
Johne's Disease Risk Assessment

Your Dairy's Checklist

Do you...

- * Buy, rent or have bought replacement stock, including bulls?
- * Raise young stock (newborn up to bred heifers) in contact with adult cattle or run off from their manure?
- * Let calves nurse their dams for colostrums?
- * Freshen or calve-out cows in dirty maternity pens or pastures?
- * Graze young animals with or in rotation after adult cattle?
- Overcrowd your cattle pens or pastures?
- Spread manure on grazing pastures?
- * Feed hay on the ground?
- * Use the same equipment to clean alleys, pens, handle manure and to handle feed?
- * Have a barnyard run-off to or graze cattle in direct contact with common watering sources, e.g. ponds or streams?

If you answered "yes" to any of the above, your herd is at risk for.....**Johne's Disease**
Johne's cost the Georgia dairy industry
\$1,957,194 to \$3,914,388
each year.

What is Johne's Disease?

Johne's (pronounced "yo-knees") disease or Paratuberculosis is a chronic (many years) mycobacterial infection affecting the lower small intestine of ruminants. The disease is caused by the bacteria *Mycobacterium avium spp paratuberculosis*. Paratuberculosis has been found worldwide in cattle, sheep, goats, and many non-domestic ruminants such as farm-raised deer, elk, bison, and zoological wildlife. Does Johne's disease cause Crohn's disease in Humans? There is a perception that Johne's disease is a public health problem; however, scientific evidence to date is inconclusive.

What causes Johne's Disease?

M. avium spp paratuberculosis is a slow growing bacteria in the same category of mycobacteria as bovine and avian tuberculosis. In the laboratory, the organism may take up to 16 weeks to grow. The bacteria is very resistant in damp environmental conditions, **surviving up to 9 months in manure pits and anaerobic manure slurry, 11 months in soil and 17 months in water**. Exposure to direct sunlight, heat and specific disinfectants will kill the organism. As the bacteria slowly grow in the small intestine of the infected animal, the intestinal wall becomes thickened and unable to absorb nutrients. The organism has been cultured from the small intestine, regional lymph nodes, uterine and mammary tissues, colostrum, milk, meat and manure of infected animals.

What are the clinical signs?

Obvious clinical signs in cattle include weight loss (even with a normal appetite), diarrhea, and lowered milk production. The diarrhea may occur off and on, potentially becoming chronic. It is unresponsive to treatment. Eventual death will occur in weeks to months. Some animals will develop a low grade fever and edema (swelling) under the jaw. In other cattle, symptoms may be seen only as a general unthriftiness, less than expected milk production or increased susceptibility to problems such as infertility. Individual animals will be infected, but can appear normal up to 8-10 years of age.

When does clinical Johne's develop?

Typically clinical disease develops during the first or second lactation. Clinical disease has been seen in animals as young as 6 months and as old as 15 years. The age when an animal is first infected, the dose or amount of bacteria, some stress factors and genetics appear to be involved in determining when an animal becomes clinical. Again, subclinical animals just don't seem to do as well as expected.

How does it spread?

Infected calves, cows and bulls **can all shed the bacteria in their manure at any time**, but the risk increases as the animal becomes older or clinically sick. Primarily calves, but animals of all ages ingest the bacteria through feed or water contaminated with manure from infected animals. Feed troughs, hay bunks, water tanks, ponds, etc. can be contaminated directly from an infected animal or indirectly from equipment used to feed or spread manure. Newborns and young animals can ingest the organism located on manure laden teats or directly from colostrum or milk from infected cows. Calves can also become infected while in the uterus of a positive cow (natural dam or embryo transfer recipient).

Who is susceptible to infection?

Newborn calves or young animals are the most susceptible to infection. While animals develop some resistance with age, **individual animals of any age can be infected** if there are enough bacteria in the environment, feed or water. All breeds of cattle (dairy and beef) can be infected.

How many in a herd will be affected?

Infection rate depends on many management factors in a herd, but if left unchecked **will increase over time**. The number of clinical animals seen does not reflect the total number of infected animals in a herd. For every animal showing clinical signs, there may be 10-25 other animals of different ages that are very likely infected. One clinical case may be seen every few years, then all at once, 10% or more of the herd is showing advance clinical signs.

Economic Losses Attributed to Johne's in the Dairy Herd.

USDA estimates of the cost of Johne's disease in a herd with 10% of the cows showing signs is \$225.00 per cow in the herd.

A recent Georgia study found 10% of all Georgia dairy cattle infected with Johne's disease. Economic analysis of Georgia's Johne's problem revealed that ***Johne's cost the Georgia Dairy industry \$1,957,194 per year to \$3,914,388 per year.***

Premature culling of clinical or infected animals:

The overall cull rate in the infected herd is increased and results in retaining less productive animals which would have normally been culled from a non-infected herd.

Increased replacement Costs: "Low Johne's Clinical Herds" (<10% of cull cows showing clinical signs) require 1.3 additional replacements per 100 cows in the herd. Whereas "High Johne's Clinical Herds" (>10% of cull cows showing clinical signs) require 3 additional replacements per 100 cows in the herd. Herd replacement costs per cow in the herd are \$14 and \$31, respectively.

Decreased milk production in infected, but normal looking animals has been reported as high as 25% over a lactation.

Decreased weight and salvage value at slaughter:

The revenue from cull cow sales is less than Johne's negative herds. It is \$1.82 less per cull cow for the "Low Johne's Clinical Herds" and \$7.12 less for the "High Johne's Clinical Herds".

Loss of a market to sell replacement animals:

Selling infected animals puts the buyer at risk and can result in legal consequences for the seller.

Reduced feed efficiency: Requires additional feed to maintain infected animals.

Increased susceptibility to other diseases:

Johne's reduces the animal's resistance to other diseases and results in.....Increased Veterinary costs.

Prevention, Control and Elimination of Johne's Involves:

Prevention:

- * **The best way to avoid buying Johne's disease is to be as certain as possible that animals brought into the herd are not infected.**
- * If younger than 2 years of age, buy only from Johne's negative herds.
- * If 2 years of age and older, attempt to buy from Johne's negative herd or the animals must test negative prior to purchasing or adding to the herd then test each 6 months.
- * **Make sure the "Heifer Raiser" you are using DOES NOT jeopardize your Johne's prevention plan.**

If you have Johne's....Control and Eliminate It:

Prevent or reduce the rate of new infections. Identify and remove infected animals and develop a herd plan for the control and eventual elimination of the disease.

1. Reduce spread of Johne's by managing manure:

- * Calve in a clean environment
- * Promptly separate newborns from their mothers
- * Keep calves separate from adults for the first 6 months of life
- * Use different equipment for handling feed and manure
- * Avoid using manure contaminated water

2. Reduce spread by colostrums & milk management

- * Use only colostrums and milk from Johne's negative cows. Do not pool colostrum
- * Avoid natural nursing
- * Feed milk replacer instead of raw milk or
- * Pasteurize milk fed to calves

3. Identify and remove Johne's infected animals & their offspring to minimize disease spread

- * Permanently identify all cows and their daughters on the dairy
- * Remove or keep separate all test-positive animals.
- * Cull or keep separate offspring of infected mothers.

Participation in the Georgia Voluntary Johne's Control Program will you assist in controlling Johne's disease in your herd.

For information on the program contact;
Georgia Dept. of Agriculture or
GA Designated Johne's Coordinator
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JOHNE'S DISEASE

In Georgia Dairy Cattle

The Disease and Its Economic Impact to the Georgia Dairy Industry



Photograph by: Steve Collins, United States National University of Animal Health

Developed by the
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