GEORGIA SMALL RUMINANT RESEARCH AND EXTENSION CENTER

NEWSLETTER

Valley State University | Agricultural Research Station and Cooperative Extension Program | Fort Valley, Georgia

SARE Grant brings more research in control of nematodes

With a recently acquired Sustainable Agriculture Research and Education planning grant, Tom Terrill is expanding the scope of his on-going research. A forage specialist with the Georgia Small Ruminant Research and Extension Center, Terrill and his colleagues are researching a biological control for gastrointestinal parasites.

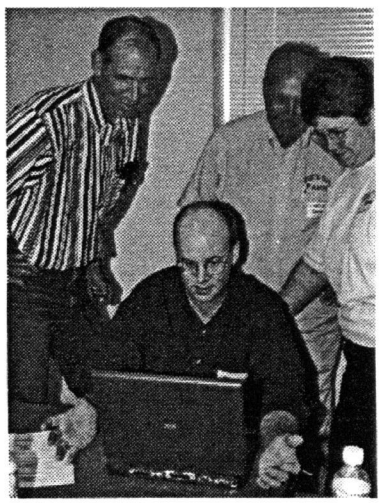
"With forages, you always worry about parasites," Terrill said.

The first planning session was held June 8-9. The 18 participants came from four Southeastern states as well as Denmark, New Zealand and the U.S. Virgin Islands. Participating institutions included Fort Valley State University, the University of Georgia, Louisiana State University and the USDA in Florida.

One of the first workshop's goals was to assemble a group of researchers, Extension personnel and farmers interested in sustainable control of parasites in small ruminants. The second goal was to identify and evaluate university and on-farm research objectives for a full SARE proposal to be submitted for the 2002 funding cycle. Both goals were accomplished.

At another session held on Aug. 1 and 2, participants developed a rough draft of the pre-proposal to be submitted by Aug. 31.

Tom Terrill is a forage specialist with the Georgia Small Ruminant Research and Extension Center. He may be reached at (478) 825-6814 or by e-mail at terrillt@mail.fvsu.edu.



Tom Terrill (seated) and Will Getz (far left) join Charles and Helen Batten of White Oak Farm, Sandersville, Ga., during an SARE proposal planning workshop.

news and notes

❒ Meat harvesting and processing services are now available to producers in Georgia through the abattoir in the FVSU meat technology laboratory. Harvesting fees are $8 per head. Further processing requires additional fees. For more information about schedules and costs, lamb and goat producers can contact meat plant manager Terrell Hollis at (478) 827- 3078.

❒ Seyedmehdi Mobini, Extension and research veterinarian at the Georgia Small Ruminant Research and Extension Center, has been appointed to the Animal Welfare Committee of the American Veterinary Medicine Association. He serves as a representative from the American Association of Small Ruminant Practitioners.

❒ Will R. Getz, geneticist and Extension animal scientist, has been appointed to the Small Ruminant Program Committee of the Southern Section of the American Animal Science Association. He is scheduled to chair that committee in 2003. Getz is also serving on the Nomination Committee.

❒ Participating in the International Animal Agriculture and Food Science Symposium held recently in Indianapolis were Seyoum Gelaye, Brou Kouakou, Kannan Govindarajan, Young Park, Aref Kalaray and Will R. Getz. They reported on research and made invited presentations.

content

Terrill's research work emphasizes collaboration

On a bright summer morning, Tom Terrill begins his work at the Georgia Small Ruminant Research and Extension Center. A forage specialist, he heads to the pastures on the Fort Valley State University campus where goats are kept.

Assisted by two others, he sets up feeding troughs in each of the pastures and helps herd the goats into the feeding area. The feed is part of his current experiment to develop a biological control for parasites. Terrill familiarizes Robin Kircher, his research technician, with the routine because this will be part of her duties. Then he sends her off on another task.

