

One Biosecurity

DISEASE RISK RATING – JOHNE'S DISEASE IN DAIRY CATTLE

MARCH 2019



Management of Johne's disease in dairy cattle: producer manual

Information current as of March 2019

© Government of South Australia 2018

Disclaimer

PIRSA and its employees do not warrant or make any representation regarding the use, or results of the use, of the information contained herein as regards to its correctness, accuracy, reliability and currency or otherwise. PIRSA and its employees expressly disclaim all liability or responsibility to any person using the information or advice.

One Biosecurity enquiries

One Biosecurity Support (Biosecurity SA)

Email: IBSupport@sa.gov.au

Phone: (08) 8429 3300

Support hours 9am – 5pm, Monday to Friday

Johne's disease (in cattle) enquiries

Dr Jeremy Rogers – BJD Program Manager

Email: jeremy.rogers@sa.gov.au

Phone: (08) 8539 2110

Mobile: 0427 608 133

Contents

FORMER DAIRY MANAJD PROGRAM.....	4
Acknowledgements	4
JOHNE'S DISEASE IN DAIRY CATTLE	5
Consequences of Johne's disease in a dairy herd	5
Advantages of managing Johne's disease in your dairy herd.....	6
ONE BIOSECURITY	7
Disease Risk Ratings	7
JOHNE'S DISEASE (JD) IN DAIRY CATTLE – DISEASE RISK RATING	8
Independent assessors	8
How do I use the disease risk rating?.....	8
Minimum biosecurity practices	8
Progressing through the categories.....	8
One Biosecurity disease risk rating for Johne's disease in dairy cattle	9
Program requirements and risk categories.....	9
Testing for Johne's disease.....	10
Herd Environmental Culture	10
Sample Test	10
Maintenance Testing	10
Testing for enrolment of herds into One Biosecurity.....	10
Johne's disease in dairy cattle: disease risk rating minimum biosecurity practices	11
Johne's disease in dairy cattle: pathways for progression through disease risk rating categories	12
Certificates	13
Vaccination.....	14
Responsibility of private veterinarians, PIRSA and producers.....	14
Hygienic calf rearing.....	14

Former Dairy ManaJD Program

The South Australian cattle industry, dairy processors and PIRSA developed the Dairy ManaJD program in 2004 based on a National Dairy Assurance Scoring system for Johne's disease in Australian dairy herds.

The SA Dairy ManaJD (pronounced "Dairy Managed") program was funded by the SA Cattle Industry Fund, administered through the SA Cattle Advisory Group that has representatives of both the beef and dairy industries. The program was designed in partnership with dairy food processors, SA dairy veterinary practitioners, the Dairy Authority of SA, and PIRSA.

The vision for Dairy ManaJD was to implement effective management of Johne's disease in the South Australian dairy industry to improve on farm productivity, trade access and product quality through a quality management approach.

In South Australia, all Dairy Assurance Scores have been based on:

- *Full herd blood tests, with follow-up of any reactors*
- *Annual audits*
- *Biennial maintenance or Check Tests*
- *Individual Certificates issued to producers*

In 2018, most SA dairies were enrolled in the program, with over 70% of herds testing negative and maintaining this status.

This program has now been incorporated into the One Biosecurity program and modified to align with proposed national changes, which were supported by the South Australian Dairyfarmers' Association.

Modified National Dairy Assurance Scoring systems have been introduced in recent years and it should be noted that there are significant differences between the South Australian One Biosecurity disease risk rating system, which incorporates the former Dairy ManaJD program, and the national dairy score available through Dairy Australia.

Acknowledgements

Jack Van Wijk, Manager Animal Health Operations, PIRSA

Peter Nosworthy, former Manager Disease Control, PIRSA

Jeremy Rogers, BJD Program Manager, PIRSA

Fiona Little, Dairy Authority of South Australia

Mary Carr, Manager Risk Management and Response, PIRSA

Johne's disease in dairy cattle

Johne's disease is caused by the bacterium *Mycobacterium paratuberculosis* (*MpTB*). There are many strains of (*MpTB*) in Australia and around the world. In Australia historically c-strain is more commonly detected in cattle and s-strain more commonly detected in sheep. It is now recognized that both strains can infect multiple species - i.e. be passed from cattle to sheep and vice versa.

