



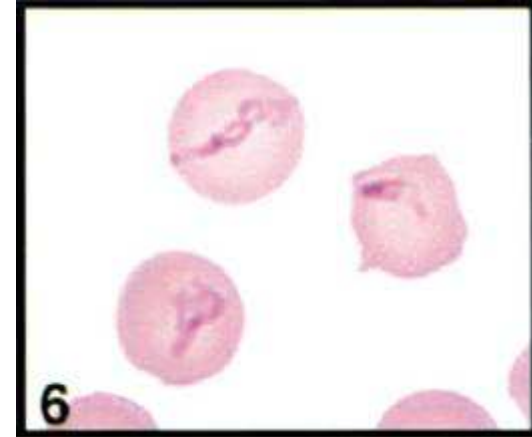
Primary  
Industries

# Theileria in cattle- a farmers guide to a “new” disease

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# What are Theileria?

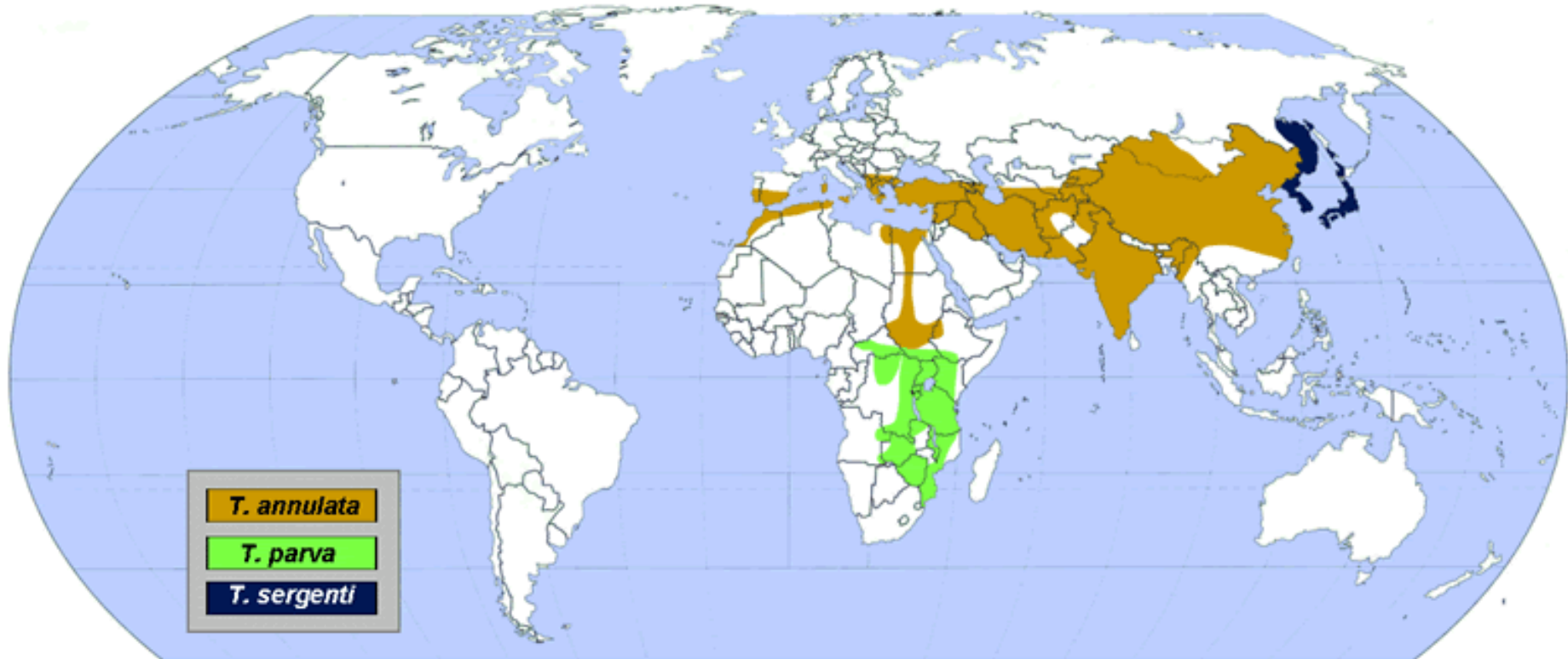
- Theileria are protozoa
- Microscopic
- Other examples include:
  - Malaria (People)
  - Coccidiosis (Animals and birds esp poultry)
  - Tick fever (cattle)