He walks into the first pasture with garden clippers and a heavy metal square in hand. First he tosses the square into the air and lets it fall. This guarantees that the forage plants he clips from within the fallen square will be a random sample of what's in the pasture. Back in the lab, the samples are analyzed as part of Terrill's research.

These Middle Georgia pastures are far from the hills of Pennsylvania, and he's never quite gotten used to the heat of Georgia's summers.

Terrill grew up in Lancaster, Pa., the son of a social worker and a guidance counselor. He was always interested in science and was influenced by his uncle, who worked in tobacco breeding research at Virginia Tech. His uncle suggested Terrill study agronomy. While a student at Pennsylvania State University, Terrill's interest turned to forages.

While working toward a master's degree in agronomy at Virginia Polytechnic and State University, Terrill spent many hours trapping meadow voles in the wild for use in laboratory studies of forage use. The meadow vole is a type of field mouse that is the most abundant mammal in North America. It's digestive system is similar to horses and it's particularly good at using low-quality forages.

During this time Terrill also decided that he preferred research to teaching. At the suggestion of a professor, Terrill came to the University of Georgia, where he earned a doctorate in agronomy under the tutelage of Dr. Carl Hoveland.

"Science – it can be tedious and grueling at times, but it's a lot of fun. You meet a lot of people from around the world."

Tom Terrill

While at UGA, he also met Donna, his future wife.

Terrill's main professor at UGA was familiar with pasture work conducted in New Zealand. He encouraged Terrill to travel to the country's Massey University for his post-doctoral work.

At first his fiancee wasn't happy that Terrill would be going overseas, but it would just be for 10 weeks. The trip ended up lasting 15 months.

"It feels like home away from ho over there," Terrill said. "It's just suc beautiful country."

He grew to appreciate New Zealand's sheep and pastures of rollir hills, but it was the people who intrigued him. Their warm hearts an open doors made Terrill feel welcome

Many times he was invited home with a family to eat a meal after Sunday church services. While in Ne Zealand, Terrill stayed with his main professor's family. That's a tradition Terrill has adopted by opening his home to researchers visiting Middle Georgia.

"It's neat because you can develo friendships that way," he said.

Those friendships are a major attraction to collaborative research projects. Terrill enjoys working with researchers from other institutions on single project. He also enjoys the travel involved with these projects.

"I really like collaborative research because it's so much fun," Terrill said.

When Terrill returned from New Zealand in early 1990, he found a depressed U.S. economy. Jobs for scientists were few. Shortly after getting married, he and his wife settled

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Tom Terrill clips forage from a goat pasture for study in the lab.

Georgia Market Goat Show results available on the World Wide Web

Photos, complete results and background information from the 2000 Georgia National Fair Market Goat Show and the 2001 Georgia National Spring Stock Show can now be seen at www.aginfo.fvsu.edu/ces/gnfair/. Look at photos from the live show as well as the carcass merit component. Cutout information on the grand champion carcass is available. One section provides background information on show rules and identifies staff members responsible for each task. A listing of all live and carcass placings is provided with information on each participant.

Will R. Getz, Extension specialist, and Terrence Wolfork, computer specialist, at Fort Valley State University constructed the Web page with input from GNF staff in Perry and collaborators in the USDA/AMS/LMN office in Thomasville. Future market goat results will be added in a timely manner.

Task force develops response plan for foot-and-mouth disease

Seyedmehdi Mobini has been participating in recent months as a member of the Georgia Foot and Mouth Disease Task Force, charged to create and develop an emergency response plan for the state of Georgia. The task force operates through the Georgia Department of Agriculture and is composed of animal health professionals, government agency personnel, representatives from several animal industry commodity groups, Extension personnel and farm organizations.

One of the outcomes of the task force is the establishment of a Web page (www.ag.fvsu.edu/News/foot_mouth.htm) where the public can learn about the disease and what actions are taken to control introduction to the U.S.

The U.S. has been free of foot-and-mouth disease (FMD) since 1929. Mexico eliminated FMD in 1959. USDA personnel have worked diligently to prevent the reintroduction of FMD into the U.S.

