

THEILERIAS AND THEIR CONTROL

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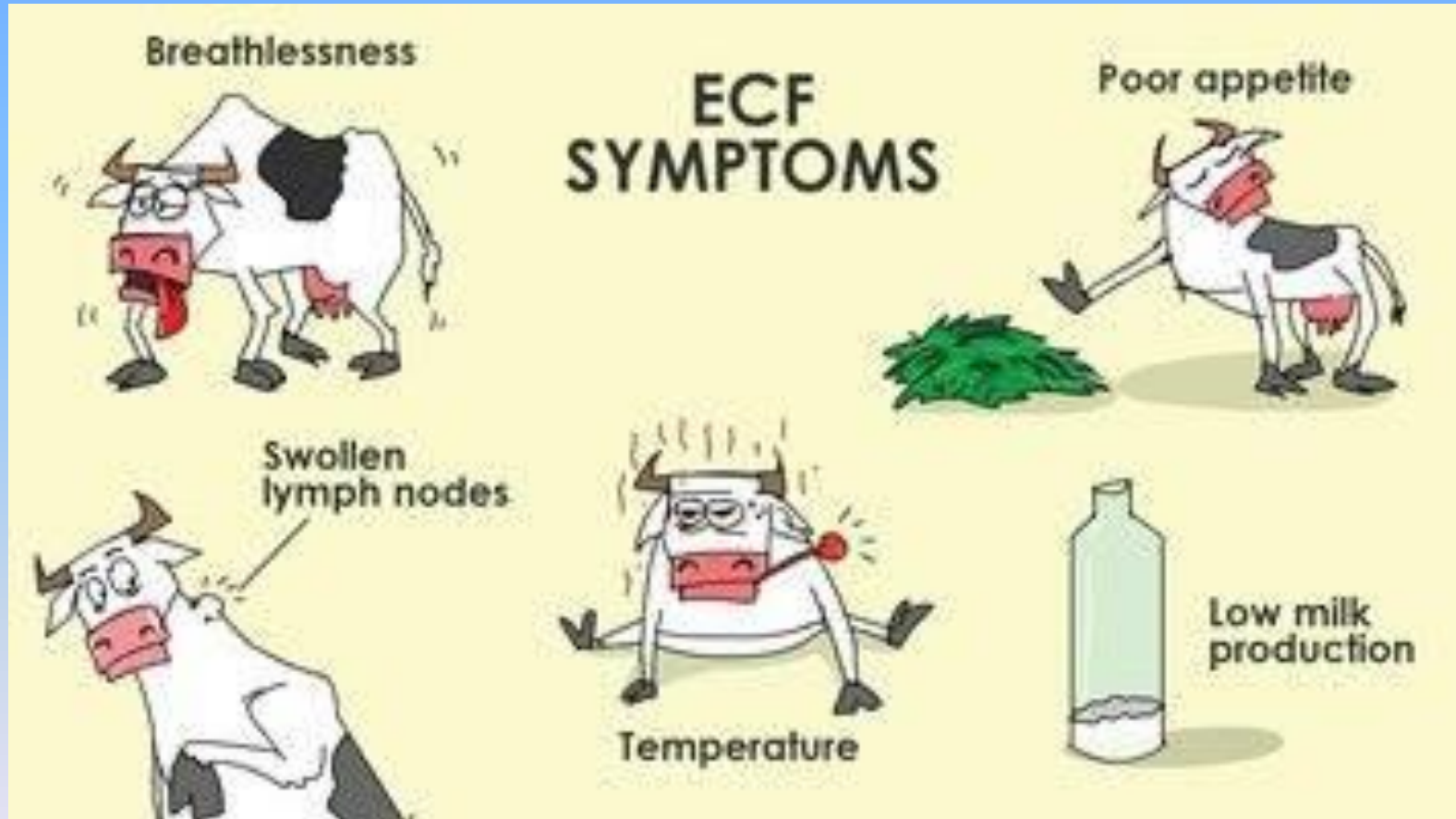
THEILERIA PARVA IN CATTLE IN ZIMBABWE

