

## **Extension's Role in Parasite Control**

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## **History of Extension**

Cooperative Extension (Extension) is a nationwide, informal educational network that brings the research and knowledge of the land grant university to people in their homes and on their farms. It links over 2,900 county extension offices, more than 100 land grant colleges and universities, and the federal government.

In 1862, the Morrill Act established land grant universities to teach citizens about agriculture, home economics, mechanical arts, and other practical professions. Extension was formalized in 1914 by the Smith-Level Act, which established a partnership between land grant colleges and the U.S. Department of Agriculture to provide extension work.

Throughout its history, Extension has played a vital role in improving the efficiency of agricultural production. Today, while it serves a more diverse audience and operates with fewer resources, Extension continues to serve the educational needs of the public, including those of small ruminant producers. In fact, recognizing its continued importance, many federal grant programs now require an extension (outreach) component.

## **Internal Parasitism in Small Ruminants**

Internal parasitism is the primary health problem affecting small ruminants in many regions of the United States. According to the 2011 NAHMS Sheep Health Report, internal parasitism accounted for 9.6 percent of non-predator sheep losses, with farms in the East experiencing almost 5 percent more losses (1). As for goats, necropsy records showed that internal parasites caused more goats to die in the Southeastern United States than the total of the next three leading causes (2).

The traditional approach to worm control has been to administer anti-parasitic drugs called anthelmintics (dewormers). Unfortunately, the worms have developed varying degrees of resistance to drugs in all three anthelmintic classes, with some farms in the Southeast experiencing total anthelmintic failure. Among livestock populations, anthelmintic resistance is the worst in sheep and goats, and has been documented in the camelid population.

## **American Consortium for Small Ruminant Parasite Control**

The Southern Consortium for Small Ruminant Parasite Control (SCSRPC) was established in 2003 to address the growing problem of anthelmintic resistance in the small ruminant industry (5). In 2012, as the membership of the consortium expanded, the name was changed to the

American Consortium for Small Ruminant Parasite Control (ACSRPC), with the name change reflecting the national scope of the parasite problem.

The ACSRPC is a group of scientists, veterinarians, and extension specialists whose stated mission is to 1) Develop novel methods for sustainable control of gastrointestinal nematodes in small ruminants; and 2) Educate stakeholders in the small ruminant industry on the most-up-to-date methods and recommendations for small ruminant parasite control (3).

Since 2003, Consortium members have received grant funds in excess of \$3.5 million to support the mission of the Consortium (4,5). Some of the initial research efforts involved documenting anthelmintic resistance and validating the FAMACHA© system for use in the United States. Other research projects have focused on novel methods of parasite control, including copper oxide wire particles, sericea lespedeza, and nematode-trapping fungus (4).

Extension (outreach) has been an important component of all grant-funded projects.

### **Web Site**

In 2004, the Southern Consortium for Small Ruminant Parasite Control established a web site at [www.scsrpc.org](http://www.scsrpc.org). Additional domain names ([acsrpc.org](http://acsrpc.org), [wormx.org](http://wormx.org), [wormcontrol.org](http://wormcontrol.org), and [controlworms.org](http://controlworms.org)) were eventually purchased and re-directed to the original domain. The web site underwent significant redesigns in 2012 and 2013. It was moved to a new server and has a new webmaster.

The primary purpose of the web site is to provide small ruminant producers with information on sustainable gastro-intestinal parasite control. It is a place where members of the Consortium can share results of their research projects. The web site also provides access to train-the-trainer materials.

The web site currently has listings of approved FAMACHA© instructors and upcoming FAMACHA© trainings. Each month, a different member of the consortium provides a “Timely Topic” related to parasite control. Timely topics appear on the home page and are archived for continued access.

### **Train-the-Trainer Curriculum**

In 2006, the Consortium received a grant to develop curriculum for FAMACHA© instructors (trainers) (5). Educational materials include a three-ring binder, CD-ROM, and PowerPoint (Flash) presentation. Materials contained in the binder and CD-ROM are available on the Consortium’s web site. Currently, the materials are in the process of being updated. Instructors are free to modify the materials to suit their own educational needs.