The disease is a highly communicable viral disease that affects cloven-footed animals. It is characterized by fever and blister-like lesions on the tongue and lips, in the mouth, on the teats and between the digits on the hooves. Although not frequently fatal, the disease causes great loss in productivity, which is the primary economic consideration. FMD is not recognized as a zoonotic disease, one that also affects humans. It only impacts animals and is spread by animals, people or materials that bring the virus into contact with susceptible animals.

Two researchers sojourn to Brazil for presentations

In September 2000, Will R. Getz presented an invited paper in northeastern Brazil at the First International Symposium on Improving Goats and Sheep for Meat held at Joao Pressoa in the province of Paraiba. His talk was titled "Crossbreeding Systems and Development of Composite Breeds for Goat Meat Production." Other Americans invited to present papers included David Notter from VPI and Roberto Sainz from UC-Davis.

In addition to those from Brazil, presenters included scientists, breeders and educators from Germany, Australia, New Zealand, Botswana and the Republic of South Africa. Much of the focus was on ways to use improved indigenous breeds while exploiting potential new sources of germ plasm from breeds such as Boer and Dorper. Several American companies and breed associations had exhibits at the symposium.

In February 2001, Thomas Terrill attended the 20th International Grasslands Congress held in the Brazilian state of Sao Paulo. At the Congress Terrill presented the paper "Amaranth Productivity and Nutritive Value," which he wrote with FVSU's Wayne Whitehead. Amaranth belongs to a plant family, which includes pigweed and can be used as a dual-purpose crop for both human and animal nutrition. While in Brazil, Terrill contacted potential graduate students for FVSU's Animal Science master's degree program.

Georgia influence goes beyond state borders

The Georgia influence and involvement goes beyond the borders of the state on a regular basis.

❒ In February Seyedmehdi Mobini participated in a workshop organized by the Alabama Meat Goat Association. He discussed health issues and held demonstrations on basic health tasks.

❒ On Feb. 16 and 17 Will R. Getz provided training for county Extension agents in South Carolina. He also discussed breeding options and carcass evaluation at a conference of the South Carolina Meat Goat Association. At the same events, Sidney Law, Extension program coordinator in Washington County, shared the program's experience in dealing with goat marketing issues and provided an update on the Washington County Meat Goat Association initiative to form a new generation cooperative to process and market goat meat. Charles Batten accompanied Sidney to South Carolina and presented useful information from the feasibility study conducted by Chris Ferland from the UGA Institute for Enterprise Development.

❒ On March 3, Eugene Amoah served as a resource person at a Meat and Dairy Goat Symposium held in Nashville, Tenn. He spoke on maintaining good reproduction and new opportunities in goat reproduction. The symposium was organized by Tennessee State University in collaboration with the Tennessee Goat Producers Association.

❒ On July 21, Will R. Getz provided instruction and information on making genetic change at the Tennessee Goat Producers Association Field Day at the University of Tennessee at Knoxville. ■

a glimpse at research results

This section is a new feature. We hope to share glimpses of some of the research reports related to small ruminants that have been given by students, scientists and specialists . The section will provide some early clues regarding research and development outcomes from Fort Valley State and other stations around the country.

'Resistance of Goat Kids to Infection with Gastrointestinal Parasites'

Researchers from Fort Valley State University, Louisiana State University and the Danish Centre for Experimental Parasitology at the Royal Veterinary and Agricultural University collaborated on a study to determine if different breeds of goats can resist gastrointestinal nematode infection.

A total of 25 weaned kids consisted of three breed combinations: one-quarter Boer and three-quarters Spanish; one-quarter Nubian and three-quarters Spanish; and half Nubian and half Spanish. Fecal and blood samples were taken from each animal every two weeks.

No deworming was practiced except to save the life of a kid. Kids grazed together as a single herd on a pasture dominated by summer perennial grasses from July through November.