- The disease
- The problem
- The solution

THEILERIA PARVA

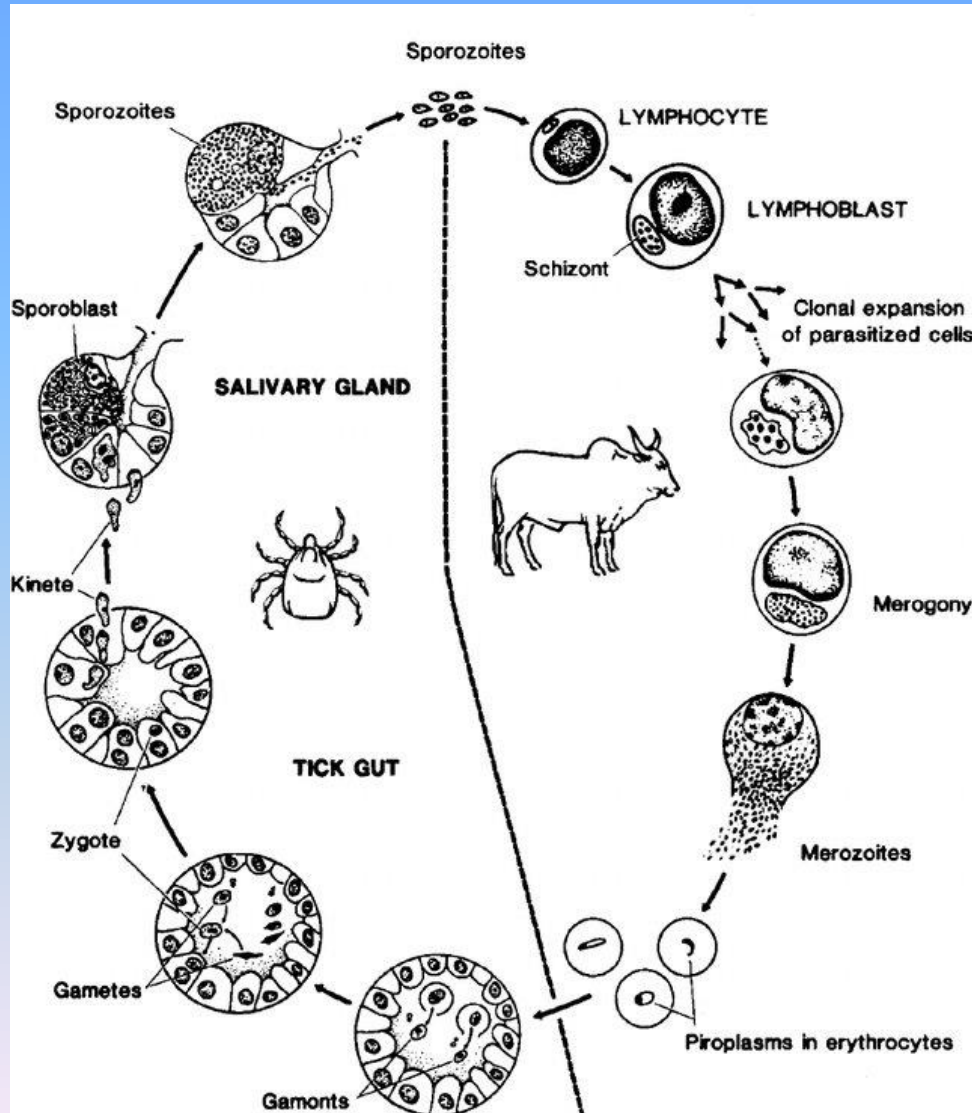
- Protozoan organism widespread in eastern and southern Africa
- Only infects cattle, African buffalo
- Transmitted by Brown Ear Ticks (*Rhipicephalus* spp.)
- Causes three different disease syndromes
 - East Coast fever
 - Corridor disease
 - January disease

