

A Friendly and Encouraging Challenge to the Agricultural Extension Community:
A low cost tool that can greatly influence management of internal parasites in small
ruminants

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There is a low cost way for Extension and small ruminant producers to assess the need for anthelmintics that can increase both animal performance and financial returns. The technique is called FAMACHA. A relatively small financial and time investment by University and Cooperative Extension service to train producers to use FAMACHA can reap huge benefits for our industry.

FAMACHA is an old technique with a new qualitative twist that involves assessment of the shades of red/pink in the lower eyelid. The FAMACHA card was developed in South Africa by a multi-institutional group of scientists and veterinarians. It has five shades of red/pink/cream that when matched to the eyelid color are accurate enough to determine whether a sheep or goat requires anthelmintic treatment to prevent death from anemia or poor performance due to the barber pole worm (*Haemonchus contortus*).

So, here's the challenge. Who will be first to demand that this low-cost low-tech tool for control of parasites be universally taught to shepherds and goat producers? Will it be the shepherds, the Extension agents or the administrators in land grant agricultural schools? FAMACHA needs to be incorporated into Parasitology 101 in all veterinary schools as well. I think that all of us can work together to make FAMACHA more universally available.

Now before you say, "Whoa! My granddaddy looked at eyelid color 50 years ago." I agree that FAMACHA is "Back to the Future." Many things were done right 50 years ago before the development of anthelmintics and antibiotics. With the minor qualitative modification provided by the FAMACHA card, this old technique is an incredibly effective tool that enables us to quickly determine on each sheep whether it needs deworming due to barber pole worm infestation or not. A shepherd can determine with 95% accuracy whether an animal needs to be dewormed at the time of checking.

FAMACHA was brought to the USA and validated here by a group of parasitologists in the Southern Consortium of Small Ruminant Parasite Control (SCRSCP). This group of research scientists and veterinarians is integrating knowledge about the ecology, population genetics, physiology, and immunology of the interaction between the barber pole worm and goats and sheep to help manage internal parasites. Rarely are management tools and techniques this effective at integrating basic science knowledge from all these fields. You can visit the SCRSCP website at www.scsrpc.org to learn about their activities and the specifics of FAMACHA.

Populations of worms develop resistance to dewormers in much the same way that bacteria develop resistance to antibiotics, just a little slower. As with antibiotics and bacteria, inappropriate use of anthelmintics can quickly increase populations of worms that are resistant to them. The deworming of all animals or lambs in a flock when only

10 to 50% need anthelmintics increases the percentage of the worm population that no longer responds to that anthelmintic. For several weeks following the anthelmintic treatment of all animals in a flock, only eggs from worms resistant to the dewormer are added to the pasture population. If the sheep industry is going to survive in areas with major internal parasite problems, it is imperative that shepherds quit deworming all lambs when only a percentage needs it. As small ruminant producers, we need to start using our anthelmintics responsibly. So, how do you tell which animals need anthelmintic treatment and which don't? Regular use of FAMACHA allows on the spot, effective determination of which sheep or goats need deworming.

FAMACHA is a tool that can decrease development of populations of worms with wide resistance to anthelmintics (dewormers) in your pasture. Unlike their pursuit of antibiotics, pharmaceutical companies are not developing new anthelmintics. The more shepherds who limit their use of anthelmintics only to the animals that need treatment, the longer we will have effective worm treatments. Use of FAMACHA will save you money and solve many parasite management issues for the following reasons.

There will be near term savings because the majority of shepherds will decrease their use of anthelmintics by 25-75%. In South Africa, use of anthelmintics decreased by as much as 90%. (I know a shepherd in the USA who used FAMACHA in 2004, that dewormed 5%, 20% and 60% of their lambs at three different times, when in previous years he would have dewormed all the lambs). Most parasite treatment plans are designed for only 20% to 30% of a flock. With FAMACHA a shepherd can treat only those animals that need it.

For many, the peace of mind of knowing that all lambs that needed treatment received it is worth a lot. A shepherd can make a more informed decision about treatments.

Preventing (or at the least decreasing the rate of) development of anthelmintic resistance in the worms in your pastures will have great financial benefit in future years.

Regular use of FAMACHA will identify those animals that need treatment and are performing poorly due to barber pole worms. Treatment will enable them to perform better by producing more milk or weight gain. Identification of the more susceptible animals can aid in culling decisions.

Regular use of FAMACHA can prevent the buildup of high numbers of worm larvae in a pasture, thus decreasing the number of worms ingested by your sheep. Research indicates that 20 to 30% of the sheep put 70-80% of the worm eggs/larvae on the pasture. If a shepherd deworms these sheep on a regular basis, pasture loads will be lower, sheep will need less treatment and production will be less affected by worms.

Final notes: FAMACHA is useful for management of the barber pole worm, *Haemonchus contortus*, which is the worm species responsible for most death and poor performance due to worm parasites in areas with summer rainfall. Other species of worms that do not cause anemia (low red blood cell count) or bottle jaw/mandibular

edema cannot be managed by FAMACHA. Not all cases of anemia are due to the barber pole worm and the shepherd needs to eliminate other factors. Coupling FAMACHA with fecal egg counts on a subset of sheep will ascertain that there is no other cause of anemia. FAMACHA doesn't replace fecal egg counts, but it can decrease the frequency or number of fecal egg counts needed to manage barber pole worm infections. FAMACHA cannot be used to monitor coccidia infestations, another major cause of lamb death. Of even more importance than FAMACHA for managing worms is to select for animals that are more resistant to parasites and to manage pastures and animals so that parasites are less of an issue. FAMACHA can only do so much. Identifying productive animals with good performance that are resistant to parasites and that pass this trait on to offspring will be an important future step in small ruminant production systems as anthelmintic resistance in worm populations develops.

So, start the challenge today. Call your Extension agent and ask him or her to organize a FAMACHA training session for your county or parish. Ask your vet to help train you in the use of FAMACHA. If they don't know, then challenge them to learn or find another professional who will listen and learn. Don't take no for an answer!

Author's Note –University and Cooperative and Extension services in a few states have started teaching FAMACHA to producers and they deserve our thanks. I would also like to thank Jim Miller, DVM of LSU Veterinary School and Joan Burke, PhD of USDA-ARS who taught me FAMACHA, introduced me to the concept of refugia and Haemonchus control and for their discussions of the use of FAMACHA to control anthelmintic resistance.

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