



# Farmnote

## Johne's disease in cattle

*By Peter Morcombe, Senior Veterinary Officer*

Johne's disease is a chronic, intestinal disease of ruminants caused by *Mycobacterium paratuberculosis*. Infection causes thickening of the intestinal wall affecting absorption of nutrients and water.

The bovine strain of the bacteria usually infects cattle, goats, deer, alpaca and llama. An ovine strain of the same bacteria usually causes Johne's disease in sheep and goats. There have been a few cases of crossover of strain infection between species.

Johne's disease causes serious economic losses from increased deaths of older cattle (up to 5 per cent per year), reduced productive capacity during the long pre-clinical stage of the disease and from reduced trading opportunities.

Johne's disease has a long incubation period. Because of the slow course of the disease, clinical cases occur sporadically.

Johne's disease is difficult to control because diagnostic tests in pre-clinical animals are not highly sensitive.

The National Johne's Disease Market Assurance Program (Cattle MAP) provides herd certification following testing of a large sample of the herd and assessment of the standards of management of the property. Assessed herds are a source of low risk animals.

### **Distribution**

Johne's disease has been in south-eastern Australia for over 70 years. As at March 1999, there were 1774 infected herds in Victoria; 171 in New South Wales; 36 in Tasmania; and 30 in South Australia.

Currently, Johne's disease is not known to be present in cattle in Western Australia, Queensland or the Northern Territory and the small number of infected herds in north-western New South Wales are under quarantine.

Johne's disease is more prevalent where cattle are grazed under

intensive conditions – as in dairy herds. The disease is also present, but usually at much lower prevalence, in beef herds.

Once Johne's disease is introduced into a herd, and if no control measures are applied, then after a period of 20 years, more than 50 per cent of the herd may have become infected.

### **Signs of the disease**

Clinical signs of Johne's disease are seldom seen in animals less than two years old. Most clinical cases occur between two and six years of age in cattle.

The onset of Johne's disease is usually gradual. In cattle the main feature of the disease is persistent diarrhoea (scour) that leads to a gradual loss of body condition and drop in milk production. The coat becomes rough and hair color may fade.

The faeces of animals affected by Johne's disease have a characteristic green watery appearance resembling pea soup. The faeces do not contain blood or mucus or have an offensive smell.

The appetite of affected cattle remains normal although thirst may be excessive. There is no fever.

In some cases, the onset of disease is associated with stressful events such as calving, lactation, or malnutrition. Once signs of Johne's disease become evident, it progresses to severe emaciation, dehydration, weakness and collapse. The course of the clinical disease may run a few weeks to several months before the animal dies.

Cows in the early stage of Johne's disease are prone to mastitis and problems of infertility.

### **Spread of the disease**

Johne's disease is nearly always brought into a clean herd by the introduction of an infected animal which itself is showing no signs of disease.

Large numbers of bacteria are passed in the faeces of infected animals before there is any sign of disease. The infection is usually transmitted by ingestion of faeces, pasture or water contaminated by an infected animal. While the bacteria can survive in faeces, soil or water for up to 12 months they do not survive long under hot, dry conditions.

Young animals up to 12 months of age, but particularly those in

the first few months of life, are susceptible to infection.

## **Diagnosis**

Available tests for Johne's disease in cattle are the Enzyme-Linked Immuno-Sorbent Assay (ELISA) for antibodies in blood, the culture of faeces and tissues for *M. paratuberculosis* on BACTEC media with Polymerase Chain Reaction (PCR) identification of DNA material (which takes eight weeks for a negative result) or histological examination of tissues from the intestine at the ileo-caecal junction.

The blood test identifies approximately 40–50 per cent of cattle over two years of age. When used on a large sample of animals it will identify infected herds with a high degree of confidence. There will be a small number of animals with a 'false' positive reaction to the blood test. Further testing by culture of faeces or post-mortem will be necessary to resolve the suspicion associated with these reactions.

## **Economic impact**

In an average dairy herd the disease costs the farmer about \$4000–\$5000 a year through reduced milk production, poor conception rates and restriction on movement of stock. In beef herds this loss is about \$1000–\$2000 per year. In stud herds this loss is about \$35,000–\$40,000 per year.

The economic effect of Johne's disease gets progressively more severe over time as the prevalence of infection increases and individual animals start to show clinical signs.

## **Treatment**

There is no effective treatment for Johne's disease.

## **Control**

The insidious nature of the infection, the long incubation period and the slow development of the intestinal damage make Johne's disease one of the more difficult diseases to detect and control.

Johne's disease spreads slowly so it may be many years before a herd is recognised as being infected. This is especially so with herds with good management and hygiene.

Surveillance and investigation of suspected infected herds and of traces to, and from, infected herds is identifying where the disease is occurring.

The rate of spread of Johne's disease in cattle is slowing because of control programs based on zones. Zones reflect the prevalence of infected herds, the level of surveillance and restrictions on movement off infected and suspect properties and between zones.

Western Australia is a Free Zone; the Northern Territory, Queensland and north-western New South Wales is in the Protected Zone. The rest of New South Wales, Victoria and South Australia are in the Control Zone and Tasmania is in a Residual Zone.

## **Eradication**

Western Australia is currently free from Johne's disease.

Johne's disease has been diagnosed in cattle on six occasions in Western Australia since first detected in 1952. In each case, the infected animals had been imported into the State. Strict quarantine measures were applied to the infected property and susceptible animals ordered to be slaughtered or returned to the source property. Compensation was available for animals destroyed. The infected land was spelled for 15 months, including two summer periods.

## **Movement restrictions**

There are movement restrictions on livestock entering Western Australia to prevent the introduction of Johne's disease. From 16 August 1999, the conditions of movement are:

- Only cattle from herds with status of, or equivalence to, Monitored Negative one (MN1) status, or higher in the National Johne's Disease Market Assurance Program (Cattle MAP) are permitted to enter Western Australia.
- Cattle with a status of, or equivalence to, MN1 require a movement test (ELISA) within 30 days prior to movement unless from Queensland or the Northern Territory.

## **The Market Assurance Program (MAP)**

The Cattle MAP provides herd certification based on an assessment of the property history, herd management and results of regular herd blood testing. Approved veterinarians perform the testing and certification.

There are about 800 herds in the Cattle MAP. Animals from herds with Monitored Negative (MN1, MN2 or MN3) status

have a very low risk of carrying Johne's disease. They are a source of cattle for breeding or re-stocking.

**See also:**

- Farmnote 12/99 ['Johne's disease in sheep'](#)



**Prime Notes  
Index**



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