THEILERIA PARVA INFECTION



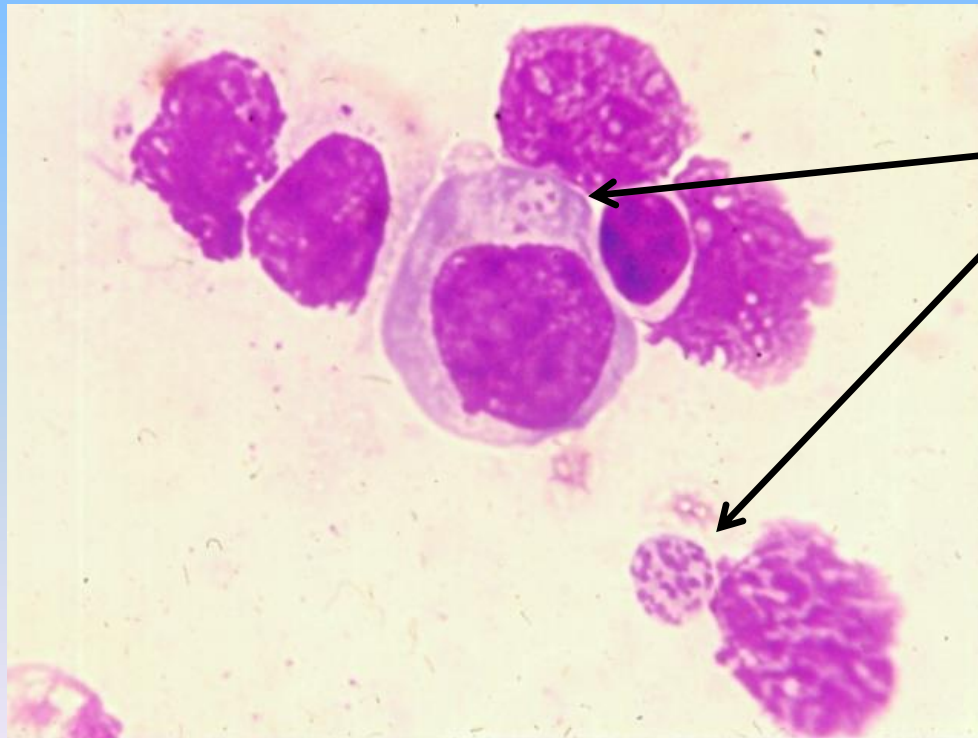


THEILERIA PARVA: LIFE CYCLE



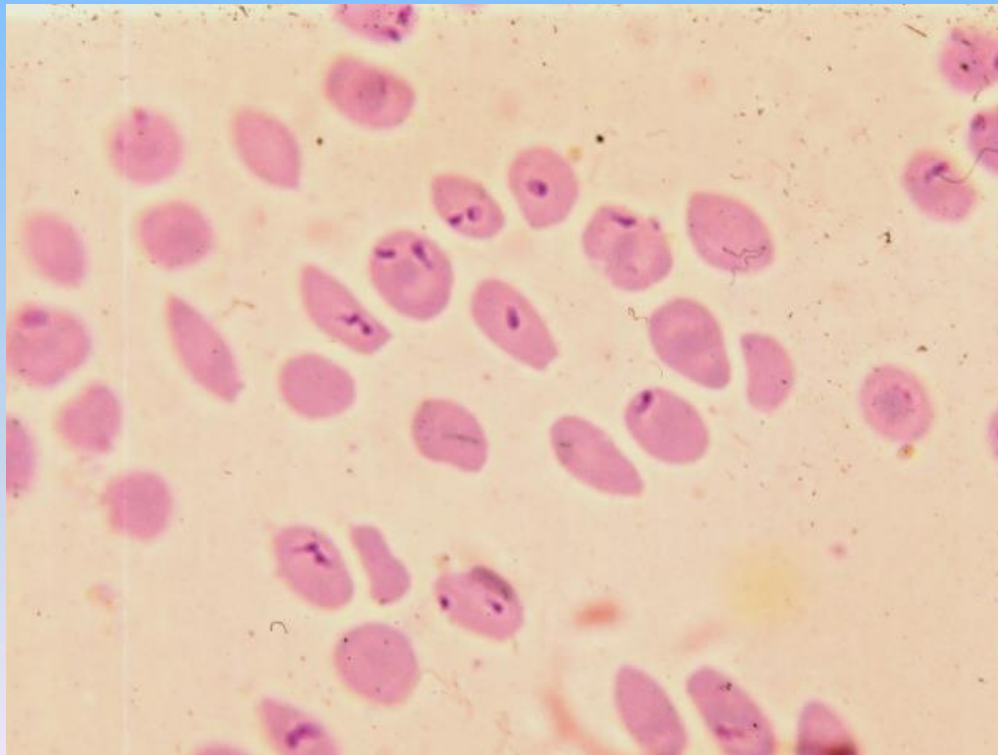
SCHIZONTS

The stage of the organism that is responsible for tissue damage and illness



PIROPLASMS

The stage of the organism that infects the tick



THEILERIA PARVA: VARIANTS

DISEASE	RECOGNISED	TRANSMISSION	SEASONALITY	SPREAD	MORTALITY
East Coast fever	1902 imported	Cattle - cattle	Non-seasonal	Rapid	High
Corridor disease	1934	Buffalo - cattle	Non-seasonal	Self-limiting	High
January disease	1936	Cattle - cattle	Rainy season	Slow	Low

East Coast fever was finally eradicated in 1954.

