



# Goat Newsletter

Cooperative Extension Program  
Langston University

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

*Fall 2016*

## From the Director's Desk



It has been a pleasant and enjoyable summer and fall is here and the days are turning cooler, a very agreeable season. I am always energized after returning from one the International Conference on Goats, which is held every four years. This September, the conference was held in Antalya, Turkey. It was the 12th such conference. The very first conference was held in London in 1967 and other venues have been France (twice), Tucson, Brazil, India, China, South Africa, Mexico, and Spain. At the third conference in Tucson, the International Goat Association was formed and has been the organizer of the subsequent

conferences. The next conference will be held in 2020 in Hungary. I enjoy attending my other professional meeting but there is something very special about attending a scientific conference dedicated solely to goats. I enjoy interacting with my colleagues from around the world and learning about what they are doing. This conference in Turkey was lightly attended with only 350 participants, about one-third of the participants were from outside of Turkey. Langston University sent six scientists and I think that was approximately half of the U.S. delegation. In today's world, I think that people are afraid to travel, which is a shame. Antalya is a beautiful, historic city and its citizens are warm and welcoming. If you have a chance to visit Antalya, I would highly recommend it.

Our most-productive Visiting Scholar, Dr. **Yoko Tsukahara**, will soon be leaving us. After completing her Ph.D. in Animal Breeding and Genetics at Kyoto University in Japan, she came to Langston University to work on the project entitled "Establishing a Langston University Testing Center for Electric Fence Modifications

of Cattle Barb Wire Fence for Goat Containment" with Dr. **Arthur Goetsch**. She was very successful with that project and published 3 scientific articles. We knew that we wanted Dr. **Tsukahara** to stay so we asked her to take on responsibility of a newly-funded project, at that time. Her second project was entitled "Sustainable Small Ruminant Production through Selection for Resistance to Internal Parasites" also working with Dr. **Goetsch**. We feel that this latter project will be foundational for future breeding objectives in the meat goat and hair sheep industries. Dr. **Tsukahara** conducted an experiment on anthelmintic resistance and I would like to share the results with you. Dr. **Tsukahara** traveled to five goat/sheep farms and conducted a Fecal Egg Count Reduction Test (FECRT), which involves sampling animals and giving an anthelmintic treatment to a random groups of animals on an initial farm visit and then a follow-up up sampling period 1 week later. The reduction in FEC measures the level of anthelmintic resistance present in the parasites. The two graphs to the left illustrates the



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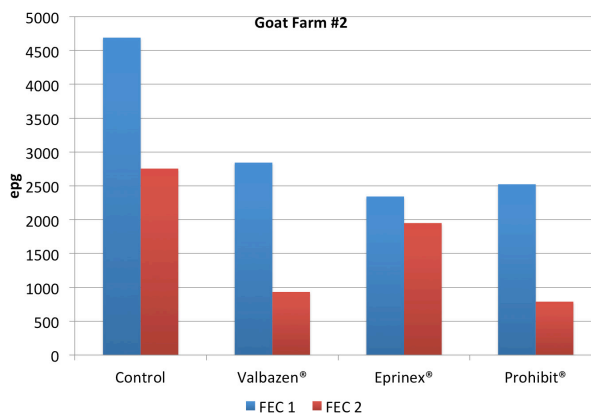
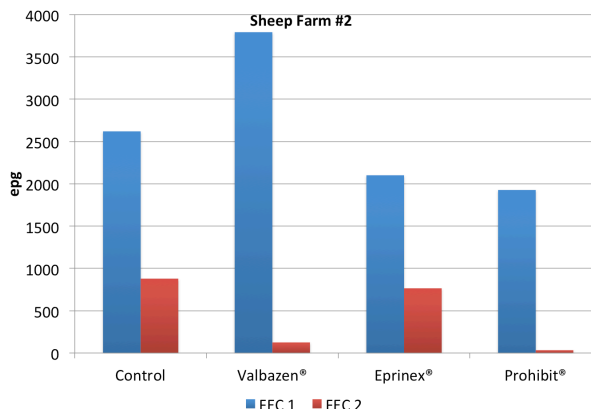
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potential state of the industry. At Sheep Farm #2, Valbazen® and Prohibit® provided acceptable results but not Eprinex®.