Johne's disease can also affect goats, deer, and alpacas.

Symptoms in cattle

- Fall in milk yield and infertility in milking animals
- Diarrhoea - this can be chronic, acute, or intermittent
- Weight loss
- Emaciation

There is no available treatment for Johne's disease in infected animals.

The disease can have a long period between infection and development of clinical signs. This period tends to be dose related, and may be years in most cases with cattle – typically 5 to 7 years on SA dairy farms.

Under extensive farming conditions in South Australia the rate of clinical cases occurring in a herd can be very low with only 1 or 2 cases (weight loss and/or diarrhoea) being reported every couple of years. Many infected animals will be culled for poor production prior to developing severe clinical disease.

Spread between animals

The bacteria that cause Johne's disease are spread from infected adult cattle to calves through:

- Faeces (most common route)
- colostrum
- milk

The disease can spread in infected environments such as calving pads. Bacteria can survive for over 12 months in cool, wet conditions, particularly in water or sediment, however it may survive for less than 3 months in soil and faecal material in dry conditions when exposed to light and heat.

For the purposes of Johne's disease management destocking of all susceptible species for a minimum period of 12 months is recommended to decontaminate infected land and pasture.

Spread between farms

Disease spread between farms can happen through movement of infected animals (this is the most common way of the disease spreading) and movement of vehicles, manure spreading and water, although these are less common routes in SA.

Consequences of Johne's disease in a dairy herd

The disease is hard to detect as most cattle do not show any outward clinical signs of the disease in early stages, and will not give positive test results until the disease has advanced. The age at which clinical signs appear or cattle become test positive is related to the infective dose received. Some form of stress, such as calving, often triggers the first clinical signs of the disease.

Internally, the bacteria causes a thickening of the intestine wall leading to poor absorption of food and nutrients resulting in scouring and loss of body weight by the animal and reduced resistance to other diseases.

The loss of body weight leads to a reduction in production and cows are often unable to conceive, resulting in culling from the herd. In SA deaths of cattle from BJD are rare as many cattle are culled for production reasons prior to the development of advanced clinical signs.

There is no treatment for Johne's disease, but it is possible to control spread with detection and selective culling of infected and high-risk animals, improved calf rearing practices and vaccination. Eradication of BJD from infected dairy herds is difficult and requires repeated herd testing, improved calf rearing, and strict biosecurity practice over a long period. A vaccine is available and may be considered in some situations to aid in management.

Advantages of managing Johne's disease in your dairy herd

- Manage the risk of loss of production and death from the disease
- There is no available treatment, so prevention and Biosecurity is the best approach
- The disease can affect and be spread by other species (sheep, goats and deer)
- The organism can remain infectious on a property for long periods
- Neighbours can be infected by straying stock or manure spreading
- Providing a premium product (livestock or milk) from within an assurance program
- Market access – tested negative properties have more sale options including export opportunities, and achieve higher prices, whilst livestock from infected properties have less sale options

One Biosecurity

www.onebiosecurity.pir.sa.gov.au

The One Biosecurity program is a new initiative to further promote and protect South Australia's strong biosecurity regime across its livestock industries. The aim of providing an online system to support this is to allow producers to record and assess their biosecurity practices, and then to share that information with other producers and potential purchasers. Asking the right questions and getting the right answers about the biosecurity practices of the farm of origin and the health status of stock before transport or purchase is essential to minimising the risk of entry and spread of diseases between properties and across the state – as well as reducing risk to those buying and processing livestock.

Once a producer is registered on the One Biosecurity website (www.onebiosecurity.pir.sa.gov.au), they will be self-guided through the program's two main components: the Biosecurity Practices Questionnaire, and Disease Risk Rating modules.