# What diseases do Theileria cause in cattle?

- *Theileria parva* East coast fever
- *Theileria annulata* Tropical theileriosis
- *Theileria sergenti/T. buffeli/T. orientalis* complex  
Bovine anaemia caused by *Theileria orientalis*- theileriosis

## Distribution of major *Theileria* species of cattle



▪ Courtesy Matt Playford

# Bovine theileriosis in Australia

- First recorded 1910
- Incidental finding, common Qld and nth NSW
- 2006 in NSW sickness and deaths
- Anaemia main feature of the disease
- March 2009- District Veterinarians Conference, Pt Macquarie
- September 2009 Theileria Workshop
  - Name of disease- benign bovine theileriosis
  - Case definition
  - Research Priorities
  - Theileria working group

# How would I recognise the disease?

- Lethargy
- Lack of appetite
- Exercise intolerance
- Gums pale and/or yellow
- Abortion and still births
- Deaths-particularly late pregnancy or early lactation

# How would I recognise the disease?



- Photos courtesy Ian Poe



# How would I recognise the disease?



- Photos courtesy Ian Poe



# How would I recognise the disease?



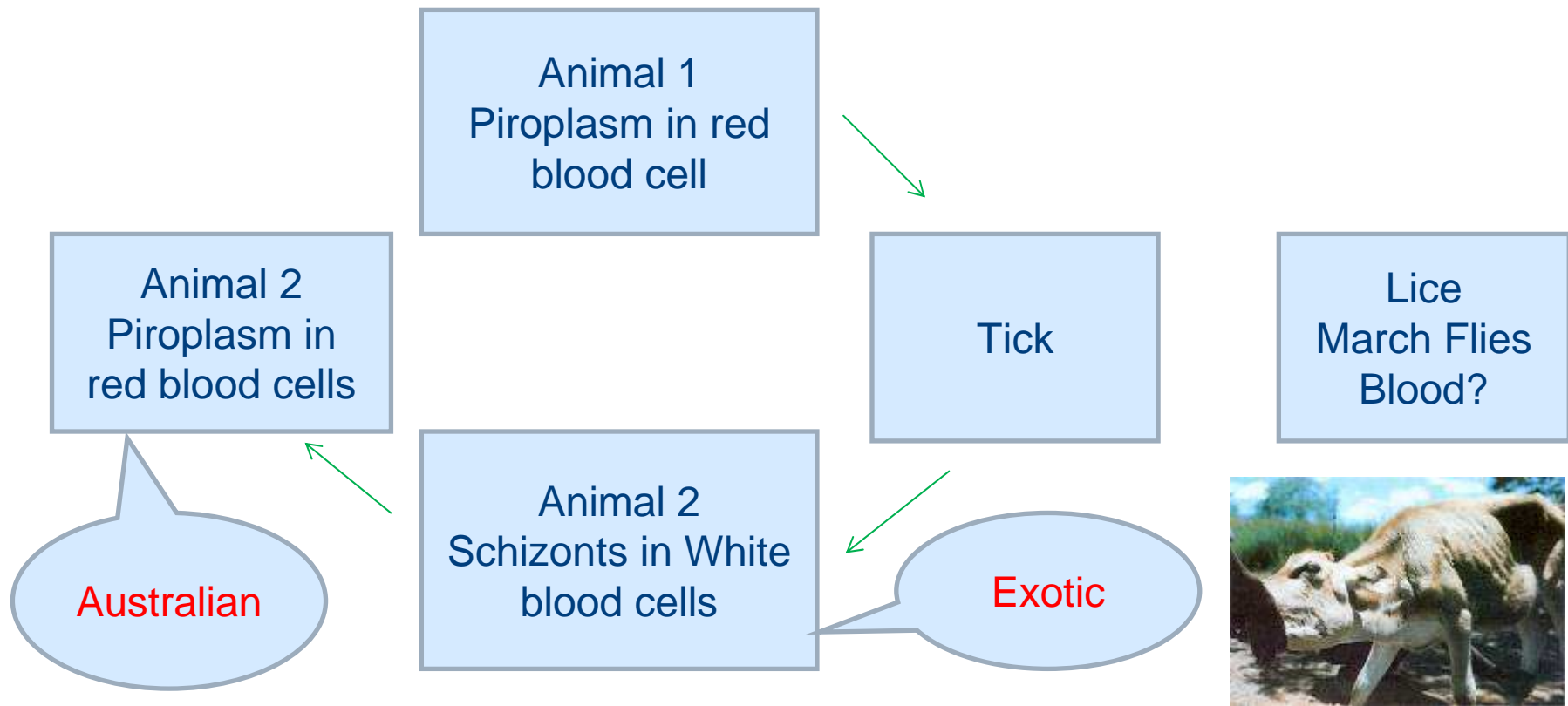
- Photos courtesy Bruce Watt



# How is the disease diagnosed?

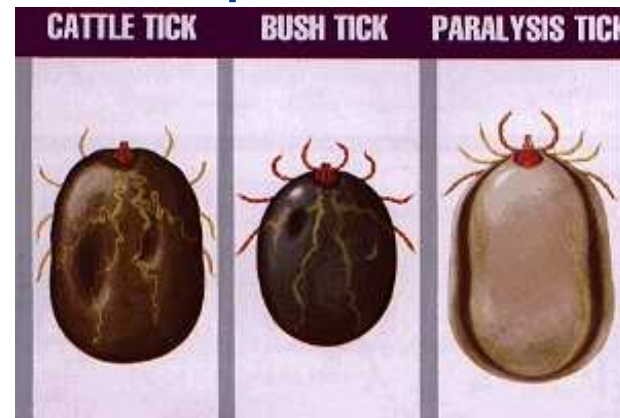
- History
- Clinical signs
- Laboratory examination of blood
  - Anaemia
  - Theileria parasites
- Other common causes of regenerative anaemia excluded

