E. (Kika) de la Garza Institute for Goat Research • OKLAHOMA •

Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E (Kika) de la Garza Institute for Goat Research *Winter 1999*

From the Director's Desk

Dr. Tilahun Sahlu

This fall has been a productive period of time in regard to completion of a number of experiments, as well as planning, preparing for and starting many new ones. However, in some respects it has been sad as well, in that three Visiting Scholars working with us completed their programs and returned home - Dr. **Isabel Prieto** to Spain and Dr. **Girma Abebe** and Mr. **Getachew Animut** to Ethiopia. Girma and Getachew completed all activities associated with their wheat straw/broiler litter experiments. Dr. Abebe, Dr. **Lionel Dawson**, and Mr. **Glenn Detweiler** successfully completed the experiment exploring anthelmintic properties of seed from an Ethiopian plant. Mr. **Tehsome Shenkoru** and Dr. **Ryszard Puchala** completed their experiment with different supplements of diets for primiparous Alpine does. On Dr. **Tumen Wuliji's** project in the seasonal manipulation of breeding and cashmere production, a large number of doelings have kidded, and the kids are growing well. Dr. **Steve Hart** is preparing pastures for a forage-based dairy goat production system project starting in the spring. Dr. **Sergio Soto-Navarro** is conducting a performance trial with Boer × Spanish wethers consuming diets differing in protein level and supplemental protein source. Dr. **Arthur Goetsch** has just returned from a 4-week South African tour supported by USDA Scientific Cooperation Program to map up potential for future collaborative research and extension activities including personnel exchange.

In addition to the departure of the Visiting Scholars, we are also saddened by the departure of Drs. **Irene Brown-Crowder** and **Steve Zeng**. Dr. Brown-Crowder is now employed by an agricultural cooperative in upstate New York, and Dr. Zeng is working for a commercial cheese plant in Florida. We will be filling these staff positions as soon as possible. In the meantime, the Langston DHI Laboratory is managed by Mr. **Tim McKinney**. The DHI lab continues to grow and Mr. McKinney has instituted several management practices that will enhance the efficiency and productivity of the lab. Dr. **Steve Hart** completed several grazing demonstrations in Oklahoma and Kansas and was a featured speaker at the Washington State Goat Conference. Dr. **Terry Gipson** gave a presentation on interpreting DHI records at the American Dairy goat Association annual meeting in Ohio. In addition, Dr. Gipson conducted four HAACP workshops targeting goat producers and small plant operators. Dr. Gipson also organized a workshop for producers to sharpen their grantwriting skills. Drs. Hart and Gipson assisted with the Oklahoma Meat Goat Association's Fall Show; Dr. Hart was the clerk and Dr. Gipson was a judge.

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Meet the Faculty & Staff

Dr. Steve Hart

Steve Hart was born in Texas City, Texas and raised on a small swine farm. He was very active in 4-H, having projects with chickens, fat barrows and a dairy heifer. While in junior high, he moved to northeast Texas and was active in FFA with crop and brood cow projects.

Dr. Hart received a B.S. from Texas A & M University in Dairy Science. While there, he was active in the Dairy Science Club, and student chapters of Agronomy Society and Soil Conservation Society. He was awarded the I.W. Rupel Scholarship for his Junior and Senior years. After graduation, he served two years in the Army.

Dr. Hart went back to Texas A & M to work on his Master's degree studying sorghum silage for dairy cows. After graduation, he went to Virginia Tech to work on his Ph.D. in Dairy Science and was supported by a Pratt fellowship. He studied feed buffers for dairy calves and rate of passage of digesta.

After receiving his doctorate, Dr. Hart worked for the USDA Agricultural Research Service at El Reno, Oklahoma. He worked with silages and crop residues for beef and stocker cattle and grain-forage interactions in cattle. He also worked with turnips for sheep and did some grazing studies with sheep. While at USDA, he collaborated with Langston on some goats studies.

