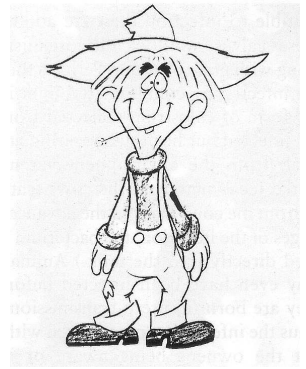


Rancher Rob

by Wendy Belcher

Rancher Rob and his cronies are fictitious characters (but the scenarios are real) created by the author.



The bulls are sold, the cows have calved, the crops are all planted and the rain has finally come. Taking advantage of the wet days, Rancher Rob takes a morning to go into town to the coffee shop and visit with his neighbours and friends. While there, he has a chat with Neighbour Neil who lives just across the fence line. Neighbour Neil informs Rancher Rob about the trouble he is having with *Johne's* and advised Rancher Rob to contact his veterinarian to develop some sort of strategy to keep the problem from his herd.

Neighbour Neil purchased a new herd bull a few years back at an annual bull sale, last summer during the drought, the bull became ill and tested positive for *Johne's*. As the bull had been running with the cows at that time, Neighbour Neil opted to sell his entire calf crop as feeder calves rather than run the risk of keeping a possible replacement calf which could have picked up the *Johne's* organism from fecal material in the pasture.

Neighbour Neil advised that he had also changed his calving pasture this spring to a previously un-grazed field and moved his cows and calves to a second virgin feeding area as soon as possible after calving. All of these efforts might now be in vane as a second animal (a cow this time), is showing signs of *Johne's*. The cow and her calf have been moved to a quarantine pen and the veterinarian is coming in the afternoon to run tests. As the disease has no cure, the cow will be put down and the calf, now a few months old, will be pail fed until the fall when it can be sold as a feeder calf.

Home again on this wet day, Rancher Rob starts his research on *Johne's*. *Johne's* (pronounced "Yoh-nees") disease is an infectious bacterial disease caused by *Mycobacterium avium subspecies paratuberculosis* (MAP). It is a chronic progressive disease affection the small intestine of ruminants. Named after a German veterinarian, Dr. Heinrich Albert Johne, this fatal gastrointestinal disease was first clearly described in a dairy cow in 1895. The disease is widely distributed throughout Canada and the world and causes substantial economic losses through death and loss of productivity during the prolonged preclinical stage.

There really are only two clinical signs of *Johne's* disease: rapid weight loss and diarrhea. In some animal species, like sheep and goats, diarrhea is less common. Despite continuing to eat well, they become emaciated and weak. Since the signs of *Johne's* disease are similar to those for several other diseases, laboratory tests are needed to confirm a diagnosis. If a case of *Johne's* disease occurs, it is very likely that other infected animals (who may still appear healthy) are in the herd.

Animals infected with the organism often show no signs of the disease until after two years of age, although it is believed that most animals are infected shortly after birth. *Johne's* is spread via feces and milk. It is believed that most infections occur during the first day of life of a calf and originate from the dam. However, cattle can contract *Johne's* up to about two years of age. Infected animals pass the *Johne's* organism through their feces. Calves commonly become infected through drinking contaminated milk or colostrum or through contact with dirty udders or other contaminated feed and water equipment.

Because *Johne's* disease develops slowly, an infected animal can remain in the herd for many years before clinical signs appear. These apparently healthy, but infected animals can infect other animals in the herd as they shed the *Johne's* organism in their feces.

The infection happens in the first few months of an animal's life but the outcome depends on both the ability of the host to mount a cell-mediated immune response and the dose of the initial infection. An animal may stay healthy for a long time and symptoms of disease may not show up for many months to years later. This infection is contagious, which means it can spread from one animal to another. *Johne's* is a hardy bacteria and while it cannot replicate outside of an infected animal, it is resistant to heat, cold and drying thus the *Johne's* organism can survive in the environment for at least a year.