# Theileriosis- a tick born disease

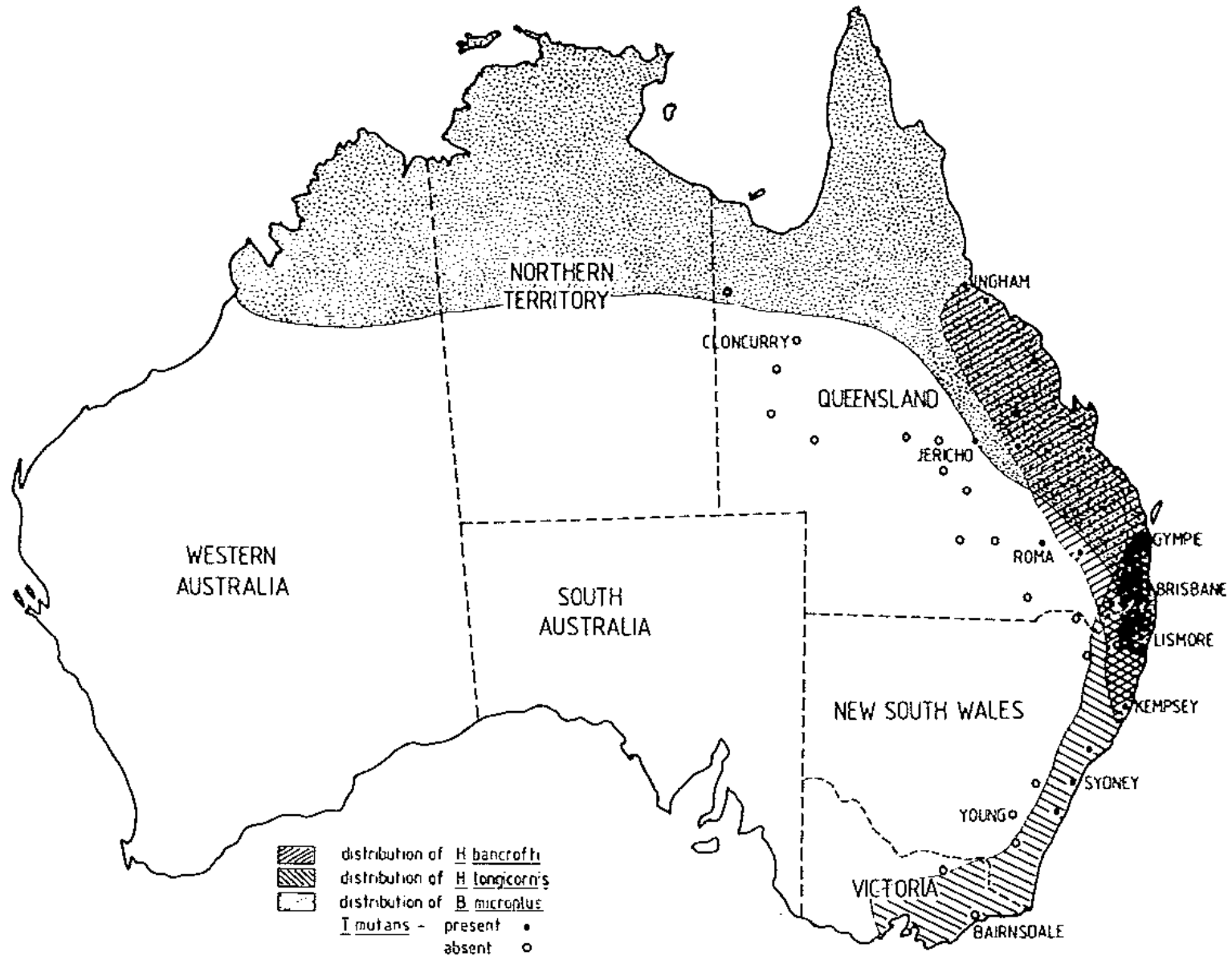


# Ticks and theileriosis in Australia

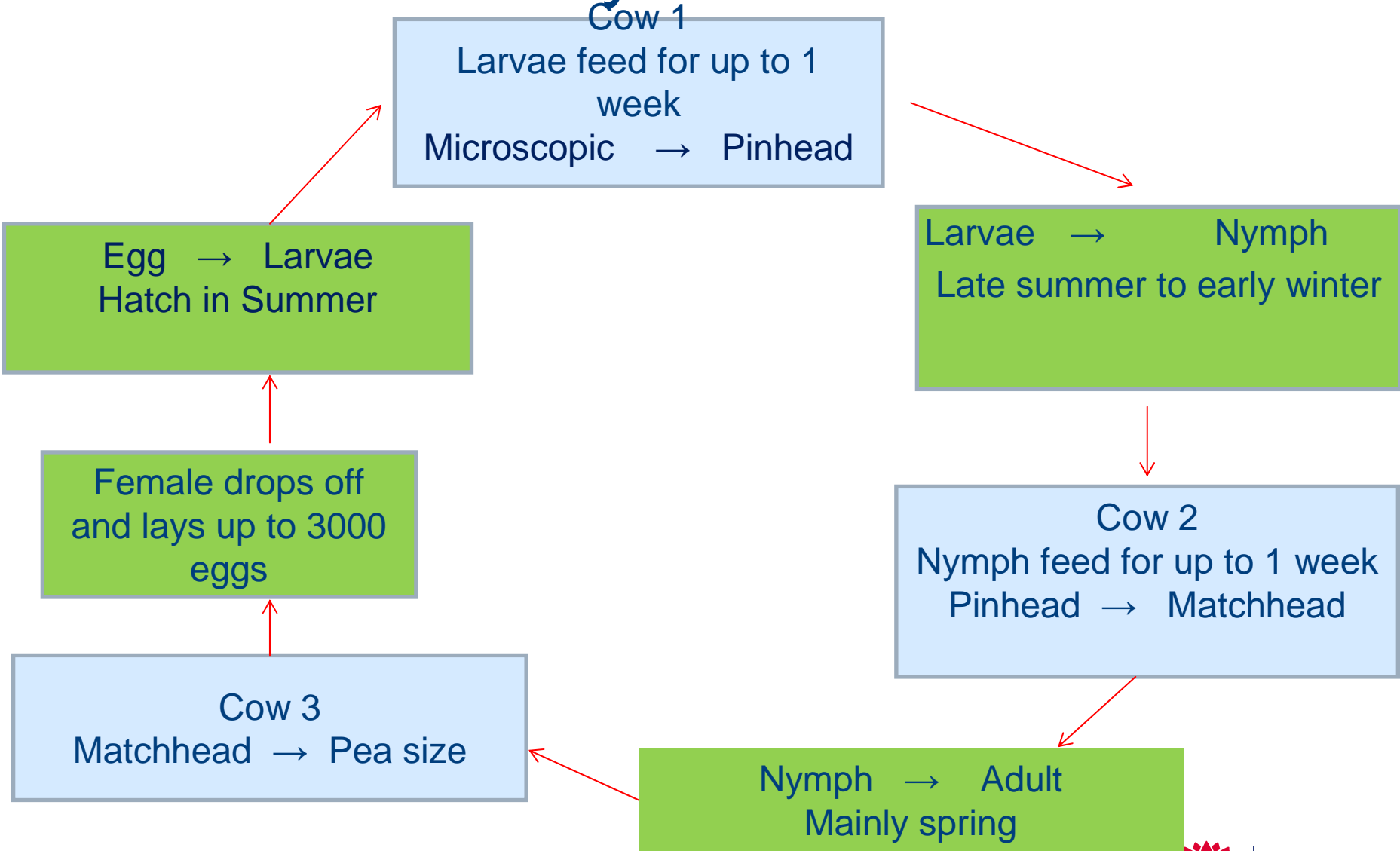
- Bush tick- likely to be the main culprit
- Others:
  - Wallaby tick
  - Bandicoot Tick
  - NOT the Cattle Tick
- Transmission-small numbers required
- Detect in blood shortly after exposure