While the breed combination and number of gastrointestinal nematode eggs had no significant effect on kid weight during the trial, the group of one-quarter Boer heritage required more deworming to save the lives of kids.

Significant differences in the number of eggs per gram and the packed cell volume were observed between the one-quarter and half Nubian groups in the November sampling when the three-quarters Spanish group held the advantage over the half Spanish kids.

Preliminary results suggest that breed may be a factor affecting resistance of goat kids to gastrointestinal parasites.

'Effects of Age and Breed on Cortisol, Thyroxine and Triiodothyronine in Goats'

Brou Kouakou of the Georgia Small Ruminant Research and Extension Center, working with Fort Valley State University student Dawnyetta Marable, studied the effect of breed and age on levels of cortisol, thyroxine (T_4) and triiodothyronine (T_3) in goats. These hormones are involved at different levels in biological reactions relating to metabolism. Levels of these hormones may contribute to breed and age differences related to metabolism.

Forty goats – consisting of 10 dairy kids, 10 meat kids, 10 dairy does and 10 meat does – were used. Blood samples were collected on two days from each goat and the serum was analyzed.

Results suggest that age and breed had an effect on cortisol, T_3 and T_4 levels in goats. Researchers theorize that how animals are handled and how often they are handled may affect metabolic processes and productivity.

Mature meat goat cortisol concentrations were significantly higher than meat kids, dairy kids and mature dairy goats. For both samplings, dairy animals had similar levels of cortisol. The cortisol level for meat kids also varied from that of young and mature dairy goats. Dairy breeds had significantly higher T_3 levels than meat breeds. Goat kids of both types had significantly lower T_3 concentration levels than mature dairy and meat goats. T_4 values for mature goats were significantly higher than for young goats on both sampling days.

This suggests that meat goats, due to their naturally high cortisol, should be handled in ways that minimize unnecessary stress. In addition, when cortisol is used as a stress indicator, the breed of goats should be specified.

Although there were clear differences in the hormones analyzed, this research was conducted with only 20 animals per breed. The number of animals should be increased to make broad inference about breed differences.

'Caprine Arthritis Encephalitis and Hematological Profiles in Dairy Goats'

Researchers from Fort Valley State and St. Cloud State University in Minnesota collaborated to evaluate the effects of caprine arthritis encephalitis (CAE) on total white blood cells (WBC), red blood cells (RBC) and the differential WBC count.

CAE is caused by a retrovirus. The chronic form of the disease is characterized by emaciation along with swollen and stiff knees.

Blood samples were taken from seven goats exhibiting clinical signs of CAE and seven that did not.

Results indicate that CAE infection significantly increases total WBC without affecting the total RBC. A goat's CAE status did not affect the number of monocytes, eosinophils or neutrophils. CAE did increase significantly the number of lymphocytes.

Results suggest the increase in total WBC was due to an increase in the number of lymphocytes, which suggests that maintaining an acceptable somatic cell county in milk harvested from goats with CAE infection is more difficult in herds where this condition prevails. ■

Star performers identified

The official results and a detail summary report of the *2000 Georgia and Southeast buck performance test* have been released by the Georgia Small Ruminant Research and Extension Center based at Fort Valley State University. Topping out the total weight gain category were bucks bred and consigned by Mountain Creek Farm, Monroe, Ga., Gamble Farms, Headland, Ala., and Mountain Goat Ranch, Jamestown, Tenn.

Among Boer bucks, a son of Mountain Creek Farm (owned by Crista Carrell and Rick Huszagh) herd sire Jeb achieved a weight gain ratio of 134.2 (34.2 percent above breed mean) by gaining right at 0.50 pounds per day during the 84-day test. In close contention was a buck of Ryals Magnum-Just Right breeding, consigned by Bruce Gamble, which gained an average of 0.49 pounds per day and achieved a weight gain ratio of 130.7. In considering carcass merit, a 7/8 son and 15/16 son of Jeb had top ranking in ultrasonic rib eye estimates, followed closely by a Gamble buck of Ryals Magnum-Hiltop breeding.

