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# From the flock

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MONTHLY NEWSLETTER FOR THE CANADIAN SHEEP INDUSTRY

## Course of Action for the Canadian Sheep Federation

By Jennifer Fleming, Executive Director

If you look up the word “resolution” on Dictionary.com you get twelve definitions. My favourite is number three – “... determining upon an action or course of action...” Not that I’m looking to make a resolution myself, but while pondering over an article for this month I thought about the AGM in November, how closely it comes to the end of the calendar year and how, intentionally or not, the CSF seems to have made a few resolutions for 2008. Putting it more accurately – CSF has charted a course of action.

With a broad stroke, one could argue that this course of action points in the direction of the industry’s long-term sustainability and growth. Their commitment to this is illustrated best by the decisions that were made over the four days in Victoria, B.C. This of course did not happen overnight and it certainly did not happen without any planning. This past year has been a year of setting the foundation – most notably, as you already know, was the development of the Strategic Business Plan. It was the Board’s ability to act on the information gathered through the development of this business plan, and the input from producers on a number of other key issues that demonstrated their commitment to their chosen course of action.

In general, I think it’s safe to say that our Board has resolved to keep this focus that has come out of the business planning exercise; they have resolved to be as functional, forward thinking and market driven as possible, recognizing that the best interests of the industry are what should be driving all activities. Firstly, the CSF has resolved to undergo some

governance training, along with policy and by-law reviews, with the goal to ensure that the organization is serving Canada’s sheep producers in the best way possible.

The CSF has also resolved to move the industry forward in terms of National Identification. This action stems from much of the feedback provided by producers through the CSIP questionnaire that was circulated in the fall. There has been widespread recognition that the use of RFID technology can assist producers with flock management and can provide them with information to help make management decisions – especially when tied to carcass quality data. It is also recognized, both by government and by industry, that the cost of such technology is prohibiting its uptake in the sheep industry. The course of action then is to begin discussions with the government and services providers to see what kind of support is available for implementing RFID technology in the sheep industry.

Keeping with the theme of providing producers with information, the CSF has committed to supporting the CSBA and GenOvis in building a national genetic evaluation database. This database would be market driven, providing producers with information that would help in their selection of breeding stock that produces the quality of lambs to suit their markets.

With this list of resolutions in hand, it looks like CSF is going to have a busy 2008. I’m confident that we will make significant progress and have much to celebrate at our next AGM in Moncton, New Brunswick.



# Canadian Sheep and Lamb Food-Safe Farm Practices Program

## Start Off the New Year Prepared: On-Farm Emergency Planning

By France Lanthier, On-Farm Food Safety Coordinator

As in many parts of the country I find myself here in Eastern Ontario shoveling on a daily basis as the snow doesn't appear to be letting up. While the pristine white blanket will surely deliver the Holiday landscape that comes to mind when we listen to Bing Crosby slowly and dreamily whisk us away, I found myself unable to appreciate the landscape as I thought: I could be snowed in! With an approaching deadline for From the Flock my thoughts of snow, sheep, and planning fused into one and the result was this month's topic: On-Farm Emergency Planning.

As with any type of plan, the first step is communication. For any plan, whether it involves a two person family operation or a team with multiple staff, it is imperative that each person be aware of their role, the tasks they are responsible for, and how to communicate their actions to the team. Lack of training and communication during an emergency can greatly slow down the response.

Every farm should have an emergency contact list containing but not limited to the following people and organizations: Police, Fire Station, and Ambulance (911 or local stations), CFIA regional office, Provincial Ministry of Agriculture, Provincial Ministry of Environment, Poison Control, Utilities (gas, electrical, water), and neighboring farms. While not all emergencies will present as flash events, every plan should include a "safe meeting place" in the event of an emergency such as a fire or flood. This will assure that everyone is accounted for and that each can perform their role. Now, at this point if your eyes are rolling and you're thinking "What?! If my barn is burning it's not the time to have a family meeting and start a circle of sharing". If that's what you're thinking I would say "you're right, it's not the time to hold hands and sing folk songs", but I would also ask that you consider the following: What if it was your responsibility to call the fire department but you weren't in a position to do it? In this case it would be important that the rest of the team know so they could take over that task. Alternatively if you're thinking "why have a plan? If there's a fire we all know to phone the fire department". This might be true, but there only needs to be one person on the phone while the others accomplish other tasks.

Another simple way to start your emergency plan is by sketching a farm map. While your map should be detailed, it should not appear cluttered or include excessive colour as to make it confusing.