# Tick distribution



# Bush Tick life cycle



# Mechanism of spread

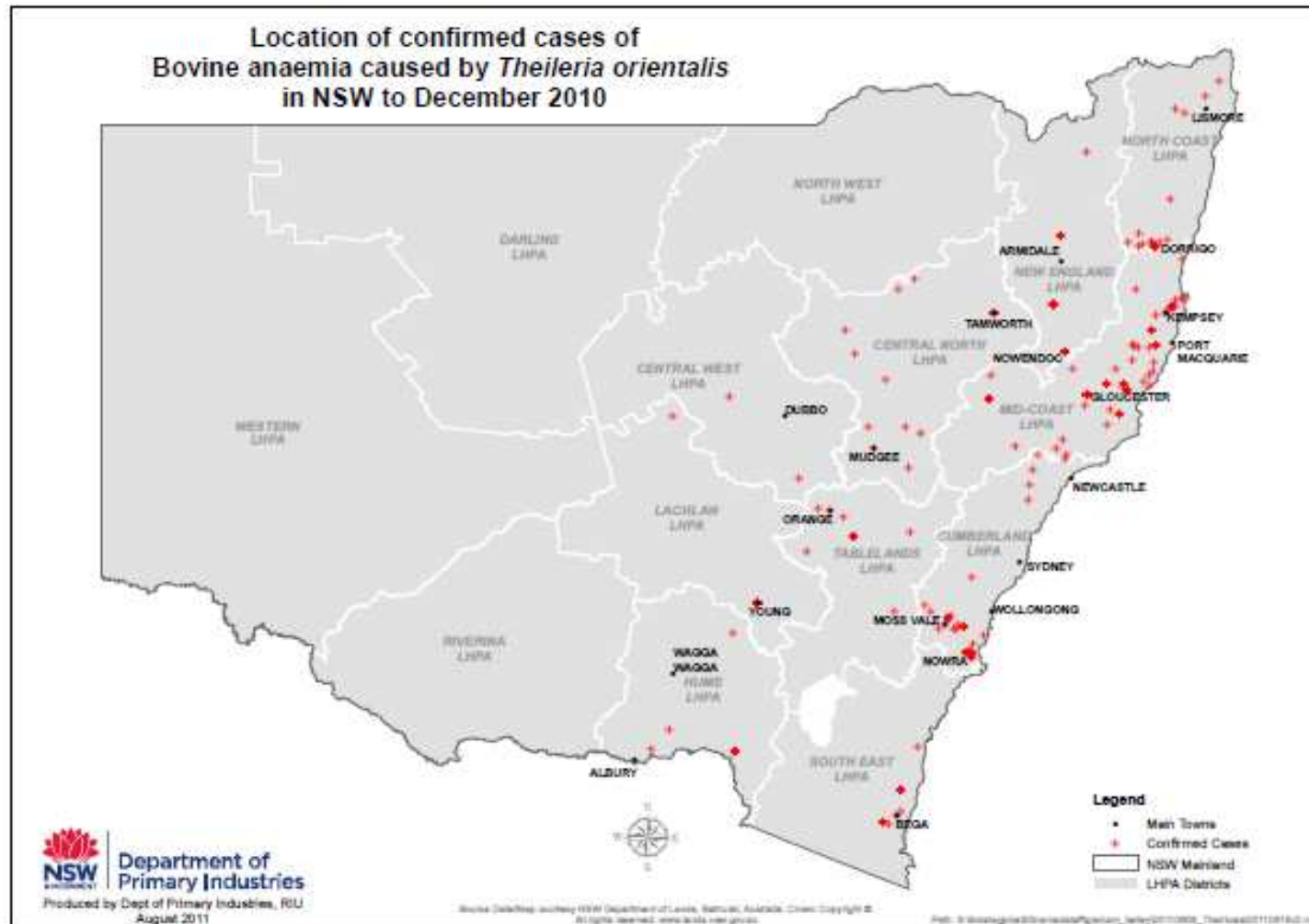
	Ticks observed in the 2 years prior to disease diagnosis	
	Yes	No
Coastal	36	8
Non Coastal	4	16
Total	40	24

