry system. Therefore, feasibility of use of a portable indirect calorimetry system with goats while grazing, for a direct estimate of HE, was investigated in this experiment. Ten yearling Boer goat wethers (avg 98 lbs) were used to determine HE and the grazing activity energy cost (GAEC) while standing or grazing Sudangrass pasture with a portable indirect calorimetry system. The method entailed use of a partial face mask that allowed unrestricted grazing to measure oxygen consumption and carbon dioxide emission for 30 min while restrained in a stanchion near the grazing area, followed by 60 min of grazing with other members of the group. The face mask was attached to a 50-ft tether along with a corrugated plastic hose through which exhaled air was passed to a FlowKit Mass Flow Generator and FoxBox Respirometry System (Sable System, Las Vegas, NV) that were carried by a researcher who allowed unrestricted goat movement. Prior to measurements, animals were trained to become accustomed to presence of personnel and use of the equipment, with observed grazing behavior similar among all animals of the group. Measurement periods were during morning and afternoon grazing bouts. Heat energy while restrained was 18.7 kJ/kg $BW^{0.75}$/hour. Grazing HE increased to 35.1 kJ/kg $BW^{0.75}$/hour, implying that the GAEC was 16.4 kJ/kg $BW^{0.75}$/hour. Goats spent 8.5 hours/day grazing; therefore, the daily GAEC was 138 kJ/kg $BW^{0.75}$. A very similar GAEC of (165 kJ/kg $BW^{0.75}$/day) was determined from the difference in HE estimated indirectly from HR between times when grazing a one-acre pasture and confined in nearby 4×4 ft pens and fed fresh forage. In conclusion, this method offers promise for relatively simple and direct estimates of the sizable fraction of total HE comprised by GAEC.

M.E. Brassard, R. Puchala, T. Sahlu, and A.L. Goetsch. 2015. Determination of the grazing activity energy cost in Boer goat wethers using a portable indirect calorimetry method. Journal of Animal Science. 93(Suppl. s3):178.

Restricted Feeding for Dairy Production.

Restricting periods of dietary access of lactating dairy goats could influence level or efficiency of production and offer different management options. Therefore, objectives of the experiment were to determine effects of offering feed at different times of the day and for various lengths on intake and milk yield and composition of 50 Alpines (15, 25, and 10 of parity 1, 2, and ≥3, respectively) with initial BW of 122 lb and 125 days-in-milk. A 40% forage diet (20% alfalfa pellets, 10% cottonseed hulls, and 10% coarsely ground grass hay) was given free-choice in Calan gate feeders during a 2-wk covariate period and subsequent 12-wk experiment. Treatments were feed access continuously (C), during the day for 8 hour (D) or night for 16 hour (N), and for 2 or 4 hour/d with equal lengths after milking in the morning and afternoon (2H and 4H, respectively) (10 animals/treatment). Neither dry matter intake (DMI: 4.5, 4.1, 4.6, 4.2, and 4.1 lbs/day) nor milk yield (3.9, 3.9, 3.7, 3.6, and 3.7 lbs/day for C, D, N, 2H, and 4H, respectively) were influenced by treatment, with milk yield differing among periods (4.1, 4.1, 3.5, and 3.4 lbs/day in periods 1, 2, 3, and 4, respectively) but not DMI. Treatment also did not influence ADG (0.07, 0.05, 0.11, 0.02, and 0.04 lb/day) or body condition score during the study (2.35, 2.32, 2.24, 2.26, and 2.34) and at the end (2.49, 2.39, 2.32, 2.33, and 2.42). However, there were treatment effects on milk concentrations of fat (3.78, 3.64, 3.54, 3.75, and 3.21%) and protein (2.91, 2.88, 2.88, 2.84, and 2.58% for C, D, N, 2H, and 4H, respectively). Energy-corrected milk (3.5% fat, 3.2% protein) in lb/day (3.7, 3.7, 3.5, 3.4, and 3.4) and relative to DMI (0.79, 0.84, 0.78, 0.81, and 0.81 lb/lb for C, D, N, 2H, and 4H, respectively) were similar among treatments. In conclusion, dairy goats in mid- and late lactation possess considerable flexibility in eating behavior that may allow for incorporation of limited feed access regimens in management systems for most efficient facility utilization.

