

Control options for Johne's-infected beef herds

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Introduction

Bovine Johne's disease has a long incubation period, and it may be several years after infection before exposed animals show any signs of disease. Because of this, the disease spreads very slowly within a herd, and its presence may not be recognised until a number of years after the infection was introduced.

Even after initial detection, owners may believe that BJD is not a major problem, as only one or two older animals appear to be affected at any one time. However, it must be appreciated that as the level of infection builds up in the herd, more and more animals will become infected. Once a herd becomes heavily infected, production losses will escalate.

Owners of heavily infected herds should consider their long-term prospects within the industry before embarking on an all-out eradication program. Control of the disease will certainly minimise production losses, but complete eradication will take a long time (sometimes up to 10 years), involve considerable trouble and expense (unless a more rapid destocking/separation approach is adopted), and there is no 100% guarantee of success.

The 'Do nothing' option

Currently, the main restriction on infected herds is that cattle from such herds cannot be sold for restocking. Commercial beef producers who sell for slaughter, or owners of commercial dairy herds whose major source of income is from milk, may therefore not see any need to take further action.

However, if nothing is done to control the spread within infected herds, there are likely to be ever increasing losses from the following effects:

- a 15% drop in annual milk yield which commences in the lactation before a cow becomes 'clinical';
- losses from death, or culling of clinical cases;
- increasing susceptibility to other diseases;
- affected animals eat more (because reduced absorption of nutrients makes them hungry) while losing weight, thus wasting feed;
- loss of access to the store market.

In lower rainfall areas with high average summer temperatures, the spread of BJD is likely to be much slower than in more temperate areas with good rainfall. Some producers in this situation may feel that the 'do nothing' option is quite acceptable. However, they should remember that an infected herd will remain in quarantine, which is likely to adversely affect land value, if they wish to sell the farm.

If infection is detected in a drier area, it is likely to be easier to eradicate, or at least keep at a very low level, if actively managed.

Even in a heavily infected herd where it appears too difficult to eradicate the disease, it is highly desirable to develop a management plan to reduce the rate of spread and prevalence of the disease.

Detect/remove all infected animals

The first stage of control is to cull all cattle with clinical signs of the disease. These animals excrete enormous numbers of bacteria into the environment and can directly infect other animals. Property owners should then start a regular test program, and, as soon as practicable, cull any animals that react to a test. Owners should then remove all animals that are



at a high risk of being infected — without waiting for a test reaction or for clinical signs to occur. This will almost certainly lead to the culling of some animals that are not infected, but will speed up the process of elimination of infected animals, often by many years.

These high-risk animals include:

- dams or progeny of confirmed cases;
- calves that have maternal siblings which are confirmed cases (i.e. confirmed cases in calves from the same dam);
- animals that have been reared with confirmed cases and were probably exposed to the same infected animals or the same infected ground in the first 12 months of life.

In some herds with long-term infection or no individual identification, all animals are probably 'high risk'!

Problems with control/eradication

There are two major problems with the control of bovine Johne's disease. The first is that the tests that are currently available usually do not detect animals still in the incubation phase of the disease, which may last several years. This means that repeated testing is required to detect infected animals, which usually only give a positive reaction after they actually start shedding Johne's bacteria. By this time, they have already added to the contamination load of their environment. This is why high risk animals as outlined above are usually culled even if they test negative.

The other major problem is that the bacteria that cause the disease can survive for long periods outside an animal. In some areas of a farm environment, BJD will survive for up to 12 months even after all infected animals have been detected and removed. Therefore even total de-stocking will not result in the immediate removal of quarantine. The usual requirement is that the contaminated paddock remain de-stocked for a minimum of 12 months or, preferably, two summers, so that hot dry conditions will kill the remaining bacteria.

Principles of control/eradication

The following points need to be understood if eradication is to be successful:

- Calves under 30 days are most susceptible.
- Young cattle can still pick up the disease until about 12 months old. Virtually all infected animals were infected before they were 12 months old, but may not show disease until years later.

- Older cattle are resistant to infection, so can be grazed on potentially contaminated pasture.
- Current tests do not pick up all cattle in the early stages of disease (before they are showing clinical signs) so some cattle that initially test negative can develop disease later in life.
- Infected cattle under 2 years rarely shed the bacteria, so usually do not spread the disease.
- Spread is mainly by faecal contamination of any material consumed by cattle.
- Johne's bacteria can survive for long periods outside the animal while moisture is present.
- Johne's bacteria outside the animal will die out in hot dry conditions.

