

Bovine Johnes Disease (BJD)

Dairy farm guidelines for BJD control

BEST PRACTICE RECOMMENDATIONS
for managing the risk of BJD in Australian dairy herds



www.dairyaustralia.com.au/bjd

Foreword

Congratulations for taking the first steps in managing BJD!

This booklet has been specifically designed for you and contains the essential information and best practice management guidelines you will need to manage the risks on your farm.

BJD is an important disease which poses risks to individual farm businesses as well to our wider industry. You can help yourself and the industry by increasing your awareness and understanding of the disease and then implementing the standard recommendations on BJD control (see Part 2).

Knowledge is power and the rewards of action are great.
I urge you to get on board and take control of BJD.



Chris Griffin

**Australian Dairy Farmers Ltd,
BJD committee representative**

Further information

Pamphlet: What's the Score with BJD?

Fact Sheet: 3-Steps to minimise BJD risk in your herd.

Booklet: Dairy BJD Technotes.

Visit: www.dairyaustralia.com.au/bjd

Or talk it through with your local vet, milk company field officer or DPI animal health staff.

Dairy Farm Guidelines for BJD control: best practice recommendations for managing bovine Johne's disease in Australian dairy herds

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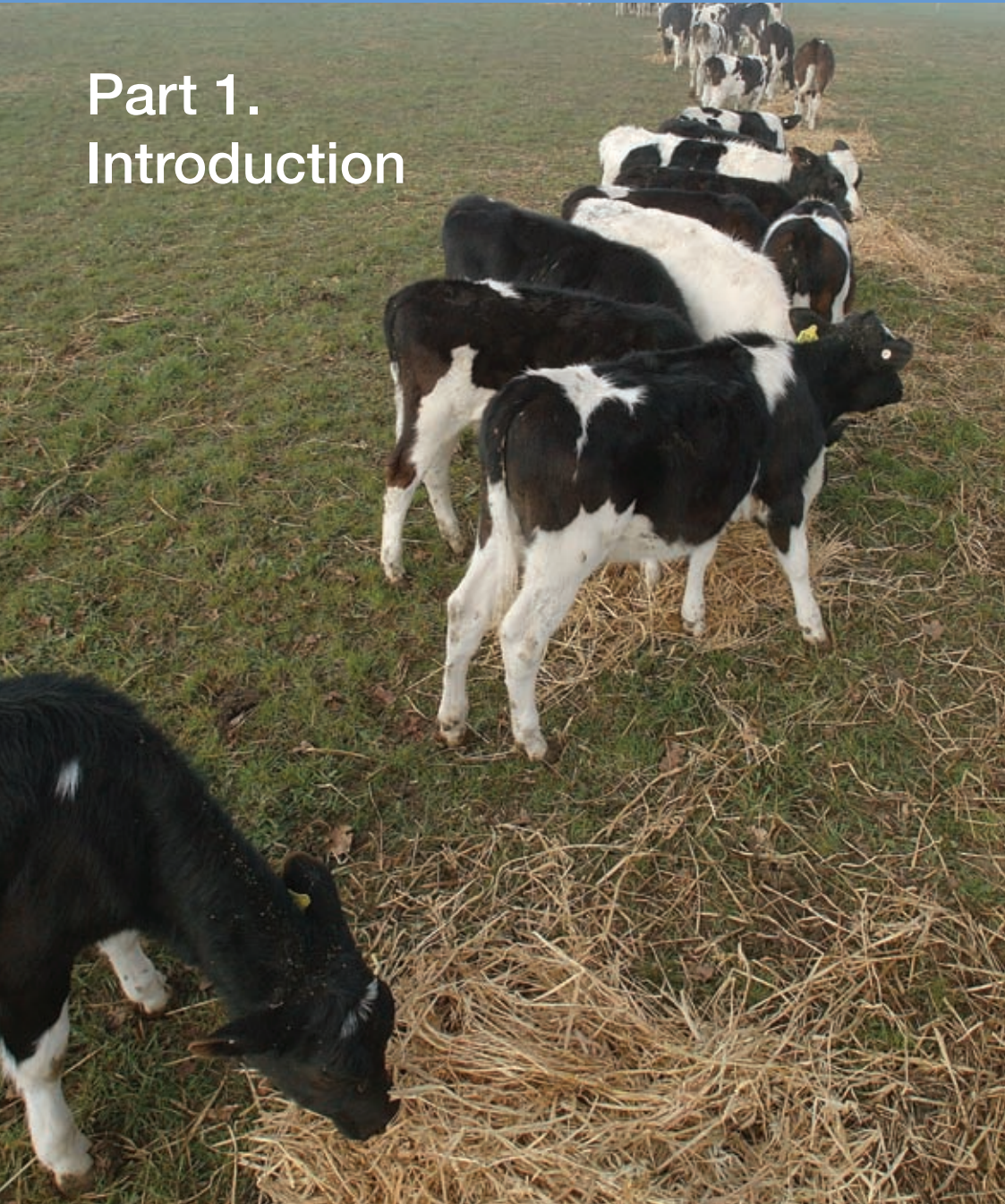
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Part 1. Introduction