Among the Kiko bucks, a son of Lightnin owned by Mountain Goat Ranch (Ruble Conatser) was top gaining buck with a ratio of 109.2 and average daily gain of 0.41 pounds. This buck was also the Kiko leader in estimated rib eye area and rib depth.

The full official report includes information and a detailed discussion on the weight gain, group feed utilization efficiency, individual ultrasonic estimates of rib eye area and rib depth, and individual periodic fecal egg count data.

In the *2001 Georgia and Southeast buck performance test*, evaluation of the five bucks born in January or February bucks was completed Aug. 3. Data on several aspects of performance were collected and compiled. A full report will be available in September through Will Getz, coordinator of the buck evaluation program. All five bucks were consigned by Ruble Conatser, owner of the Mountain Goat Ranch of Jamestown, Tenn. Among the five were two Boer bucks, sons of Thunder; and three Kiko bucks, sons of Lightin.

USDA updates voluntary scrapie program for sheep, goats

Following the many questions and comments we received from readers and other clients about increased activity in the scrapie certification program, Seyedmehdi Mobini contacted other animal health professionals and regulatory personnel to provide a more comprehensive summary of Georgia's scrapie program.

While the state's program originally focused on sheep breeders, goat breeders are now expected to participate if they engage in interstate or international commerce. In our summer/fall 2000 issue, we reviewed the nature of the disease as one of several transmissible spongiform encephalopathies (TSE) of which bovine spongiform encephalopathy (BSE) is one.

The USDA has extended the period to comment on a new uniform methods and rules draft document.

Since 1952, the United States Department of Agriculture and the sheep industry have made numerous attempts to eradicate scrapie through various programs. The purpose of all previous USDA programs was to identify scrapie and eradicate it. That approach changed with the implementation of the Voluntary Scrapie Flock Certification Program on Oct. 1, 1992.

This program is a voluntary, cooperative effort among producers, allied industry representatives, accredited veterinarians, state animal health officials and USDA's Animals and Plant Health Inspection Service (APHIS).

The program provides participating producers the opportunity to protect their sheep and goats from scrapie, and to enhance the marketability of their animals through certifying their origin in scrapie-free flocks. In addition, APHIS regulations restrict the interstate movement of sheep and goats from scrapie-infected and source flocks.

The program was modified in October 1997 to make it more practical for producers. The intent of the new Voluntary Scrapie Flock Certification Program is to monitor flocks over a period of five years or more to identify flocks that are free of scrapie. Because there is no validated live-animal test for this disease and scrapie has a long incubation period, a flock is considered free of the disease if no sheep or goats have been diagnosed with scrapie and there is no clinical evidence of it over a period of time.

The longer a flock has been enrolled and following the requirements of the program, the more likely the animals in the flock are free of scrapie. The economic value of animals in enrolled flocks increases the longer they are in the program, especially once the flock is certified. Animals from certified flocks are a valuable source for replacement of breeding animals in other flocks. ■

For more information, visit www.aphis.usda.gov or www.sheepusa.org.

Weight was measured at 28-day intervals following a 10-day warmup period. Calculations were made to determine total weight gain, average daily gain, and weight per day of age. Large differences did not separate the bucks within either breed. Top ranking Boer with an average daily gain of .53 pounds per day was Buck 04 (No. 34). This was 4 percent above the breed mean. He also had the better weight per day of age at .48 pounds. He was 179 days of age at the end of the evaluation. Among the Kikos, Buck 06 (No. 38) was 9 percent above breed mean with an average daily gain of .56 pounds per day and a weight per day of age of .49 at 170 days of age.

Concentrate feed use was recorded for the group as a whole. A total of 216.05 pounds of gain resulted from the use of 1050 pounds of feed during the 84-day evaluation. Feed utilization efficiency was calculated to be 4.86 units of feed per unit of gain. This accounted for concentrate feed (pellets) but not for the forage the bucks voluntarily consumed from the paddocks. Concentrate feed was an 18 percent crude protein pellet purchased from Mid-Georgia Farm Service near Montezuma, Ga.