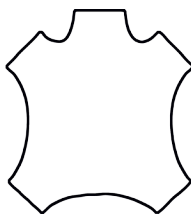


At Goat Farm #2, none of the anthelmintics provided acceptable results. I feel that many small ruminant produc-

ers are like Sheep #2 in that they are unaware of what is working or not in their herd/flock but unfortunately are in transition to a situation like Goat #2. Selecting for genetic resistance to internal parasites is the only answer for producers like Goat #2.

I would personally like to thank Dr. **Tsukahara** for her hard work and to wish her a speedy return to Langston one day. We will miss her greatly.

## 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](mailto:rmerkel@langston.edu).*

*A registration form is available online at <http://www.luresext.edu/ExtensionActivities> or <http://www2.luresext.edu/goats/extension/tanning.htm>.*

# Research Spotlight

## *Herding behavior in goats.*

The cohesive behavior (CB) of animals can provide an indication of the animals' ease with their environment and their willingness to explore and efficiently utilize their grazing resources. However, the spatial evolution of CB over time is unknown. The objective of this study was to evaluate CB in a small herd of goats over time. Twenty-one mature, female goats were fitted with GPS collars and released into one of three 0.5 ha wooded paddocks, with seven goats per paddock (replicate). Goats were assigned to the same paddocks each year, unless a substitution was necessary. Collars that recorded a fix every 5-minutes were deployed for 10 days during the late spring for three consecutive years (max=84°F, min=61°F for year 1; max=75°F, min=55°F for year 2; max=79°F, min=57°F for year 3). The inter-animal distance (IAD), a measure of the CB of the small herd, was calculated for each 5-minute interval for animals within the same paddock. A total of 211,156 IAD were available for analysis. To test if CB of the small herds changed over time, that is, day of exposure to the paddock across years, heterogeneity of slopes was evaluated using mixed model methodology with day of exposure to the paddock (1 . . . 10) as covariate, year (1, 2, 3), hour of the day (0 to 23 h), and all two-way interactions as fixed effects and with animal and paddock as random effects. IAD increased linearly with day of exposure to paddock with the greatest increase in years 1 and 3 at 2.7 ft/day and year 2 the slowest at 1.3 ft/day. For day 1, the IAD was greatest for year 3 (64.3 ft) with years 1 and 2 similar (55.1 ft and 56.1 ft, respectively). The IAD was smallest in the early morning hours (75.5 ft at 03:00 h) and greatest shortly after sunrise (98.1 ft at 08:00 h). However, daytime or nighttime had no effect upon IAD. These results indicate that a small herd of goats tends to exhibit less CB as time progresses and with familiarity to their environment due to previous exposure. This relaxation of CB might indicate a level of comfort that the small herd has with its environment.

Gipson, T.A. and C. Clifford-Rathert. 2016. *Cohesive behavior of a small herd of goats in a woodland pasture. Proceedings of the 12th International Conference on Goats, Antalya, Turkey. p. 212.*