January disease and Corridor disease have persisted as localised problems that can be controlled relatively easily

THE PROBLEM



THEILERIA PARVA: VARIANTS

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???	2017	Cattle - cattle	Rainy season	Rapid	High

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"JD 17"	2017	Cattle - cattle	Rainy season	Rapid	High

THEILERIA PARVA: VARIANTS

IMPORTANT DIFFERENCES

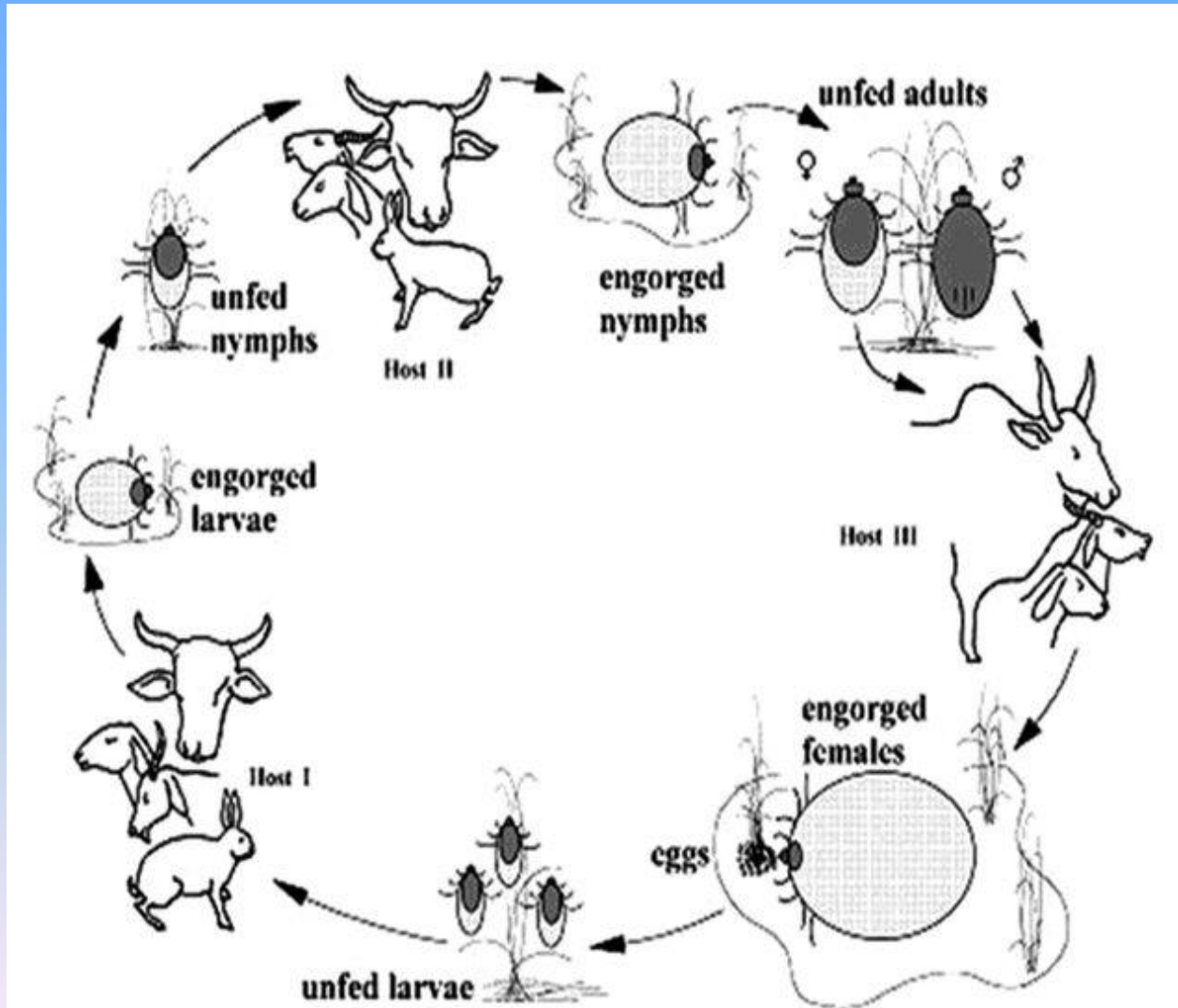
- Schizonts and piroplasms are more numerous in “JD 17” than in January disease
- Course of disease of “JD 17” is usually longer – 15 days v. 4 days, but variable
- Opportunities for infection of ticks greater in “JD 17”