Disease Risk Ratings

Once you have completed the biosecurity practices questionnaire and received a biosecurity rating, you can choose to also complete one or more of the disease risk rating modules for specific endemic diseases that occur in South Australia. Each module will guide the user through a series of questions regarding biosecurity best practice for specific diseases. Depending on the answers, a classification of 'independently assessed', 'self-assessed' or 'managed' will be provided. If no information is provided, or the practices carried out do not meet the criteria for one of these categories, the system will default to 'not currently classified'. Properties rating as 'independently assessed' or 'self-assessed' are considered low risk for the presence of that particular disease, with high levels of biosecurity in place.

Further general information is available within the 'One Biosecurity: Disease Risk Ratings – Producer Guidelines' on the website
<https://onebiosecurity.pir.sa.gov.au>

Johne's disease (JD) in dairy cattle – disease risk rating

Independent assessors

Private veterinarians who have participated in the former PIRSA Dairy ManaJD program can undertake One Biosecurity independent assessment. Contact the Biosecurity SA BJD Program Manager for accreditation or for a list of accredited assessors.

How do I use the disease risk rating?

How you use the disease risk rating will depend on your own business situation. Please discuss with your private veterinarian if you are unsure what risk this disease may pose to your business. The One Biosecurity Disease Risk Rating (DRR) for Johne's disease in dairy cattle works the same as the former Dairy ManaJD program – trading like with like. Some general guidelines are available below.

If you wish to source animals that are lower risk of being infected with JD:

Starting point: *Independently assessed: very low risk* SA Dairy Score 7 or above, with a current certificate

Additional factors to consider to further lower the risk:

- What level of testing has been undertaken?
- When was testing last undertaken? Regular testing for the bacterium provides greater assurance.
- How long has the property been testing for? The longer the property has been testing the greater the assurance.

If you wish to source animals that are lower risk of being diseased with JD:

Starting point: *Self-assessed: very low risk* (or *Independently assessed: very low risk*)

Additional factors to consider to further lower the risk:

- What monitoring has been undertaken? Sample Test or just Herd Environmental Cultures (HEC test).
- When was testing last undertaken? Regular testing for the bacterium provides greater assurance.
- How long has the property been testing for? The longer the property has been testing the greater the assurance.

Sourcing animals from known infected properties:

Some extra care should be taken when sourcing animals from known infected properties, but this can actually pose less risk than purchasing animals of an unknown risk status as you can knowingly manage the risk.

- Check the management plan to ensure they are undertaking similar practices to reduce the risk of clinical disease.
- What is your ultimate goal? If you are wishing to progress to lower risk levels, then sourcing animals from lower risk properties is recommended.

Minimum biosecurity practices

The table on page 11 outlines the minimum requirement for the biosecurity practices that must be undertaken to achieve each category.

Progressing through the categories

On page 12, there is a diagram that shows how you can progress through the disease risk ratings. How far a producer wishes to progress through the categories will be determined by their individual business situation.

One Biosecurity disease risk rating for Johne's disease in dairy cattle

- Provides a means by which owners of dairy herds that are at low risk of infection can protect their herd status
- Reduces the risk of Johne's disease spreading between dairy herds
- Provide a means by which dairy producers can undertake risk-based trading
- Reduces disease spread within infected herds which can result in an improved herd risk and reduced contamination of product and the farm environment
- Assist infected herds to progress the management of JD in their herd
- Allows direct comparison of biosecurity practices and risk of JD between dairy herds

Program requirements and risk categories

Most herds that were previously enrolled in Dairy ManaJD with a score of 7 or above should be able to meet the requirements for the 'Independently Assessed: Very Low Risk' category.