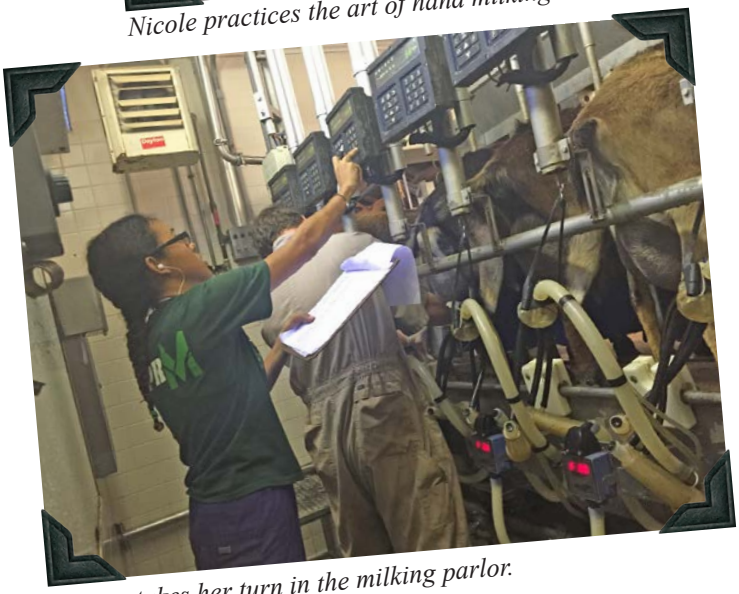
N.C.D. Silva, R. Puchala, T.A. Gipson, Y. Tsukahara, T. Sahlu, and A.L. Goetsch. 2015. Effects of restricted diet access on intake and performance by dairy goats in mid- to late lactation. Journal of Animal Science. 93(Suppl. s3):489.

Langston University Hosts University of Puerto Rico at Mayagüez Summer Interns

This summer, three University of Puerto Rico at Mayagüez animal science students conducted a six-week summer internship at the goat research farm. Ms. Andrea Paola Ríos Lugardo, Ms. Nicole M. Irizarry Larriuz, and Ms. Mirene Rosas Feliciano (left to right in the photo to the right) learned the practical art of goat keeping and were also exposed to research techniques. Presented here are a few photos from their scrapbook.

Nicole practices the art of hand milking.

Andrea preg-checks a doe using ultrasound.



Mirene takes her turn in the milking parlor.

Weekends were for fun and the best activity was horseback riding.

Meat Goat Production Handbook - 2nd edition

The second edition of the Meat Goat Production Handbook has arrived! This edition contains all of the chapters found in the first edition, updated with current information, along with many new chapters. Two of the new chapters, External Parasites of Goats and Fencing for Goats, were short chapter sections in the first edition. But, the importance of both issues in meat goat production necessitated expanding them to full chapters with more detailed information in this second edition. Disposing of farm mortality is becoming increasingly difficult and is addressed in Goat Mortality Composting, describing an environmentally-friendly and legal way of disposing of livestock losses. The Transporting Meat Goats chapter provides recommendations to maintain animal health and welfare during trucking and addresses regulations not only in the U.S. but also in Canada. Predation of meat goats is a concern for all meat goat producers and while many producers use livestock guardian dogs to protect their stock, others use llamas or donkeys. Information on the management, health, and guarding behavior for llamas and donkeys has been hard to find. This second edition solves that problem by including chapters on not only guardian dogs, but guardian llamas and donkeys, as well. Technology is evolving at a rapid pace in the area of genetics and the use of genetic markers in animal selection. This can be a challenging topic to understand and the brief chapter on the Use of Genomics in Meat Goats introduces and explains a topic that will have future increasing importance in the goat producing community. Several new chapters deal with specific topics that some producers will find interesting and may wish to pursue. For those who wish to consume their goats, the chapter on The Slaughter and Processing of Goats at Home provides an easy method of processing goats. Many goats have hair coats with unique colors and patterns. The Tanning Goatskins chapter teaches how to prepare and tan skins with the hair on for home or hobbyist use. Finally, the chapter on Pack Goats addresses the use of goats as pack animals and how to select, raise, and train goats to carry loads.

The first edition of this handbook was published in 2007 with the sponsorship of the USDA Food Safety and Inspection Service (FSIS). The American Institute for Goat Research wishes to thank the USDA FSIS for their support of that first edition. As was true of the first edition, an important part of this second edition remains food safety and quality assurance. The Meat Goat Quality Assurance and HACCP chapter outlines a framework of Best Management Practices to assist meat goat producers in their production system. Adopting a quality assurance program is important for the meat goat raising community for production purposes and for establishing a program that assures the public that producers care for the welfare of their animals.