## *Selection for parasite resistance.*

Boer, Kiko, and Spanish male kids from farms in the south-central US were tested for response to artificial infection with *Haemonchus contortus* larvae (categorized as resistant [R], of moderate resistance [M], and susceptible [S]) and growth performance. There were 16, 13, and 16 Boer (initial age 3.8 mo and 44 lbs), 16, 14, and 20 Kiko (3.7 mo and 42 lbs), and 14, 17, and 18 Spanish goats (3.9 mo and 42 lbs) in years 1, 2, and 3, respectively. Males were randomly selected in year 1, whereas offspring of R and M sires were tested in years 2 and 3. The test entailed 2 wk of adjustment and 8 wk of data collection, with free access to a 15% CP and 50% concentrate diet in automated feeders. During adaptation, anthelmintic treatment resulted in low fecal egg count (FEC; <600/g), after which 10,000 infective larvae were administered orally. BW and packed cell volume (PCV) were measured weekly, and FEC was determined 4 to 5 times in wk 6-8. The cubic clustering criterion was used to categorize resistance groups, which resulted in 19, 18, and 14 for R, 16, 17, and 21 for M, 11, 9 and 19 for S in yr 1, 2, and 3, respectively. There was a resistance group by breed interaction in ADG, with values highest for R and(or) M (0.52, 0.59, and 0.48 lbs/day for Boer, 0.31, 0.38, and 0.30 for Kiko, and 0.37, 0.29, and 0.29 for Spanish of R, M, and S, respectively). There were interactions in FEC of breed × resistance group (962, 1492, and 2774 eggs/g for Boer, 1258, 1968, and 3338 for Kiko, and 276, 1149, and 2373 for Spanish of R, M, and S, respectively), breed × year (1102, 1436, and 2690 for Boer, 3577, 1664, and 1323 for Kiko, and 1328, 952, and 1518 for Spanish in yr 1, 2, and 3, respectively). PCV was greatest for R (27.2, 25.3, and 24.7% for R, M, and S, respectively). In conclusion, selection of meat goat sires through a central performance test improved resistance to internal parasitism without negative influence on growth performance, although change in resistance varied among breeds and years.

Y. Tsukahara, T.A. Gipson, S.P. Hart, L.J. Dawson, Z. Wang, R. Puchala, T. Sahlu, and A.L. Goetsch. 2016. *Progress in resistance to internal parasitism and growth performance of Boer, Kiko, and Spanish goat kids through selection in a central sire test. Proceedings of the 12th International Conference on Goats, Antalya, Turkey. p. 131.*



# Photo Album

## International Conference on Goats - Antalya, Turkey

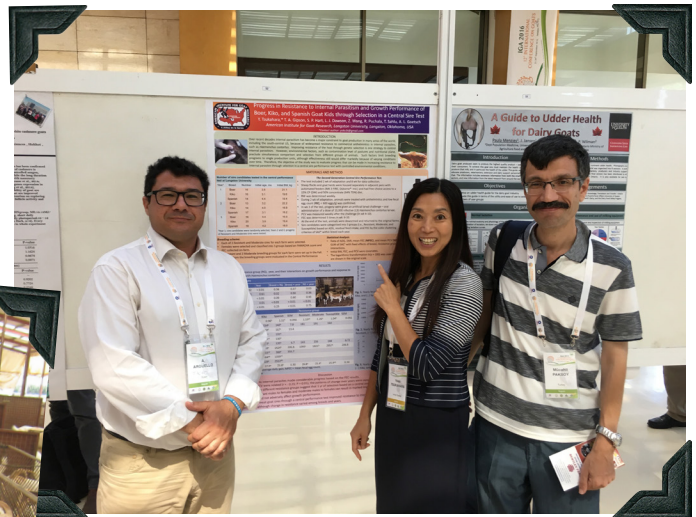
Every four years, the International Goat Association hosts the International Conference on Goats (ICG), where scientists gather together and learn from each other. This past September, the 12<sup>th</sup> ICG was held in Antalya, Turkey. Drs. Terry Gipson, Arthur Goetsch, Ryszard Puchala, Tilahun Sahlu, Yoko Tsukahara, and Zaisen Wang attended the 12<sup>th</sup> ICG and presented research findings. This is a photo album of their trip to the 12<sup>th</sup> ICG (<http://icg2016.org/en/>).



Langston scientists and colleagues during a break at the 12<sup>th</sup> ICG.



Apple Mansion (Elmalı Konak) goat farm in the Elmalı district operates as a breeding/production facility with 500 Saanen goats. The daily goat milk yield of the farm is around 500 kg/day and the goat milk is processed as ice-cream and various cheeses. The average milk yield per animal is 2.5 to 3.0 kg/day.