Bovine Johne's Disease (BJD) in the Australian dairy industry

Key points

- It is relatively common for dairy herds in South Eastern Australia to have BJD.
- BJD control benefits both the dairy industry and individual farmers.
- Australia has a national, across-industry strategy for managing BJD.
- Many other countries are actively managing BJD.
- Control of BJD centres around three key areas:
 - minimising new infections in calves;
 - avoiding introducing BJD; and
 - removing cattle that are shedding the bacteria.

What is BJD?

Bovine Johne's disease (BJD) is a chronic, incurable disease of adult cattle caused by a hardy, slow-growing bacterium called *Mycobacterium paratuberculosis*.

Cattle usually only become infected as calves less than 12 months of age. Generally no symptoms are seen until the animals are at least four years old. When clinical signs do occur they include a loss of milk production and body weight over several weeks, followed by persistent diarrhoea that is unresponsive to treatment. The animal will then waste away over weeks to months until it eventually dies.

The presence of the disease in a herd is notifiable to the State Government and movement restrictions may be placed on cattle from affected herds in some States.

Although live animals can be tested for BJD, infection is difficult to detect reliably in all animals in early stages. For example, a typical 200-cow dairy herd infected with BJD could expect to see only a handful of clinical cases each year. If the herd was blood tested, around 2% (four of the 200 animals) may be detected. However, due to the low sensitivity of the blood test there are likely to be around 10% (20 animals) infected with BJD in the herd.

Farm benefits of controlling BJD

Reduced deaths, reduced early culling and improved slaughter weights

Farmers who are active in managing BJD can reduce the economic impact of the disease. Deaths from clinical cases are just the tip of the iceberg; losses also occur through premature culling and lower slaughter weights for cull cows.

Improved milk production from non-infected cattle

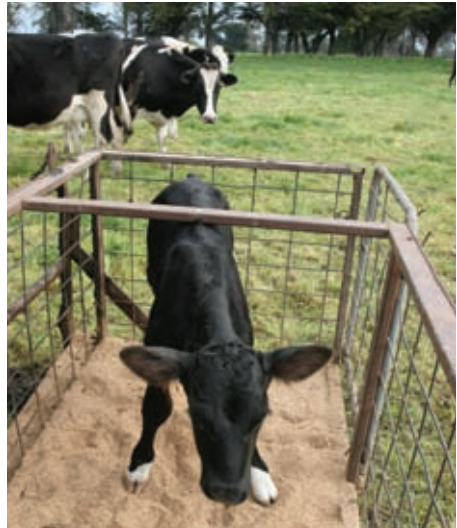
Many studies have shown that cattle infected with BJD produce less milk than non-infected cows, without showing overt signs of disease. In the lactation before an infected cow starts to scour, her milk production is reduced by around 5 to 15%.

