



# Johne's Disease – Beef

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## Johne's Disease Can Infect the Best of Herds

Each of us likes to believe that we have the management in place that will limit our herd's exposure to *Mycobacterium avium* ssp *paratuberculosis* (*MAP*), the bacteria that causes Johne's disease. But every now and then, each of us can slip up.

The following four cases illustrate how *MAP* was introduced into beef herds. Names of individuals and breeds have been changed to protect the innocent and to obscure the guilty.

### Case #1

Pete, a small Simmental seedstock breeder, buys a registered heifer from ABC Cattle Co. at a State Beef Expo. ABC Cattle Co. has an excellent reputation, and the price is reasonable at \$1,500. While the heifer is a little harder doing than some animals, she seems a good buy at just \$1,500.

The purchased heifer calves at two years of age and is nursing a bull calf that is growing well. The heifer, however, starts to loose condition. This is despite being fed supplemental grain, appearing bright and alert, has a voracious appetite, and seems to be always drinking water. The heifer then developed profuse diarrhea.

Based on a blood test, the veterinarian diagnoses Johne's disease. The female is culled, and the seller is notified.

ABC Cattle Co. offered to replace the heifer—and the seedstock business tested all their cows with the ELISA. Interestingly enough, none of the herd's registered Simmental cows test positive for *MAP*, but all of the herd's two-year-old registered Simmental test positive. (*Editor's Note: Typically, 50% to 60% would be a shockingly high number of test-positive two year olds.*) In addition, many of the herd's commercial cattle are found to be test-positive.

This may sound baffling until it's revealed that, two years prior, the registered herd was mixed with the commercial herd, introducing *MAP* to susceptible calves. Transmission most likely occurred from *MAP*-infected commercial cows to newly introduced registered calves and indirectly via the cattle's water source—the pond—which became contaminated with *MAP*-infected manure.

**The moral of the story: Do not introduce animals of unknown Johne's disease status to your herd.**



*An ET calf from a MAP-infected recipient cow is at high risk for developing Johne's disease.*

### Case #2

Fred, a seedstock producer with a small herd of registered Shorthorn cows, wants to make rapid genetic improvement. He is interested in using semen from one of the most popular bulls in the breed—a bull with calving ease, balanced EPDs, eye appeal and a National Championship. Unfortunately, semen isn't offered on the bull. Producers can only obtain the genetics by purchasing bred heifers from the bull owner who has the reputation for progressive marketing and excellent genetics.

Fred buys three bred heifers due to calve in four months and takes out a loan to cover the \$30,000 cost.

In the spring, the three heifers calve without difficulty.

One of the heifers, however, doesn't maintain condition. She develops profuse diarrhea and rapidly goes downhill. Fred's veterinarian diagnoses Johne's disease on clinical appearance and a blood test. The heifer is found dead two days later.

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One of the other heifers is positive on blood test and fecal. The third heifer is negative on the first test.

Fred contacts the seller. The seller tells Fred that the heifers must have gotten the bacteria at his place as the seller's farm has never had a problem with Johne's disease. As Fred asks more questions, he learns the seller doesn't know the herd's Johne's disease status as the herd hasn't been tested for Johne's disease. The seller offers no compensation or no replacements.

To recoup his losses, Fred sells all the calves, including those from the positive cows, as replacements at an Expo.

**The moral of the story: Beware of herds that say they don't have a Johne's disease problem and don't test. Beware of buying cattle from herds of unknown Johne's disease status. In the process of minimizing his own losses, Fred has now passed Johne's disease on to more herds—perpetuating the disease and damaging his reputation.**

## Case #3

Simon, an Angus breeder with 75 cows, has a reputation for his herd's excellent genetics and exceptional animals. He capitalizes on this reputation, selling cows, embryo recipients, show heifers and breeding bulls. He also buys superior animals to add to his herd.

At calving, close-up cows are kept in a cement lot that is scraped several times per week. The cement lot has minimal bedding and has several round bale feeders for hay. In the winter, scraping is more sporadic and cows often lay in manure. Yes, udders often become manure-covered.

While cows typically calve in separate pens, they sometimes calve early in the lot.

Cows spend most of the time in the lot and are moved into the calving area to nurse their calves. After several weeks, depending on the weather, cow/calf pairs are moved to another area where there is a straw-bedded barn for both cows and calves.

During one calving season, Simon notices that Beauty, one of his best embryo donors, is thin and has diarrhea. Exhibiting clinical signs of Johne's disease, Beauty is tested for Johne's disease, and tests positive.

Beauty's dam was purchased as a bred heifer, and Beauty was born on the farm. Her grandam was purchased sometime later as a bred cow.

Concerned about Beauty's offspring and the rest of his herd, Simon asks his veterinarian for a risk assessment and to test the herd.

The risk assessment reveals two primary risks: 1) the exposure of calves to manure from contaminated udders and calving area; and 2) Simon's purchase of animals from herds of unknown Johne's disease status.

Testing reveals that Beauty's dam and grandam are

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fecal culture test-negative. On the other hand, Beauty's first calf is test-positive. One ET calf born on the farm is test-positive, but two other ET offspring born elsewhere are test-negative.

**The moral of the story: Limit a calf's exposure to potential MAP-infected manure. Just a thimbleful of heavily infected manure can be enough to infect a calf!**

## Case #4

Amanda has a small herd of registered Limousin and was excited about purchasing frozen embryos that would inject superior genetics into her herd. Since all of her cows are bred, she approached her neighbor to use his dairy cows as recipients. The two reached an agreement, and a dozen embryos were placed in Holstein cows of unknown origin and unknown Johne's disease status.

Eight embryo calves are born.

After the recipient cows and ET calves had been together for a few days, Amanda takes the calves and raises them on her farm. She feeds milk replacer.

The ET heifers are show quality, and Amanda's children show them successfully. The heifers are kept as replacements.

Amanda's veterinarian suggests that she have a Johne's disease risk assessment performed on her farm since major risk factors for introducing Johne's disease into a herd include purchasing animals from unknown sources and using dairy cattle for recipients.

Testing reveals that one of the ET calves, that is now four years old, is high test-positive on the blood test. The dairy recipient is no longer in the herd and cannot be tested. The dairy herd does not test.

Amanda has unknowingly introduced MAP onto her farm.

**The moral of the story: Know the Johne's disease status of your recipient females. Never put embryos in cows of unknown status.**

*Editor's Note: Thank you to Dr. Lana Kaiser and Dr. Dan Grooms, Michigan State University, who provided information about these four cases.*

### Note from ND Johne's Coordinator:

These four cases are out of Michigan, where they are also dealing with another Mycobacterial disease, *Mycobacterium bovis*, which causes bovine TB. Managing your herd and implementing good purchasing/leasing practices goes a long way towards preventing the introduction of Johne's as well as other diseases. Good management practices will also minimize the impacts of disease within a herd, especially if your herd is affected with diseases that have fecal-oral transmission. There is an update on the vaccine project available in the summer 2012 Dairy newsletter available, on our website at:

<http://www.nd.gov/ndda/disease/johnes-disease>.