Dr. Yoko Tsukahara (center) discusses her poster on selecting for resistance to internal parasites with Dr. Argüello (left) of the Universidad de Las Palmas de Gran Canaria in Spain and with Dr. Paksoy of the Kahramanmaraş Sütçü İmam University in Turkey (right). The abstract of this poster is on page 3.







Local map of Antalya. ① is the location of the conference, ② is the location of Elmali Konak, and ③ is the location of the extensively-raised goat herd.



Dr. Art Goetsch (blue shirt, left), Dr. Zaisen Wang (blue shirt, center), and Dr. Tilahun Sahl (right) enjoy samples of chocolate, vanilla, and sesame goat milk ice cream at Elmali Konak.



Extensive goat farming is one of the most popular and the most traditional goat production systems of the Mediterranean region. The goats are raised primarily for meat production, but some enterprises will milk their lactating females. Kids are sold in local bazaars, where the demand for goat meat is high. Typical breeds are Turkish Hair goat and Honamlı goat.



Kaleiçi is the historic city center of Antalya. Kaleiçi means "Inside the Kale" or "Inner Kale" (Kale itself means castle or fortress) and until modern times most of the city was located within its walls. Hadrian's Gate (photo) is a triumphal arch built in the name of the Roman emperor Hadrian, who visited the city in the year 130 A.D.



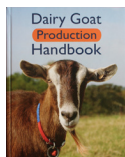
# Dairy Goat Production Handbooks

The American Institute for Goat Research has recently published three new resources for dairy goat producers. The Dairy Goat Production Handbook has 475 pages of information on all aspects of dairy goat production and could be considered as a companion book to the Institute's Meat Goat Production Handbook, 2<sup>nd</sup> Edition. Important topics covered in the Dairy Goat Production Handbook include dairy goat quality assurance, doe and kid management, nutrition, herd health management and diseases with a separate chapter on mastitis, parasites of goats, goat milking facilities and systems, goat milk regulations, record keeping and financial management of the dairy goat business, reproduction and genetic improvement, and an overview of lactation and the biology of goat milk production. Other chapters provide an overview of legal issues faced by dairy goat producers, carcass disposal options, marketing considerations, and how to make cheese, goat milk soap, and yogurt.

In addition to the full handbook, the Institute has also created the Dairy Goat Production Basics, a condensed, easy-to-read version of selected chapters from the full handbook similar to what was done to create the Meat Goat Production Basics. Fourteen of the 29 chapters from the full Dairy Goat Production Handbook were chosen, resulting in 176 pages. Each chapter contains illustrations to help explain concepts. The Dairy Goat Production Basics is targeted for clientele who would like dairy goat information but would not wish to read the full handbook. The basics book would be ideal for youth groups such as 4-H or FFA, students, producers, and others interested in dairy goats.

To better serve the Institute's Spanish speaking clientele, the Dairy Goat Production Basics book has been translated into Spanish and the Producción de Cabras Lecheras Conceptos Básicos is available. The Institute worked with scientists of the University of Puerto Rico – Mayagüez (UPRM) in the editing and review process. Previously, the University of Puerto Rico – Mayagüez translated the Meat Goat Production Basics book into Spanish for the Producción de Cabros para Carne Conceptos Básicos. That book is available for purchase from UPRM (<http://www.uprm.edu/cms/index.php?a=file&fid=12080>).

