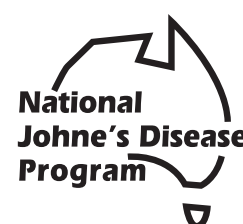


Source: R. Gordon

UNDERSTANDING BOVINE JOHNE'S DISEASE IN BEEF HERDS



WHAT IS BJD?

Bovine Johne's disease (BJD) is an incurable infection of cattle, which causes wasting and chronic diarrhoea. It results in lost production and can end in the animal's death.



There are two recognised strains of Johne's disease in Australia, cattle strain and sheep strain (ovine Johne's disease, or OJD). BJD is the more common infection in cattle but there have been examples of cattle being infected with OJD, probably as a result of co-grazing with OJD infected sheep.

BJD is caused by a bacterium (*Mycobacterium paratuberculosis*) that lives mainly in the intestines of infected animals. It causes the intestinal wall to thicken and reduces the normal absorption of nutrients from grazing, so the animal can eventually starve to death.

ABOUT THE DISEASE

The micro-organisms causing BJD are tough and can live for a long time in the environment.

Recent research in southern Australia shows that heat and sunlight destroy BJD and that under normal summer conditions in paddocks and waterways around 90% of the bacteria die within six weeks. However, in the right conditions – moist, shaded areas – the BJD bacteria can survive for longer than 12 months.

Clinical cases of BJD occur occasionally in infected herds, if left uncontrolled the rate of infection can increase. BJD can cause significant mortality and reduced productivity, particularly in intensive management systems. It is recommended to take the necessary steps to eliminate BJD from infected beef herds to ensure the welfare of the herd, maintain optimum productivity and maximise marketing opportunities.

WHAT ARE THE SIGNS OF BJD?

While most cattle are infected as calves and they may not show any symptoms of BJD for many years, they are still likely to excrete the bacteria before developing clinical signs. And though the numbers of infected cattle in a herd may start out low, the rate of infection can increase significantly if BJD is not controlled. Visibly sick and dying animals can cause animal welfare issues and reduce production.

The most common signs are chronic diarrhoea (scouring), wasting and eventual death.

However not all infected cattle show these signs. Some animals just fail to reach their full productive potential. BJD occurs in more dairy herds than beef herds. The number of beef herds known to be infected with BJD in Australia is very low, with the disease occurring more frequently in the southern states. While northern Australia is relatively free of the disease and therefore deemed a Protected Zone, only Western Australia is considered a BJD Free Zone.

www.bjdaware.com.au

Animal Health Australia

Email: johnes@animalhealthaustralia.com.au

Phone: 02 6232 5522 Fax: 02 6232 5511

www.animalhealthaustralia.com.au

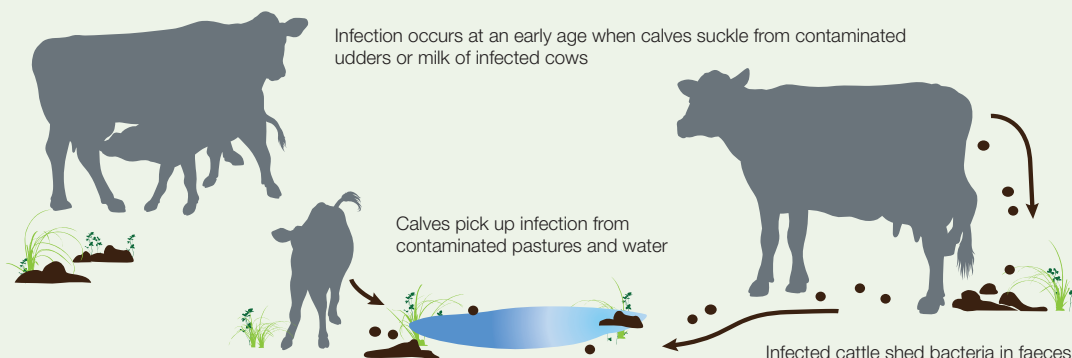


HOW IS BJD SPREAD?

Animals usually become infected at a very early age and pick up the infection as they eat or drink from contaminated pastures, water and udders, or from contaminated milk of infected cows.

In situations where there is a high pasture contamination level older animals may become infected. Some infected animals are capable of shedding billions of organisms in their faeces on a daily basis.

BJD TRANSMISSION



WHY PREVENT BJD IN BEEF HERDS?

