THE ANNUAL MEETING EDUCATION DAY – A DAY TO REMEMBER By Ed Barnes

The Annual Meeting educational day at Langston University was one of the best animal seminars that I personally have ever attended. From the onset, its scope and organization was outstanding including the scientific material and also the tour of the research facilities. For those members that could not attend, I will try to give a thumb nail sketch of the topics and discussion.

The seminar started on October 16, 2015 at 1:00 with an overview of Langston University research, extension, and international programs **by Dr. Terry Gipson**. The American Institute for Goat Research was founded in 1984 with the mission of developing and transferring enhanced goat production system technologies to goat producers. Dr. Gipson went on to say that in the three decades since its inception, the Institute has worked with and favorably impacted goat producers at local, state, regional, national, and even international levels. Improving dairy goat production has been a mainstay activity of the Institute beginning in 1985 with the acquisition of 70 Alpine dairy kids. In 1986, a herd of Angora goats was purchased for research and extension activities on mohair production, the largest component of the goat industry at the time. Spanish goats were added in 1990 to expand fiber research. As US goat producers transitioned from fiber to meat production, the Institute intensified meat goat research by adding a herd of Boer goats in 1999. Today, the American Institute for Goat Research remains dedicated to serving goat producers and will continue to create programs and impart information to serve worldwide clientele. Some of the newer research at the Institute includes; "the genomics of resilience in sheep to climatic stressors"; the selecting for parasite resistance in hair sheep, and nutritional considerations for pregnancy and for health in sheep.

Dr. Yoko Tsukahara, a visiting scholar from Japan, elaborated on the topic of "selecting for resistance to internal parasites". Her focus began with a review of internal parasites; namely Nematoda/Barber pole worms (Haemonchus contortus). Dr. Tsukahasra outlined worm size, their position of attack in the gut and that the female parasite can produce as much as 5000 eggs per day. She stressed what a constraint they have on small ruminant production, causing anemia, depression, bottle jaw and even death. She stressed that this allows for low growth/production outputs, high medication costs and now the resistance to commercial anthelmintics (wormers). At Langston, a USDA-supported project, entitled "Sustainable small ruminant production through selection for resistance to internal parasites," has been underway since 2013. Identification of worm infestation can be identified by loss of body condition, FAMACHA eye membrane color charts, PCV – Pack cell volume (blood test) and FEC-Fecal Egg Count. The research project has partners: **Dr. R. Mateesu**, University of Florida (focus is genomic components) **and Dr. DeVuyst,** Oklahoma State University (focus is economic aspects and estimates impact of replacing resistant females on profitability). Part of this project was supported by collaborator farms which loaned sheep to the

University with **our own Vice President, Jason Pelzel, loaning 18-20 sire candidates of St. Croix Hair Sheep.** All sheep candidates were placed on a central performance test. Each test lasted 11 weeks with one week of adjustment and 10 weeks of data collection with free choice feeding in a FIRE (Feed Intake Recording Equipment). The feed chute allows only one sheep to enter at a time and records individual feed intake, duration of occupancy and number of visits throughout the day and recognizes each animal by a FRID ear tag. Along with the feed portion an artificial challenge was introduced. At the beginning of the test, animals are dewormed and confirmed free from helminthes. In the 3rd week of the test, animals are given a dose of 10,000 infective larvae. At the end of the test, animals are again dewormed and confirmed free of helminthes (worms). The male portion was labeled "On-Station" (housed at the research station) and the female portion was labeled "On-Farm" and they were kept at the farm. The study parameters were different for the females. They were visited 8 weeks after lambing/kidding with FAMACHA scores and fecal samples taken. Then at weaning, weaning weight, blood samples, FAMACHA score and fecal samples were taken. **The results were that St. Croix out performed** Katahdin and Dorper sheep in all categories.

Dr. Art Goetsch gave his topic of new research which included **St. Croix Hair Sheep from some member breeders from four different regions of the United States**. His topic "the genomics of resilience in sheep to climatic factors" and supported by USDA was overviewed. The project deals with common stress factors of livestock production in the USA, and throughout the world, which are limited feed intake, restricted drinking water availability and high heat load. The long-term goal of the project is

to provide necessary knowledge and tools to improve resilience of sheep to these environmental stressors through effective breeding programs using selection as well as crossbreeding. Responses of animals to such stresses are controlled by genetics. The genetic makeup of animals varies. Therefore, a group of female hair sheep has been gathered from Upper Midwest, Central Texas, Southeast, and Northwest containing St. Croix, Dorper and Katahdin breeds. Trials are now being initiated to evaluate resilience to the afore mentioned stress factors and possibly immunity to parasites during the tests. A key aspect of this project is the use of genomics to assist in the selection of animals more resilient. Specifically, single nucleotide polymorphisms (SNPs) in the animals will be evaluated. Hopefully**, relationships between these SNPs and resilience to these production system stress factors can be indentified to eventually result in an efficient tool to assess genetic merit for potential breeding animals.**

Dr. Terry Gipson then gave a quick over view of Genomics. He stated that there are 54 chromosomes in sheep. Certain chromosomes are responsible for traits and characteristics. A system has been developed by the Genome Wide Association Study that tracks traits and formulates cards called SNPS (Single Necleotide Polymorphisms). These cards can be used to evaluate differences in many areas including weight gain, resistance to parasites, resilience to stress factors and etc. This will help in the future to pick sires and dams and produce a stronger breed.

