

The Risk to Sheep From Dog Tapeworms

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DOGS AND SHEEP NATURALLY GO TOGETHER. Dogs are used to herd the sheep or guard them from predators and many flocks own at least one of these useful animals. Other canids such as coyotes, wolves and foxes commonly leave near sheep pastures. But without proper precautions, any of these canids can be a source of a parasitic disease that can rob your sheep enterprise of all its profits.

Canids can be a host to many different intestinal parasites, some of which can cause them illness. However, one of these parasites – tapeworms – do not generally make the dog sick, but the intermediate stage of these worms cycles through sheep and unfortunately, the damage that these tapeworms do the sheep carcass can cause them to be condemned at slaughter.

To understand how this happens, we need to understand the life cycle of the dog tapeworm. Adult tapeworms reside in the small intestine of the dog or other canid and use a scolex or head to grasp onto the wall of the gut. The tapeworms reproduce by shedding segments of their body each one of which contains thousands of eggs. These segments are not only found in the dog's stool but can be seen "crawling" on its coat before finally dropping off. They look like a strange white, flat worm. When dried, these segments look like a grain of rice. The eggs are spilled out of the segment and can survive in the environment for up to a year - waiting for an opportunity to infect its next host - the sheep.

If these segments contaminate the pasture or forages that sheep are eating, the eggs will hatch in the sheep's gut and the tiny larvae will burrow through the wall of the intestine to travel to its "target" tissue, where it turns into a small bladder-like structure called a cyst. Each one of these cysts contains an embryonic "baby" form of the tapeworm. If a dog or coyote gets an opportunity to eat the tissues that contain these cysts, this larval tapeworm will turn into an adult in the dog's intestine and the cycle will continue.

Here in Ontario, there are two main types of dog tapeworms to worry about and they have different target organs in the sheep.

1. *Taenia hydatigena* is the name of the most common tapeworm in the dog and *Cysticercus tenuicollis*, also called the bladder worm of sheep, is the name of the intermediate "cyst" stage in the sheep. The larval parasite prefers migrating through the liver and then developing into cysts within the liver tissue. After several weeks, the cysts may die. At slaughter, the liver

may show long, wiggly migration tracts caused by a recent infection, moderately large cysts containing an embryonic tapeworm, or small round scars from an old infection. Or if re-infection is ongoing – the liver may contain all three. Regardless of which stage is found, the liver is condemned as unfit for human consumption.

2. The next tapeworm is less common but reports of the parasite are increasing in Canada – often with great economic cost. *Taenia ovis* in the dog, it is called *Cysticercus ovis* in the sheep, sometimes also called the sheep measles worm. Its preferred tissues are the muscles of the body, including heart, diaphragm and skeletal muscle or meat of the sheep. At slaughter, small white cysts can be seen through the muscle. If found, the entire carcass will be condemned as unfit for human consumption.

So how common are these infections? In Ontario, an audit of condemnations found that 5% of lamb livers are condemned because of evidence of tapeworm cysts. In other parts of Canada, there have been cases where up to 30 lambs from one farm have been condemned because of *C. ovis* cysts in the muscle. This is an economically important disease to the sheep industry.

While these two tapeworms are not infectious to humans (unlike the cattle tapeworm), there is a dog tape in Ontario *Echinococcus granulosus*, which can harm people. It more commonly has a wolf-moose cycle in northern Ontario – but can also cycle through the dog and sheep. It is the cyst form that infects humans. Fortunately control of *T. hydatigena* and *T. ovis*, will also control echinococcus infection in dogs.

What should be done? Once the lamb is infected, there is no treatment so it is very important that all farm dogs be routinely treated for tapeworms every 3 months, and as frequently as every month if cysts have been found in sheep. A special de-worming medicine is required to kill the adult tapes, and can only be purchased from a licensed veterinarian. The wormers sold in pet stores or feed stores will not kill tapeworms. At the same time, make sure that all dead stock is buried at least 2 ft deep or is appropriately composted so that no scavenging can occur by dogs or wild canids such as coyotes, wolves or foxes. If the tapeworms infect the wild canid population there is little chance of eliminating it. Unfortunately the cyst stage of the infection can also occur in deer. Once the wild canid - deer cycle is

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Sheep Worm Resistance Targeted by Gene Marker

By JON MORGAN - *The Dominion Post*

A genetic weapon has been launched against the \$100 million problem of worm resistance in young sheep.

Catapult Genetics, a New Zealand-Australia research venture, is unveiling the latest in its armoury of gene markers to farmers at meetings this week.

Marketed as Wormstar, the marker identifies sheep that can both fight off the worm challenge and grow well at the same time. It comes at a time when worm resistance to chemical drenches has been steadily rising on sheep farms. A recent survey found that two out of three sheep farms had drench resistance to at least one of the three drench families.

Some farmers have tried to breed lines of sheep that fight off worms, energy-sapping creatures that live in the gut. Selection is made by counting the worm eggs in their faeces. Others have tried a different tack, breeding sheep that still thrive, despite a high worm burden.

Catapult's gene marker appears to highlight the sheep that do both – have low faecal egg counts and high growth rates of meat and wool.

Wormstar is the result of five years' research by scientist John McEwan and a team at AgResearch Invermay. AgResearch is a shareholder, along with Meat & Wool New Zealand, Australia's Commonwealth Scientific and Industrial Research Organisation and Australian venture capital firm Nanyang Innovation Fund.

Catapult's product development manager, Mike Tate, placed a potential value yesterday of \$882 a ram on the benefits Wormstar could bring to a farmer. This compared

with an average, non- tested, ram.

Also, the benefits would grow over time as the level of natural resistance to worms within the flock increased. Less drenching would be needed and other methods of managing the worm burden would become more effective.

The marker was a breakthrough for breeders, Dr Tate said. It meant farmers could select rams with more confidence and know they did not have to compromise on important productive traits such as weaning weight and hogget fleece weight.

Catapult had developed a star ranking system to identify top Wormstar rams. A two-star ram was estimated to have a reduction in faecal egg counts of between 7 and 12 per cent compared with a normal ram. In a one-star ram the reduction was estimated to be between 2 and 9 per cent.

Data from more than 900 sires in 111 breeders' flocks and over 100,000 measured progeny from Northland to Southland were tested to find the gene marker. The key maternal breeds, Romney, Coopworth and Perendale, made up the bulk of the animals, though Poll Dorset, Texel and other breeds were also included.

Wormstar joins Catapult's other sheep gene marker tests: Myomax, which identifies sheep with increased muscling; Loinmax, for sheep with 10 per cent bigger loin muscles; Inverdale, a profligacy gene; and I-Scan, which identifies a blindness gene. Genestar, a test for beef animals, is a suite of gene markers that identifies marbling and tenderness, along with feed efficiency, a trait that measures how quickly animals grow. **OSN**

<http://www.stuff.co.nz/stuff/4248954a3600.html>

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established in your geographic region, control in pastured sheep becomes very, very difficult. If you have any questions at all whether your dogs are infected, contact your local veterinarian right away.

In summary to prevent infection of your sheep with dog tapeworms:

1. Do not feed any of your dogs (working, guard or pet) any part of a dead sheep.
2. Do not dispose of dead sheep where dogs or coyotes or foxes might have access to it.

3. Talk to your flock veterinarian to get your dogs on a regular tapeworm treatment program.
4. Any new dogs coming to your farm must be treated and held in isolation for at least 3 days before exposing to the sheep farm.
5. Try to prevent your dog from defecating where it might contaminate sheep feed, pastures or water sources.
6. Make yourself aware of causes of condemnation of lambs that are sent for slaughter. **OSN**

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