Control of spread within a herd

With the above points in mind:

- Calves that will be sold to slaughter by 2 years of age (i.e. most steers) can be run with potentially infected animals on potentially contaminated ground, as even if infected they will not express the disease and further contaminate the ground prior to slaughter.
- Calves *to be kept as breeders* are the greatest potential problem. In dairy herds they can be reared separately. (See *Rearing calves to minimise the risk of BJD.*) 'Snatching' a beef calf from the cow at birth could perhaps be considered for stud cattle of high genetic merit. However, embryo transfer programs would probably be a more likely option to salvage genetic material if a stud was found to be infected. Some calves born to infected cows are infected prior to birth.
- Calve cows in clean paddocks with good grass cover.
- Keep feed and water troughs free of visible manure. Ensure water source is not contaminated with manure.
- Only allow slaughter stock access to high risk areas such as swamps, springs and mudholes.
- In beef herds, ways of reducing spread within the herd are limited. In some large herds it may be possible to run the young cows separately, and only keep heifers from the younger sub-group. The paddocks used for the two groups would need to be for their use only, and the low risk paddocks must not receive any drainage from the high risk paddocks. If separate yards are not an option, the low risk group should always use the yards first, during dry weather if at all possible. The separation should be

maintained as long as possible, preferably for at least 12 months.

- A simpler alternative is to sell all breeders and trade in steers for at least 12 months, preferably two summers, or until there is a long dry spell.

Eradication and the 'end-point'

Owners should develop a control program based on the above principles, which would include combinations of the following:

- **Calf management.** Remove calves from all sources of infection within 12 hours of birth. This may be very difficult to achieve in beef herds.
- **(Partial) Depopulation.** All livestock or only susceptible animals are sold for slaughter. Destocking requires a minimum period of 12 months or, preferably, two summers. It may be possible to trade adult cattle (such as yearling steers) on a short-term rotation during this time.
- **Salvage of genetic material.** This can be achieved via artificial breeding. Both semen and embryos are considered to be a minimal risk for spreading infection. Clean recipients and a clean property are needed for this approach.
- **Blood testing and culling.** This should only be used in combination with other measures as it is unlikely to succeed on its own (certainly within any reasonable time frame).

Herds that have eradicated Johne's disease can request classification as 'non-assessed' (the same status as all other herds where there is no information as to whether the herd is infected or not). Possibly, a better alternative would be for the owner to enrol in the Market Assurance Program and have the eradication recognised with a 'monitored negative' status.

The accepted requirement for a previously infected herd to be reclassified as 'non-assessed' includes three whole-herd negative blood tests at 2-year intervals (in practice, this will generally be five tests at 12-month intervals).

A reduced testing requirement may be approved when coupled with partial depopulation of all high-risk animals.

Approval of management plans

The Chief Veterinary Officer must approve all Property Disease Management Plans (PDMPs). He is assisted by a technical panel in judging the feasibility and likelihood of success of each

individual plan. Because of the wide range of cattle enterprises, each affected producer and their veterinarian should develop a specific program for their particular property and submit the proposed program before moving too far down the track. NSW Department of Primary Industries (DPI) livestock officers may also be able to assist. Wide consultation on the proposed strategy will increase the likelihood of success in eradicating BJD, but is not a guarantee.

Summary

- Owners of infected herds face a difficult situation which, in most cases, is not of their making.
- The cattle industry does not want infected herds spreading Johne's disease to clean herds and clean areas.
- Eradication of Johne's disease is costly and time-consuming, especially from properties where the disease has been present for some time.
- Options should be discussed thoroughly with advisers. It may not be cost-effective for some commercial enterprises to do anything other than minimal control in the short term.

For more information, contact your local Rural Lands Protection Board, NSW DPI office, private veterinarian, NSW BJD Coordinator Sally Spence on (02) 6391 3630, or the author on (02) 6741 8363.

Acknowledgment

This Primefact is based on an Agnote by Tim Jessep, former BJD Coordinator at Goulburn.

The assistance of Rural Lands Protection Board veterinarians Dan Salmon and Keith Hart is appreciated.

Published by NSW Department of Primary Industries
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ISSN 1832-6668

JOB NUMBER 5981

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