What Farmers Should Know About Theileriosis

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What Causes Theileriosis?

Protozoa called *Theileria parva bovis* which destroy white blood cells in the lymphatic system and the lungs.

How Serious is Theileriosis?

The disease varies in severity from an acute form where the cattle die after 2 to 3 days Illness or a mild form where symptoms may not be noticed.

Up to 80% of visibly infected animals die. Recovered animals, whether treated or not, remain **carriers of the disease for life**.

How do Brown Ear Ticks become Infected?

By feeding on carrier animals when at the nymphal stage, around August and September. Nymphal ticks feed, engorge and fall to the ground to change into adults. Adults are ready to start feeding from November onwards.

In other words, the infection is on the ground in certain paddocks or on certain farms where nymphal ticks have dropped from carrier animals during August or September.

Ticks cannot walk far on the ground and so do not move from farm to farm except when carried on an animal.

How can Theileriosis Spread to my Farm?

1. When carrier animals are introduced onto a farm and there are nymphal Brown Ear ticks on them. The infected adult ticks then feed on your cattle from December to March.
2. If carrier animals from neighbouring farms stray onto your land and nymphal Brown Ear ticks on your farm feed on them or if carrier cattle bring nymphal Brown Ear ticks with them which drop off on your farm.
3. If your animals stray during the summer months onto a farm where there are infected adult Brown Ear ticks on the ground.

What Signs do Sick Animals Show?

The disease usually occurs between December and March

1. Animals become very sick and show signs of difficult breathing, which progressively worsens until the animal dies.
2. All superficial lymph nodes are swollen

3. The eyes may be cloudy
4. There may signs of struggling on the ground.

What Samples should be taken to Confirm the Disease?

The protozoa are in the lymph nodes, spleen and lungs and pieces of these organs and or smears from them should be submitted for examination to the Veterinary Department or a private veterinarian.

How can Theileriosis be Controlled?

Control is based on:

1. Control of tick vector; and
2. Control of animal movement

Control of the Tick Vector

All ticks have basically the same life cycle and go through the following stages:-

Egg $\rightarrow$ Larva $\rightarrow$ Nymph $\rightarrow$ Adult

Adult female ticks, after mating on the host, fall off and lay eggs on the ground. The eggs hatch into larvae which feed, engorge and change (moult) into nymphs. The nymphs feed, engorge and change into male and female adults. Flat adult ticks climb onto cattle to feed. The females increase approximately 50-fold in size before falling off to lay eggs.

Brown Ear ticks moult on the ground. Therefore, each succeeding stage feeds on a different animal.

The life cycle of these ticks takes approximately one year. Each stage becomes particularly active and numerous at a certain time. This means that the different stages of the tick are mostly seen at the same time each year.

The peak periods of activity are roughly as follows:-

Adults	December to March
Larvae	April to august
Nymphs	August to October

These ticks also have short engorgement periods. Each stage spends less than a week feeding on a host.

Therefore, it is relatively easy to control them by effective short interval dipping at the periods of activity of each of the three stages. It is particularly effective at the nymphal stage because these ticks are not inside the ear but are on the external surface of the head. They are also much easier to kill than adults. Animals should be examined to ascertain when periods of activity begin.

If nymphs are not effectively controlled, and adults are numerous in summer:

a) Hair must be clipped from inside the ears and from the tail brush to expose the attachment sites to spraying and dipping;
b) It may be necessary to hand dress ears;
c) It is difficult to control all ticks where small herds graze large pastures; and
d) It is possible to eliminate Theileriosis from an infected farm by short interval dipping throughout the year for a number of years.

Control of Animal Movement

a) Prevent animals straying onto your land during August and September as they may introduce infected nymphal ticks;
b) Prevent animals straying during December to March onto land where there may be infected adult ticks on the ground; and
c) Avoid acquiring animals from Theileriosis-infected farms, as the presence of carrier animals in a herd is probably the most important fact in maintaining the threat of subsequent outbreaks. (This is almost impossible if you speculate since many commercial herds contain carriers).

What Treatment Must be Given to Sick Animals?

a) Nursing – provide food, water, shelter, shade and protection; and
b) Inject the anti-protozoal drugs**, BUPARVEX** at the rate of 1ml/ 20kg body weight.

Theileriosis is still a **NOTIFIABLE** disease and any outbreak must be reported to the Veterinary Department. At present, Buparvex can only be prescribed by a Veterinary Surgeon and supplied by a Veterinary Surgeon or Pharmacist.

Do Cattle Build up an Immunity?

Cattle may develop an immunity, but it cannot be relied on for control. On many farms the disease occurs year after year.

The only reliable prevention is sound dipping and management.

The Department of Veterinary Services has developed a vaccine using a milder strain which provides an immunity. At one time it was administered with a covering injection of tetracycline. With an adjustment in the dose, this is no longer necessary.

Vaccinated animals remain carriers after vaccination.
If there was a more virulent Theileria infection on the farm at the time of vaccination, vaccinated animals will also become carriers of the virulent strain without showing symptoms and they will be able to transmit it to a new generation of ticks. If vaccination is discontinued, this virulent strain will still be present in those animals and in ticks which have fed on them. Non-vaccinated animals and your neighbours animals are again at risk.

Rhipicephalus:

R. appenddiculatus: Brown Ear and "Eye Tick"
(2 species: 1 found on the Highveld and the other in the Lowveld, *R. zambeziensis*)

R.simus: Glossy Brown Tick or "Heel Tick"

R. tricupis, R. compsitus and R. sanguineus (Brown Dog Tick)

The female lays 3,000 to 5,000 eggs

Pre-oviposition period	5 – 40 days
Eggs hatch (summer)	28 days
Eggs hatch (winter)	3 months
Larvae engorge	3 – 7 days
Larvae moult	10 – 49 (28 days)
Nymphs engorge	3 – 7 days
Nymphs moult	10 – 61 (34 days)
Females engorge	4 – 10 days
Unfed larvae survive	7 months
Unfed nymphs survive	6 ½ months
Unfed Adults survive	14 months