

Mycoplasma in dairy herds

Mycoplasma species are bacteria that can cause diseases in animals. Mycoplasma species can affect cows in different ways and the symptoms can vary from farm to farm for reasons that are not fully known.

Mycoplasma bovis has been recognised as a significant problem in Australian herds since 2006 and has been found in all dairy regions. Although low numbers of farms have been affected, many are larger herds, and disease caused by **Mycoplasma bovis** has resulted in significant losses due to lost production, culling and deaths of cows and calves. In affected herds, there is often a history of introducing animals. Other **Mycoplasma** species can cause disease but these species are less frequently isolated from Australian dairy herds.



How does it spread?

Cows may carry **Mycoplasma** without showing any signs of infection. These carrier animals are an important source of infection whether they are introduced or home bred cows. It can be difficult to identify carrier animals as they shed **Mycoplasma** intermittently and a single milk test may not always give a positive result. **Mycoplasma** species can readily spread during milking from one quarter to another in the same cow or other cows via milker's hands or liners. Cows can also become infected via contact with contaminated nasal secretions or uterine fluid. Semen, embryos and contaminated equipment are also potential sources for transmission.

Calves can become infected by consuming milk from infected cows, contact with contaminated surfaces or contact with other infected calves (including via aerosol).

While there is much to learn about **Mycoplasma**, research is currently underway to better understand the dynamics of infections in Australian dairy herds.

Table 1. Signs of Mycoplasma infections

Cows	Calves
Mastitis > often in multiple quarters > poorly responsive to treatment > higher cull rate of mastitis cows	Pneumonia > acute and severe > may affect very young calves (< 2 weeks of age)
Lameness > diffuse swelling of joints/leg > one or more joints/limbs affected.	Lameness > diffuse swelling of joints/leg. > one or more joints / limbs affected
Pneumonia	Head tilt Conjunctivitis
Swollen heads	Death
Death	

How to diagnose Mycoplasma species?

Mycoplasma infection should be considered if a number of animals are showing signs listed in Table 1. Special testing for **Mycoplasma** species is the only way to know for sure, so ask your vet about available testing options.

Milk cultures

Routine milk culture techniques used for mastitis pathogens will not grow **Mycoplasma** organisms. Check that your local testing laboratory is capable of culturing **Mycoplasma** species. **Mycoplasma** species are slow growing organisms and it can take up to seven days to obtain a culture result. Some species of **Mycoplasma** and other closely related bacteria do not cause disease, so further testing may be required to confirm a positive result.

Infected animals should be isolated immediately and monitored closely in case they deteriorate rapidly and require euthanasia.

Other cultures

If animals are showing lameness, your vet can take samples from swollen joints and submit them for culture or PCR testing. Swabs can also be taken from other body sites. Samples should be chilled on ice and transported immediately to the laboratory. Samples should be frozen if shipping is going to be delayed.

PCR test

A PCR test is preferable to culture when a quick diagnosis is required such as, in the face of an outbreak. A PCR test detects the genetic material from the *Mycoplasma* species and is very sensitive. At present, there is commercial PCR testing available only for *Mycoplasma bovis*.

Your factory field officer can request a PCR Major 4 test from Dairy Technology Services (DTS) on the bulk milk sample taken at normal pick up. However this will only test the cows contributing milk to the vat, not the cows under treatment.

Monitoring for *Mycoplasma* can be done at the herd level with regular bulk milk samples that include all the cows on the farm. This means a sample from the vat AND a sample from cows excluded from the vat. Due to intermittent shedding from subclinically infected cows, multiple tests (up to 5) 3 to 4 days apart will increase the sensitivity and specificity of testing. The test should be repeated once any dry cows have calved.

Treatment

Currently there are no effective approved treatments for *Mycoplasma* associated disease in lactating dairy cows. Certain antibiotics may be helpful when managing calves with *Mycoplasma* infections so seek veterinary advice. The potential for cured calves to remain shedders needs to be considered.

Managing a herd with *Mycoplasma*

If *Mycoplasma* infection is suspected, you will need to review hygiene measures and ensure they are strictly enforced. Disposable gloves should be worn in the dairy and milker's hands and milking equipment should be disinfected with teat dip or 70% alcohol spray between suspect cows or calves.

Regular stripping of cows will ensure early detection and isolation of mastitis cows into the hospital herd and minimise spread within the main herd. It is very important to disinfect gloves between stripping of suspect clinical cases to minimise the chance of spread.

Particular attention should be focused on limiting spread within the "sick or hospital" herd. Cows infected with *Mycoplasma* do not respond favourably to treatment and subsequently tend to accumulate in the "hospital" herd. Strict attention to hygiene is important when working with this "hospital" herd to avoid infecting animals entering this herd for other reasons. Avoid mixing "sick" and recently calved cows.

Always submit samples from suspect animals to confirm the diagnosis. Infected animals should be isolated immediately and monitored closely in case they deteriorate rapidly and require euthanasia. Infected cows should be culled from the herd once any withhold periods have passed. Once you get on top of your clinical cases, regular monitoring of your bulk tank using PCR is recommended to be aware of the remaining level of infection in your herd. If a herd remains positive and all clinical cases have been identified, it is likely cows remain that are subclinically infected. Preliminary research indicates sampling every cow to identify subclinically infected cows is not cost-effective. A more targeted approach of testing pooled samples from high cell count cows may identify subclinically infected cows but will not always. Focus should remain on identifying clinically infected cows.

How can I protect my herd from *Mycoplasma*?

Mycoplasma is most likely to be introduced by an infected animal so good biosecurity is essential to protect your herd. No single animal testing strategy will identify all infected animals but testing will significantly reduce the risk.

As a general rule, don't bring any animal onto your farm until you have checked its disease risk. Remember that apparently healthy animals can carry *Mycoplasma* and a variety of other serious diseases

such as Bovine Pestivirus, Johne's disease or digital dermatitis. It is risky to buy cows at sale yards where there is no access to the herd history or milk test results from the herd of origin.

Ideally source all new animals from herds that have been tested negative for *Mycoplasma*. The recommendation for testing source herds is to collect bulk tank and "hospital herd" milk samples at 3 to 4 day intervals. The risk of buying animals from infected herds reduces if more bulk tank and "hospital herd" samples are taken at intervals of 3 to 4 days due to the intermittent shedding of *Mycoplasma*. The samples should be tested using the PCR test for *Mycoplasma bovis*.

Depending on the level of risk and cost of testing, composite milk samples from individual cows can be tested. However, since cattle in infected herds may harbour *Mycoplasma* in their respiratory and genital tracts, milk cultures will not identify all animals colonised at these sites.

At present there are no commercially available tests for determining the *Mycoplasma* infection status of heifers or calves.

Whilst bulls are considered low risk, they do have the potential to spread *Mycoplasma* disease. Culture of semen and preputial swabs could help minimise this risk, especially from bulls known to be from infected farms.

Given the varying presentation of *Mycoplasma* in dairy animals, the accuracy required for sampling and interpretation, a close working relationship with an experienced veterinarian is essential. ■■



Mycoplasma under the microscope