

Control and treatment of Theileriosis to reduce cattle deaths

At the Mashona Cattle Society's AGM, Doctor John Lawrence, a Theileria expert, gave a most instructional presentation on the disease that is cutting a swathe through our national herd numbers and affecting nearly every single cattle owner in Zimbabwe. Areas have been completely devastated by this disease. It is a serious disease and it is going to be with us for a while so farmers need to understand it, understand how to control it and manage it and to live with it.

Points taken from Doctor Lawrence's speech:

Theileria parva is a protozoan organism widespread in eastern and southern Africa. It only affects cattle and buffalo. It is transmitted by brown ear ticks (*Rhipicephalus* spp.) it causes three different disease syndromes: East Coast Fever, Corridor disease and January disease.

East Coast Fever is transmitted from cattle to cattle. It is not seasonal and can occur at any time of the year. It spreads very rapidly from one farm to another and it causes very high mortality - up to 90 per cent of infected cattle die.

In 1934 another *Theileria parva* variant was recognised, causing Corridor disease. This spread from buffalo to cattle, but did not spread amongst the cattle. This was a disease with high mortality but was self-limiting.

Two years later, in 1936, January disease was then recognised as the third variant of the same species of *T. parva*. It spread from cattle to cattle, was confined to the rainy season, didn't spread very quickly and it didn't kill many cattle on the infected farm. This was given the name of January disease because people expected to find it in the rainy season.

East Coast Fever was eradicated from this country in 1954 and from the rest of southern Africa by 1960. January disease and Corridor disease have persisted - the control methods that got rid of the East Coast fever did not get rid of them; but they have been localised problems - they cause mortality on a farm if they are not controlled but they don't spread widely and they are not really national problems.

However, Doctor Lawrence is of the professional opinion that that changed in as early as 2015.

"Since from as early as 2015, there appears to be a new strain of January disease, and it is characterised by rapid spread and non-seasonality of appearance, whereas January disease is a disease that is characterised by a slow spread and occurs in the rainy season."

In 2016 or 2017, cattle started dying in noticeable numbers from Theileria infections. The department of Veterinary Services does not have figures for how many cattle died but Doctor Lawrence estimates it to be in the hundreds of thousands that died or were sold for emergency slaughter. And he says it was due to a new variant of *Theileria parva*. Statistics indicate that it was quite serious by 2016. It spread from cattle to cattle very rapidly around the country, it was nonseasonal and with very heavy mortality in infected herds.

Doctor Lawrence says there are very important differences between January disease as we have always known it and the new variant.

"They are so different and it is important to know that they are different," he says. The schizonts (the stage of the organism that is responsible for tissue damage and illness) and piroplasms (the stage of the organism that infects the tick) are much more numerous in the new variant than in January disease. The course of the new variant is usually longer, and can be up to 15 days if the animal is sick whereas with January disease, it is usually dead in four days. This longer period means that the opportunities for infection of ticks is greater.

Species of brown ear ticks that transmit *Theileria parva* are the Brown Ear Tick ("Highveld Tick") *Rhipicephalus appendiculatus* and the Lowveld Brown Ear Tick ("Lowveld Tick") *Rhipicephalus zambeziensis*. The "Highveld Tick" cannot survive in the lowveld whereas the "Lowveld Tick" thrives in the highveld. Adult ticks are almost indistinguishable and feed on the ears and head. "Highveld Tick" larvae and nymphs feed on the ears and

head and Lowveld tick larvae and nymphs feed on the legs and feet.

When it was first recognised the "Lowveld Tick" was restricted to the dry areas in the Zambezi valley, Matabeleland and the south-east lowveld. A survey in 2014 revealed that it is now widely distributed throughout the highveld. This is attributed to climate change, movement of cattle and inadequate tick control.

Important differences between the species of Brown Ear Tick: "Lowveld Tick" nymphs and adults are both efficient transmitters of *T. parva* and enable it to infect cattle twice a year. "Highveld Tick" nymphs are much less efficient transmitters so there is very little infection in the dry season, hence January disease, and *T. parva* can only spread half as fast.

The problem is that a perfect storm has been created with the simultaneous presence of three probably unrelated factors:

1. the appearance of a new variant of *T. Parva*, very infectious for ticks
2. the appearance of "Lowveld Ticks" in the highveld transmitting *T. parva* twice a year
3. a national herd completely susceptible to *T. parva* infection and the "Lowveld Tick".

Control of *Theileria parva*

Prevention of infection by ticks through isolation or acaricides. If these fail, then treatment or immunisation.