The following is a list of objects and areas to keep in mind when drafting your map: all buildings and structures, sheep holding areas, exits (for humans and animals), slope of the land (for drainage), ponds and streams, fire extinguishers, first aid kits, septic tanks, wells, municipal water supply, fuel storage, hydro and water shut offs, pesticide and fertilizer storage, and manure storage. Many more items can surely be added to this list but this is somewhere to start. A farm map is a simple but very useful tool in the case of an emergency. Having a map can greatly facilitate the work of emergency respondents who may not be familiar with the layout of the farm.

If you're starting to think about an emergency plan for your farm, a good thing to do is to list all the possible emergencies that could affect your farm. Then consider how these emergencies would affect the people working on your farm, your animals (can feed still come in? is water still accessible?). Then consider the people and organizations you would need to notify to prevent the perpetuation of the crisis (i.e. in the case of disease) or to notify in order to get help. While your emergency plan starts on your farm in can also involve and impact your community.

While it is easy to fall into the mind frame of "I'll know what do to when it happens" this type of roll-with-the-punches thinking could lead to valuable minutes and assets being lost. Planning for emergencies can be challenging but it is well worth it. An emergency plan can be viewed as an umbrella: we complain on all the days we take it with us but we don't need it, we hope we won't need to use it, but aren't we glad we took it with us when it pours!

During the past year I have had the opportunity to meet many of you across the country which has truly been a joy. As this will be the last From the Flock for 2007, I will take this opportunity to wish you all a joyous Festive Season and a prosperous, healthy, and safe 2008.

Online Emergency Management resources:

1. Canadian Food Inspection Agency Area and Regional Offices: [www.inspection.gc.ca](http://www.inspection.gc.ca)
2. BC Ministry of Agriculture and Lands - Contingency Plan: Template for On-Farm Planning website: [www.agf.gov.bc.ca](http://www.agf.gov.bc.ca)
3. Canadian Animal Health Coalition website: [www.animalhealth.ca](http://www.animalhealth.ca)



# Scrapie Canada

## Sheep Genetics and Scrapie Resistance

By Courtney Denard, Scrapie Coordinator

Genetic makeup has been determined to be a significant factor in a sheep's susceptibility to classical scrapie. Research has shown that there is a link between sheep prion proteins and susceptibility levels. A prion is a protein that occurs normally in a harmless form, but by folding into an abnormal shape the normal prion turns into a rogue agent. This rogue agent then co-opts other normal prions to become rogue prions, which are basically proteins gone bad (1). It is this abnormal or rogue prion that is associated with the infection of classical scrapie.

Experimental evidence indicates that there are different forms of the sheep prion proteins. Some forms are highly susceptible to becoming a rogue prion (bad protein), while others demonstrate resistance to this change. Resistance to the structural change is tied to activity at different codons in the animal. A codon is a stretch of DNA that determines which particular amino acid will be included at a particular location of a protein, in this case the prion protein. In the literature concerning susceptibility levels in North American classical scrapie, three codons are of importance: 171, 154 and 136. The presence of arginine (R) at codon 171 grants resistance to the prion protein undergoing the structural change associated with classical scrapie. The presence of glutamine (Q) or histidine at codon 171 and alanine (A) at codon 136 results in the prion protein being susceptible to the structural change associated with classical scrapie. The coding for valine (V) by codon 136 can produce susceptibility to the structural change associated with scrapie as well.

The majority of classical scrapie cases worldwide have been in sheep homozygous for glutamine (QQ) at 171. The profile of sheep's prion genotype varies between breeds, between countries and between flocks. The following chart reveals different levels of classical scrapie susceptibility at the above mentioned codons (2).

Risk group description	UK National Scrapie Plan (136-154-171) <sup>3</sup>	United States (136-171)
<b>Most resistant</b>	<b>AA-RR-RR</b>	<b>AA-RR</b>
<b>Resistant</b>	<b>AA-RR-RQ AA-RH-RQ</b>	<b>AA-RR-RH</b>
<b>Have little resistance</b>	<b>AA-RR-QQ AA-RH-QQ AA-HH-QQ</b>	<b>AA-RQ AV-RQ</b>
<b>Susceptible</b>	<b>AV-RR-RQ</b>	
<b>Highly susceptible</b>	<b>AV-RR-QQ AV-RH-QQ VV-RR-QQ</b>	<b>AA-QQ AV-QQ VV-QQ</b>

Genetic information can easily be determined by genotype testing sheep. Through the National Genotyping Survey, Canadian purebred sheep producers can test their animals at a subsidized cost. Without subsidization, genotype testing is approximately \$30/ head, depending on the chosen lab. Testing completed through the survey costs \$10/ sample (plus tax). The National Genotyping Survey is open to producers of purebred sheep until March 31, 2008. For more information please contact Scrapie Canada at 1-866-534-1302 or by e-mail at admin@Scrapiecanada.ca.