In 1991, Dr. Hart traded sheep for goats and moved to Langston. Currently, his research is investigating goat nutrition and various pastures for dairy and Angora goats. He is also involved in extension goat demonstrations in Oklahoma and Kansas demonstrating the ability of goats to clear brush and weeds, measuring weight gains and the management of goats on these pastures. He was very involved in the Mohair Producers of Oklahoma and is active in the Oklahoma Meat Goat Association, serving as a director.

Dr. Hart is married to Sue and they have one daughter, Lindy, a teenager. In his leisure time, he enjoys gardening, people, mechanicing and Coyle basketball games.

Dr. Steve Hart can be reached at (405) 466-3836 or at shart@luresext.edu.

Research Spotlight

Abstracted by A. Goetsch

Angora Goats and Stress.

Angora goats are notoriously stress-susceptible. Compared with other breeds, Angoras exhibit higher abortion rates and succumb easier to cold and(or) nutritional stress. Many researchers speculate that the main cause is an inability to maintain a normal blood glucose level under stress. Blood glucose is used by an animal as an energy source with which to maintain important body functions, especially when an animal experiences stress and ceases eating. The objective of this study was to test the ability of Angora goats, compared with Spanish goats, to produce cortisol. Cortisol, a hormone secreted by the adrenal gland, helps animals cope with stress by mobilizing fat for energy and protein, which is used to increase blood glucose level. High levels of cortisol can inhibit fiber growth. Some researchers hypothesize that the superior fleece-producing ability of Angora goats is in part because of a typically low level of cortisol in the body. There was no difference between Angora and Spanish goats in the ability to produce cortisol in response to acute or chronic stress. In summary, the inability of Angora goats to maintain blood glucose level under stressful situations does not appear due to an impaired ability to produce cortisol. This finding brings us closer to understanding the physiological mechanisms involved in the stress-susceptibility of Angoras. Therefore, it may one day be possible to reduce the stress-related problems of the Angora breed, considerably impacting the economic opportunities of Angora goat production.

Toerien, C. A., R. Puchala, R., J. P. McCann, T. Sahlu, and A. L. Goetsch. 1999. Adrenocortical response to ACTH in Angora and Spanish goat wethers. Journal of Animal Science 77:1558-1564.

Angora Goat Nutrition.

Angora goats are the highest fleece-producing ruminants on a body weight basis. Poor nutrition affects mohair production by Angora goats, as well as affecting gain or maintenance of body weight. Pastures for Angora goats vary widely in quality and forage availability, often resulting in seasonal reductions in mohair growth, body weight, and body condition. Mohair production and body weight can be increased during periods of poor grazing by supplementation. On a long-term basis, changes in mohair production and body weight are positively related. However, body control mechanisms for live weight gain and mohair growth differ. Short periods of nutrient restriction may not necessarily affect live weight gain and mohair growth in the same way. This experiment was conducted to evaluate mohair growth and body weight change during (40 days) and after (41 days) different levels of feed intake restriction, which were 50, 67, and 83% of free-choice intake of a 15% crude protein, 70% concentrate diet. In the second parts of both the restriction phase and the subsequent free-choice intake phase (or compensatory portion), mohair growth was decreased by feed intake restriction in the early phase. This is different than live weight gain during the free-choice intake or compensatory phase, which increased as the severity of the earlier restriction increased (in other words, compensatory growth was greatest for the animals with lowest feed intake earlier, and vice versa). In conclusion, feed intake restriction can have longer term effects on fiber growth than body weight change. This suggests that special attention be given to avoiding even short-term periods of low feed intake if maximal fiber production is to be achieved.

Sahlu, T., S. P. Hart, and A. L. Goetsch. 1999. Effects of level of feed intake on body weight, body components, and mohair growth in Angora goats during realimentation. Small Ruminant Research 32:251-259.