# Why is the disease more serious today than before 2006?

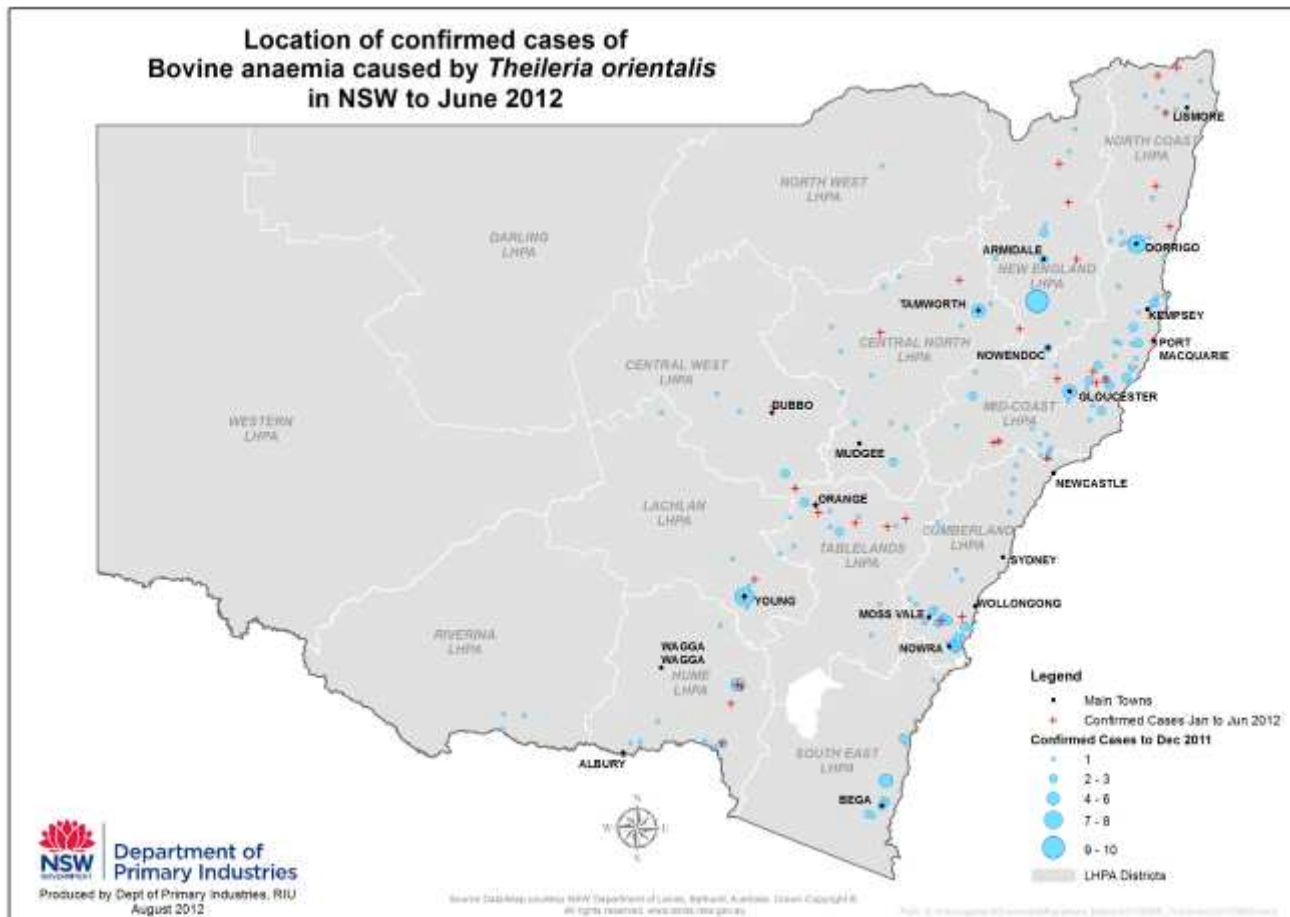
- PCR test allows variants to be distinguished
- Prior 2006- buffeli and probably chitose were present
- 2006 Ikeda first detected
- Ikeda
  - Ikeda MPSP always detected on properties with disease
  - Ikeda MPSP always detected in severely anaemic animals- as pure or mixed