If BJD is introduced into a beef herd the impact on a business can be severe, particularly for producers selling breeding animals. The reputation of seed-stock producers can be damaged if animals that have been sold to clients are subsequently found to be infected.

Once established in a herd BJD is difficult to eradicate, so prevention through biosecurity practices is a sound investment. BJD enters a herd through the introduction of infected animals either by purchasing or agisting infected stock.

Australia's low prevalence of BJD in beef herds is recognised internationally. Since large parts of Australia and the majority of beef herds are free of BJD, it is worth investing in a program that continues to protect this desirable animal-health status and reduces the risk of disease spread.

Taking no action to control and maintain the level of infection in Australian beef herds at very low levels has the potential to undermine Australia's reputation as a supplier of premium beef products on world markets.



Source: Prof. R. Whittington

There is considerable scientific discussion internationally about the possible link between Johne's disease in cattle and Crohn's disease in people. Though the evidence to date does not support the theory that Johne's disease in grazing animals is related to Crohn's disease in people, it is prudent to manage Johne's disease as a precautionary measure.

Several of Australia's major markets and competitor countries require certification for BJD status and are implementing BJD control programs, so infected herds could be excluded from particular markets that require certification of absence of disease.

More information is available at

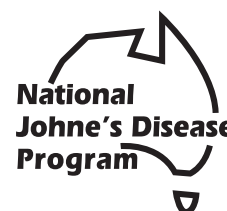
<http://www.daff.gov.au/aqis/export/live-animals>



Source: Prof. R. Whittington

AVOIDING BJD IN BEEF HERDS

What can you do to protect your beef herd against BJD? BJD infection is uncommon in the national beef herd compared with the dairy sector and there are some basic steps you can take to protect your herd.



- Set up a biosecurity plan for your property that identifies the most likely sources of disease risk, for example dairy cross animals, and develop strategies to minimise the risk of disease coming onto your property.
- Since the most likely source of infection for beef herds are infected cattle brought onto a property, it is strongly recommended that you only buy, sell or agist high assurance cattle such as CattleMAP or *Beef Only* animals accompanied by a National Cattle Health Statement.
- Avoid the introduction (including agistment) of dairy-cross or dairy cattle unless they have been Check Tested or come from CattleMAP herds. It is strongly recommended to seek additional assurance through a National Cattle Health Statement from the vendor.
- Only use livestock agents who understand and comply with the National Cattle Health Statement.
- Pay particular attention to the selection of embryo recipients to ensure these animals have been sourced from high-assurance herds such as CattleMAP, *Beef Only* or Dairy Assurance Score 7 or higher.
- Avoid agisting dairy or dairy-cross cattle. If planning to agist, ensure these cattle are young and leave the property before they are 2 years of age (there is a high risk of shedding from infected animals beyond this age). Although dairy calves younger than 2 years of age are considered a low risk for shedding disease, this is still possible. Consider whether this is compatible with your own business model or biosecurity plan.
- Assure your herd's resistance to disease through good nutrition and parasite control. Pay particular attention to animals that are failing to grow or fatten.
- Quarantine and investigate any suspect animals and report anything suspicious to your local vet for investigation.

www.bjdaware.com.au

Animal Health Australia

Email: johnes@animalhealthaustralia.com.au

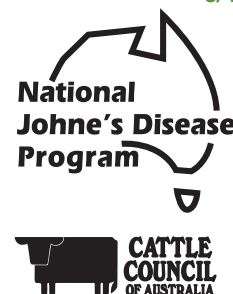
Phone: 02 6232 5522 Fax: 02 6232 5511

www.animalhealthaustralia.com.au





Source: Animal Health Australia



TESTING FOR BJD IN BEEF HERDS

A variety of tests are available for bovine Johne's disease (BJD), including tests on blood, faeces and tissues. Most of these tests have very poor sensitivity (ability to correctly identify infected animals) in young animals or early in the onset of the disease.

False positive results can also occur in the blood test and are more common in northern Australia due to cross-reactions with other bacteria which the cattle may have picked up from their environment.

Because of this, tests are often used in combination, for example with initial screening by a blood test, followed by faecal culture, PCR or post mortem tissue test on reactor animals.

The sensitivity of these tests increases as the disease progresses, even before signs of disease are noticeable.