BROWN EAR TICKS



BROWN EAR TICKS LIFE CYCLE

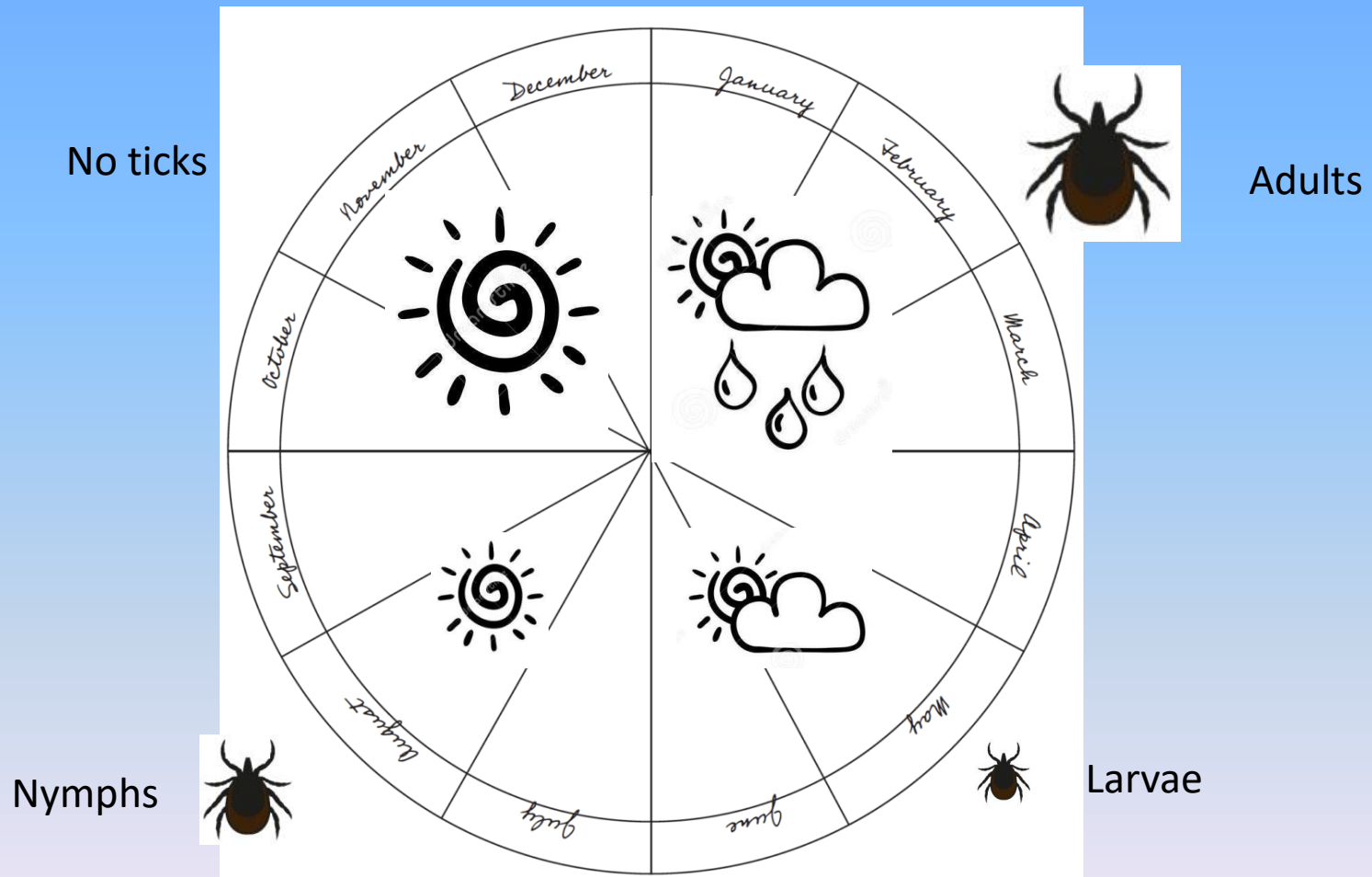
Nymphs



Larvae

Adults

SEASONALITY OF BROWN EAR TICKS IN SOUTHERN AFRICA

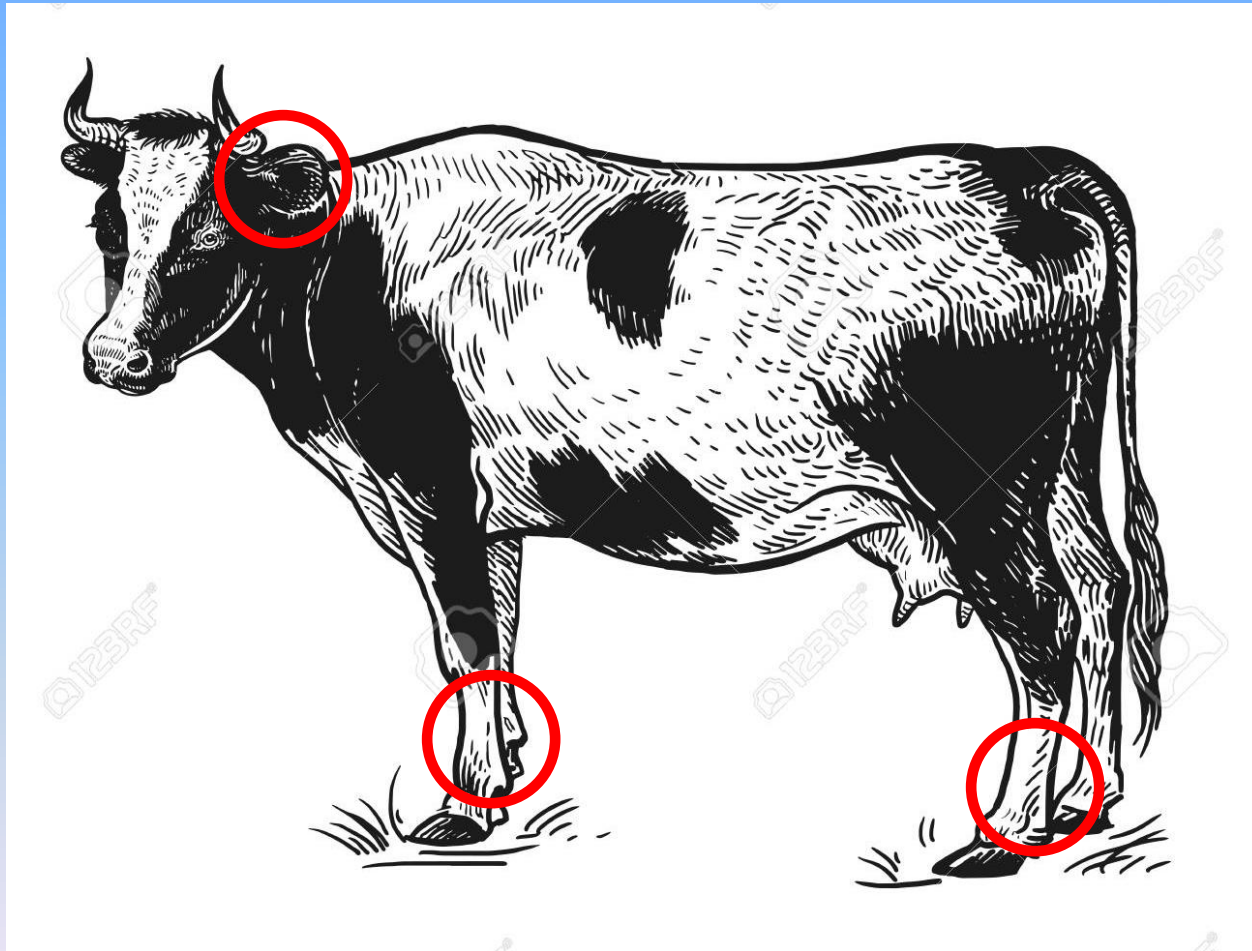


SPECIES OF BROWN EAR TICK THAT TRANSMIT *T. PARVA*

- *Rhipicephalus appendiculatus* – described 1901 – Brown Ear Tick (“Highveld Tick”)
- *Rhipicephalus zambeziensis* – described 1981- Lowveld Brown Ear Tick (“Lowveld Tick”)
- “Highveld Tick” cannot survive in lowveld
- “Lowveld Tick” thrives in highveld
- Adults almost indistinguishable
- “Highveld Tick” larvae and nymphs feed on the ears and head