# Where are farmers seeing disease?



# Where are farmers seeing disease?



# How might the parasite be introduced to my farm?

- Animal movements
- Patterns of disease
  - Introduced adult cattle
  - Home adult cattle
  - Calves

# What can I do to reduce the chances of introducing the parasite?

- Don't introduce cattle
- If cattle introduced:
  - Introduce from districts where infection is uncommon
  - Biosecurity on introduction
    - Treat for ticks on arrival
    - Place in paddocks less favourable for ticks
    - Don't mix with home cattle

# What can I do to reduce severity of disease ?

- General management
- Observation of at risk cattle
- Early veterinary attention
- Future
  - Drug limited infection?
  - Vaccination?

# What drugs have been used to treat cattle with theileriosis?

- Hydroxynaphthoquinones (paravquone and **buparvaquone**)
- 8-amino quinoline derivatives (primaquine and pamaquine)
- Quinazolinones (halofuginone lactate)
- Antibiotics- tetracycline
- Carbanilide derivatives (immidocarb)

# Property 1



- Across the fence transmission
- Ticks?

# Property 2

- Home property Coonamble
- Coastal block at Gloucester- had for approx. 20 yrs
- 16/4/2010 52 PTIC Cows moved
- 1/6/2010 Theileriosis diagnosed
- Losses- 4 cows died, 30 abortions
- Estimated cost-\$26 500
- Plan to cease moving cattle



# What precautions should be taken in the future?

- Cattle have had disease/high probability Theileria on farm?
  - Don't get rid of cattle
  - Introduction naïve cattle a risk
  - My cattle might spread elsewhere
- Cattle naïve
  - Don't introduce cattle
  - Introduce cattle from districts where Theileria uncommon
  - Biosecurity on introduction
  - Moving cattle?