### **FAMACHA© Workshops**

FAMACHA© (also called Smart Drenching and Integrated Parasite Management) workshops have been at the core of the Consortium’s outreach effort. The first FAMACHA© workshops were held in Georgia and Florida in the spring of 2003, followed by similar workshops in Alabama, Arkansas, Louisiana, Maryland, Oklahoma, Texas, Puerto Rico, and the U.S. Virgin

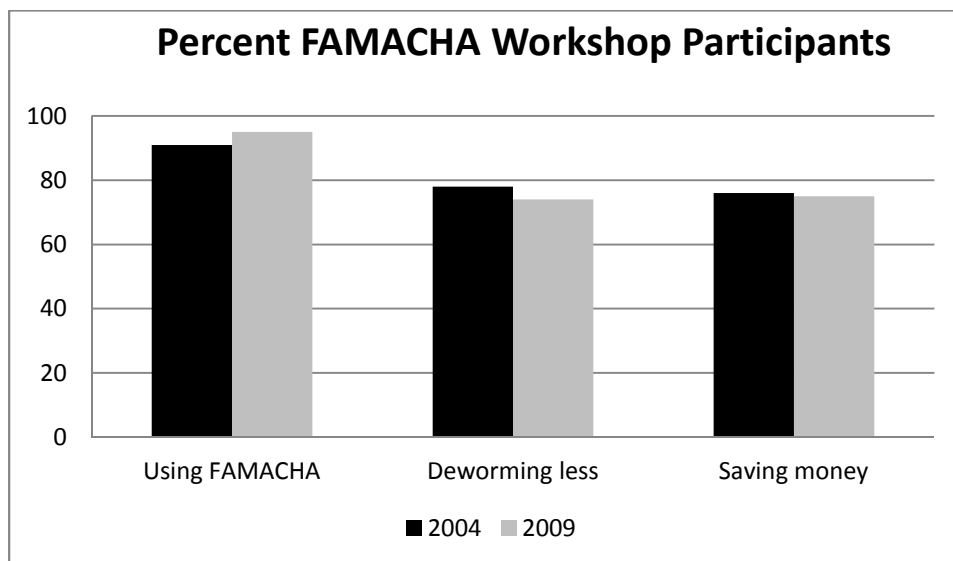
Islands (5). Since 2003, over 29,000 FAMACHA© cards have been sold to over 40 states and various Caribbean and Latin American countries (9).

## Impacts

The impact of FAMACHA© workshops has been documented on at least two occasions (6,7,8). In 2004, ninety participants in FAMACHA© workshops, primarily in the Northeast, returned a mailed survey. According to the survey, 91.1 percent of producers were using the FAMACHA© system to make deworming decisions; 64.4 percent were having less problems with internal parasites, 77.8 percent were deworming their animals less often, and 75.6 percent reported spending less money on anthelmintics (6,7).

According to pre- and post-tests, workshop participants increased their knowledge of internal parasite control by 30 to 40 percent (6.7). In addition to using the FAMACHA© system, workshop participants were implementing various other management practices to control internal parasitism, including pasture rest-rotation, 61%; supplemental nutrition, 54%; periparturient dewormings, 51%; and animal selection, 49% (6.7).

In 2009, a larger, more formal survey was conducted by the American Consortium for Small Ruminant Parasite Control and published as an abstract in the Journal of Animal Science (8). Surveys were returned by 729 participants, primarily from southern and Midwestern states. According to survey results, 95 percent of respondents felt that the training made a difference in their abilities to control or monitor parasitism. Eighty-seven percent of respondents indicated they were using the FAMACHA© system to make deworming decisions. Seventy-four percent were deworming less frequently and 75 percent saved money in the first year after the training. In addition to FAMACHA©, the most popular practices being implemented were rotational grazing, 77%; and genetic selection, 53% (8).



The results from both surveys clearly demonstrated that producers have benefitted from FAMACHA trainings (6,7,8).

## **Future**

According to the 2009 NAHMS Goat Report, only 14 percent of goat owners (in surveyed states) were using the FAMACHA© system to make deworming decisions (2). While it is likely that additional progress has been made in the past four years, this data shows that there is a continuing need for education, as being provided by the Consortium.

FAMACHA© workshops will continue to be held throughout the United States. Workshops will target all small ruminant producers (sheep, goat, and camelid), as well as veterinarians and animal health specialists. There is a strong need to certify more FAMACHA© instructors and to provide training to producers in the more northern and western states. There is also opportunity to provide education to small ruminant producers in other countries.

The role of the web site will continue to be expanded, with the opportunity to conduct trainings online. Online training would be particularly suitable for producers who lack qualified extension services in their county, state, or country. Online training for veterinarians and other agricultural professionals is another option being considered by the Consortium.

Additional educational materials, including research outcomes, will be posted to the web site as they become available.

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