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# Managing infectious causes of reproductive loss in beef herds

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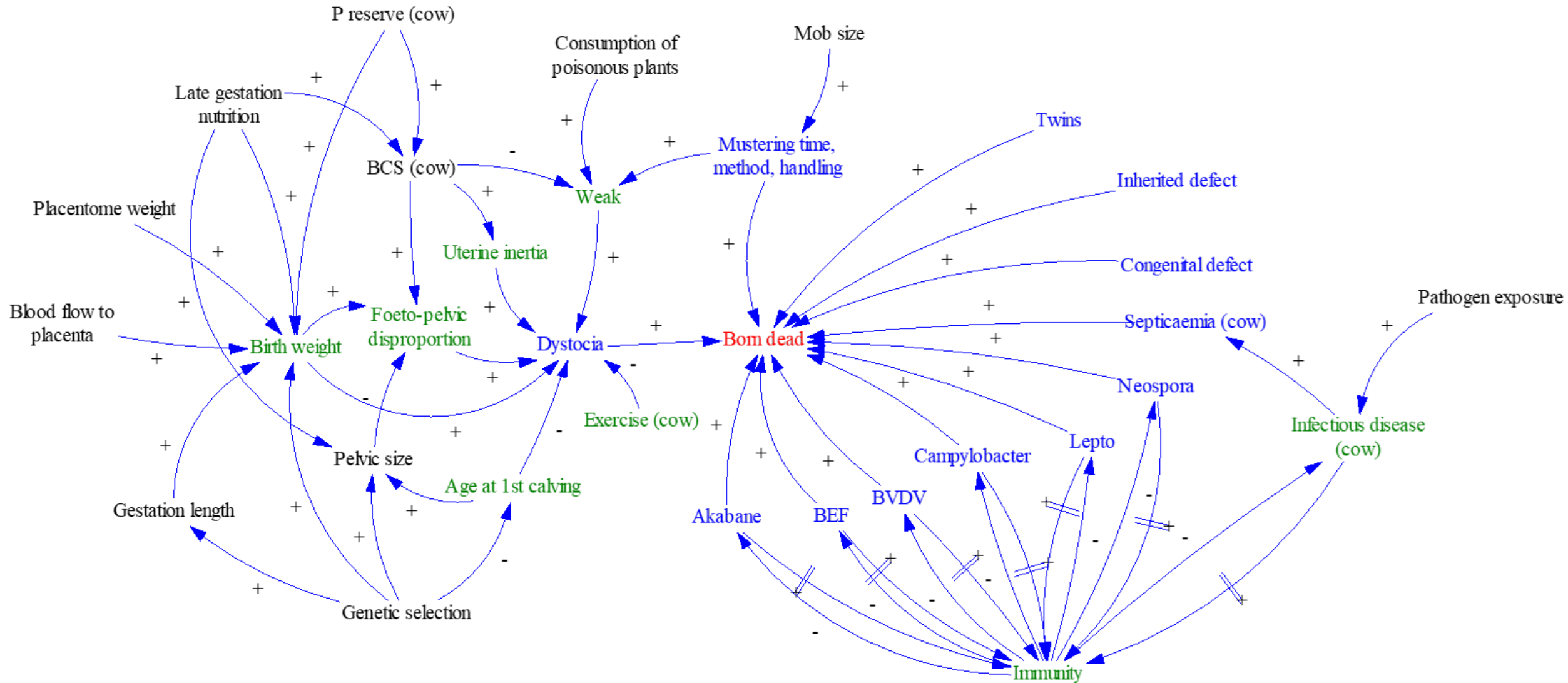
# WHAT WE WILL COVER - VIBRIO, TRICH, PESTIVIRUS, LEPTO

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- Brief overview of each disease
- How the occurrence of disease in a herd can be confirmed
- How to reduce the risk of outbreaks of each disease in your herd

*Although outbreaks of infection with any of these can cause big losses more commonly losses are less obvious*