Potential to increase asset values with good BJD management

Herds that have systems in place to ensure they are a low risk for BJD may attract more buyers for their cattle and land, and consequently higher prices. Participation in a BJD market assurance program will encourage buyers from across Australia because of their ability to move purchased cattle between zones. This is particularly relevant for stud breeders.

Hygienic calf-rearing programs help to reduce spread of other infectious diseases of calves

Anecdotal evidence suggests that the health of calves can be improved by minimising the calves' exposure to adult cow faeces. While no major studies have been documented, farmers have reported less calf disease and lower mortalities after implementing BJD control programs for calves.



Dairy industry benefits of controlling BJD

International market risk-management

Australia's animal health status has the potential to be used as a barrier to trade. It is in the best interests of the Australian dairy industry to be pro-active in BJD control and so minimise the potential for trade restrictions in the future. Countries such as the Netherlands, Sweden, Norway, the US, Canada and Japan all actively manage BJD. Japan aims to eradicate BJD from its national herd and has a major national program in place.

BJD is considered by many importing countries in their animal health statements and many require various testing procedures and assurances prior to export.

Consolidate Australia's already favourable animal disease status

Australia has an enviable position in the world because it is free of many serious cattle diseases such as tuberculosis, brucellosis, mad-cow disease and foot-and-mouth disease. This status allows us relatively easy access into the international live animal market. In recent years, dairy farmers have benefited through the export of tens of thousands of dairy heifers to many countries around the globe.

Australia is the only country that has a recognised BJD-free dairy region (Western Australia). In Australian dairy herds where BJD is present, the within-herd prevalence is also generally much lower than reported from overseas countries.

Milk quality assurance

Although no definitive link has ever been established, there is some international publicity linking the bacteria which causes BJD with an incurable disease of humans called Crohn's disease. This has raised interest in the issue and driven further research work. If a definitive link between BJD and Crohn's disease is ever established, there may be major implications for the Australian and global dairy industries (see also Question 9, page 20).

BJD reduces overall dairy industry productivity

Losses from BJD are generally considered modest in comparison to diseases such as mastitis, metabolic diseases, fertility and lameness. However, cattle infected with BJD produce less milk in the 12-18 months prior to showing symptoms. This results in a significant loss of milk across the whole of the dairy industry.

BJD: a whole farm approach

Key points

- BJD management practices should be incorporated into all dairy farming systems, regardless of BJD status.
- Set realistic goals based on your resources and capabilities.
- All farmers should aim to provide at least a moderate level of assurance that their herd is a low risk for BJD infection.

Introduction

The majority of dairy farmers in Australia have limited capacity to provide assurances that BJD is not likely to be present in their herd. Whether you want to join an 'official' assurance program or not, there are many practical things that can be done on-farm today to help minimise the risk of spreading or introducing BJD (Table 1).



Set realistic goals

If you are like many commercial dairy farmers and primarily focus on milk income, selling only a few heifers and calves, you may not wish to invest heavily in BJD assurance.

If you already have an infected herd you would already be aware that BJD cannot be eradicated quickly. Many herds that enrol in an approved test and control program take a number of years before the herd tests are negative, and even then may never completely eliminate the infection (see Question 10, page 20).

Plan for the future

Your herd is a valuable asset and should be managed carefully to minimise the risks of introducing unwanted diseases. Being able to offer some assurance that your cattle are low risk for BJD may bring financial rewards if you are planning to sell your herd in the near future. Time will tell if a price premium develops in the market place for commercial cattle from BJD assured properties.

International market pressures may also force a rapid unpredictable change at any time. Farmers engaged in a BJD assurance program are in a better position to manage this business risk.

Table 1. Different approaches to BJD based on desired level of interest.