One Biosecurity			Dairy ManaJD Scores eligible to apply for this One Biosecurity Disease Risk Rating Category
Disease Risk Rating Category	Basic Category Requirements	Maintenance	
Independently Assessed: Very Low Risk	More than THREE negative tests, with at LEAST ONE Sample Test No confirmed positive cases	Biennial maintenance testing Biosecurity plan reviewed annually Clinically consistent or suspect cases are tested*	7 to 10
Self-assessed: Low Risk	At LEAST ONE negative test result within the last three years No confirmed positive cases	Maintenance testing at least every 3 years Clinically consistent or suspect cases are tested*	5 and 6
Managed: Known Risk	PIRSA property disease management plan in place Undergone whole herd or HEC testing at least every 3 years	Maintenance testing at least every 3 years Clinically consistent or suspect cases are tested*	4
Not Currently Classified	All properties that do not meet one of these 3 categories will automatically default to ' Not Currently Classified '.		0 to 3

Testing for Johne's disease

Herd Environmental Culture

A Herd Environmental Culture (HEC) involves scaping manure into a central pile in the dairy yard after milking and sampling 100gms of the manure. This sample is sent to Gribbles laboratory for testing – a process that takes approximately 3 months for culture or 3 weeks for an HT-J (DNA) test. Both tests are similarly priced.

Sample Test

A Sample Test requires the screening of the entire adult herd or a large representative sample of the adult herd by an approved test or tests, which may be blood or faecal tests (ELISA, (pooled) faecal culture or (pooled) HT-J faecal PCR). This will require testing either all adult cattle in smaller herds to a maximum of 300 cattle in larger herds.

Maintenance Testing

Herd Environmental Culture (HEC) on faecal material collected from the yards.

Note that all laboratory testing is to be arranged between the producer and their private veterinarian, with prices as determined by the laboratory and the private veterinarian. Industry subsidised testing is no longer available.

Testing for enrolment of herds into One Biosecurity

If Johne's disease it NOT known to occur in the herd:

1. To reach '**Independently Assessed: Very Low Risk**' status:
 - a. More than three negative tests are required (former Dairy ManaJD 7 and above), with each test 12-24 months apart. At least one of these tests must be a Sample Test (see above). The other three can be HEC tests.
2. To reach '**Self-assessed: Low Risk**' status:
 - a. At least one negative test in the past 3 years – either HEC or Sample Test.

If Johne's disease is known or suspected to be present:

1. To reach '**Managed: Known Risk**' status:
 - a. Whole herd or HEC testing at least every three years.

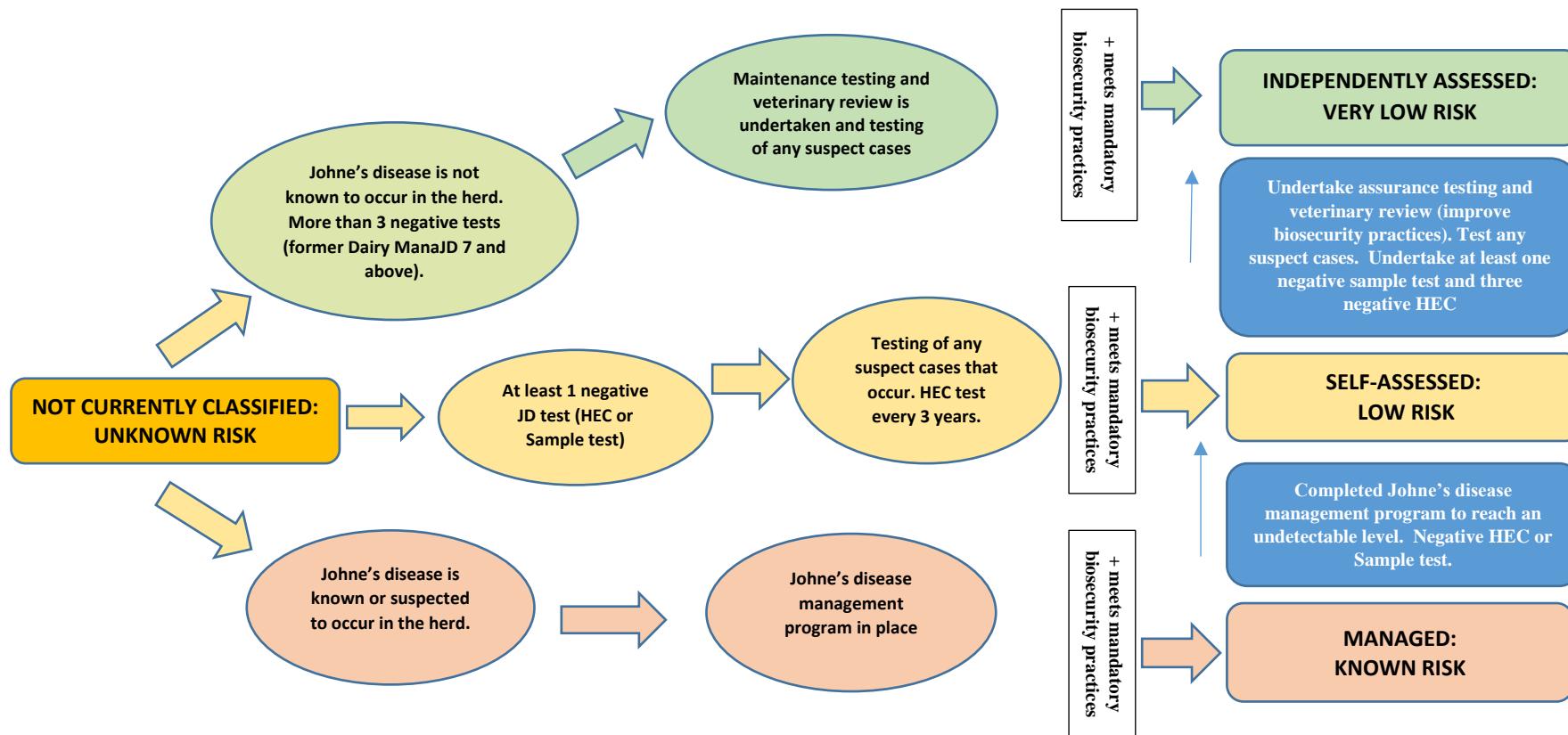
See the flowchart on page 12 for more details.