TEST	USE	ADVANTAGES	DISADVANTAGES
Blood test (ELISA) – tests for disease antibodies	For screening animals over two years old for CattleMAP or testing for export or for clinical cases	<ul style="list-style-type: none"> • Rapid result, relatively cheap. • A useful herd test, but not reliable as an individual animal test. 	<ul style="list-style-type: none"> • Low sensitivity* for individual animals. • The ELISA can fail to detect infection when it is present. • Using ELISA testing of a herd offers moderate sensitivity. • Imperfect specificity* results in false positive reactors, requiring further investigation. This is especially common in northern Australia
Faecal culture – tests for presence of bacteria in the faeces	To confirm infection in suspect* animals	<ul style="list-style-type: none"> • Highly specific. Better sensitivity than blood test. Can be used as a pooled test, with up to five animals per test to reduce cost and increase throughput. 	<ul style="list-style-type: none"> • Takes three months to get a result. • Relatively expensive compared to ELISA
Faecal PCR – tests for DNA of the bacteria in the faeces	Details of how PCR will be used are still to be confirmed, but likely to be similar to faecal culture	<ul style="list-style-type: none"> • Highly specific. Better sensitivity than blood test. • Rapid result (under one week). • Can be used as a pooled test, with up to five animals per test to reduce cost and increase throughput. 	<ul style="list-style-type: none"> • Expensive compared to ELISA (similar to faecal culture). • Requires follow-up with other tests to confirm infection in herds not previously confirmed or suspect.
Histology (microscopic examination of tissue samples from the gut of suspect animals)	Used for confirmation of infection in suspect animals	<ul style="list-style-type: none"> • High specificity and moderate sensitivity. 	<ul style="list-style-type: none"> • Requires slaughter of the animal and immediate collection of samples either in abattoir or on farm.
Tissue culture (culture of tissue samples from the gut of suspect animals)	Used for confirmation of infection in suspect animals	<ul style="list-style-type: none"> • High specificity and sensitivity. 	<ul style="list-style-type: none"> • Requires slaughter of the animal and immediate collection of samples either in abattoir or on farm.

* Sensitivity is the ability to give a positive result in an infected animal.

* Specificity is the ability to give a negative result in an animal that is not infected.

* Suspect animals are those with clinical signs of BJD or those which have returned a positive blood test (ELISA).

www.bjdaware.com.au

Animal Health Australia

Email: johnes@animalhealthaustralia.com.au

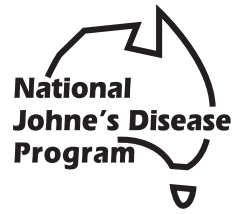
Phone: 02 6232 5522 Fax: 02 6232 5511

www.animalhealthaustralia.com.au



MANAGING AN INFECTED BEEF HERD

BJD is difficult, but not impossible, to eradicate from infected properties. If BJD is confirmed in your herd you should talk to your MAP-approved veterinary advisor and seek their advice to develop a control plan to suit your particular circumstances. Industry funded BJD counsellors are also available to assist beef producers to return to unrestricted trading.



Source: Department of Primary Industries Elizabeth Macarthur Agricultural Institute

- You may consider an initial herd test in order to determine high-risk groups and find out how far the disease may have spread in the herd, and to discover other infected cattle.
- Use targeted and/or pooled sampling to screen for high or low risk groups.
- Identify, segregate and remove high-risk animals, including:
 - recent progeny of visibly infected cows
 - siblings of visibly infected cattle
 - companion animals of the same age and grazed together with visibly infected cattle
 - animals that, as calves, were in contact with visibly infected cattle or their effluent
- Isolate and cull promptly any animals showing visible signs of BJD. Such animals should not enter the food chain.
- Prioritise high-risk animals for culling.
- Fence off low areas or creeks where water may be contaminated or where the bacteria are likely to survive for longer periods.
- Reduce pasture contamination by:
 - spelling potentially infected paddocks from grazing for extended periods. (The current recommendation for decontamination as part of an eradication plan is 12 months)
 - rotating paddock use with cropping
 - re-sowing pasture
 - grazing with adult sheep where the risk of OJD is low
 - grazing with non-breeding cattle and selling them straight to slaughter before they reach two years of age
- Avoid feeding on ground – substitute with troughs or automatic feeders.

In some cases, where the disease is not well established at the time of detection, an aggressive program of culling high-risk animals can be sufficient to eradicate the disease.

Always ask for a National Cattle Health Statement when buying or agisting cattle.

www.bjdaware.com.au

Animal Health Australia

Email: johnes@animalhealthaustralia.com.au

Phone: 02 6232 5522 Fax: 02 6232 5511

www.animalhealthaustralia.com.au

