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SB 2342 Attachment  
Dr. Jesse Vollmer  
February 5, 2009

Johne's disease is a bacterial disease of both wild and domestic ruminants. The disease causes chronic diarrhea and weight loss. There is no treatment for the disease and it is always fatal. There is a conditionally licensed vaccine that has many side effects, including interfering with tuberculosis testing. Johne's disease is caused by *Mycobacterium avium ss. Paratuberculosis* (MAP). The Mycobacterium are a notorious group of bacterium. They have been around for at least 6,000 years. One of the group caused a disease referred to in the Bible, leprosy. Another of the group was the cause for much grief early in the twentieth century; *Mycobacterium bovis* was at a level of five percent in our national cow herd and prompted the TB eradication program in 1917. The Mycobacterium are very difficult to deal with from a disease control standpoint. They are slow growing obligate intracellular pathogens, which mean they are hard to culture, since they live inside of the host's cell (hide from the immune system). They also live in the environment for a long period of time and have extremely long incubation periods.

The disease was quarantinable in the state of North Dakota until the mid-90's. From a practicing veterinarian's view point it was financially devastating for a client to have the disease diagnosed in their herd. All animals from the herd then had to be only sold for slaughter only. This law was thankfully changed in the middle of the last decade. However, the disease was infecting new herds yearly during this period. Also during this time period, both veterinarians and animal

scientists were telling producers to feed colostrum and lots of it to calves that were stressed at birth. The current thinking at the time was the best source of colostrum was the local dairy, so it was a common practice and now we are now left to clean up the disease that got a foothold in the state and still exists.

Exposure to the bacterium can take place in utero, at birth, or later in life. Exposure and consequent infection is easiest when the gut is open to be absorbing colostrum. After twenty four hours of life, infection is somewhat dose dependant (it takes more bacteria per animal to cause infection). We have found out in recent years with a high enough dose it is possible to infect adult animals. Because of the limitations of the tests we currently have and the nature of the organism causing disease, we are unable to tell if an animal is infected, shedding organisms, or will become clinical (have profuse diarrhea) until shortly before the animal becomes clinical. Once shedding of bacteria begins, it is intermittent, and can be very prolific. Animals shedding copious amounts of bacteria can look very normal and not have clinical diarrhea. Because there are normal soil borne *Mycobacterium species*, the serologic test is very limited in what it can tell us. The serologic test is good at telling us if there is a likely infection in the herd, it is very poor at telling us which animal in the herd is positive for the disease. In fact, in the federal program an animal is not considered infected unless it is by an antigen detecting test. The two antigen detecting tests being used are fecal culture and fecal PCR (polymerase chain reaction). Both are expensive and the culture test can take up to twelve weeks. Pooling by the lab is allowed on both of the antigen detecting test, which is helpful in defraying costs.