



FACT SHEET

APRIL 2016

JOHNE'S DISEASE – MANAGEMENT FOR NEW ZEALAND BEEF CATTLE AND DAIRY REPLACEMENTS

Johne's disease (also known as paratuberculosis or JD) is caused by an infection in the gut of cattle and other ruminants with the bacteria *Mycobacterium avium paratuberculosis* (Johne's bacteria or MAP). The infection causes gradual thickening and inflammation of the intestinal wall which eventually prevents the absorption of nutrients. Clinical Johne's disease is characterised by ill-thrift, progressive weight loss and profuse diarrhoea. No cure is available and the condition is eventually fatal.



KEY AREA MANAGEMENT

The first case of Johne's disease in New Zealand was discovered over 100 years ago in a Taranaki Jersey cow

Since the Taranaki diagnosis in 1912, Johne's disease has been found in farmed ruminants throughout New Zealand. It is often diagnosed in dairy herds but is found only occasionally in beef cattle. While most dairy herds probably harbour some infected animals, a much lower percentage of beef herds (~30%) are infected. Clinical disease is responsible for significant animal health problems and production losses but is rare in beef herds in New Zealand.

Top control priority: Reduce exposure of calves and young stock to adult faecal matter.

Although we do not fully understand the science behind Johne's disease, it is clear that there are specific factors which increase the incidence and severity of clinical disease in a herd. Changing farming practices, such as increased and widespread discharge of effluent on pasture on dairy farms, may inadvertently lead to a build-up of Johne's bacteria in the environment and worsening levels of the disease. Once a threshold level of herd infection and shedding of Johne's bacteria is reached, the disease becomes difficult to manage and specific steps are necessary to bring it under control.

The impact of Johne's disease can be minimised

Many husbandry, hygiene and management practices recommended for the control of Johne's disease in other ruminants are difficult to implement in extensive New Zealand dry stock systems, so practical strategies for the management and control of disease for beef are limited. Johne's disease in beef cattle is best controlled by quick diagnosis, removal of suspected cases and preventing contact between young stock and high risk, infectious animals.

CONTROLLING JOHNE'S DISEASE

The eradication of Johne's disease from a herd is not feasible with today's technologies so control measures are aimed at reducing the likelihood of new infections. Get professional veterinary help to understand how best to work in your herd and keep a long term focus as it can take several years to see the benefit of disease control.

If you are seeking to control Johne's disease in dairy cattle, sheep or deer you should consult specific guides prepared for these species^{1,2,3} as different strategies are recommended for other ruminants.

While *Mycobacterium avium paratuberculosis* or MAP are the technically correct names for the bacteria, New Zealand farmers are more familiar with the term "Johne's" for the disease. For clarity we have used "Johne's bacterium" and "Johne's disease" in this fact sheet.

1. Dairy Cattle: <http://www.dairynz.co.nz/animal/health-conditions/johnes-disease/>
2. Deer: <http://www.johnes.org.nz/publications/>
3. Sheep: <http://beeflambnz.com/Documents/Farm/johne-sheep.pdf>

KEY JOHNE'S DISEASE FACTS

Johne's bacteria are mostly found in the faeces of infected and clinical animals but cows in advanced stages of the disease can transmit Johne's bacteria to their calf during pregnancy and via colostrum or milk. The major source of infection in a herd is those animals shedding bacteria in their faeces.

Calves and young stock

- Calves are most susceptible to infection and most at risk under 6 months of age, although older stock can also become infected.
- Repeatedly ingesting high doses of Johne's bacteria will speed up disease progression and increase the severity of Johne's disease.
- Tests do not identify infected calves very well.
- Shedding is rare in young stock.
- 10-40% of calves from cows with advanced infection or clinical Johne's disease are infected in the uterus.

Adults

- Adult cattle are the primary source of Johne's bacteria.
- Adult cattle begin to shed Johne's bacteria before clinical signs appear and will spread the infection while they still look healthy.
- If a clinical case of Johne's disease occurs it is very likely that other animals in the herd will be infected even though they may appear healthy.
- Clinical signs of Johne's disease often appear many years after initial infection.
- Stress often triggers clinical disease. For cows this often occurs at calving.
- Tests are good at identifying animals with advanced infection, especially high shedders of Johne's bacteria and early cases of clinical disease.
- In the advanced stages of disease animals may become "super-shedders", excreting huge numbers of bacteria (up to a million per gram) in their faeces.

