NSW GOVERNMENT Department of Primary Industries

primefact

Tick fever

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Animal Biosecurity and Welfare, NSW DPI

Tick fever is a serious disease in the northern parts of Australia. Of the domestic animals, it affects only cattle and buffalo. Late last century when tick fever swept through Queensland in the absence of chemical control, it was estimated that some three million cattle died. 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.

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 carry small numbers of the parasites in their blood usually 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* (*Boophilus) microplus* is the vector for tick fever.

The *Babesia* parasites are taken up from an infected beast when female ticks engorge with blood. The parasites are then transferred through the tick's eggs to the larvae or 'seed ticks'. The disease is spread when these 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 while *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 spend more than two months on a host, much longer

than female ticks. *Anaplasma* can also be spread by blood transmission by contaminated equipment like syringes and ear pliers. Transplacental transmission also occurs with anaplasmosis.

Effect of the parasites

The parasites enter red cells where they multiply, destroying many of the cells. This decreases the blood's ability to carry oxygen around the body, resulting in anaemia, fever and weakness. In tick fever due to *B. bovis* the destruction of the red blood cells provokes a strong immune reaction and release of inflammatory chemicals which damages the circulatory system particularly in the brain and lungs.

Symptoms

In general, older cattle are more likely to be severely affected than young ones. Calves up to several months old may not show any signs at all.

Babesiosis

The first signs of illness usually occur 8-10 days after tick attachment for *B bovis* and 14-20 days for *B bigemina*. The severity of the illness can range from a mild fever to one which is rapidly fatal. Clinical illness is rarely seen in animals less than 9 months of age.

Typical symptoms of babesiosis are as follows:

- Sudden onset of high **fever** up to 44°C (106°F) — often the first sign of this is that the animal isolates itself from the others and becomes uneasy and seeks shade.
- 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** are a feature of infection with *B. bovis*. Circling and personality changes such as aggression are often seen.
- The urine is often red or brown to almost black, hence tick fever is sometimes referred to as '**redwater'**.
- Pregnant cows may **abort**.
- Infected bulls may be temporarily **infertile** for 6-8 weeks

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 babesiois usually taking around three–six weeks after infection for symptoms to appear. These symptoms are:

- mild fever, and anaemia, but no 'redwater';
- jaundice (yellow colouring of the membrane around the eyes), which 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 are infrequent with around one outbreak every one to two years. 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.

The majority of 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 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 NSW are greater if Queensland origin cattle become infested with cattle tick.

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 tick fever. Any stock owner who suspects that an animal may be ill with or may have died of tick fever should ring:

- your Local Land Services on 1300 795 299
- a NSW Department of Primary Industries 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.

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@dpi.nsw.gov.au

For information on cattle ticks see:

http://www.dpi.nsw.gov.au/content/agriculture/livestock/health/images/information-by-species/cattle/ticks

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