- “Lowveld Tick” larvae and nymphs feed on the legs and feet

FEEDING SITES OF BROWN EAR TICKS

Adults of both species, immatures of “Highveld Tick”



Immatures of “Lowveld Tick”

R. ZAMBEZIENSIS: DISTRIBUTION IN ZIMBABWE

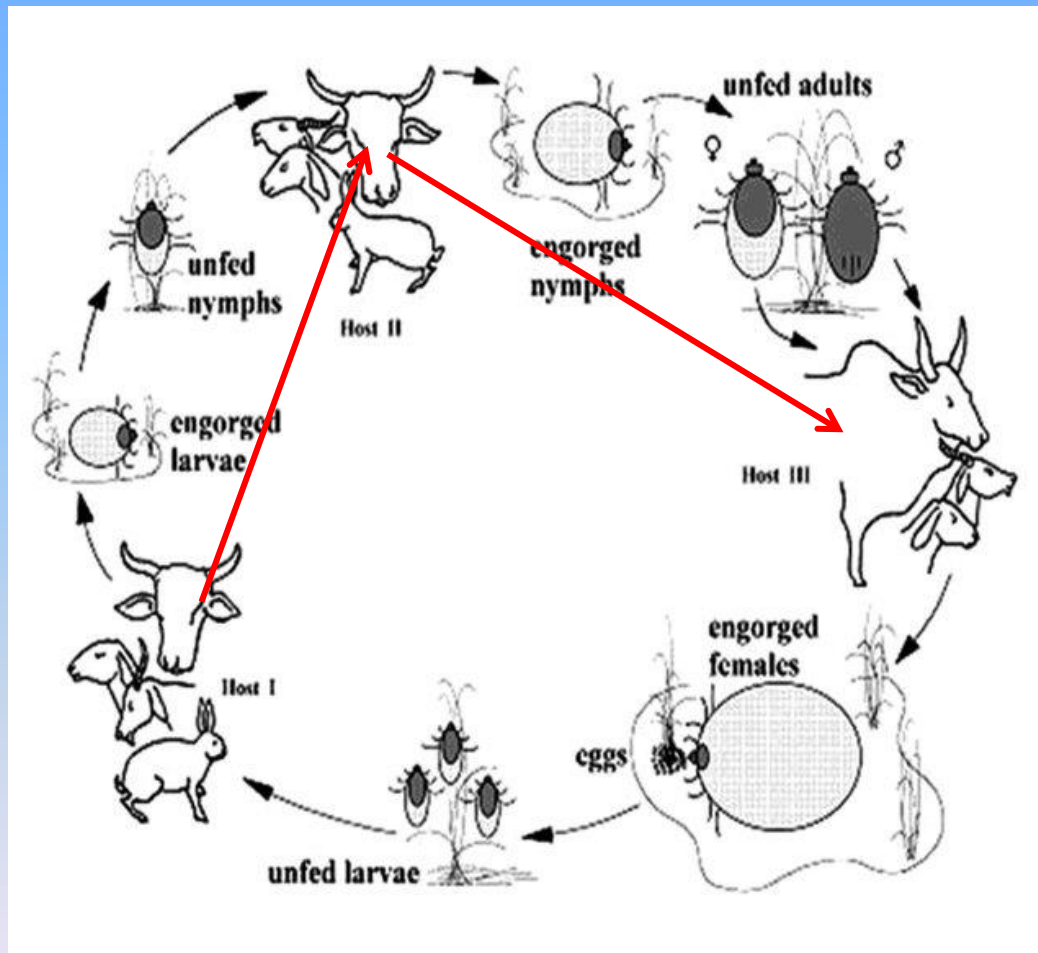
- When it was first recognized the “Lowveld Tick” was restricted to the drier areas in the Zambezi valley, Matabeleland and the south-east lowveld
- A survey in 2014 revealed that it is now widely distributed throughout the highveld
- This is attributed to climate change, movement of cattle and inadequate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