Productivity and Breeding

- Johne's disease affects productivity
- The genetics of an animal can influence the outcome of disease. Some animals appear to be more susceptible than others; however there are no genetic based breeding tools available or in development for beef cattle in New Zealand.
- It is highly unlikely that Johne's bacteria can be transmitted by artificial insemination (AI) although small amounts of Johne's bacteria have been found in the semen of clinical bulls.
- Natural mating bulls are a potential source of Johne's bacteria via faecal shedding.

Vaccination

- A vaccine for Johne's disease in cattle does exist but is not registered for use in New Zealand as it can potentially interfere with tuberculosis (TB) testing.

Johne's bacteria

- Bacteria can survive for several months in effluent, water or on the pasture.
- Dark, damp and cool conditions promote survival of the bacteria.
- Johne's bacteria invade the intestinal wall and lymph nodes where they replicate and gradually cause more severe damage.
- There are multiple strains of Johne's bacteria and it could be that some strains cause more severe disease than others.

Other ruminant species

- Deer, sheep, goats and other ruminants are all susceptible to Johne's disease.
- There are two major strains of Johne's bacteria, a cattle type and a sheep type. Beef cattle can be infected with both strains.
- Grazing the same pastures as infected animals (either co-grazing or following on) may increase the risk of the disease being passed from one species to another
- Other non-ruminant animals and wildlife may be infected with Johne's disease but how this might affect ruminants is unclear. They are unlikely to present a significant Johne's risk to farmed livestock.

JOHNE'S DISEASE MANAGEMENT FOR BEEF CATTLE

AIMS: To remove or keep major sources of Johne's bacteria from the herd and reduce losses from clinical Johne's disease



Best Practice

- ✓ Testing any animals with signs of Johne's disease ASAP
- ✓ Culling all Johne's disease test-positive cattle ASAP
- ✓ Culling the most recent calves from clinical cases or high positive cows
- ✓ Purchasing only healthy and JD test negative stock
- ✓ Keeping all infected or suspect stock (including other species) away from calves and young stock and the pasture they graze on
- ✓ Maintaining good overall herd health



High risk behaviours to avoid

- ✗ Keeping animals with Johne's disease: there is no cure
- ✗ Rearing calves from Johne's diseased or test-positive cows
- ✗ Grazing young stock on pasture recently irrigated with effluent or access to effluent pond overflow
- ✗ Letting stock lose excessive weight or condition from poor nutrition.

MAKE A PLAN TO MANAGE JOHNE'S DISEASE

It is possible to reduce the level and impact of Johne's disease but eradication is not practical. It is good practice to work with a vet to investigate all cases of ill-thrift in the herd to ensure that diseases such as Johne's do not remain undetected while eroding productivity, and to prevent a build-up of the disease on farm. Ensure your herd health programme includes a plan to manage Johne's disease.

Recognise clinical signs of Johne's disease early

Clinical disease is the end stage of infection by Johne's bacteria and usually occurs in adults, around 3-4 years of age. Animals with clinical signs are highly likely to shed bacteria in their faeces. Signs include:

- Weight loss and poor body condition score despite a good appetite.
- Persistent diarrhoea which does not respond to treatment.
- Bottle jaw - fluid accumulating under the jaw due to protein loss.
- Muscle wasting and emaciation.

Test-and-cull to lower infection level and avoid clinical losses

Johne's disease tests are good at detecting cattle with advanced infection or clinical disease. Johne's disease in beef cattle is identified by either blood (ELISA) or faecal test (PCR).

During the early stages of infection, where animals shed the Johne's bacteria intermittently, the disease is difficult to detect. But as the infection progresses, test performance improves dramatically so that tests can identify up to 80-90% of high shedders before they develop clinical signs of Johne's disease.

Blood test all suspect and high-risk animals e.g. losing body condition, diarrhoea, drop in live weight, and cull all Johne's test positive cattle ASAP.

Rearing Dairy Replacements

As clinical Johne's disease is not normally seen in young cattle, the disease is unlikely to occur in finishing cattle, but it may be seen when rearing dairy replacements and breeding stock.

Beef cattle reared on non-dairy farms and on pasture not grazed by cows are at low risk of becoming infected with Johne's disease. Beef cattle born on sheep and beef farms are generally raised in extensive environments for the first 6 months of life, minimising their exposure to risk when they are at their most vulnerable to infection.