All genetic information in this article is sourced from: [www.Scrapiecanada.ca/genotyping.html](http://www.Scrapiecanada.ca/genotyping.html)

References: (1) MedicineNet.com <http://www.medterms.com/script/main/art.asp?articlekey=5047>; (2) Information reveals UK and USA levels of Scrapie resistance; (3) H (histidine) at codon 171 is rare and seems to have the same effect as Q



# The Risk to Sheep from Dog Tapeworms

By Dr. Paula Menzies, Dept Population Medicine and Dr. Andrew Peregrine, Department of Pathobiology, Ontario Veterinary College, University of Guelph

Recently Canadian packers have had to deal with another rash of carcasses being condemned due to *C. Ovis*. Producers are being urged to take the necessary precautions to prevent the infection of their sheep with dog tapeworms.

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.



Tracts through the liver caused by the migrating tapeworm larvae. This lamb died from a massive infection of *C. tenuicollis*.

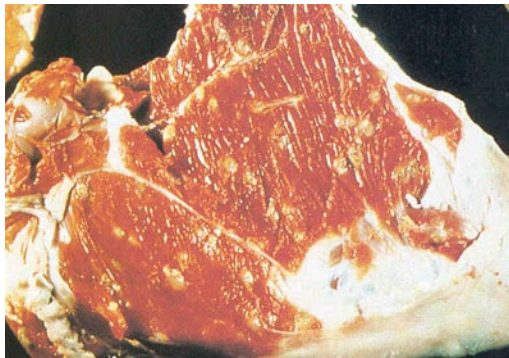




## The Risk to Sheep from Dog Tapeworms continued



This is the embryonic head (scolex) of the *C. ovis* tapeworm, taken from a cyst on the heart of lamb condemned at slaughter.



This is a cross section of muscle from a lamb. Each white cyst has an embryonic tapeworm in it.

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. hydatigenia* 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 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.

Photos courtesy of the Ontario Veterinary College.



## Electronic identification of sheep and goats

Source: Department for Environment, Food And Rural Affairs ([www.defra.gov.uk/animalh/id-move/index.htm](http://www.defra.gov.uk/animalh/id-move/index.htm))

The EU Council of Ministers have today agreed on 31 December 2009 as the obligatory implementation date for the introduction of electronic identification (EID) of sheep and goats.

The Regulation was adopted on 17 December 2003 and introduces, amongst other measures, a system of individual animal recording and electronic identification (EID) for sheep and goats, which will now be required from 31 December 2009. The Commission's report on the implementation of electronic identification of sheep and goats was published on 16 November 2007.

Animal Welfare Minister Jeff Rooker said:  
"Whilst I am aware that the industry needs to make significant changes in order to implement these proposals, securing a delay until 31 December 2009 for implementation is a significant achievement and will give our industry two years longer than was originally agreed to adjust to the introduction of EID."

"We do still have concerns about the cost and practicalities of introducing EID and these are recognized in the Commission's report. We will continue to work in close partnership with industry to discuss the implementation of EID in a way which is practical and industry can make work. We will also be seeking further amendments to the Regulation to limit the impact of the introduction of the individual recording requirements which exists for older animals."

Further information can be found at:  
[www.defra.gov.uk/animalh/id-move/index.htm](http://www.defra.gov.uk/animalh/id-move/index.htm)

### Notes:

1. Council Regulation (EC) No. 21/2004 ("the Regulation"), which was adopted on 17 December 2003, established a system for the identification and registration of ovine and caprine animals. Amongst other measures it provided for the introduction of individual animal recording and electronic identification (EID) for sheep and goats from 1 January 2008. This date was subject to confirmation or amendment by the Council, following a report from the Commission to the Council which was to have been submitted by 30 June 2006.
2. The Commission's report on the implementation of electronic identification of sheep and goats was published on 16 November 2007. Council Legal Service confirmed that if a decision was not taken before 1 January 2008, then EID would come into effect by default on that date.

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