

## Tick Fevers of Cattle

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### INTRODUCTION

For a description of the cattle tick, please read Agnote K39 (721) titled *The Cattle Tick*. Similarly, for information on the life cycle of tick fever parasites, please refer to Agnote K31 (696) titled *Life Cycles of the Tick Fever Parasites*.

Two types of tick fever are found in cattle in the Northern Territory (NT):

Bovine babesiosis - commonly known as tick fever or red water; and

Anaplasmosis.

Both are called tick fever because the microscopic parasites which cause them are transmitted to cattle by cattle ticks.



### 1. BOVINE BABESIOSIS

#### CAUSE

Babesiosis in Australia is caused by two species of *Babesia*, which invade and destroy red blood cells in cattle.

They are: *B. bovis* (formerly known as *B. argentina*); and  
*B. bigemina*

*B. bigemina* is common but rarely causes disease.

## METHOD OF INFECTION

Both *Babesia* species are carried by the cattle tick (*Rhipicephalus microplus*) and pass from the infected female adult tick through the eggs she lays. The eggs hatch into larvae, transform into nymphs and subsequently become adults.

*B. bovis* is transmitted to cattle through ingested tick larvae during grazing. *B. bigemina* is transmitted through ingested nymphs and adult ticks, but not larvae. This results in a time difference between the onset of the two infections and the appearance of the parasites in the blood stream. The time period is as shown below:

*B. bovis*                eight to 10 days;

*B. bigemina*        13 to 14 days.

## SUSCEPTIBILITY

Calves in tick areas are initially resistant to clinical disease due to the consumption of colostrum of (early milk) from their dams. This is followed by mild or in-apparent disease if infected from six to eight months of age. The resistance will disappear by nine months of age unless the calves have been exposed to infected ticks.

Of all cattle, bulls older than one year are the most susceptible. Yearling cattle are the next most susceptible. Excessively fat cattle, or those in poor condition, do not survive as well as cattle in good condition.

Zebu and Africander cattle have a stronger natural resistance to *B. bovis* than do British breeds and the Santa Gertrudis breed. It is suspected that non-immune Brahman cattle may become infected but clinical disease and death is not common.

Some cattle, which have recovered from an attack of babesiosis, remain carriers and are the major source of re-infection. The period of protection following natural infection is unknown, but is thought to be at least four years and appears to be life-long. It was previously thought that continuing re-infection was needed to maintain immunity. Cattle will definitely remain immune to tick fever where ticks are plentiful because of continual re-infection.

## CLINICAL SYMPTOMS

- Sudden development of fever - temperature around 41°C (106°F). The fever stage usually lasts about a week.
- Loss of appetite and rumination (chewing of cud) ceases.
- The animal isolates itself from the herd; it is disinclined to move and stands with the head lowered and ears drooping.
- The coat may appear ruffled, breathing becomes rapid and jerky and heart beat is accelerated.
- The mucous membranes of the eyes, nose and mouth become yellow due to anaemia and jaundice.
- The animal exhibits incoordination of the hindquarters, muscle shivering and a tendency to charge when disturbed.
- Emaciation occurs.
- The animal passes red coloured urine.
- Most deaths occur in the third week, but may occur any time after 24 hours of infection. Death may be precipitated by exertion or excitement.

The death rate of fully susceptible animals (European breeds from tick-free areas) is at least 20%; the death rate in susceptible Brahman cattle thought to be less than 1%.

## POST-MORTEM FINDINGS

You are advised to contact your local Livestock Biosecurity Officer or veterinarian if you suspect tick fever. By carrying out a post-mortem examination, he/she will be able to provide a definite diagnosis for the presence/absence of tick fever in your herd.

The symptoms a veterinarian will expect to find for tick fever include:

- yellow mucous and serous linings with small haemorrhages;
- an enlarged and bronze coloured liver;
- a distended gall bladder, usually filled with coagulated, dark green bile;
- an enlarged spleen with its contents resembling black-currant jam;
- red congested kidneys, swollen with blood;
- distended bladder with dark coloured urine.

These symptoms vary with acuteness and severity of the disease.

Confirmation of the presence of *Babesia* is done by microscopic examination of peripheral blood, brain and kidney samples from infected animals. This examination can be done at the Veterinary Laboratories in Darwin

## TREATMENT

Successful treatment depends on early diagnosis and prompt administration of effective drugs. Inject Imizol® subcutaneously at the rate of 1 mL/100 kg live body weight. Lactating dairy cows and cattle due for slaughter within 28 days for human consumption should **NOT** be treated with Imizol®.

It is important not to move or excite sick animals. They should be provided with shade, shelter and easy access to good feed and water.

## 2. ANAPLASMOSIS

Anaplasmosis is caused by the microscopic parasite *Anaplasma marginale*.

## METHOD OF INFECTION AND SUSCEPTIBILITY

Most of what has been said above about babesiosis applies to anaplasmosis.

The following are the differences between the two:

- The incubation period for anaplasmosis is three to six weeks.
- Anaplasmosis increases in severity with the age of the animal.
- Temperatures during the early stages of infection rarely reach 40.5°C. Temperatures also either remain high for several days then return to normal or alternate for up to a fortnight between high and normal.
- Animals do **NOT** pass red urine.
- Recovery is slower.
- Treatment is with Imizol® injected subcutaneously at the rate of 2.5 mL/100 kg live body weight.
- Clinical anaplasmosis is observed in NT Brahman cattle.

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