Goat Management Tips

Winter Care for Your Goats *by S. Hart.*

Hopefully, by now your goats are bred and you can relax until spring kidding. But don't completely neglect your goats during this time. A little labor can make them more comfortable, reduce the cost of wintering and reduce management problems at kidding. Culling will reduce the number of animals that you have to winter and you may be able to time the sale of those animals to get the better prices that are offered around Christmas. Pregnancy testing is usually too expensive to enable culling open animals, but does that are cycling are highly suspect.

Goats can be wintered with feeding programs similar to beef cattle. Pregnant does should be fed so that they lose little body condition during the winter. Hay can be fed to appetite and the animals supplied a protein/grain supplement, especially during colder weather. Goats can be wintered with 1/3 lb. of a 20% protein supplement increased as the weather gets cooler and when northerners blow in, but do not exceed one lb./day. Higher levels of feeding increase the risk of enterotoxemia. Feed should be increased during the last six weeks of pregnancy because the kids that the doe is carrying gain about 70% of their weight during this time. Fat animals often have problems with ketosis during kidding, so don't fatten them up. A dry doe should not have a body condition score of greater than 3.5 prior to kidding. The doe's backbone can still be felt and the skin is nearly straight or rounded between the backbone and short ribs. When the breastbone is felt, there is a distinct depression on each side of the mass of fat between it and the bone and muscle of the breastbone.

Goats will eat most grass hays, but not all. Square bales can be broken and fed in hay feeders. When feeding round bales, keep goats off the hay or they will foul and scatter half of a round bale of hay. Round bales can be sandwiched between two livestock panels for feeding. Some hay feeders that hold bales off the ground work well. If you have enough goats, you can roll a round bale out. Protein/grain supplements can best be fed in troughs, made from scrap lumber or PVC pipe. Range cubes, large pellets or whole shelled corn can be fed on the ground with little waste if it is not too wet or the grass too tall. It is best to not feed off the ground in the same place for very long due to goats picking up worms.

Winter is also a time to do some veterinary work so that you won't need to do it during kidding. Does should be vaccinated during the last month of pregnancy so their colostrum will be high in antibodies for these diseases. Vaccinate against tetanus, enterotoxemia and caseous lymphadenitis if necessary. Give the shot subcutaneously (under the skin, not into the muscle) either in the brisket or in the skin behind the elbow. This way, the needle does not damage any meat. If you give vitamin A, D and E shots, this is a good time to give them, too. If not, your supplement should have these vitamins. Also, this is a good time to catch up on foot trimming. If you had bad worm problems last summer, you may want to deworm because the barberpole worm overwinters in an arrested state in the goats stomach. It will take twice the normal dose of Ivomec, Safeguard or Valbazen to kill the arrested worms. Valbazen should not be given in the first 45 days of pregnancy.

Also, don't forget the basics. Break ice in water troughs at least twice a day and keep goats off frozen ponds. Trace mineralized salt should be kept available at all times. Goats will need some shelter to get out of the wind and something to keep the rain off. This may be a pool bank, brush mott or draw to shelter from the wind. A roof, brush or trees can provide a degree of protection from the rain. Goats can tolerate bad weather a lot better if their bellies are full. They need the best care during the worst weather.

For more information regarding goat management, contact Dr. Steve Hart at (405) 466-3836 or at shart@luresext.edu

South African Odyssey

by A. Goetsch

In October, Dr. Art Goetsch visited a number of locations, institutions, centers, universities, and producers/farmers involved in goat research, extension, and(or) production in South Africa. The trip ranged from Port Elizabeth on the southern coast up to near Louis Trichardt, close to the border with Zimbabwe. The general objective of the visit was to become familiar with goat production, research, and extension and outreach programs in South Africa. Special emphasis was given to Boer goats and goat meat production, because of the rapid increase in the US meat goat industry.