Note that if a herd classified as 'Independently Assessed: Very Low Risk' or 'Self-assessed: Low Risk' receives a confirmed positive test result, the herd will become either 'Managed: Known Risk' or 'Not Currently Classified'. They will then need to progress through the relevant steps (see the pathways for progression on page 12) in order to be reclassified in the lower risk categories. This may take a number of years.

Johne's disease in dairy cattle: disease risk rating minimum biosecurity practices

	Independently assessed: very low risk	Self-assessed: low risk	Managed: known risk
Description	Johne's disease is not known to occur in this herd. This enterprise has high-level biosecurity practices, veterinary oversight and laboratory testing to support this claim.	Johne's disease is not known to occur in this herd. Biosecurity practices are in place to minimise the risk of introduction of Johne's disease.	Johne's disease is known or suspected to occur in this herd. This enterprise has biosecurity practices in place that minimise the risk and impact of the disease.
Required biosecurity practices. Note: these are the minimum practices required to attain the risk level. Additional practices may be undertaken which will be detailed in the summary document. All herds that do not meet one of these 3 categories will automatically default to 'Not currently classified'.	<ul style="list-style-type: none"> <input type="checkbox"/> Suspect or clinical cases have been or will be tested by a veterinarian <input type="checkbox"/> No history of Johne's disease on the property in <u>any</u> cattle or if history of Johne's then has been reduced to an undetectable level through a PIRSA management program <input type="checkbox"/> Undertake testing for Johne's disease, with history of more than THREE negative test results. At least one of these tests must be a sample test. Ongoing biennial maintenance testing. <input type="checkbox"/> No history of unresolved traces to the property or unresolved positive or indeterminate test results for JD <input type="checkbox"/> This is a closed herd OR the lifetime history of all introduced cattle is known and risk assessment was undertaken to ensure only sourced from herds with same or lower risk <input type="checkbox"/> No co-grazing with any cattle, sheep, goats & alpacas that are known or suspected of being infected with Johne's disease <input type="checkbox"/> Young animals intending to be used for breeding purposes are not grazed in high-risk areas <input type="checkbox"/> Risk assessment for animals straying on or off the property is undertaken and an action plan is in place <input type="checkbox"/> No agistment of stock off property OR agistment carried out with prior risk assessment <input type="checkbox"/> Boundary fences are kept inspected and maintained <input type="checkbox"/> Boundary gates and grids (to grazing areas) are kept closed and maintained <input type="checkbox"/> Biosecurity plan reviewed annually by a veterinarian 	<ul style="list-style-type: none"> <input type="checkbox"/> Suspect or clinical cases have been or will be tested by a veterinarian <input type="checkbox"/> No history of Johne's disease on the property in <u>any</u> cattle or if history of Johne's then has been reduced to an undetectable level through a PIRSA management program <input type="checkbox"/> Undertake testing for Johne's disease, with at least ONE negative results. Most recent test must be within the last three years. HEC test may be used. <input type="checkbox"/> No history of unresolved traces to the property or unresolved positive or indeterminate test results for JD <input type="checkbox"/> This is a closed herd OR the lifetime history of all introduced cattle is known and risk assessment was undertaken to ensure only sourced from herds with same or lower risk <input type="checkbox"/> No co-grazing with