Heaven on Earth for Sheep Parasites!

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The hot, wet summer is excellent for growing crops and pastures, but for Ontario sheep in may be a growing threat. Because of the warm, humid temperatures common to the summer months, losses due to gastrointestinal nematode parasites (GIN) are on the rise.

The two species of GIN that cause the most havoc are Haemonchus and Ostertagia. Haemonchus will suck blood from the animal, while Ostertagia sucks proteinaceous fluid.

Sheep become infected with Haemonchus by something they do everyday- eat! The adult form of the Haemonchus worm takes residence in the animal's glandular stomach, laying eggs that are passes externally through the feces. Once outside the animal, the eggs hatch and mature to infective larvae within approximately 7-14 days, depending on the weather. Infective larvae are then eaten by sheep out on pasture and the whole cycle- which takes about 21 to 28 days- begins again.

The heat of the summer days hastens the hatching and maturation of the larvae. And the moisture in the air helps release the larvae from the fecal ball- as well as assists in placing the larvae higher on the grass stem (making it easier for the sheep to ingest).

The most risky pastures to sheep are those covered by dew on a nice sunny day. Warm and moist conditions help the larvae live for months so with the recent humid weather, larval contamination on pastures is sky rocketing.

Signs of parasitism include poor growth, diarrhea, bottle jaw (edema under the jaw), weakness, lethargy, and pale mucous membranes due to blood loss. In serious cases of Haemonchus, sheep may drop dead on pasture without any signs due to the severe and rapid loss of blood experienced by the animal.

A single Haemonchus (*H. contortus*) worm will suck about 0.05 ml of blood per day, which may not sound like much until you calculate that a moderate load of 1,000 worms will suck about 50 ml of blood per day. A 70 lb lamb has a total blood volume of approximately 2.8 litres. In one week alone, 1,000 parasites will drain that lamb of over 12% of its total blood volume. It is not unusual to see lambs that have lost well over 50% of their blood volume with these infections. Combine these losses with the loss of blood plasma and protein and we have a severely compromised or possibly dead lamb.

Most producers usually de-worm their flock at pasture, putting a stop to the infection before major losses occur. But this year, submissions to the Animal Health Laboratory at the University of Guelph have been revealing an unsettling trend. Late July to August is the traditional time when pathologists have dead lambs (and adults) submitted with very high loads of parasites in the gastrointestinal tract (particularly Haemonchus). But what pathologists have been noticing this year is that submitted animals have been recently de-wormed within a few weeks of being examined. This could mean one of two things: either the de-wormer was not administered correctly to the sheep, or the parasites are resistant to the de-wormer.

If it is a case of incorrect administration that can be equally solved. All producers are encouraged to become knowledgeable with administration techniques.

When administering a de-wormer to a sheep, it is critical that the following be done to prevent under dosing:

- Estimate the weight of the sheep correctly. It may be necessary to weigh a few of the animals.
- Based on the above information, dose not for the average weight but the heavier weight of the sheep being treated.
- Make sure the dose gun is correctly calibrated, i.e. it is delivering the amount of de-wormer that you think it is.
- When administering the de-wormer, make sure that the sheep gets all of it. A little drizzle out the side of the mouth could make the difference between an effective or ineffective treatment. Make sure the drench gun is placed over the back of the tongue; steady the sheep's head so all of it gets swallowed.

Some other issues to note:

- In Canada right now, Ivomec (Merial) is the only licensed anthelmintic 9de-wormer) available either as a drench or an injectable. Make sure that you do not use another form of Ivomec (e.g. our-on for cattle) as it is not well absorbed and so leads to under dosing.
- Don't use pour-ons at all on sheep. There is scientific evidence that absorption of the drug is inadequate, even in shorn sheep.
- There are other commercial products on the market that are not licensed for sheep but are effective. Talk to your veterinarian before using these products to make sure they are right for your situation.
- Many "alternative" de-wormers are available, often with little proof that they work- and sometimes with proof that they actually don't work. If you wish to use one of these products, make sure that you monitor your sheep closely so they don't become diseased or die.

If it is not a case of incorrect administration, but rather a case of resistance, that is a whole other bag of worms. Anthelmintic resistance (AR) in sheep has been reported around the world, particularly in hotter climates such as Australia, South Africa, and the USA- but is has not yet been reported in Canada. While some parasite eggs and larvae can live out the winter under the snow cover, Haemonchus doesn't seem to be able to. The parasite can only survive winters if it stays alive in the gastrointestinal tract of sheep. So Canadian winters give us a natural "cleansing" season for our pastures and may have helped protect us from AR. However, with the fluctuations in weather patterns, this natural "cleansing" season may not be as effective as it once was.

With this in mind, farmers may be concerned about resistance levels in their flocks. Producers can contact their vets who can perform tests to determine if their flock is AR. The name of the procedure used by vets around the world is the Fecal Egg Count Reduction test (FECRT). One way of determining worm burden in sheep, is to count the eggs in the feces. However, this is not the best method as egg counts can vary quite a bit from day to day and depend on other factors such as diet and activity. But by counting the eggs quantitatively (eggs per gram (epg) of feces) in several animals, vets can get a good idea of the parasite burden in the group of animals. If you suspect AR in your flock (sheep not responding to treatment or losses within a few weeks of treatment), contact your vet to set-up a FECRT.

If AR is confirmed within a flock, producers along with their vets need to work as a team to control it. There are many strategies that can be completed in such a case and they do not all involve using a different de-wormer.

At the University of Guelph, researchers are looking at the natural epidemiology of GIN in Ontario and Quebec flocks with a plan to use these finding to propose strategic control measures more suitable for the Canadian climate.

Please contact the extension veterinarians at OMAFRA for further information (Wellington Place, R.R. #1, Fergus, ON N1M 2W3, Phone: (519) 846-0941, Fax: (519) 846-8178).