TRANSMISSION OF *THEILERIA* BY BROWN EAR TICKS

Nymphs

Larvae

Adults

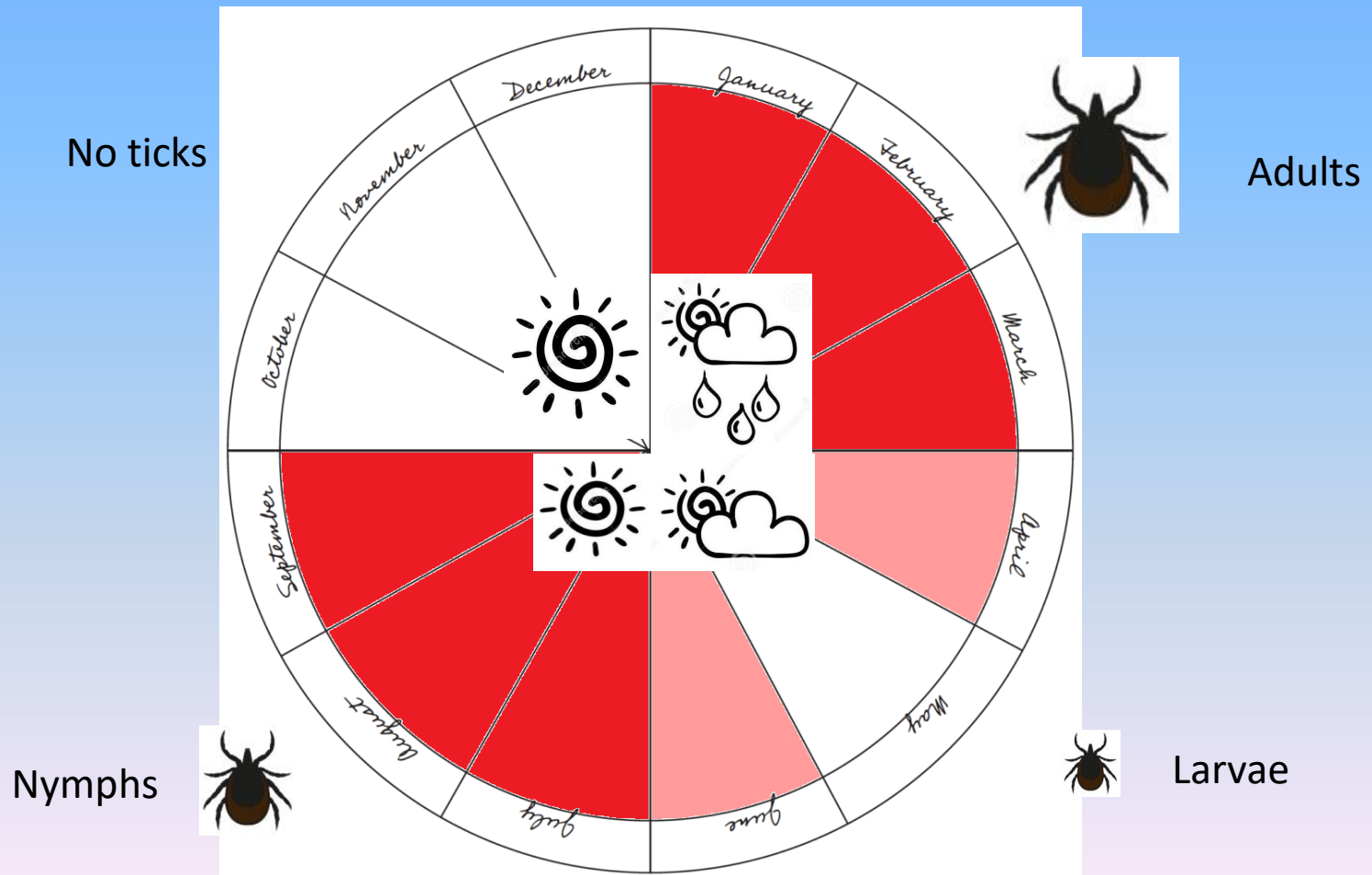


SPECIES OF BROWN EAR TICK

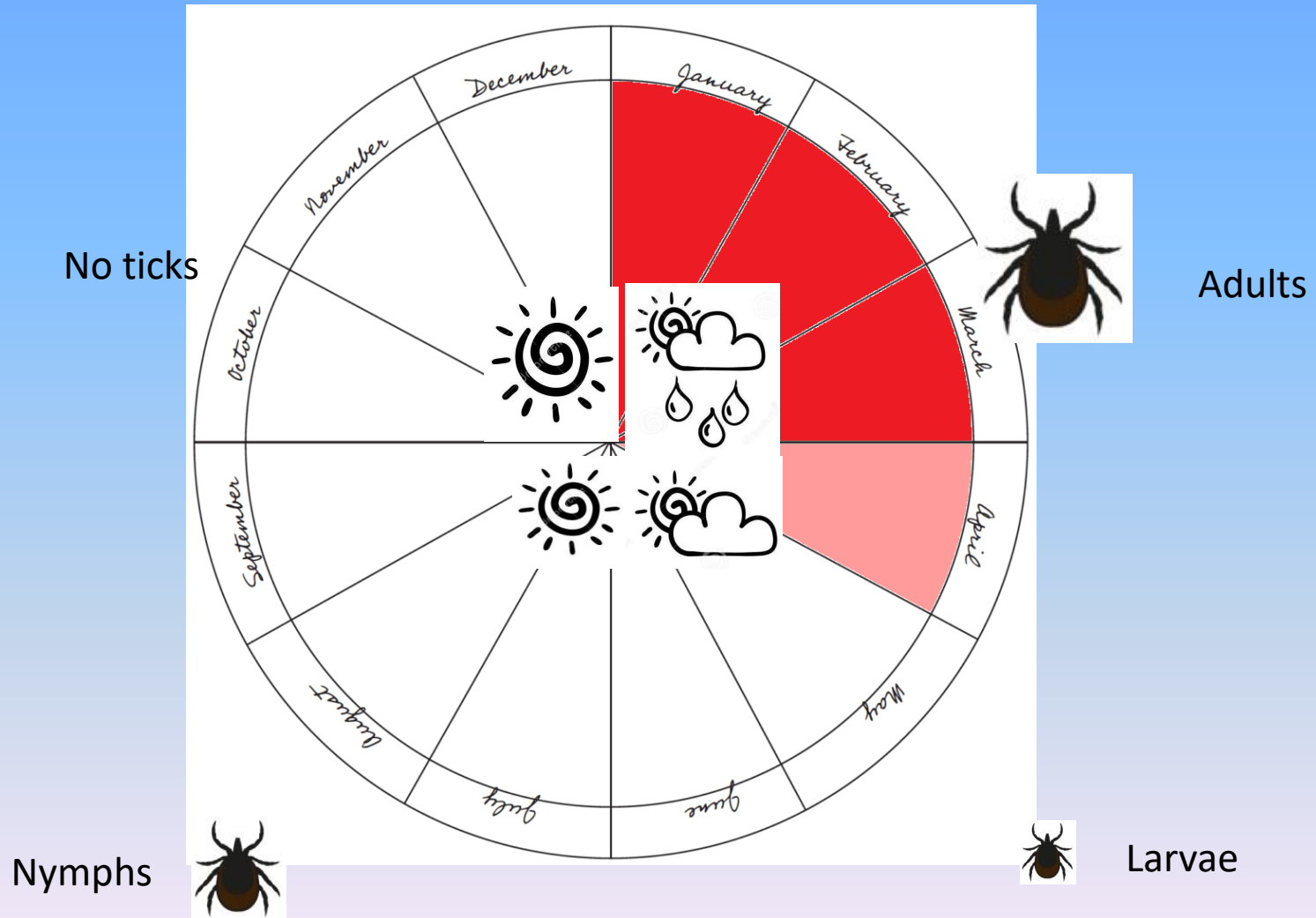
IMPORTANT DIFFERENCES

- “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

ADULT AND NYMPH TRANSMISSION "JD 17"



ADULT ONLY TRANSMISSION JANUARY DISEASE



THE PROBLEM

A PERFECT STORM

- Simultaneous presence of three probably unrelated factors:
 - The appearance of “JD 17”, a variant of *T. parva* very infectious for ticks
 - The appearance of “Lowveld Ticks” in the highveld transmitting *T. parva* twice a year
 - A national herd completely susceptible to *T. parva* infection
- Exacerbated by interruption of dipping services in the communal areas

THE SOLUTION



The tick is the weak link

CONTROL OF *THEILERIA PARVA*

Prevention of infection by ticks

- Isolation
- Acaricides

If these fail:

- Treatment
- Immunisation

ISOLATION

- Sick or carrier cattle can introduce infection
- Keep them out
 - Zero grazing
 - Fencing

ISOLATION

- Infected ticks can be introduced on:
 - cattle
 - other large hoofed animals
 - hay
- Keep them out
 - Zero grazing
 - Fencing
- Do not introduce hay cut from pasture to which infected cattle may have had access