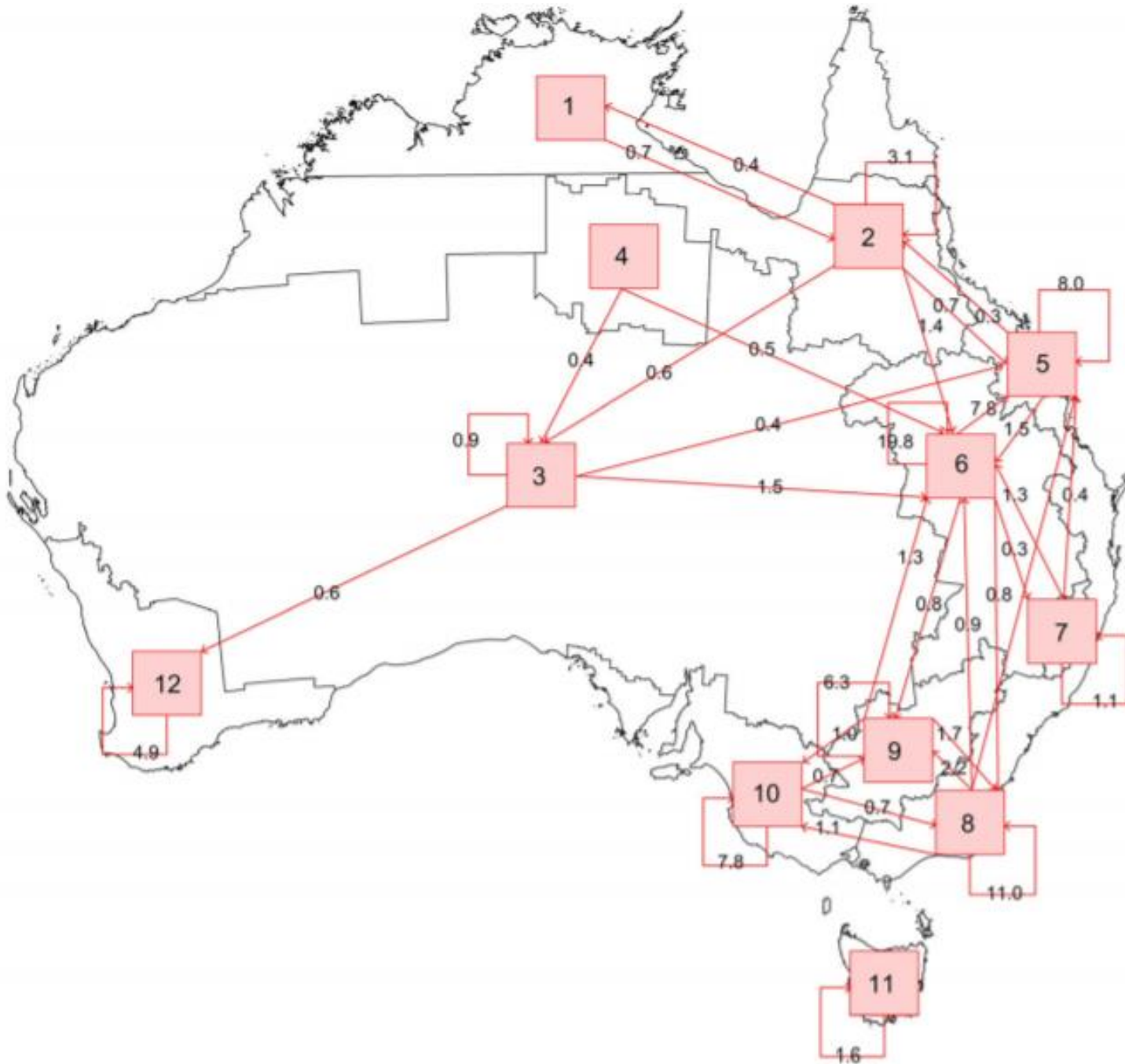
# Critical to understand that the causes of calf wastage are BOTH non-infectious and infectious