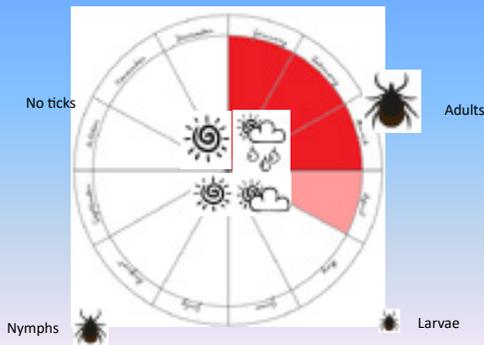
Isolation. This works by keeping out sick or carrier cattle that can introduce infection. This can be done by zero grazing or fencing.

Cattle or other large hoofed animals and hay can introduce infected ticks. Do not introduce hay cut from pasture to which infected cattle may have had access.

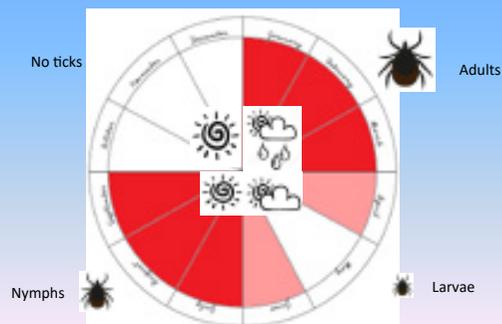
One ox can infect 1,000 ticks. One tick can infect an ox. Dipping while larvae and nymphs are feeding will reduce the risk of infection in the next season. Dip or spray at 5-7 day intervals throughout the year except October-December, whether you see ticks or not.

All registered dips kill Brown Ear Ticks.

ADULT ONLY TRANSMISSION JANUARY DISEASE



ADULT AND NYMPH TRANSMISSION NEW VARIANT



the infected beast of water for up to 48 hours or using a diuretic such as furosemide.

Corticosteroids (eg Dexamethasone) suppress lymphocyte division and inhibit cytokines. Consult your veterinary advisor for details.

Immunisation against *T. parva* is not available in Zimbabwe at present. Furthermore,

no safe and effective dead vaccine exists. Cattle can be immunised by “infection and treatment” an isolate of January disease named Boleni has been used in the past to immunise cattle but is no longer available. “Infection and treatment” saves lives where tick control is possible, but establishes foci of infected ticks. Block treatment with long-acting tetracycline in the early stages of an outbreak will slow down the development of disease in animals incubating infection until tick control is established.

Final points from Doctor Lawrence for cattle producers to take home include preventing access of infected animals and ticks with zero grazing or secure fencing if possible. Kill ticks by using the most effective method you can and use it regularly. Supervise dipping. Treat infected animals. Check animals frequently and treat early. The way to reduce economic losses resulting from livestock deaths is to employ a combination of all possible control measures in an integrated strategy. Keep your animals safe!

The acaricide of choice for the control of theileriosis is Amitraz. The disadvantage of this is that Blue Ticks may be resistant. Amitraz has a detachment effect as well as killing ticks. It terminates or even prevents ticks feeding. As *Theileria* can be transmitted within 24 hours on occasion, this provides added protection. Pyrethroids have a 7-10 day residual effect so weekly dipping is sufficient. Amitraz has a 4-5 day residual effect so cattle need to be dipped every five days. Lastly on the subject of dipping chemicals, use reliable brands of acaricide. Regarding supervision during dip day, check that the infrastructure and equipment is functioning efficiently. Check that the acaricide is up to strength and count the cattle through the dip so none are left out. If hand spraying, spraying the backs of cattle in a race will not kill Brown Ear Ticks. The ears and feet must be thoroughly wetted, whilst the cattle are individually tied up or in a crush.

Tick grease must be applied directly to feeding sites - ears, eyelids, tail root, udder and feet at weekly intervals. With cattle

with hairy ears, the hair in the ears must be clipped. Tick resistant cattle include indigenous breeds such as the Mashona. Resistance limits the number of ticks that feed and the amount of blood they consume, and thus limits the severity of infection in a herd. Save your money by treating your sick cattle as early as possible.

Treatment of *T. parva*

Symptoms of *T. parva* include temperature, breathlessness, poor appetite, swollen lymph nodes and low milk production.

Buparvaquone is highly effective if used early. It kills schizonts and piroplasm. Repeat the dose after 48 hours if necessary. Do not underdose - estimate cattle weight accurately. Use a reputable brand. Recovered animals are likely to be carriers.

Tetracycline is effective if used early in mild cases. It does not kill the schizonts and piroplasm. It acts by inhibiting multiplication of cells containing schizonts. Recovered animals may be carriers.

Treatment includes reducing lung oedema and this can be done by depriving



Zero grazing