There are nearly 7 million goats in South Africa, of which approximately 38, 35, and 23% are Boer, Angora, and indigenous goats. The demand for goat meat is highest by particular ethnic groups, such as in the US. Therefore, prices received and demand for meat goats vary with season and holidays. Although, many South Africans feel there is potential for increased consumption by a greater proportion of the population, with conduct of necessary research and efforts made to promote goat meat as a healthy and palatable diet component. Most goats are purchased live and slaughtered according to cultural practices. The normal market weight is 20 to 30 kilograms, or 44 to 66 pounds, achieved at or 1 to 2 months after typical weaning ages. Few goats go through sale barns or auctions, but rather are purchased off the farm typically by contract buyers. Currently, there appears sufficient demand for goat meat to maintain profitable production. Similarly, although mohair prices have recently decreased from previous levels, present prices for mohair are fairly good, particularly relative to those for wool. The number of improved dairy goat breeds in South Africa is low. Demand is relatively low for goat milk and cheeses, although some South Africans see potential for increased goat cheese consumption, again with proper promotional efforts.

In addition to use of Boer goats for production of meat, Boers as well as other types of goats play an important role in veld or pasture/range management. Brush encroachment is a significant problem in many South African velds, and goats are essential for lessening brush prevalence and(or) maintaining stable, sustainable brush levels. Considerable research has been conducted in South Africa to identify preferred veld management schemes employing goats and fire. It is evident that the Boer goat can perform quite well under very extensive, low-input production systems existent in many South African velds. However, Boers are generally less resistant to some diseases such as 'heart water', transmitted by ticks, and internal parasites. However, there is variability among Boers in susceptibility to such diseases and parasites, creating interest in selection for such attributes. Similarly, there are efforts in progress to determine optimum levels of Boer and indigenous goats in crossbreds to achieve acceptable growth and resistance or environmental adaptation. Comparable research is taking place to identify optimal mixtures of improved dairy goat breeds and indigenous goats to achieve adequate milk production for a family's needs while retaining sufficient disease/parasite resistance for survival. As is also true for cattle and sheep, most South Africans have realized the great value in maintaining indigenous goat breeds and potential roles in developing particular types of goats for specific environmental conditions and production systems. As in the US, South

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Africa has the problem of internal parasite resistance to anthelmintics. Other aspects that Boer stud breeders are giving attention to include greater mothering ability/milk production and decreased foot rot incidence. South African Boer genetics remain in high demand for use in many areas of the world.

Major changes in South African research and extension, technology transfer and outreach programs have occurred in recent years. In general, governmental funding for research has declined, with an ensuing increase in seeking of extramural grants. Major focus is being placed upon programs for small farms or resource-poor farmers, and less attention is given to commercial farmers. There is considerable emphasis being given to the commercialization of goats, such as in value-added processing, in order to maximize benefits to South Africans. The use of such agricultural products is a key point. It has been acknowledged that it serves little or no useful purpose to aid farmers in producing more meat, milk, or fiber, unless there is an established use or market for the commodity. Along these lines, potential for development of a cashmere industry in South Africa is being studied. A very successful program is in progress to initiate small cottage businesses for tanning and handcrafting culturally unique leather items from goat skins, which previously were discarded.

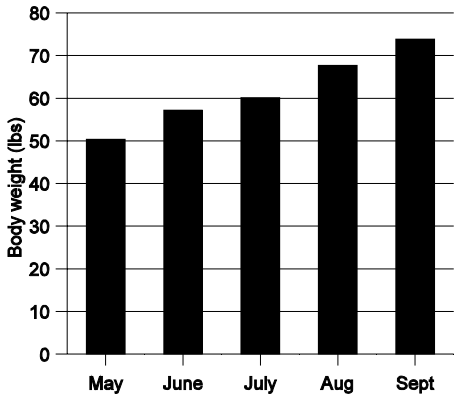
There are many areas of goat research, extension, and production of common pertinence to South Africans and their institutions and to the E (Kika) de la Garza Institute for Goat Research of Langston University. South Africans are very interested in cooperative endeavors with people, groups, and institutions in the US. Thus, it is envisioned that this visit will lead to future mutually beneficial, collaborative ventures in goat-based programs between Langston University and South African institutions.

