Key information for affected producers

Bovine Johne's disease response

Introduction

Queensland has a very low prevalence of bovine Johne's disease (BJD) and holds a favourable Protected Zone status. Maintenance of this status provides Queensland with greater market access than other areas of Australia that do not have protected status.

Properties in Queensland that have received cattle from a BJD infected property have been initially placed under movement restrictions (through a quarantine notice) pending further investigation.

It is most likely that for the majority of properties currently under movement restrictions, BJD infection will not have spread into the herd, given that in beef herds, bulls are less likely to spread infection than cows.

Where possible, the status of the received cattle is being determined as quickly as possible so that movement restrictions can be lifted. However this may take some time on some properties, particularly where the suspect animals cannot be located, for example on extensively run properties or where suspect animals are no longer available.

In other cases, the introduced animals may be highly valuable.

Any property where BJD is found will require a detailed, individual assessment in liaison with animal health professionals.

It is imperative that the response to BJD is as flexible as possible to accommodate individual circumstances. This is being approached in two broad ways:

1. Assessing disease status through appropriate animal sampling and testing, and

2. Management strategies to minimise the impact while under movement restrictions.

Some relevant facts on the transmission of BJD:

- The probability of animals becoming infected following exposure to BJD when one year old or more is very low.

  That is, older animals are resistant to infection and most animals become infected when they are less than 12 months old, even though the actual disease develops later in life.

- The probability of infected animals shedding BJD bacteria in their faeces when less than two year's old is very low. The disease takes some time to develop to this stage.

- If the trace-forward animal has been spatially segregated from other animals, supported by sound biosecurity practices, the risk to the other animals is very low. Hence there may be low risk groups on restricted properties.

- The probability of contracting BJD from infected or suspect animals solely passing through yards and crushes is low.

Herd and animal assessments

The relevant tests are:

- Faecal culture test. A dung sample is collected and culture of BJD bacteria is performed in the laboratory which can take 2-3 months. A positive result indicates that the animal has BJD and was excreting (shedding) BJD bacteria. A negative result in itself is not final as shedding can be intermittent and further testing and interpretation may be required depending on the situation.

- Faecal Polymerase Chain Reaction (PCR) test. This new test directly detects the DNA of any BJD bacteria that may be present in the faeces. It is much quicker than culture and potentially more sensitive. However, it should be realised that an animal early in the infection cycle will most likely be negative to this test or the faecal culture test. Like the faecal culture test, a positive result indicates that the animal has BJD

and is excreting BJD bacteria. A negative result in itself is not final, as shedding can be intermittent and further testing and interpretation may be required.

- Histopathology. This means slaughtering the animal, taking specific samples from the gut and examining these under the microscope for BJD organisms. This test can be done relatively quickly (1-2 weeks). A positive result in a trace-forward animal means that the animal will be regarded as infected. A culture of gut tissue samples will also be performed to confirm that the animal is positive.

- Culture of gut tissue samples. This is normally performed in conjunction with histopathology to detect BJD organisms in gut tissue samples and can take 2-3 months.

  A positive result indicates that the animal was infected with BJD. A negative result shows that the animal posed no risk of transmitting BJD.

- Serology. This is a blood test that detects antibodies to BJD infection. It has problems in the current situation, as false positive results are relatively common, unlike the other tests. With PCR now available it will generally not be used.

There are a number of ways that properties that have received trace-forward animals may be assessed. Each has advantages and disadvantages, so testing regimes should be tailored according to individual circumstances.

A summary of the main options is provided below.

It is imperative that professional assistance is sought regarding the details to allow a property's suspect status to be resolved as quickly as possible.

1. On-farm or abattoir slaughter of all trace-forward cattle, plus definitive testing by histology and tissue culture

This is the most definitive method, but also means destroying the animals and in some cases they may no longer be available. Culture takes up to three months to report results. If negative for all animals, the movement restrictions on the herd will be lifted.

2. On-farm or abattoir slaughter of all trace-forward cattle, plus testing by histology and faecal PCR.

This is a new option recently approved. While it is possible for an animal to later return a positive culture result, if negative to these two tests, we can be confident that the animals were not shedding BJD bacteria, so the movement restrictions will be lifted.

3. Paired faecal culture or faecal PCR test on all trace-forward animals, 3-6 months apart, with immediate removal (e.g. slaughter) of trace-forward animal(s) after second sampling.

This option applies where all trace-forward animals are still available. Testing is to demonstrate that the animal(s) are not shedding BJD bacteria and therefore have not presented a risk to the herd. The two tests are required as faecal shedding in infected animals can be intermittent.

It does not mean that they are not infected, but if these tests are negative the movement restrictions will still be lifted. This option allows greater scope for postponing removal for breeding or other purposes. The culture test takes some time, but if replaced by the PCR test the results should be available within 2-3 weeks.

4. Paired faecal PCR test on all trace-forward animals, 3 - 6 months apart, plus isolation of these animals from the main herd.

Animals can be retained for breeding purposes and the movement restrictions on the rest of the herd can be lifted, provided the suspect animals remain isolated – that is separated from susceptible animals and subjected to movement restrictions.

Periodic monitoring of the suspect animals is required until they are eventually removed (e.g. through turn off to slaughter).

5. Herd (or exposed group) sample test, designed to identify whether infection has spread into the herd.

This single test is used if some or all of the trace-forward animals are no longer present and can be done any time after two years after the date of last dangerous contact (this time delay is to allow recent infection to become detectable – the longer the period the better).