The last presentation was given **by Dr. Steve Hart**. His topic on "Nutritional considerations for pregnancy and for health" contained many diet tips for optimum health for the pregnant ewe as well as the growing ruminant. Dr. Hart emphasized that the immune system is the sheep body's first line of defense against infectious diseases, whether it be viruses, bacteria, parasites or cancer. The factors that affect the immune system are genetics, stress and **nutrition**. Dr. Hart outlined body condition on a scale

of 1 to 5. (A 1 being extremely thin and 5 being obese) Both ends of the spectrum can affect the immune system stability. Often the animal is nutritionally depressed far before they lose body condition. Dr. Hart said that the vitamins, A, D, and E are extremely important in disease prevention. Vitamin A comes from sunlight; D and E come from leafy green forages or supplements. But minerals are also important, namely, selenium, copper and zinc but also iron, manganese and magnesium are necessary. Many areas of the USA are deficient in minerals. County agents often know their local area mineral deficiencies, such as selenium and iodine. Hay can have forage analysis for mineral content. In case of death loss or slaughter, a liver sample can be sent to the Michigan State Diagnostic Lab and be informative if deficiencies exist. Most places need mineral supplement. It is best to use mineral that animals will consume, i.e. loose mineral formulated for sheep but kept it in a dry environment. Mineral deficiencies can affect health and reproduction.

Dr. Hart emphasized that if lambing yearlings, they require extra nutrition. If one is growing replacement animals, supplement with grain and the best pastures. Flushing of ewes is the introduction of more or extra nutrients beginning a few weeks before breeding season and continuing through part of the breeding season and may increase lambing % but also may produce more triplets. Dr. Hart presented graphs that indicated a need for increased nutritional load during the first 100 days of gestation in the ewe. Under nutrition at this time reduces placental size and will lead to low birth weight lambs and reduced survivability. In the last 6 weeks of gestation in the ewe, 70% of fetal growth occurs. Also during this time, the mammary gland system develops and with fetus increasing in size rumen capacity (and intake) is decreasing, so, higher quality feed is needed. Dr. Hart suggested that there are several factors that affect this late gestation period; energy is likely to be deficient; there is a need for slight increase in protein; the calcium requirements virtually double during late pregnancy; and selenium and vitamin E are essential.

So how much nutrition is needed? This depends on these factors: the weight and age of the ewe and the number of fetuses born. To keep milk production high, one may need higher quality forage and supplement with grain. If forage quality is low, one may need protein or calcium supplement. The consequences of inadequate nutrition include: pregnancy toxemia or ketosis; small weak lambs and higher lamb mortality; reduced quantity and quality of colostrum; low milk production and most likely will result in weaning fewer and lighter weight lambs with more health problems.

But there are consequences for overfeeding as well. Over feeding leads to obese ewes which can result in: pregnancy toxemia; increased lambing difficulty; large lambs with higher mortality and increased prolapse. So there is a need for feeding management. Be sure that there is adequate feeder space and plenty of clean fresh water. Also **Dr. Hart recommends feeding yearlings separately**. Feed additives like Rumensin or Deccox can prevent coccidiosis. Dr. Hart also mentioned that antibiotics can and may be needed for infectious abortions. Feeding after lambing is also important. Water, even warm water can help the ewe. Putting syrup in water can give the ewe an energy boost and be sure to feed the best quality hay. Keep the ewe on the same feeding regimen they were on before lambs are born, but gradually increase grain in the diet up to 1 lb. /day per lamb offspring.

Consistent nutrition during lactation is very important to prevent loss of body condition. Ewes highest nutritional requirements come in the first 6-8 weeks of lactation. Ewes with single lambs need the lowest nutrient requirements. Ewes with twins require 20-40% more chow; ewes with triplets

require 40-60% more feed. It is almost impossible for a ewe to raise triplets on pasture with no supplements. Lamb nutrition is also important to consider. For the first couple of weeks, milk is the only feed necessary. However, some lambs start nibbling at solid food from day 1. Ewe milk peaks between 3 to 5 weeks of lactation. At 6 weeks of age, lambs are getting 50% of nutrition from solid food. Starting lambs on a creep feed program excluding the ewe mothers can give them a head start and increase weaning weights. Dr. Hart recommends creep forward grazing (an area of high quality forage close to the mother ewes which lambs can enter but mothers can't). With a creep gate in each pasture, the young lambs have access to the best quality forage prior to and not competing with the ewe mothers. This pasture plan may help parasite levels and reduce weaning stress.

Dr. Hart covered the topic of weaning. Early weaning can cause stress with the young lamb and consequent sickness. Early weaning increases the chance of mastitis in the mother ewe. To lower stress to the lambs leave them in familiar surroundings and on the same diet; place nanny ewes in with the baby lambs and move the ewes to pasture next but separate from the lambs. When preparing to wean lambs, feed the ewe low protein/low energy diet 5-10 days prior to weaning. Restrict water intake of the ewe before/after the weaning. There is no special feeding or management when lambs are weaned late or naturally.

Dr. Tsukahara and Dr. Hart then led a tour of the research facility explaining the special feeding systems that allow the scientists to gather accurate feed intake of each individual animal. Langston mixes all feed regimes by a large machine automatically to exact specifications for their research. All the animals had great body condition.

All of the staff at Langston University were eager to answer any questions during the seminar and tour of the Campus research barns. This education day was truly **A DAY TO REMEMBER.** Following the seminar, the Langston staff joined the Association membership for a great barbeque dinner. The dinner was complimentary and part of the registration fee.