For information regarding goat production in South Africa, contact Dr. Art Goetsch at (405)466-3836.

Stocker Goats on Sericea Lespedeza

by S. Hart

This study was conducted in Kansas on a field of sericea lespedeza to determine the effect of sex and initial body weight on the gains of goats during a summer stockering program. On May 21, 160 head of stocker goats were put on 40 acres of sericea lespedeza that had been grazed the previous year with 5 goats per acre. The goats were Spanish and Spanish cross that had been purchased in Texas. The initial purchase weight was 52 lbs. and weight ranged from 35 to 75 lbs. Half the stockers were females and the other half were wethers. Goats were weighed, eartagged, vaccinated for tetanus and enterotoxemia and dewormed with Ivomec off the truck. Goats were weighed monthly and fecal samples taken from 35 animals for determination of eggs per gram. Goats were grazed until September 27 when they were weighed off the study.



Body weight gains for stocker goats grazing Sericea lespedeza.

Goats gained three to seven pounds per month for a total gain of 23.5 lbs. over the period. Goats gained seven pounds the first month of the study, although a significant amount of that was regaining fill that was lost while in transit from Texas. Gains were lowest the second month of the study due to humid weather. Gains improved the third and fourth month of the study (7.5 and 6 lbs. respectively). Overall daily gain averaged .180 lbs./day. There was no difference in weight gains for wethers and does. Initial weight did not affect the amount of weight gained. The

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number of eggs/gram of feces was negligible the first two months of the study, but increased to 300 the fourth month. A few individuals had over 700 eggs per gram of feces the third month of the study, but declined the fourth month. Most of the remaining animals had low numbers of fecal eggs. The threshold for deworming is 1,000 eggs/gram. In summary, neither initial weight nor sex affected summer stockering gains. Stocker goats only needed to be dewormed at the beginning of the grazing season.

For information regarding the grazing Sericea lespedeza or other plants, contact Dr. Steve Hart at (405)466-3836 or shart@luresext.edu

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The mailing list for the Goat Newsletter continues to grow and so do mailing costs. If you would like to continue receiving the Goat Newsletter in the year 2000, please complete the form below and return. **IMPORTANT: If you do not return the form, then you will no longer receive the Goat Newsletter.**

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ATTN: Y2K GOAT NEWSLETTER

Noteworthy News

Dr. **Art Goetsch** recently completed a four-week study tour of South Africa. Dr. Goetsch traveled extensively in South Africa visiting institutions, centers, universities, and producers involved in goat research, extension or production. The objectives of the study visit were to become familiar with goat production, research, and extension and outreach programs in South Africa and to foster ties with South African institutions for possible future collaborative projects in goat production.

Dr. **Girma Abebe** and Mr. **Getachew Animut,** Visiting Scholars, recently returned to Ethiopia after a six -month research stay at Langston. Dr. Abebe returned to Awassa College of Agriculture and Mr. Animut to Alemaya University of Agriculture.

Dr. **Steve Hart** was a featured speaker at the Washington State Goat Conference in November. Dr. Hart spoke on meat goat nutrition, dairy goat nutrition, pasture management, the Langston DHI laboratory, flushing dairy goats, interpreting feed tags and ration balancing.

Dr. **Terry Gipson** gave a presentation on interpreting DHI records at the American Dairy Goat Association annual meeting in Ohio. In addition, Dr. Gipson was a member of a panel discussing performance testing for dairy goats.

The following USDA 1890 Capacity Building Grant Program projects were approved for funding: 1) *Metabolic Changes Affecting Utilization of Poor Quality Diet by Goats,* 2) *Quality Characteristics and Yield Predictive Models of Goat Milk Cheeses*, and 3) *Sustainable Dairy Goat Milk production from Forages*. The funding level was $680,000 for a three-year period.

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