# General Biosecurity advice

- When buying cattle, always request a Cattle Health Statement
- See <http://www.farmbiosecurity.com.au>

**NATIONAL CATTLE HEALTH STATEMENT**

VERSION 1  
August 2011

Assignment PIC Number (must be completed): \_\_\_\_\_ Attached to accompanying NVD: (Optional) No. \_\_\_\_\_

**SECTION 1 – Consignment Information** (see explanatory notes for further information)  
 must comply with the information provided on an NVD, if available  
 Owner of cattle: \_\_\_\_\_  
 Horse number: \_\_\_\_\_  
 Address of origin of stock: \_\_\_\_\_  
 Destination Property Identification Code (PIC) (if known): \_\_\_\_\_  
 Description of stock (e.g. breed, age & sex): \_\_\_\_\_  
 Were all the cattle vaccinated on the above property? Yes  No

**SECTION 2 – Disease Free Cattle** (see explanatory notes for further information)  
 The cattle originate from the following BVD Free Area:  
 Protected Zone  Free Zone  Bred Protected Area  Management Area   
 The cattle originate from a herd with a status of:  
 Bred  Pregnant  Non-Pregnant  Clerk Treated  Bred/NA  BVD  BVD1   
 Bred Protected Area (BPA) (see explanatory notes for further information) eligible for the Protected Zone

**SECTION 3 – Disease Free Dairy Cattle** (see explanatory notes for further information)  
 The consignment has a Dairy Assessment Score of:  
 Part A (see notes) Part B (see notes) Part C (see Dairy Score)

**SECTION 4 – Exotic Bacterial Pathogens (EBP)** (see explanatory notes for further information)  
 EBP are small but deadly being carried.  
 Are the cattle free of EBP, as defined in the table below? Yes  No

**SECTION 5 – Treatment** (see explanatory notes for further information)

Treatment	Status	Date of treatment (within last 8 months)
Levofloxacin		
Clavex		
Levofloxacin (oral)		
Other treatments (specify):		
Comments (optional):		

**SECTION 6 – Current Vaccinations** (see explanatory notes for further information)  
 Clostridial vaccinations (e.g. I & D): Yes  No  Clostridial vaccinations (Bovilis): Yes  No   
 Brucella vaccinations: Yes  No  Bovine ephemeral fever vaccination: Yes  No   
 Leptospirosis vaccinations: Yes  No  Malignant catarrhal fever vaccination: Yes  No   
 Other Vaccinations (specify): \_\_\_\_\_

**SECTION 7 – Pre-travel Testing** (see explanatory notes for further information)  
 Have dairy cattle been tested for the presence of potential agents (e.g. blood, skin or hair)? Yes  No   
 If tested, were any cattle positive for potential agents? Yes  No   
 If tested, were the cattle found to be potentially infected? Yes  No

**SECTION 8 – Declaration** (see explanatory notes for further information)  
 As the owner/pastor (or his agent) responsible for the biosecurity of the cattle in this consignment, I declare that the above information is true and correct.  
 Signed: \_\_\_\_\_ Date: \_\_\_\_\_  
 Printed name (full name) must be legible under the lighting and other relevant farm legislation.  
 Printed name (full name) must be legible under the lighting and other relevant farm legislation.

**SECTION 9 – Cattle Tick** (see explanatory notes for further information)  
 I declare that:  
 All ticks (if present) are removed/present.  
 Ticks that the stock described above are free of any external parasites in a cattle tick free area (CTF).  
 Ticks that the stock described above comply with the cattle tick duty requirements (see section 10).  
 Where treatment and/or inspection was required the following expenses will be provided:  
 who contacted: Type of inspection: \_\_\_\_\_ (see explanatory notes for further information)  
 Treatment: \_\_\_\_\_ Method of treatment: (Spray/Ap - 2000) - year of - location:  
 Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Place or Location: \_\_\_\_\_

**SECTION 10 – Certification by an Authorised Person** (see explanatory notes for further information)  
 According to the information provided above, and after the completion of a tick duty inspection, I certify that the health status of the consignment of cattle described above complies with the jurisdictional requirements pertaining to:  
 Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Place or Location: \_\_\_\_\_



# More information

- Primefact: Bovine anaemia caused by Theileria orientalis group
- <http://www.dpi.nsw.gov.au/biosecurity/animal/info-vets/theileria>

# Cost- Overall

- Dairy
  - Average \$58 916
  - Range \$5300-204 000
- Beef
  - Average \$11 662
  - Range \$300-100 000

# Cost- per head

- Dairy
  - Average(\$/head) \$131
- Beef
  - Average (\$/head) \$67