ZERO GRAZING



ZERO GRAZING



FENCING



DOUBLE FENCING



Effective fencing depends on cooperative neighbours

TICK CONTROL



DIPPING



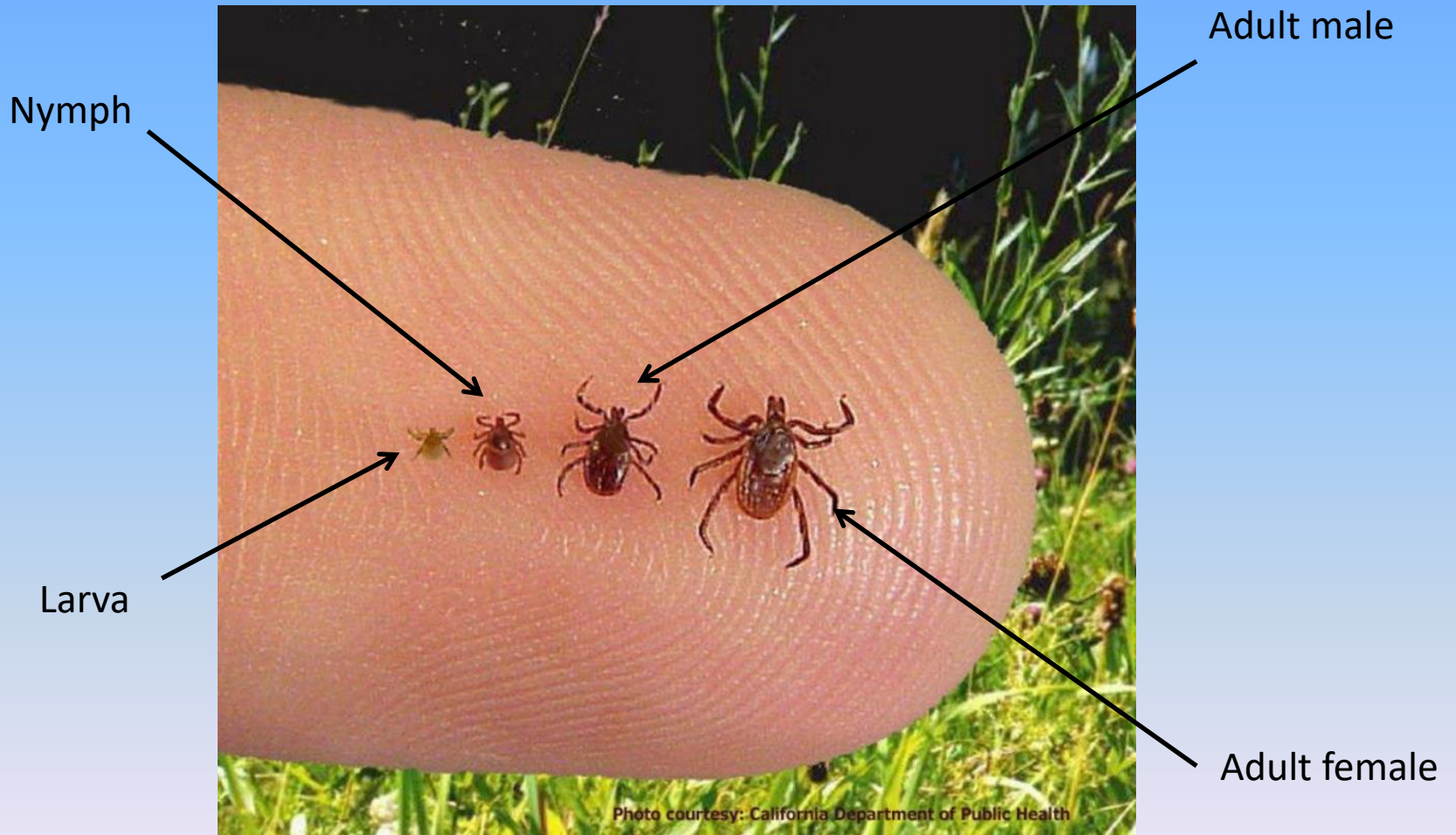
SPRAY RACE



MANAGEMENT

- One ox can infect 1000 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/spray at 5-7 day intervals throughout the year except October-December, whether you see ticks or not

SIZES OF TICKS BEFORE FEEDING



ACARICIDES

- All registered dips kill Brown Ear Ticks
- The acaricide of choice for the control of theileriosis is Amitraz: disadvantage – Blue Ticks may be resistant
- Amitraz has a detachment effect as well as killing ticks. It terminates or even prevents feeding
- As *Theileria* can be transmitted within 24 hours on occasion, this provides added protection
- Pyrethroids have 7-10 day residual effect; dip weekly
- Amitraz has a 4-5 day residual effect; dip every 5 days
- Use reliable brands of acaricide

SUPERVISION

- Check that equipment/infrastructure is functioning efficiently
- Check that acaricide is up to strength
- Count the cattle through the dip

OTHER OPTIONS FOR TICK CONTROL



HANDSPRAYING



Spraying backs in a race will not kill Brown Ear Ticks

HANDSPRAYING



Ensure that ears and feet are thoroughly wetted

TICK GREASE



Apply directly to tick feeding sites (i.e. ears, eyelids, tail root, udder and **feet**) at weekly intervals.

HAIRY EARS



Clip hair in ears

TICK RESISTANT CATTLE



“PASTURE MANAGEMENT”



TREATMENT OF *THEILERIA PARVA*



Treat as early as possible

SAVE YOUR MONEY



WORTH TRYING



TREAT NOW



TREATMENT OF *THEILERIA PARVA*

- Buparvaquone
 - Highly effective if used early
 - Kills schizonts and piroplasms
 - Repeat after 48 hours if necessary
 - Do not underdose – estimate weight accurately
 - Use reputable brand
 - Recovered animals are likely to be carriers

TREATMENT OF *THEILERIA PARVA*

- Tetracycline
 - Effective if used early in mild cases
 - Does not kill schizonts or piroplasms
 - Acts by inhibiting multiplication of cells containing schizonts
 - Recovered animals may be carriers

TREATMENT OF *THEILERIA PARVA*

- Reduce lung oedema
 - Deprive of water for up to 48 hours
 - Use diuretic (furosemide)
- Corticosteroids (e.g. Dexamethazone)
 - Suppress lymphocyte division
 - Inhibit cytokines
- Consult your veterinary advisor for details

IMMUNISATION AGAINST *THEILERIA* *PARVA*

- Not available in Zimbabwe at present
- No safe and effective dead vaccine exists
- Cattle can be immunized by “infection and treatment” – Boleni isolate in Zimbabwe
- “Infection and treatment” saves lives where tick control is impossible, 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

CONTROL OF *THEILERIA PARVA*

- Prevent access of infected animals and ticks
 - Zero grazing/fencing if you can
- Kill ticks
 - Use the most effective method you can and use it regularly. Supervise
- Treat infected animals
 - Check animals frequently and treat early

KEEP YOUR CATTLE SAFE