any cattle, sheep, goats & alpacas that are known or suspected of being infected with Johne's disease <input type="checkbox"/> Young animals intending to be used for breeding purposes are not grazed in high-risk areas <input type="checkbox"/> Risk assessment for animals straying on or off the property is undertaken and an action plan is in place <input type="checkbox"/> No agistment of stock off property OR agistment carried out with prior risk assessment <input type="checkbox"/> Boundary fences are kept inspected and maintained <input type="checkbox"/> Boundary gates and grids (to grazing areas) are kept closed and maintained 	<ul style="list-style-type: none"> <input type="checkbox"/> Property disease management plan developed in consultation with a private veterinarian or PIRSA <input type="checkbox"/> Herd has undergone whole herd or HEC testing to monitor for JD (at least every 3 years) <input type="checkbox"/> Any suspect clinical cases will be reported to PIRSA <input type="checkbox"/> This is a closed herd OR the lifetime history of all introduced cattle is known and risk assessment was undertaken to ensure only sourced from herds with same or lower risk <input type="checkbox"/> Young animals intending to be used for breeding purposes are not grazed in high-risk areas. <input type="checkbox"/> Risk assessment for animals straying on or off the property is undertaken and an action plan is in place <input type="checkbox"/> Boundary fences are kept inspected and maintained <input type="checkbox"/> Boundary gates and grids (to grazing areas) are kept closed and maintained

Johne's disease in dairy cattle: pathways for progression through disease risk rating categories



Verification of biosecurity practices and test results will be undertaken at property visits and through PIRSA database searches.

Certificates

PIRSA will continue to issue individually numbered certificates for dairy herds in SA enrolled in the One Biosecurity program. Certificates are available for herds of known, low or very low risk categories within One Biosecurity – not to herds of unknown risk (based on the disease risk rating categories).

To obtain a certificate you must:

1. **Register** your herd on One Biosecurity (www.onebiosecurity.pir.sa.gov.au)
2. **Complete the biosecurity practices questionnaire** to generate a biosecurity plan.
3. **Complete the Johne's disease in dairy cattle disease risk rating questionnaire**
 - a. For classification as 'Independently Assessed: Very Low Risk' (previously **Dairy Score 7**) this document will need to be certified by your private veterinarian. You can download and print a copy of your Disease Risk Rating from the One Biosecurity Enterprise page (via "View Summary" under your Disease Risk Rating) and provide it to your vet for signing.

The screenshot shows the 'DISEASE RISK RATINGS' section of the One Biosecurity platform. At the top right is a 'Public' toggle switch set to 'On'. Below it, the status 'Independently Assessed' is displayed. A green button labeled 'Update Questionnaire' has a hand cursor icon over it. To the left, a message says 'Completed on 19-Mar-2019 BY TEST PRODUCER'. Below this are three buttons: 'View Results', 'View Summary', and 'Update Questionnaire'. Underneath these buttons is a 'Public' checkbox with a checked box and a hand cursor icon. A large preview window shows a signed 'DISEASE RISK RATING: Johne's Disease in Dairy Cattle' document. The document includes sections for 'LIVESTOCK INTRODUCTIONS AND MANAGEMENT PRACTICES', 'Strategies I', and 'Strategies II'. It features handwritten signatures for 'Dr John Smith' and the date '1/3/2019'. A note at the bottom states: 'THIS DOCUMENT CAN BE CERTIFIED BY A VETERINARIAN IF DESIRED. A BIOSECURITY PLAN WITH VETERINARY OVERSIGHT IS NOT SPECIFICALLY A REQUIREMENT OF ONE BIOSECURITY, BUT IS A REQUIREMENT FOR SOME OTHER PROGRAMS.'