	Interest in BJD management		
	Low	Moderate	High
Goal	“I want to start somewhere with BJD but not test and not spend much!”	“I’m keen to get a higher Dairy Score and really start getting on top of BJD.”	“I’m all out for achieving the highest level of assurance I can!”
Testing	Not initially, but consider it once all calves reared under 3-Step Plan are more than 4 years old.	Test whole herd or Check test 50 animals to assess current prevalence or presence of BJD.	Regular whole herd testing of 2+ year olds or join CattleMAP.
Calf rearing	Implement a hygienic calf program (e.g. 3-Step Plan) and/or other measures that require minimal changes to current system.	Implement a hygienic calf program (e.g. 3-Step Plan) and/or other measures that require minimal changes to current system.	Implement an audited hygienic calf-rearing program (e.g. JDCAP)
Herd introductions	Make low risk herd introductions – use Dairy Score (4+) cattle.	Make low risk herd introductions – use Dairy Score (7+) cattle.	Closed herd – or only CattleMAP (Dairy Score 8+) cattle.
Culling policy	Cull high-risk animals based on non-testing data (e.g. clinical cases, cohorts, direct progeny)	Cull high-risk animals based on herd test and consider further preferential culling.	Aggressively cull all high-risk animals.
Other measures	Remove goats and alpaca, fix fences.	Consider off-farm rearing of calves if property is low risk.	Secure all fences. Restrict access to calf area by personnel.

Part 2.

Key farm recommendations for managing the risks



There are three main components to managing the risks posed by BJD on the farm.

Minimise new infections

- Protect calves from the sources of BJD bacteria, especially minimise any contact with adult faeces.
- Age resistance develops – by 12 months old calves are fairly resistant.

Avoid introducing BJD

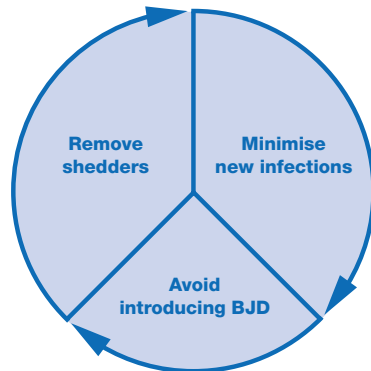
BJD comes in on the back of a truck!

BJD is usually introduced into a herd through a single infected animal.

- Take steps to know the risk with stock introductions.
- Use the Dairy Score to assess the risk of BJD.
- If you don't know the risk, focus on protecting your calves from being exposed to adult cattle and faeces.
- Semen and embryos are low risk for spreading BJD.

Remove cattle shedding BJD

- Identify and remove cattle that are shedding BJD as early as possible. This will reduce environmental contamination of the BJD bacteria.
- Blood testing will not identify all infected animals, but is a useful tool to identify those animals most likely to be shedding the BJD bacteria.
- High-risk groups of animals can be identified from testing results and preferentially culled from the herd over time.
- Testing and culling positive cows is most effective when combined with BJD calf management recommendations.



Identifying and managing your risk

The following set of questions is designed to help you quickly identify areas for improvement in your management of the risk of BJD.

Steps to minimise new infections

Minimising new infections	Poor	Could be better	Good
Do you take steps to manage the cleanliness of the calving environment?	Not very often.	Sometimes.	Yes, always strip graze calving paddock. Yes, always clean calving pad weekly.
Do you remove newborn calves off their dams at least twice daily at calving?	No.	No, however I do try to get them out once or twice a day.	Yes, always, at least twice a day.
Do you separate calves from their mothers in the calving area?	Occasionally, however I always move them up lane to yards.	Quite often.	Yes, always catch them in the calving area.
Do you feed milk from sick or medicated cows (i.e. blue milk) to your calves?	Sometimes.	Rarely.	No, never, always discard blue milk.
Do you take steps to prevent milk and colostrum for calves from being splashed with adult faeces?	I occasionally discard a contaminated bucket.	I usually discard a contaminated bucket.	Yes, always, lids on vats and chuck away milk with any muck in it.
Do you feed pooled colostrum or milk to calves?	Most of the time.	Sometimes.	No, herd replacements get milk replacer powder or milk from low-risk cows.
Do you have elevated feed bins, hay racks and water troughs for calves?	No, feed on the ground.	Some.	Yes, all feed goes into elevated bins.
Do you use tank or town water for calves?	No.	Not really, but we do sediment out canal water.	Yes, always, only tank or town water.