It is not yet understood what causes a clinically normal animal that has been infected with *Johne's* for months or years to suddenly become sick from the infection. At some point the bacteria that have been lying quiet within cells of the last section of the small intestine (called the ileum) start to replicate and take over more and more of the tissue. The animal's immune system responds to all these organisms with what is called granulomatous inflammation. This inflammation thickens the intestinal wall, preventing it from functioning normally. This, among other factors, means the animal cannot absorb the nutrition it needs and thus begins to lose body condition, milk production drops off, and diarrhea may occur. In effect, an animal with *Johne's* disease is starving in spite of having a good appetite and eating well.

Johne's disease typically enters a herd when an infected, but healthy-looking, animal is purchased. This infected animal sheds the organism on to the premises – perhaps on to pasture or into water shared by its new herd mates. Young animals are far more susceptible to infection than are adults: these calves swallow the organism along with grass or water. Perhaps they are infected by contaminated milk in the form of colostrum collected from the infected but healthy-appearing animal, from the environment via infected fecal matter on the cows teats, or from the cows milk (in the advanced stages of the infection, the bacterium is shed directly into the milk.) Animals may even have been infected before they are born (in utero transmission). Thus the infection spreads, often without the owner's being aware of it, which is what happened to Neighbor Neil.

Rancher Rob believes in the old adage, "an ounce of prevention is worth a pound of cure." Disease prevention is always more cost-effective than control and treatment and this is even more true in the case of *Johne's* disease since it is not treatable. It is far less expensive to block introducing *Johne's* disease into a herd than it is to control or eradicate the infection once it creeps in and invisibly starts to spread. Risk management is the foundation of any good animal care program and the risk of becoming infected by bringing in infected animals is manageable.

The disease has remained a problem for so long because of the absence of a simple, accurate diagnostic test. However, new approaches are now available for testing that are cheaper and more reliable than ever before. There are many good testing strategies to choose from so Rancher Rob consulted with his veterinarian to select the best approach to ensure his operation remains free of *Johne's*.

Rancher Rob's *Johne's* Risk Management Program

1) Since Rancher Rob has also purchased bulls from the same producer as Neighbor Neil, the first step in his risk management plan is to test all of his breeding age animals and cull any positive reactors from his herd. Due

to the long incubation period of the *Johne's* organism, Rancher Rob will have to annually test his herd for several years. A test and cull approach is expensive and time consuming so Rancher Rob does not stop with this step.

2) To limit the risk of a carrier animal entering the herd, Rancher Rob would like to be able to only purchase from “*Johne's* Free Herds.” However, since there is no regulated testing program in place, Rancher Rob will have to rely on quarantine and testing of new animals entering his herd. Quarantine periods can be lengthy which will affect Rancher Rob’s purchasing and delivery plans. New animals should be tested for *Johne's* on arrival in quarantine and then again in six months and then annually with the rest of the herd.

3) Fence off all water sources and provide fresh drinking water to herds via watering stations.

4) Survey his property and create diversion systems, etc. to prevent manure from Neighbor Neil’s fields from contaminating any of Rancher Rob’s pastures.

5) Rancher Rob utilizes a bale grazing system to feed his cow herd over the winter months. To reduce the chances of manure contamination of hay Rancher Rob purchased several hay feed bunks for use in his calving and maternity fields. At the end of calving season, Rancher Rob harrowed the calving and maternity fields well and then plans to leave them un-grazed.

6) Calving and Manure Management Protocols

- Avoid manure build up in pastures and corrals.
- Clean calving areas and keep cow density low.
- Move new cow/calf pairs to clean pasture as soon as bonding occurs.
- Do not use forage crops that had fresh manure applied as fertilizer during the previous and current growing season as a feed source for young stock.
- Use separate equipment to handle manure and feed.
- Keep manure from mature animals separate from young stock.
- Prevent transporting bacteria to young stock by people, runoff and equipment.
- Transport cattle in clean trucks.
- Reduce infections by using a commercial colostrum supplement product which is manufactured using a method that destroys the *Johne's* (MAP) organism while retaining the beneficial antibodies needed to protect calf health.

By implementing these enhanced biosecurity measures, Rancher Rob and Neighbor Neil will prevent and control many other infectious cattle diseases such as *E.coli*, *scours*, *Salmonella*, *Clostridia* and *coccidiosis* as well as *Johne's*.

Resources

www.johnes.org

www.thebeefsite.com

www.albertabeef.org