4. **Complete the appropriate laboratory tests**, your private vet or PIRSA can provide laboratory results to you or advise if tests are due.
5. **Upload your veterinary reviewed and signed Disease Risk Rating document** (see step 3) to your One Biosecurity Enterprise (via "Add Documents" under "Documents" on your Enterprise page). *Note: this is only a requirement for herds claiming 'Independently Assessed: Very Low Risk' status.*
 - a. If you need assistance with completing this step, you can contact the Bovine Johne's Disease Program Manager (Dr Jeremy Rogers – 0427 608 133) or contact One Biosecurity Support on 8429 3300.

The screenshot shows the 'DOCUMENTS' section of the One Biosecurity platform. At the top right is a 'Public' toggle switch set to 'On'. A green button labeled 'Add Documents' has a hand cursor icon over it. Below it is a large empty box for document uploads.

6. **Request a certificate**
Contacting the Bovine Johne's Disease Program Manager, Dr Jeremy Rogers on Jeremy.Rogers@sa.gov.au or 0427 608 133.
7. You will receive your certificate via email and/or post. When you receive your certificate you can upload it onto your One Biosecurity profile, if you choose to do so.

Vaccination

Silirum is an inactivated (killed) vaccine available to assist with the management of Johne's disease in cattle. Note that cattle vaccinated with Silirum may not be eligible for live export to some countries. There are restrictions on the use of Silirum vaccine in several jurisdictions including South Australia. Producers and veterinarians need to contact PIRSA for the latest requirements before using Silirum. Silirum vaccine is currently only used by infected herds as a management strategy to reduce the level of clinical disease and bacterial shedding.

Any vaccinating herds will be ineligible for Sample Testing using blood tests to progress to very low risk.

Responsibility of private veterinarians, PIRSA and producers

1. Private Veterinarians

- Biosecurity advice and assessment as required
- Testing of herd and interpretation of results
- Provision of laboratory results to producers
- Sign producer biosecurity plan," Independently Assessed: Very Low Risk" and dairy cattle disease risk rating questionnaire.

2. PIRSA

- Technical advice to private veterinarians
- Oversight of the One Biosecurity program (including audit and verification)
- Extension of information to farmers and industry about Johne's disease
- Issuing certificates

3. Producers

- Day to day herd management and implementation of minimum required biosecurity practices
- Informing your vet of animals that could be affected by JD so that they can be tested, diagnosed and removed if infected, or treated if not affected with JD
- Sending a request to PIRSA (with required documentation) each year to receive an updated certificate

Involvement of the Dairy Authority of South Australia

Dairy Authority SA staff assist greatly in reinforcing key messages about biosecurity and JD management, since JD management is now also a component for many processor QA programs.

Hygienic calf rearing

Calf rearing credits are no longer required, but producers are encouraged to continue with best practice calf rearing.

Recommended Calf Rearing to improve calf health and minimise risks of Johne's disease infection:

1. Calves should be taken off the cow within 12 hours of birth.
2. Management of the calf rearing area should ensure no effluent from adult cattle comes into contact with the calves.
3. Do not feed milk containing antibiotics to calves.
4. A colostrum pasteuriser may be considered in herds with higher incidence of Johne's disease. Pasteurising colostrum and calf milk can also assist with reducing infection with a number of other diseases.
5. Calves up to 12 months old should not be reared on pastures that have had adult cattle or stock that may be infected with JD, during the past 12 months. Off farm rearing of heifers is recommended.