Further monitor tests may be advisable. Either faecal culture or faecal PCR can be used. Only adults (greater than two years old) are sampled and the sample size will depend on the size of the herd. If all animals are negative, the movement restrictions will be lifted.

6. Identification and preferential culling of at risk animals

If there are a relatively small number of at risk or exposed animals on a property, culling of these may resolve the property status without the need for any testing.

7. Combination of strategies

Combined strategies may be used to cater for individual circumstances. For example, an extensive property where a significant number of the suspect bulls cannot be mustered but may still be alive on the property. Sample herd testing may be required over a two year period, as well as testing of any bulls that can be located, before movement restrictions can be lifted. Further monitor testing may also be required.

The strategy will need to be tailored to each situation in consultation with animal health professionals.

Management strategies while under movement restrictions

Where resolution of the disease status may take some time, management strategies can be developed to allow these properties to trade as much as possible so as to maintain property viability, while maintaining disease control. These strategies should be devised keeping in mind that the response is about “managed risk” and not “zero risk”.

Each property situation will be different and the property plan will need to be individually tailored, depending on circumstances. To provide guidance, some general strategies that may be implemented are provided below.

1. Isolation of groups

In many cases it will be possible to identify groups of cattle on a property, e.g. breeder groups that have had no contact with the animals introduced from an infected property. Provided some assurances can be given around the ongoing security of these groups, movement of cattle from the “free” groups can be permitted.

When assessing these groups, proper consideration of internal property movements will need to be made (e.g. what was the destination of female progeny from the suspect groups?).

2. Partial property restrictions

If the above group isolation assessment allows, it may be possible to remove the movement restrictions from the majority of the property and just place movement restrictions on the affected paddock(s), provided adequate controls and assurances are in place.

3. Determining low risk cattle

Given the nature of BJD, some cattle are at much lower likelihood of either transmitting or contracting the disease than others:

a) Cattle that were more than 12 months of age when exposed to cattle from an infected property have a very low probability of being infected. These should generally be permitted movement to other properties (e.g. saleyards, feedlots) unless some other factor dictates otherwise.

b) Cattle destined for slaughter at less than 2 years of age are very a low risk of transmitting infection, even if infected. Managed turn off, even via interim properties, should be permitted provided there is adequate assurance of slaughter within a reasonable time frame.

4. Sending cattle to low risk destinations

A number of ways to move cattle from suspect properties are possible. Some examples are provided below. However in many instances, implementation will require negotiation and agreement from the receiving property, which may be the greatest challenge.

a) Abattoirs - Movement to abattoirs is permitted provided there is assurance that all cattle from the property of origin are slaughtered.

b) Feedlots. - Movement to feedlots is permitted provided there is assurance that all cattle from the property of origin are slaughtered within the normal feedlot fattening period, e.g. poor doers, must only go to slaughter. Appropriate conditions are applied to the feedlot, for example cleanout of pens.

c) Back grounding paddocks - Steers less than two years old from suspect groups, provided they are ultimately destined for slaughter, present very little risk of spread of BJD. The owners of the suspect property may have other properties that could be designated for back grounding/ grow out of steers or they

may be able to establish a relationship with an owner of another property for the same purpose.

Cull heifers could be managed similarly, but extra assurances / security measures may need to be established to ensure 100% of the group are ultimately slaughtered. Speying of cull heifers may be encouraged.

d) Approved fattening / holding properties. Properties or areas of properties (separate from the suspect property) may be established to manage higher risk cattle from infected groups prior to slaughter (or for other purposes such as recovery of genetic material).

Adequate security from surrounding cattle paddocks would need to be established. At the end of the program, the paddock could be used during a decontamination period for fattening "clean" steers provided they are also turned off within two years. Under options (c) and (d) the paddocks used will be quarantined but this will not affect the remainder of the property, even if BJD is detected, provided paddock security is maintained.

5. Establishing a clean herd

This option is more applicable to infected properties, but may be useful under some circumstances. The basic idea is for a clean herd to be established within designated areas of a property through various means such as buying in clean cattle, testing of very low risk groups, recovery of genetic material etc. while the suspect cattle are turned off to slaughter over a period.

6. Vaccination

The use of a BJD vaccine is not advised under most circumstances currently occurring within Queensland. Some relevant considerations are:

- The vaccine has not been released commercially at the time of writing, but should be available early in 2013.
- The vaccine has been primarily developed to reduce the impacts of infection in endemic situations. It is intended to be used in young cattle - in trials it has been used in calves at 3-6 weeks of age.
- It does not prevent all animals becoming infected, but does reduce the number of clinical cases and also reduces shedding of bacteria, for example in one trial the number of animals positive to faecal culture reduced from 10.3% in adult non-vaccinates to 3.3% in vaccinates.
- We do not know how this would relate to an infected beef herd with relatively low prevalence in Queensland. The results of field trials are still being analysed by Pfizer, so more information may come to hand with time.
- It is generally considered that vaccination will not eradicate infection from a herd. It could potentially help in conjunction with other strategies. However this is untried.
- Vaccinated animals will react to the tuberculin test making then ineligible for some live export markets.

The strategies described in this document are a guide only. The program for each property should be designed in conjunction with an appropriate animal health professional.

For more information

For more information about bovine Johne's disease, contact Biosecurity Queensland on 13 25 23 or visit www.biosecurity.qld.gov.au