However, cattle born on dairy farms may be at higher risk of contracting the disease depending on management and rearing practices. High risk animals are:

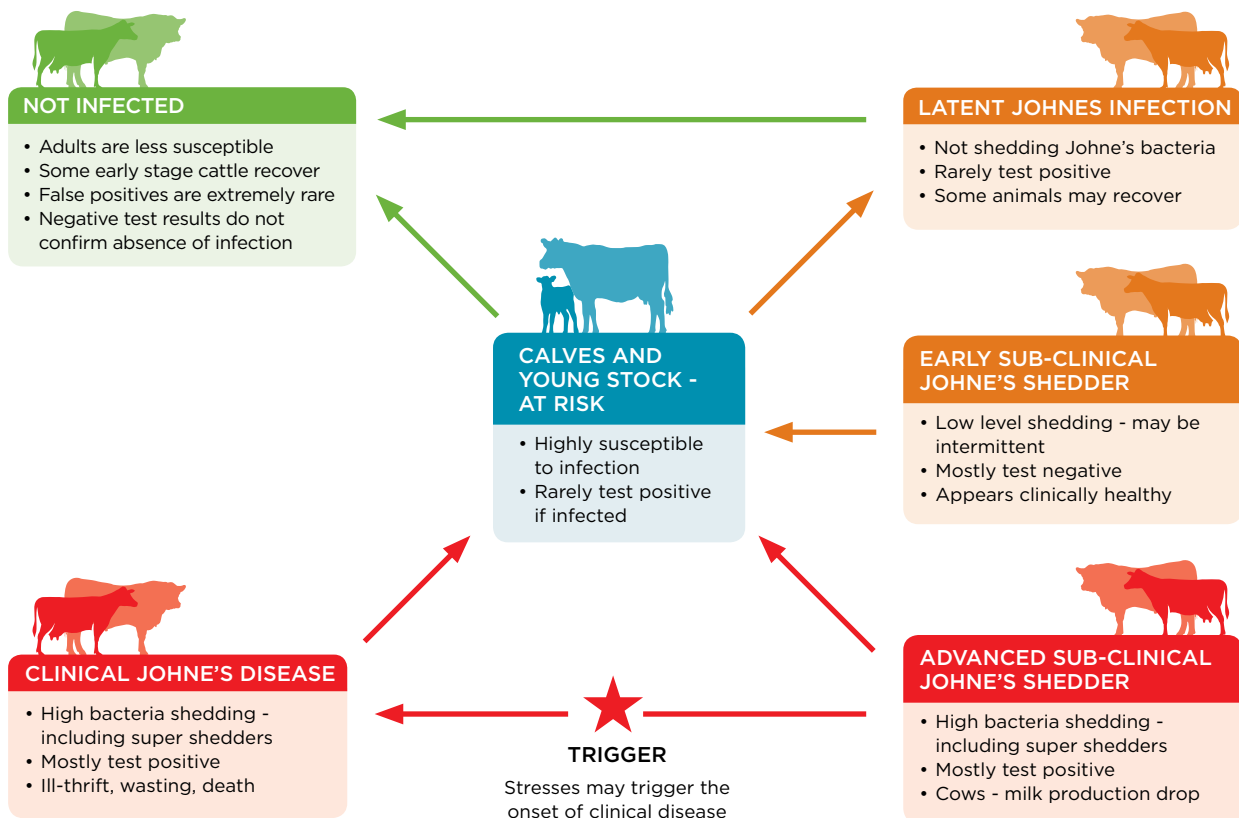
- Calves from infected dairy cows that may have been infected in-utero or by contact with their mother
- Calves grazed on the same pasture as infected dairy cows or pastures where contaminated effluent has been spread

Dairy Grazing

Grazing dairy cows or carry-over cows on beef and sheep farms can be a high risk practice, as these cows may potentially be shedding Johne's bacteria if they are infected. To minimise the risk of JD being contracted from cattle brought in from dairy farms, where possible to do so, it is recommended that cattle are tested or a reliable history gathered for the animals prior to entry. Animals that are obviously scouring or of low body condition score are very high risk and should be avoided.

! Cattle with clinical Johne's disease are sick and therefore not fit for human consumption!

THE JOHNE'S DISEASE LIFECYCLE IN A HERD



Beef + Lamb New Zealand would like to thank and acknowledge Johne's Disease Research Consortium for their assistance with this fact sheet.

For further information freephone Beef + Lamb New Zealand on 0800 BEEFLAMB (0800 233 352), email enquiries@beeflambnz.com or visit www.beeflambnz.com.



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