Fecal samples were collected at 14-day intervals to monitor presence of internal parasites, for management purposes and to assess indication of tolerance among the bucks. The samples were evaluated for presence of Haemoncus contortuseggs and the presence of coccidia. Each buck was dewormed at time of delivery. During the course of their approximately 100-day stay at the evaluation site, none of the bucks required additional deworming. While some coccidia were present in several samples, they were controlled by daily consumption of decoquinate in the feed. Laboratory analyses were conducted by FVSU Agricultural Research technicians Betty Jo Rumph and Robin Kircher.

Scrotal circumference was measured on each buck by Seyemehdi Mobini, veterinarian associated with the Georgia Small Ruminant Research and Extension Center. Among the two Boers, slight but probably insignificant differences were observed in circumference per day of age (.1575 cm versus .1543 cm) and circumference per pound of weight (.723 cm versus .788 cm). Among the three Kiko bucks, the range in circumference per day of age was .146 cm versus .136 cm whereas circumference per pound of weight ranged from .649 cm to .739 cm.

Ultrasonic estimates of rib eye area were obtained during the last days of the evaluation through collaboration with UGA-Animal & Dairy Department, Coastal Plain Experiment Station staff Dr. Rhonda Vann and Dr. Jerry Baker. Scanning occurred between 12th and 13th rib, and images were transmitted instantaneously to computer for processing. There were not large differences among individual bucks within breed. Boer buck 05 (No. 35) recorded .0403 square inches per pound of weight which was 3 percent above the Boer mean. Kiko buck 02 (No. 36) recorded an estimated rib eye area of .0395 square inches that was 4 percent above the Kiko mean.

This group of bucks appeared to be more uniform in their performance than others to be evaluated during the three years this evaluation service has been offered to breeders in the Southeast. This uniformity suggests that there was less genetic variation among the bucks within each breed. So far 38 bucks from 10 herds in four states have been evaluated at this facility. The data provide an additional degree of confidence toward estimating the breeding value – the value as a parent – for each of the breeders involved.
For a copy of the full Year 2000 Report or the 2001 evaluation, contact Will R. Getz at P. O. Box 4061, Fort Valley, GA 31030-4313; or (478) 825-6955; or getzw@mail.fvsu.edu. ■

Nomination forms, health guidelines and program specifics for 2002 will be provided in the near future. This performance evaluation program is made available for breeders wanting to add useful performance data to existing pedigree information and accelerate genetic change.

Terrill's research

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in Macon. There Terrill worked with Bassett Furniture, first in furniture production and later as director of quality control.

In 1992 he saw a classified ad in the newspaper for a pastures specialist and forage agronomist at the Fort Valley State University agriculture research station.

"I thought that would be the perfect job for me," Terrill said. Before applying, he decided to visit the campus on a Saturday. When he asked about agricultural research, Terrill was directed to the Stallworth building. As he walked around the outside of the building, he found an open door. Stepping inside, Terrill met Seyoum Gelaye, the person looking to fill the position.

"I don't remember if I ever told him it was just dumb luck," Terrill said.

Not long after that encounter, Terrill was hired. About six months later, he returned to New Zealand to attend the Grasslands Congress. That's where he first got the idea of finding a biological control for gastrointestinal nematodes – one of his current projects. (See SARE grant, page 1.)

Terrill's main duty at the Georgia Small Ruminant Research and Extension Center is to work with the Center's nutrition and forages group to develop year-round cost-effective feeding systems based on forages for goats, especially those raised for meat.

Terrill enjoys his work with the Center, as well as the people he works with, "Science – it can be tedious and grueling at times, but it's a lot of fun," he said. "You meet a lot of people from around the world."

Back home in Middle Georgia, Terrill has a different kind of collaboration. He and his wife, Donna, are the parents of Rachel, 5. They are expecting a second daughter in early September. ■