

Control the Barber Pole Worm: Breed for Resistant Sheep

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Dave Scott
Livestock Specialist
National Center for Appropriate Technology
daves@ncat.org
406-533-6642

Genetic-selection tools are a long term solution to controlling the Barber Pole Worm, *Haemonchus contortus*. After several generations of careful breeding, you will see flock improvement in parasite resistance. There are three genetic-selection tools we producers can use to lessen the impact of *Haemonchus* in our flocks: fecal egg counts, FAMACHA® scoring, and National Sheep Improvement Program Parasite Fecal Egg Counts (PFEC).



Got Barber Pole Worm here? Most likely. Genetic selection is a long term control.

NCAT Photo: Dave Scott

Remember this First

In order to successfully select for parasite resistance through culling and in choosing ewe and ram replacements, sufficient parasite challenge must be present. This means there must have an average of at least 500 eggs per gram in fecal egg count samples. If you selecting using FAMACHA scoring, at least 25% of the flock must score F3 or F5. (See the previous article in the June Woolgrower to find out more about FAMACHA scoring). While this seems obvious, it is easy to forget that you can't easily select against a problem if it does not exist.

This rule also applies when purchasing sheep. If the seller of some ewes is advertising that he or she never deworms his sheep and they are on irrigated pasture, you don't know if they are resistant to parasites or if they have never been on pastures that present a challenge. This can lead to a disaster.

How Can We Breed for Parasite Resistant Sheep?

Cull

Do we really want that ewe that has to be constantly dewormed in order to stay in the flock? Even if she produces good lambs, she is a constant source of infective worm larvae on our pastures. We can't use her genetics to improve flock resistance. When you see a good time, get rid of her.

Similarly, inject culling for parasites into your annual deportation to Mexico program. Make it strike three for any ewe that is not up to snuff. Cull ewes that score FAMACHA 4 and 5 during the grazing season. How about chronic FAMACHA 3's?

Select

The most obvious place to start selecting for parasite resistance in our flocks is by choosing superior ewe lambs. However, the rams that we use provide one half of the genetics over the entire flock. Thus, a small number of individuals are responsible for a large part of the flock genetic make-up. In fact, National Sheep Improvement Program geneticists state that over four generations, 90% of the flock genetics is determined by flock sires. Isn't that the purpose of the Miles City Ram Sale?

We can select for a parasite resistant gene pool (female and male) by these three primary means:

- Fecal egg counts
- FAMACHA score
- Use rams with low score NSIP estimated breeding values for PFEC

Fecal Egg Counts

Fecal egg counts can be used very effectively to select for *Haemonchus* resistant breeding stock. For a one-time selection procedure, take fecal egg counts from a pool of prospective ewe and ram lamb replacements two to three weeks after weaning. This is the most challenging period for the lamb with respect to parasite infection. Select the top 35- 40% of the ewe or ram lambs based on FEC. For example, if your range of FEC is from 300 epg to 9000 epg, choose the top 40% of those individuals beginning with the 300 epg lambs on up. From this group, then select sheep that are exemplary in other economically important traits such as number of lambs born, maternal weaning wt, wool quality, etc. As in all breeding selection, it is best to employ a balanced approach. Don't just select for parasites and ignore other traits.

FEC and FAMACHA evaluations must be made with animals of similar production stages, in similar environments, and in the same pasture season. While any trained sheep producer can perform FEC with relatively inexpensive equipment (\$300 microscope), they are time consuming (6-10 per hour). Veterinary charge to do one FEC is usually \$25. So now what?

FAMACHA Scoring

Enter FAMACHA scoring. With good facilities, 125 to 150 head can be FAMACHA scored an hour. While not quite as exact as FEC, FAMACHA scoring provides a practical way to identify parasite resistant genetics in our flocks.

Select those ewe or ram lambs replacements that FAMACHA score 1 or 2 three to four weeks after weaning. If this does not yield a large enough pool, include those individuals that FAMACHA score 3. Do not use any FAMACHA score 4 or 5 lambs no matter how exceptional their other traits. For those flocks that have a large Barber Pole Worm infection rate, be sure to first FAMACHA score two weeks after weaning. Otherwise, you may lose lambs. Remember to only deworm lambs that FAMACHA 3,4, and 5.



FAMACHA scoring is simple, fast, and very useful.

NCAT Photo: Rich Myers

Speed Things Up: Use NSIP EBV's

As previously noted, sires have a huge amount of influence on flock genetics. Estimated Breeding Values developed by the National Sheep Improvement Program <http://nsip.org/searchable-database/> provide the fastest way to make tangible improvements in parasite resistance. Coupled with grazing practices to limit worm ingestion (see the ATTRA tipsheet *Grazing to Control Parasites* <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=604>), these two strategies represent a long-term solution to Barber Pole Worm control.

Currently only Polypay and Katahdin breeds have PFEC ebv's. In terms of parasite resistant genetics. They are leading the pack. We need the other major breeds whose members graze irrigated pasture to get on board.

Selecting for genetic resistance for parasites is one of the leading tools we can employ to combat the Barber Pole Worm. For flocks on irrigated pasture, future success may depend upon it.

If you are interested in finding more about Barber Pole Worm management strategies, check out NCAT's ATTRA website. Search for *Parasite Management for Sheep on Irrigated Pastures* <https://attra.ncat.org/attra-pub/livestock/livestock.html#ipm-pasture> . There will also be more Integrated Parasite Management and FAMACHA workshops in 2018 and 2019, beginning with the 2018 MWGA annual convention this November.

Questions? Give me a call!