The ultimate goal of this handbook is to assist meat goat producers in producing safe, wholesome products for the public. We, the editors and authors, hope that this handbook achieves that goal for you.

Please use the order form on the next page to place your order. An explanation of the two different bindings is presented below.

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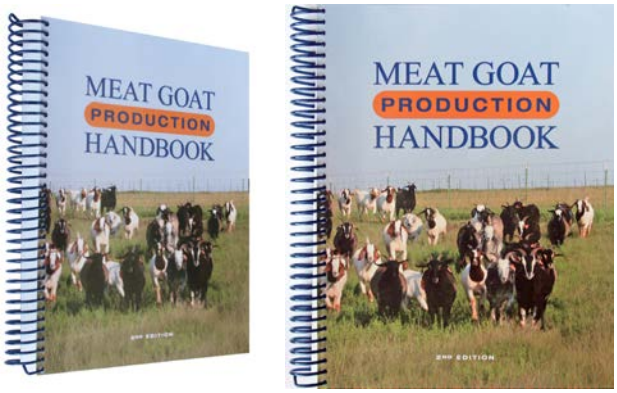

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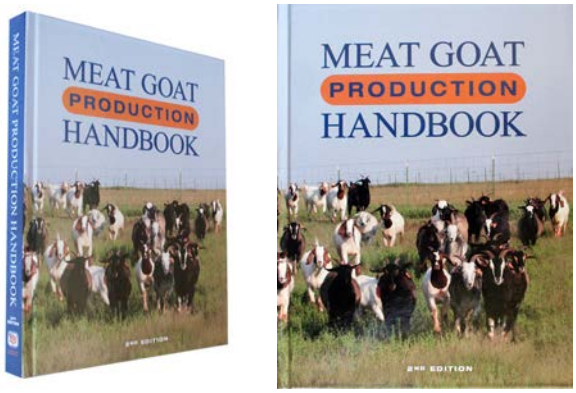

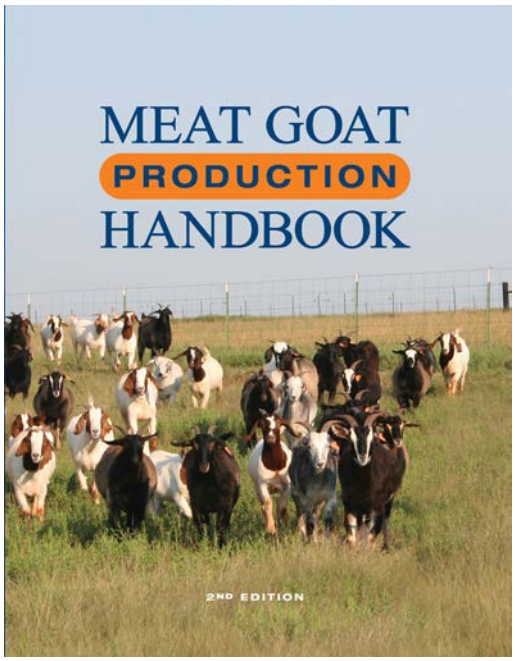

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Noteworthy News

►In May, Dr. **Steve Hart** gave a tour of the research farm to a group of County Educators of the Kansas Cooperative Extension Service.

►In May, Dr. **Steve Hart** presented on resistance to internal parasites in Stephenville, TX for the American Kiko Goat Association.

►In May, Dr. **Steve Hart** conducted a parasite workshop and FAMACHA training at Langston University.

►In June, Dr. **Terry Gipson** traveled to Maseno University in Kisumu, Kenya to fulfill objectives of the USDA Borlaug Fellow project.

►In July, Dr. **Steve Hart** conducted a parasite workshop and FAMACHA training in Coffeyville, KS for the SE Kansas and NE Oklahoma Meat Goat Association.

►In July, Drs. **Terry Gipson**, **Arthur Goetsch**, **Ryszard Puchala**, and **Yoko Tsukahara**, and Ms. **Nhayandra Silva** attended the joint national meetings of the American Society of Animal Science and the American Dairy Science Association in Orlando, FL to make research presentations and attend scientific sessions.

Meat Goat Production Handbook - 2nd Edition is now available.

Order yours today.
See page 7 for order details.

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