

Primefact

Tick fever

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What is Tick fever?

Tick fever is a serious disease in the northern parts of Australia. Of the domestic animals, it affects only cattle and buffalo. It is estimated that some three million cattle died when it first swept through Queensland after arriving in the late 1800s. However, advances in tickicides, vaccines and drug technology now mean that tick fever can be controlled, and such losses are highly unlikely to occur again.

Cause of the disease

In Australia, three different organisms cause the disease:

- *Babesia bovis*
- *Babesia bigemina*
- *Anaplasma marginale*.

Of these three, *Babesia bovis* is responsible for about 80% of the tick fever outbreaks in Australia. In northern NSW, where the disease is not endemic but introduced sporadically, *Babesia bovis* accounts for more than 95% of outbreaks.

The organisms are microscopic parasites which destroy the red cells in the blood, similar to the disease malaria in humans. Cattle that recover from a natural infection of tick fever are generally immune for life but carry small numbers of the parasites in their blood often for the rest of their life.

How tick fever spreads

A vector is required to transmit the tick fever organism from one animal to another. In Australia, the bloodsucking cattle tick *Rhipicephalus australis* (formerly *Boophilus microplus*) is the vector for tick fever.

The *Babesia* parasites are taken up from an infected beast when female ticks engorge with blood while feeding on cattle. The parasites are then transferred through the tick's eggs to the larvae or 'seed ticks' of the next generation. The disease is spread when these larval ticks attach to a new host and subsequently infect it by injecting their saliva, which is carrying the parasites. Not all ticks become infected, nor do all larvae from these ticks become infective.

Babesia bovis develops rapidly in infected cattle ticks and is spread to other cattle by the larvae as they feed. *Babesia bigemina* takes longer to mature in infected ticks and is only spread by nymph and adult ticks.

In Australia *Anaplasma marginale* is mainly transmitted by male cattle ticks as they move from animal to animal in close contact. Male ticks typically live more than two months, much longer than female ticks. *Anaplasma* can also be spread by blood transmission via contaminated equipment like syringes and ear pliers and, although uncommon, some calves may even be born infected.

Effect of the parasites

The parasites enter red blood cells where they multiply, destroying many of the cells thus causing anaemia. This decreases the blood's ability to carry oxygen around the body, resulting in weakness and lethargy. In tick fever due to *B. bovis*, inflammatory chemicals can cause high fevers and can cause red blood cells to stick to blood vessel linings, making it even more difficult to transport oxygen around the body.

Symptoms

Calves up to about nine months old may not show any signs at all due to a strong calfhood resistance. However, as this resistance wanes, animals become increasingly susceptible. Most clinical disease is seen in yearlings and adults.

Babesiosis

Typical symptoms of babesiosis are as follows:

- Sudden onset of high fever up to 44°C often the first sign of this is that the animal isolates itself from the others and becomes uneasy and seeks shade or water to stand in.
- Cattle ticks may be present on the animal and/or herd mates. However, in very light infestations, it may not be possible to find any by the time the animal is sick or dead.
- At first the membranes around the eye are bright red but over a few days turn pale, or even white, as anaemia develops.
- The animal's appetite is depressed and there is a rapid loss in condition. In dairy cows, a drop in milk production occurs at the same time as the fever develops.
- Nervous signs may be seen with *B. bovis* infections. Circling, head tilt or bobbing and personality changes such as aggression may be seen.
- The urine is often red or brown to almost black, hence tick fever is sometimes referred to as 'redwater'. However, in the early stages of *B. bovis*, the urine can appear normal even though the animal may be quite ill.
- Pregnant cows may abort.
- Infected bulls may be temporarily infertile for 6-8 weeks.

- In the later stages of the disease after the blood cells have been destroyed, jaundice (or yellowing) of tissues may be present (e.g. in the eye or vulva).

An animal may die at any time from about 3 days to 4 weeks after the onset of the illness. The fever usually lasts for about a week and the course of the disease is about 3 weeks.

In animals that survive, the appetite gradually returns to normal, but recovery is slow and may take weeks or even months. Treatment with specific drugs usually results in rapid recovery if given early but animals showing clinical signs and left untreated frequently die.

Anaplasmosis

The incubation period for anaplasmosis is longer than babesiosis, usually taking around three–six weeks after infection for symptoms to appear. These symptoms are:

- mild fever and anaemia, but no ‘redwater’.
- Weakness, lethargy and inappetence.
- jaundice (yellow colouring of the membrane around the eyes) is quite common.
- Abortions are also common.

Affected cattle can die acutely or more commonly become emaciated and take months to recover. As with babesiosis, clinical signs are rare in animals under nine months of age.

Numbers affected

Cases of tick fever in NSW are infrequent with around three to six outbreaks per year recently. In affected herds up to 50 deaths have occurred on occasions but most outbreaks report less than five to ten deaths.

Losses are minimised by prompt treatment with a babesia-specific drug and treatment for cattle ticks.

Most tick fever outbreaks in NSW have been on the far north coast where the majority of cattle tick infestations occur but outbreaks have been seen on the tablelands and central west in association with new cattle tick infestations.

Any build-up in cattle tick numbers in an area may increase the risk of tick fever outbreaks. The chances of tick fever occurring in a NSW herd are greater if Queensland origin cattle recently move into the herd.

Reporting tick fever

Tick fever is declared as a notifiable disease in schedule 1 the *NSW Biosecurity Regulation 2017*. It is a mandatory measure to notify the government about the suspicion of tick fever occurring by phoning :

- your Local Land Services on 1300 795 299 (business hours)
- Disease Watch Hotline on 1800 675 888 (any time)

- [NSW Department of Primary Industries and Regional Development](#) veterinarian or authorised officer.

Prevention

Following confirmation of the disease, further losses in a herd can be prevented by treatment and tick eradication.

In cattle tick endemic areas in northern Australia tick fever vaccine is regularly used to protect cattle. The vaccine has a short shelf life as it contains living organisms so must be used straight away. It is available from the [Tick Fever Centre](#) at Wacol Qld. Use of this vaccine in NSW tick fever outbreaks should be considered to give ongoing protection of animals during the tick eradication program if there have been significant losses due to tick fever and if it is considered ticks have been present for a while (meaning ticks could be widely dispersed across the property, leading to prolonged eradication efforts). Vaccination is not required where tick outbreaks occur in the absence of tick fever.

It is important to note that tick eradication involves using cattle, regularly treated with acaricide to kill ticks, to pick up ticks off pasture; but that the acaricide treatment does not prevent the transmission of *B. bovis* organisms, leaving animals susceptible to ongoing cases of babesiosis if not protected by vaccination or repeated treatment with babesiacides.

More information

Talk to your private veterinarian or LLS for further information on tick fever.

For biosecurity general enquiries, phone 1800 680 244 or email animal.biosecurity@dpird.nsw.gov.au

For information on cattle ticks see the [NSW DPIRD Tick](#) webpage.

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