Steps to minimise new infections (continued)

Minimising new infections	Poor	Could be better	Good
Do you use milk replacer?	Very rarely.	We are looking into it.	Yes, always use it if we can't get enough low-risk milk.
Do you graze calves where dairy effluent runoff is present or pasture has been sprayed?	Sometimes.	I try to avoid it. Sometimes calves are in an adjacent paddock.	No, never.
Do you use on-farm milk pasteurisation units?	No.	Sometimes.	Yes.
Do you use different equipment to handle feed and faeces?	No, same.	Sometimes.	Yes, always use dedicated feed-only equipment.
Is the calf-rearing area separate from adult cattle and not exposed to effluent runoff?	No.	Calves are in an adjacent paddock.	Yes.
Do calves have access to any adult manure, boggy-swampy areas or open drains when they are less than 12 months old?	Yes.	Sometimes.	No, never.
Do you rear calves off-farm?	Not usually.	Sometimes.	Yes, always.
Do you encourage everyone, including service personnel & contractors to clean boots, vehicles and equipment before entering the calf area?	Not usually.	Usually.	Yes, always. We have signs and tell everyone. It's part of staff training.
Do you ever put cattle, alpaca, goats or deer in the calf-rearing areas?	Sometimes.	Very rarely.	Never.

Steps to avoid introducing BJD onto the farm

Avoid introducing BJD	Poor	Could be better	Good
Do you source cows from low-BJD risk (high Dairy Score) herds?	No.	Sometimes.	Yes, always from highest Dairy Score we can get.
Do you protect your calves from exposure to manure of introduced stock?	Very rarely.	Usually.	Yes, always, calves never go near.
Do you source bulls from low-risk sources?	Not usually.	Sometimes I ask about it.	Yes, always from highest Dairy Score we can get.
Do you use semen and embryos to reduce the risk?	No.	Sometimes.	Yes.
Do you agist out animals older than 12 months?	No.	Sometimes, but I ask about risk.	Yes, always, only adults go away.
Do you test cattle for entry to shows?	No.	Sometimes, but I ask about BJD risk.	Yes, always, find out what is needed.

Steps to identify and remove cattle shedding the bacteria

Removing shedders	Poor	Could be better	Good
Do you understand the diagnostic tests for BJD?	No.	No, but I am going to read up on it.	Yes, I know what they do and how best to apply them.
Do you use the BJD test results and other information to preferentially cull cattle?	No.	Sometimes.	Yes, always get rid of high-risk cows.
Do you cull test-positive cattle as soon as possible?	No.	Sometimes, but we usually let them milk out.	Yes, always cull once we get test results and always before calving.
Do you understand the regulatory implications of having a test-positive herd in your region?	No.	No, but I will ask about it.	Yes.

Part 3. Frequently asked questions



Question 1

Can calves be born already infected with BJD?

Key points

- Progeny from BJD infected cows may also be born infected with BJD.
- Reducing the number of clinical infections will help to reduce the chances of transmission to the calf.
- Cows with clinical signs of BJD are at very high risk of producing an infected calf.
- Maternal progeny of clinical cases should be culled.

Question 2

Can sheep with ovine Johne's disease (OJD) infect cattle?

Key points

- Sheep with OJD can infect cattle however the risk is relatively low.
- Sheep may become infected with BJD. The risk of transmission from sheep infected with BJD to calves is probably high.
- Avoid running sheep on pasture likely to be grazed by dairy calves or heifers.

Question 3

What is the risk of spreading BJD via irrigation canals and shared waterways?