Prices for the Institute's production handbooks are:

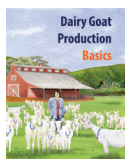


## Dairy Goat Production Handbook

[http://www.luresext.edu/sites/default/files/DGPHorderform\\_1stEdition\\_case\\_spiral.pdf](http://www.luresext.edu/sites/default/files/DGPHorderform_1stEdition_case_spiral.pdf)

Spiral-bound - \$50 including shipping for US orders, \$65 for international orders

Case-bound - \$60 including shipping for US orders, \$75 for international orders



## Dairy Goat Production Basics

[http://www.luresext.edu/sites/default/files/DGPB\\_orderform.pdf](http://www.luresext.edu/sites/default/files/DGPB_orderform.pdf)

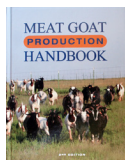
\$30 including shipping for US orders, \$45 for international orders



## Producción de Cabras Lecheras Conceptos Básicos

[http://www.luresext.edu/sites/default/files/DGPB\\_SP\\_orderform.pdf](http://www.luresext.edu/sites/default/files/DGPB_SP_orderform.pdf)

\$30 including shipping for US orders, \$45 for international orders

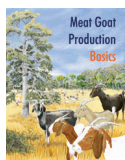


## Meat Goat Production Handbook, 2nd Edition

<http://www.luresext.edu/sites/default/files/handbookorderform-1.pdf>

Spiral-bound - \$50 including shipping for US orders, \$65 for international orders

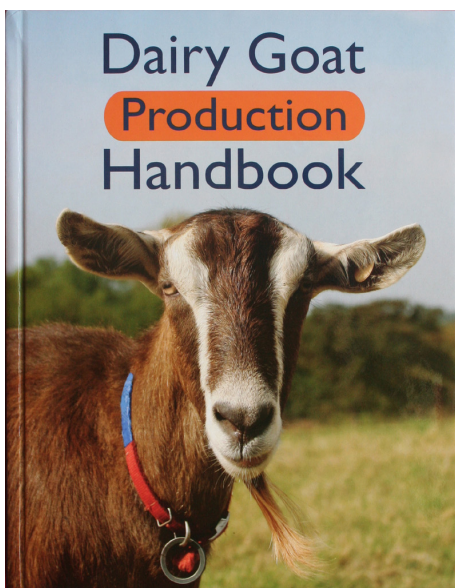
Case-bound - \$60 including shipping for US orders, \$75 for international orders



## Meat Goat Production Basics

[http://www.luresext.edu/sites/default/files/MGPB\\_orderform.pdf](http://www.luresext.edu/sites/default/files/MGPB_orderform.pdf)

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\* see next page for definitions and examples of binding

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# Noteworthy News

► In August, Dr. **Steve Hart** attended the Katahdin Hair Sheep International meeting in Cookeville, TN.

► In August, Drs. **Terry Gipson** and **Roger Merkel** traveled to Ethiopia to attend a University Linkages conference hosted by the U.S. Embassy.

► In August, Dr. **Steve Hart** participated in a focus group meeting for the Oklahoma Disease and Diagnostic Laboratory.

► In September, Drs. **Terry Gipson**, **Arthur Goetsch**, **Ryszard Puchala**, **Tilahun Sahlu**, **Yoko Tsukahara**, and **Zaisen Wang** attended the 12<sup>th</sup>

International Conference on Goats in Antalya, Turkey and presented research findings.

► In September, Drs. **Arthur Goetsch** and **Steve Zeng** attended the USDA/NIFA 1890 Institution Teaching, Research and Extension Capacity Building Grants Program Project Director Meeting in Virginia Beach, VA.

► In September, Dr. **Steve Hart**, gave a presentation on farm management at the Oklahoma Hills Meat Goat Conference in Porum, OK hosted by the National Kiko Registry.

► In September and October, Dr. **Steve Hart** provided goats

for the State Fair of Oklahoma and for the Tulsa State Fair for their respective Birthing Centers and was Superintendent of the State Fair of Oklahoma Open Boer Goat Show sanctioned by ABGA.

► In October, Dr. **Steve Hart**, gave a presentation on internal parasite control at the Goat Boot Camp in Ada, OK.

► In October, Dr. **Tilahun Sahlu** traveled to Ethiopia to strengthen the working relationships of the Goat Institute with several Ethiopian research and educational entities.



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