

## 2019 NAHMS Goat Study Anthelmintic resistance testing

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**American Consortium for Small Ruminant Parasite Control**

This study is a cooperative agreement between Louisiana State University and the United States Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services (USDA APHIS). The study is planned in conjunction with the National Animal Health Monitoring System (NAHMS) 2019 Goat Study and will evaluate the use of anthelmintics on US goat operations and the prevalence of anthelmintic resistance in goat parasite populations in the US.

The objective is to describe practices producers use to control gastrointestinal nematode (GIN) parasites and reduce anthelmintic resistance through the examination of anthelmintic treatment efficacy via fecal egg count reduction tests and fecal cultures. The study aims to generate information on current levels of anthelmintic efficacy in goat GIN populations on a national basis. GINs infect small ruminants (goats and sheep) throughout the United States and are an important cause of disease and production loss.

The main pathogenic GINs involved are *Haemonchus contortus*, *Teladorsagia circumcincta*, and *Trichostrongylus spp.* and frequently result in disrupting the function of the GI tract. Due to disease and production losses from these GINs, producers have heavily relied on broad-spectrum anthelmintics (dewormers) since the 1960s. However, the intensive use of anthelmintics has resulted in widespread resistance in the GIN populations, especially *Haemonchus contortus* (barber pole worm). Over the past few decades, anthelmintic resistance among GINs of small ruminants has been documented across the world. Multiple resistance to the three classes of anthelmintics (ivermectins, benzimidazoles, and levamisole) has developed.

The pharmaceutical industry has not introduced new pharmacological drug classes approved for use in



Kiko bucks

Image by S. Schoenian

small ruminants since ivermectin in the early 1980s, and it remains uncertain when new anthelmintics with new modes of action will become available for use. Most studies on anthelmintic resistance in small ruminant GINs in the US were done in the southeastern states. Thus, updated information and data from other areas of the country is highly warranted.

A needs assessment survey of 1,272 individuals (including producers, veterinarians, researchers, and allied industry groups) involved in the goat industry in 2017 showed that GIN parasites were the highest priority disease. Thus, GIN population distribution information and anthelmintic resistance testing were ranked as the #1 incentive to encourage participation in the NAHMS Goat 2019 study. This study will generate

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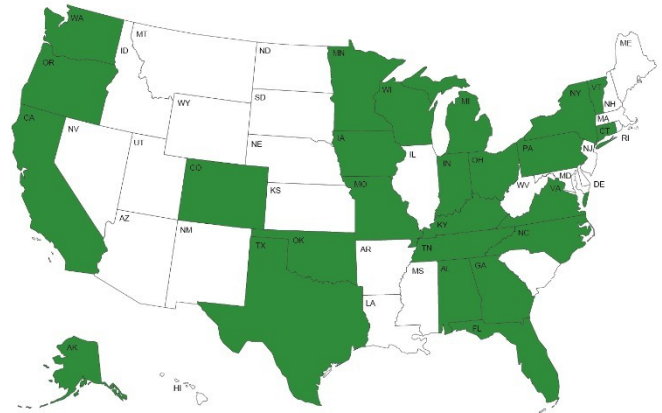


important information needed to devise adequate GIN control measures for the health and benefit of goats nationwide.

The NAHMS 2019 Goat study will take place between July 1, 2019, and December, 2019 on operations with five or more goats. The following states have been selected to participate in the study: Alabama, Alaska, California, Colorado, Connecticut, Florida, Georgia, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Virginia, Washington, and Wisconsin. These twenty-five states account for 82.7% of the goats on operations with five or more adult goats and 77.8% of goat operations with five or more adult goats.

The study will consist of questionnaires and multiple biological components, with the GIN component expected to be the largest incentive for participating operations. A total of approximately 700 goat operations will be targeted with about 4,500 goats expected to be sampled. As each goat will be tested twice (pre- and post-

treatment), up to 9,000 fecal samples are expected to be processed. After all samples have been analyzed and data reviewed, the results will be published in the form of a manuscript and information sheets.



**States participating in 2019 Goat Study**



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