Key points

- The BJD bacterium survives for long periods in water and sediments.
- The bacteria become widespread in the environment of infected cows and readily spreads from manure to water.
- In the US, up to 50% of samples collected from dairy exits, floors of holding pens, common alleyways, lagoons, manure spreaders and manure pits are contaminated.
- BJD bacteria are likely to be present in effluent drainage from contaminated sites.
- The risk of BJD spread in irrigation and shared waterways is potentially high if herds with high prevalence are present in the catchment.

Question 4

What programs are there in Australia for BJD control and market assurance?

National Dairy BJD Assurance Score

The National Dairy BJD Assurance Score is a voluntary, risk-based trading system, based on self assessment, for farmers to better manage the risk of BJD. Using the existing programs, the Dairy Score ranks the assurance measures, on a 0 to 10 scale, of cattle being infected with BJD. The 10-point scale recognises the benefits of good BJD practices: the higher the score, the lower the risk. Recognition is given to herds enrolled in approved control programs, hygienic calf-rearing program, single test negative herds and the cattle BJD market assurance program.

Full details of the Dairy Score are available from the website, www.dairyaustralia.com.au/bjd

3-Step Calf Plan

The 3-Step Calf Plan is a voluntary, industry-driven program containing three essential steps for minimising the spread of BJD. The program is included as a 'best practice' recommendation in all dairy company on-farm quality assurance manuals, and can also be used to improve the Dairy Score (see above) of cattle reared under this program.

South Australia, DairyManaJD

DairyManaJD is a voluntary BJD control program launched in South Australia during 2005. To enrol in DairyManaJD a herd must have cattle tested, cull any blood test reactors, agree to a calf management program and be subject to audit. Infected herds that enrol in the program are not subject to quarantine, but can sell on disclosure of their Dairy Score to other herds.

This program has seen a positive response from dairy farmers. As of December 2007 around 90% of dairy herds in South Australia had enrolled and been tested in the program. The program is funded by the South Australian beef cattle industry.

Johne's Disease Calf Accreditation Program (JDCAP)

The Johne's Disease Calf Accreditation Program (JDCAP) is managed by DPI Victoria. Calves reared under this program are considered a very low risk of having BJD. The requirements of the program comprehensively address all the major routes of transmission of BJD. The program is audited and administered on-farm by approved private veterinarians. In 2003 JDCAP was made a mandatory component of the Victorian Test and Control Program (TCP).

3-Step Calf Plan

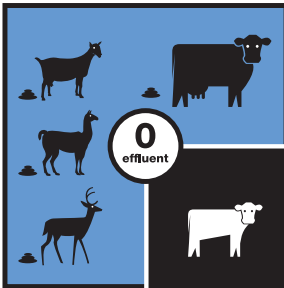
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STEP 1:

Calves should be taken off their mother at least twice per day, and ideally within 12 hours of birth. Prompt calf removal reduces the exposure to potentially infectious material from either the dam or the environment. Young calves are most susceptible to infection.

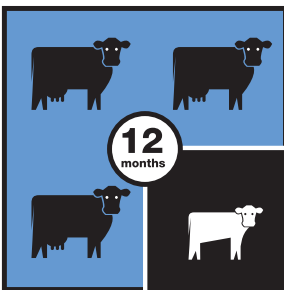
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STEP 2:

Management of the calf-rearing area should ensure that no effluent from animals of susceptible species comes into contact with the calf. Effluent containing faecal material from cattle, goats, alpaca and deer is potentially infectious to calves. By keeping the calf-rearing area free of effluent sources, calves will also be less likely to develop other infections.

3



STEP 3:

Calves up to 12 months old should not be reared on pastures that have had adult stock (or stock that are known to carry BJD) grazing on them during the past 12 months. Cattle develop age-related resistance to BJD. By the time cattle are 12 months old they are at a low risk of becoming infected.

