

Ergot... The Black Sheep of the Prairies.

Could you imagine vaccinating one of your cows for foot rot, letting her out of the chute and her hoof completely falls off?!?! I would probably look at the expiration date on my vaccine bottle! For a neighbouring rancher, this was a reality, and the cause was ergot.

Good afternoon, Master Chairperson, Honorable Judges, Ladies and Gentlemen.

My mom and dad, and my two brothers and I ranch on the dry mixed grass prairie of Southeastern Alberta, 1 hour north of Montana. Together with my grandma and grandpa, we raise black angus cattle. We have a closed herd of about 650 cow/calf pairs. Marked here, with the red star, is where I live, and here at the blue star is where we are now.

Our dominant grasses are Blue Grama grass, Needle and Thread grass, June grass and Northern and Western Wheatgrass.

Here is a map of the Ecological Site Description of Central and Southeast Alberta. Our ranch is situated in the Dry Mixed Grass Region.

Each winter we get our seed cleaned that we will use for planting in the spring. We take the screenings home and feed them to our cattle. Unfortunately, last year, for the first time, our triticale screenings had ergot and we were unable to feed them. As a result, we had to buy more feed than originally planned.

Ergot is a plant disease caused by a fungus called *claviceps purpurea*. It infects the developing grains of cereals and grasses. Signs of ergot can be seen during kernel formation when ergot bodies are formed in place of kernels. As you can see here, the ergot bodies have a hard protective rind on the outside that is blackish in colour. They protrude from the tops of maturing seed heads.

Ergot is found in higher levels when wet, cold and humid weather occurs during the flowering stage of the developing plants. When these weather conditions exist, the flowering period continues longer than normal. The structures of the plants are then open longer, allowing for the infection to take hold.

This is an ergot body that has germinated to produce drumstick-shaped structures that will release spores. These spores become wind-borne and infect early flowering plants such as oats, wheat, barley, rye, rye grass and even native wheatgrasses.

Ergot not only affects crop quality and yields, but it also produces alkaloids, which are organic compounds containing nitrogen. These alkaloids can cause ergot poisoning in humans, cattle, swine and other mammals if they consume enough of the ergot bodies.

Although ergot does not discriminate between a healthy pasture and an unhealthy pasture, good range management is essential. One of the things we do for range management is field rotation. We always make sure there is plenty of old grass, or litter, left to catch the snow during the winter which gives extra moisture for a good start in the spring.

With regards to ergot, challenges arise in striving for a healthy rangeland. In a healthy pasture, cattle will have a large selection of grass to choose from. If there is any ergot in a pasture, cattle will choose the uninfected grasses over those that are infected, therefore limiting the availability of beneficial fodder.

Ergot is more of a problem when cattle are supplemented with pellets. Pellets are often made from grain screenings which have the highest risk of being contaminated with ergot.

The symptoms of ergot poisoning in livestock differ depending on the concentration of ergot in the feed and the amount they consume. The disease can cause tightening and narrowing of the blood vessels, which shut off the

blood supply to the feet, ears and tail. It may also cause cows to abort their calves and have decreased milk production.

Animals can recover from ergot poisoning if they are removed from the contaminated feed early enough before severe signs are present. However, at the onset of gangrene, there is little that can be done.

In the top picture, the cattle were fed large round bales of brome grass that was infected with ergot. In the bottom picture, this animal has already lost one hoof and as you can see, it will soon lose another.

The cattle prices in Alberta are at an all time high. For example, this past summer the average price for one open heifer was over \$1,700. Losing any number of cattle can be a devastating economic loss as well as a loss to high valued breeding stock. Having a closed herd, a loss to us would set back the building of our genetics.

With the onset of wetter and colder weather in more recent years, the conditions have been ideal for this fungus on the prairies.

Here is a chart showing the annual precipitation for the past six years for the southeast corner of Alberta where our ranch is located. The precipitation is measured in inches. The average is 12.7 inches, which is shown in red. 2009 and 2010 were above normal. Since 2011, our precipitation levels have increased annually.

Because of increased moisture and cooler temperatures, instead of seeing a case or two a year, researchers are now handling several calls a week about the fungus.

Ergot poisoning, depending on the severity, can cause great economic losses for farmers and ranchers. Knowing that wet and cold weather conditions increase the likelihood of ergot, we need to be more diligent in inspecting our cereals and grasses. Loss of marketable cattle or crop yields is not worth the risk.

In Southeastern Alberta, there has been a lot of oil and gas well activity. Ergot can potentially become a problem during the reclamation phase, which is when a company abandons a site and must return it to its original state.

Natural recovery is the process of leaving disturbed lands to revegetate on their own. On public land, located in the dry mixed grass prairie region, seeding is not the preferred method for linear disturbances. The preferred method is natural recovery, which is most effective with minimal disturbance construction practices in the dry mixed grass prairie region. Results are, of course, moisture dependant.

For example, on this pipeline, first, weeds come, such as Kochia and Russian thistle, which are called pioneer species, or as I like to call them, mother nature's scab species. With their deep roots, these weeds break up the soil and utilize the salts that are in the soil. Then, the neighbouring native grasses will eventually establish on the disturbed area, thus maintaining the ecological integrity.

On the private land portion of this pipeline, native wheatgrass cultivars are seeded and quickly established. Some native wheatgrass cultivars are known to be susceptible to ergot. Well sites and pipelines that are seeded with these cultivars will have an increased chance of compounding the problem of ergot.

As you can see, the seeded portion of the pipeline does not match the vegetation off the right of way.

Since the cultivars are not indigenous to the area, it does not maintain the ecological integrity. The cultivars can also introduce ergot to an area through the seed mix. Seeding the native wheatgrass cultivars is like putting on a band aid; it's a quick fix. You quickly have grass that can be grazed, but with the possibility of introducing ergot into native land, it's not worth the risk. There is less risk using natural recovery.

On private land, oil and gas companies are allowed to seed after they abandon a well site, but only with the land owner's permission. Once permission is given, the land owner can, and should, request Certified #1 seed that states

it is 100% ergot free. It is the land owner's responsibility to be knowledgeable of the oil and gas well reclamation policies AND what he or she, as a land owner, has the right to request.

Ergot is a parasitic fungus that was not well known on the prairies as recent as five years ago. Increased moisture and cooler temperatures have now brought it to the attention of the agricultural community. Farmers and ranchers need to be more educated in their operations in regards to funguses. With the growing activity of the gas and oil industry, producers should be conscientious of what potentially could be introduced into their land. The best defense against ergot is, first and foremost, being knowledgeable about the fungus and then frequently inspecting their rangeland. Ergot is definitely, the black sheep of the prairies.