



Sheep and Goat Internal Parasite Management

This research has allowed farmers to save money by reducing on-farm use of synthetic drugs by up to 90 percent (\$150-\$200 per 100 animals per year for reduced drug use) and by identifying and retaining parasite-resistant breeding stock. We also developed and validated novel, non-chemical technologies for improved parasite management in sheep and goats in the U.S. and around the world.

Who cares and why?

The greatest threat to profitable sheep and goat production worldwide is infection by gastrointestinal nematodes (GIN), particularly the prolific blood feeder known as the barber's pole worm (*Haemonchus contortus*). The barber's pole worm rages throughout the United States and southern Canada in the summer months, thriving because the warm, moist climate of summer is ideal for the worm's eggs and larvae to breed on pasture lands where small ruminants graze. These worms cause health disorders and conditions including severe infections that result in poor weight gains, anemia, and death, particularly in young animals. As a result of the problem, farmers lose millions annually.

The primary defense against GIN infection in farmers' grazing livestock has been regular use of anti-parasitic drugs. Initially highly effective, overuse and misuse of these synthetic remedies result in the greatly increased prevalence of drug resistance in sheep and goat GIN, with resistance to commercially available anti-parasitic drugs reaching epidemic proportions in the U.S. Increased demand for organic meat and milk and environmental concerns over drug residues in animal feces have increased pressure to develop GIN-control strategies that minimize or eliminate use of manufactured drugs.

What has the project done so far?

Led by Fort Valley State University, the American Consortium for Small Ruminant Parasite Control (ACSRPC) has addressed this challenge since 2003 through producer-oriented research and outreach programs designed to: 1) develop and validate novel methods for sustainable control of GIN in small ruminants and 2) educate stakeholders in the small ruminant industry on the most up-to-date methods and recommendations for GIN control. The group has successfully accomplished both goals over the past 10 years by combining the expertise of plant and animal scientists, Cooperative Extension specialists, and veterinarians from more than 25 national and international educational and governmental institutions.

Through ACSRPC, farmers have greatly improved the sustainability of their sheep and goat production systems through Targeted Selective Treatment, in which only the animals in the herd or flock that actually need treatment are identified and treated for GIN infection. The treatment is done using properly-administered, effective drugs or novel, non-synthetic alternative control technologies and other management strategies, including appropriate grazing systems and animal selection to improve resistance to GIN infection.





Research and outreach programs have resulted in a major paradigm shift in producers' attitude towards GIN control in small ruminants over the past decade. Producers now use fewer drugs and the more sustainable and profitable approach of management control to keep their animals healthy.

In a series of confinement feeding and grazing trials with sheep and goats, the ACSRPC validated the anti-parasitic effectiveness of a number of



novel GIN control technologies, including copper oxide wire particles (COWP) given in bolus form or mixed in a feed ration; use of the tannin-rich perennial legume *Sericea lespedeza* (*Lespedeza cuneata*) in fresh (grazed) or dried (hay, leaf meal, pellets) forms in animal diets; nematode-trapping fungi mixed in a daily feed ration, and vaccines against *H. contortus* infection. Because of the success of these projects, commercial companies now make COWP boluses and sericea lespedeza leaf meal pellets available for farmers to purchase.

The ACSRPC successfully validated the FAMACHA[®] system to detect heavily infected (anemic) animals for use with sheep, goats, llamas, and alpacas in the U.S. In addition, thousands of producers have been trained to use sustainable parasite management principles, including the FAMACHA[®] system.

Impact Statement

Improved sustainability of sheep and goat production systems through Targeted Selective Treatment, in which only the animals in the herd or flock that actually need treatment are identified and treated for GIN infection

Reduce on-farm use of synthetic drugs by up to 90 percent (\$150-\$200 per 100 animals per year for reduced drug use) and by identifying and retaining parasite-resistant breeding stock. We also developed and validated novel, non-chemical technologies for improved parasite management in sheep and goats in the U.S. and around the world.

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What research is needed?

Additional research is needed to determine the most effective and affordable combination of novel GIN management technologies and their interaction with nutritional strategies to optimize sustainability of sheep and goat production systems in the U.S. and overseas. Additional research and development work is needed to allow commercialization of nematode-trapping fungi and anti-parasitic vaccines for use in small ruminants.

Want to know more?

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