Victorian Test and Control Program (TCP)

The Victorian Department of Primary Industries (DPI) currently offers a voluntary BJD test and control program to infected Victorian dairy herds. The program is administered by DPI and includes a subsidy for annual blood testing, a requirement to implement a hygienic calf rearing program (called JDCAP), limited compensation for blood test positive cattle and management by a private vet. The program has been successful in reducing the incidence of clinical disease within infected dairy herds. For more information contact your local DPI Victoria district veterinarian.

Beef Only

Beef Only is a market assurance program for beef cattle to provide assurance that they are low risk of BJD. Beef Only cattle are beef cattle that have minimal contact with dairy cattle and have not grazed pasture that previously was used to run adult dairy cattle.

CattleMAP

The Australia Johne's Disease Market Assurance Program for Cattle (CattleMAP) is a voluntary, industry-driven, national program to identify, protect and promote herds that have a low risk of being infected with BJD. It is a test-negative program with assurance levels based on the number of negative tests a herd has had.

Question 5

How can BJD contaminated land be managed?

Key points

- BJD bacteria can survive for long periods (up to one year) in the environment under ideal conditions
- Bacterial survival is enhanced in shaded environments where temperature fluctuations are moderated.
- Moisture is not required for survival, but low-lying areas (that may be moist or boggy) accumulate contamination and could be potential hot spots.
- Options for contaminated land management include:
 - leave land vacant for at least 12 months;
 - graze species not susceptible to BJD for 12 months;
 - graze young cattle destined for slaughter at less than 24 months;
 - grow crops on the land;
 - graze only adult cows (>12 months) but do not calve cows on the land;
 - fence off low-lying areas and manage watering points.

Question 6

Can BJD be spread by semen and embryos?

Key points

- The risk of spreading BJD through semen from infected bulls is low.
- BJD bacteria may be present in semen of infected bulls and this risk is greater in clinically infected bulls.
- Bulls are routinely screened for BJD prior to collection of semen in AI centres.
- Embryo transfer is an effective method of preventing transmission of BJD from infected donors.
- Embryo recipients should be sourced from low-risk herds.

Question 7

Does early calf removal affect the welfare of the cow or calf?

Key points

- Early calf removal has little or no impact on the welfare of the cow or calf.
- Separating calves from their mothers more than 12 hours after birth is more likely to induce signs of maternal stress such as 'mooring'.
- Cattle are highly sociable animals and keeping young stock separate from adults has no measurable impact on welfare.

- If animals are sick, their welfare is adversely affected. The dairy industry has an ethical responsibility to minimise disease in livestock and so implement calf programs to manage BJD.

Question 8

Can floods spread BJD?

Key points

- BJD bacteria can survive in soil and water for up to 12 months.
- Heavy rainfall, leading to flooding of dairying regions, can disrupt daily farm routines, and result in water and sediment deposits remaining for prolonged periods.
- Flood water is likely to contain very low concentrations of BJD bacteria so calves drinking flood water represent a low risk of contracting BJD.
- Sediment may contain concentrations of the bacteria so grazing cattle less than 12 months of age on these areas should be avoided.
- Priority should be given to ensuring calves are not exposed to flood water sediment or effluent from adult cattle.
- Disrupted boundary fences present risks with the mixing of young stock with adults.

Question 9

BJD and milk quality assurance: what are the issues?

Key points

- The suggestion that there is a link between BJD and Crohn's disease has been around for decades and continues to be thoroughly investigated by the medical community.
- The specific cause or causes of Crohn's disease have not been identified. Several scientific papers investigating a potential link between BJD and Crohn's disease are published each year, however the current evidence does not support a causal link between BJD and Crohn's disease.
- Pasteurisation is highly effective in killing the BJD bacteria.

Question 10

How useful are the diagnostic tests for BJD?

Key points

- Imminent clinical cases are readily detected by the blood ELISA test.
- The closer an animal is to being clinical, the more likely the blood test will give a positive result.
- Faecal culture is slow but a positive result is definitive.
- High-risk groups of cattle can be identified following a whole herd test.



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