## **Pestivirus (BVDV), Venereal infections (Vibrio & Trich) and Lepto**



**Primary source of infection for all of these are carrier cattle**

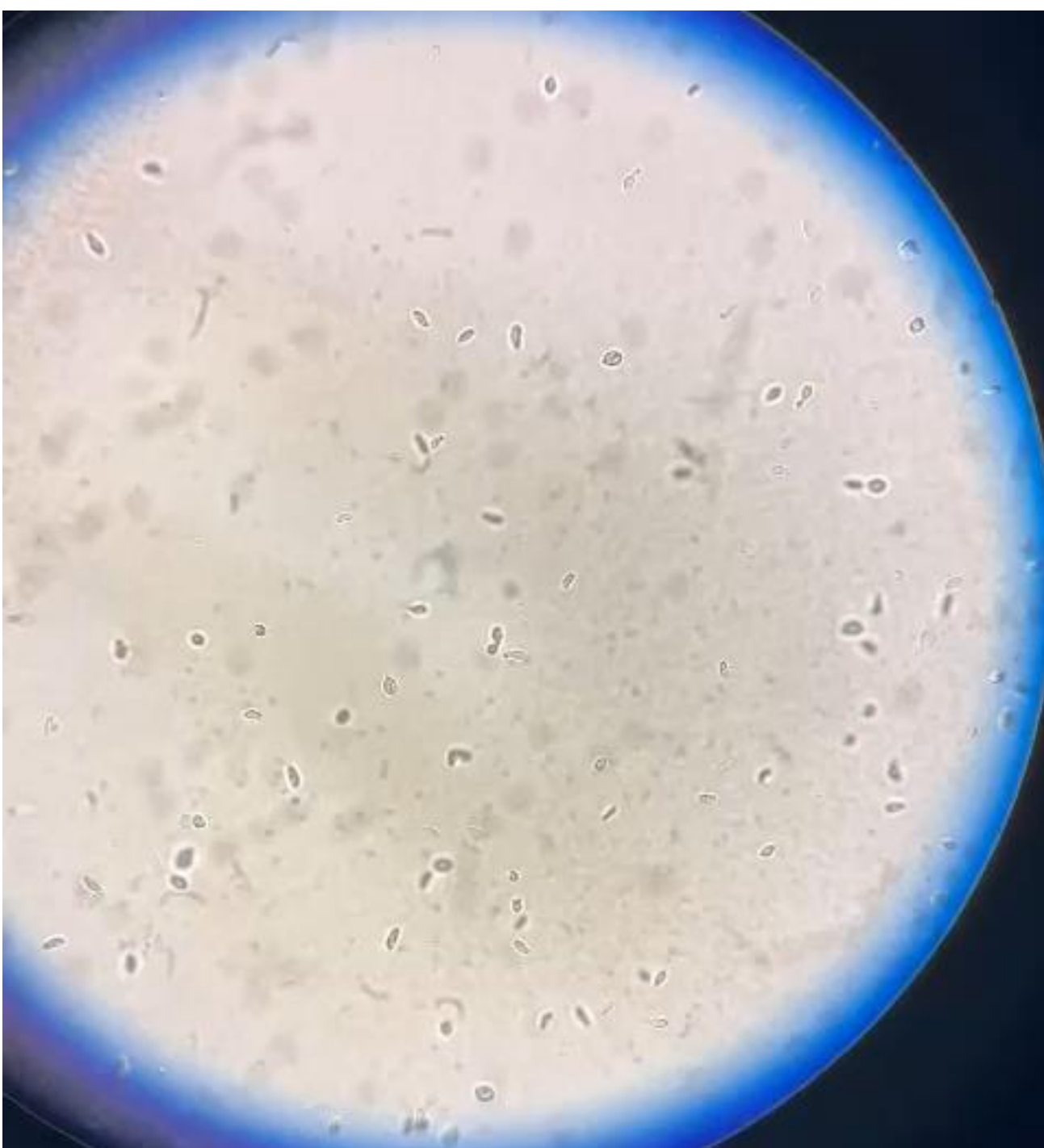


## Planned and unplanned movement of cattle between:

1. Mobs within a property
2. Properties within a business
3. Properties within a region
4. Interstate

Major means by which these infection are introduced





## Venereal infections

Both Vibrio and Trich are motile microorganisms. After mating with an infected bull they enter the cervix and then spread throughout the uterus

Trich courtesy  
Harvey Santos  
PhD student



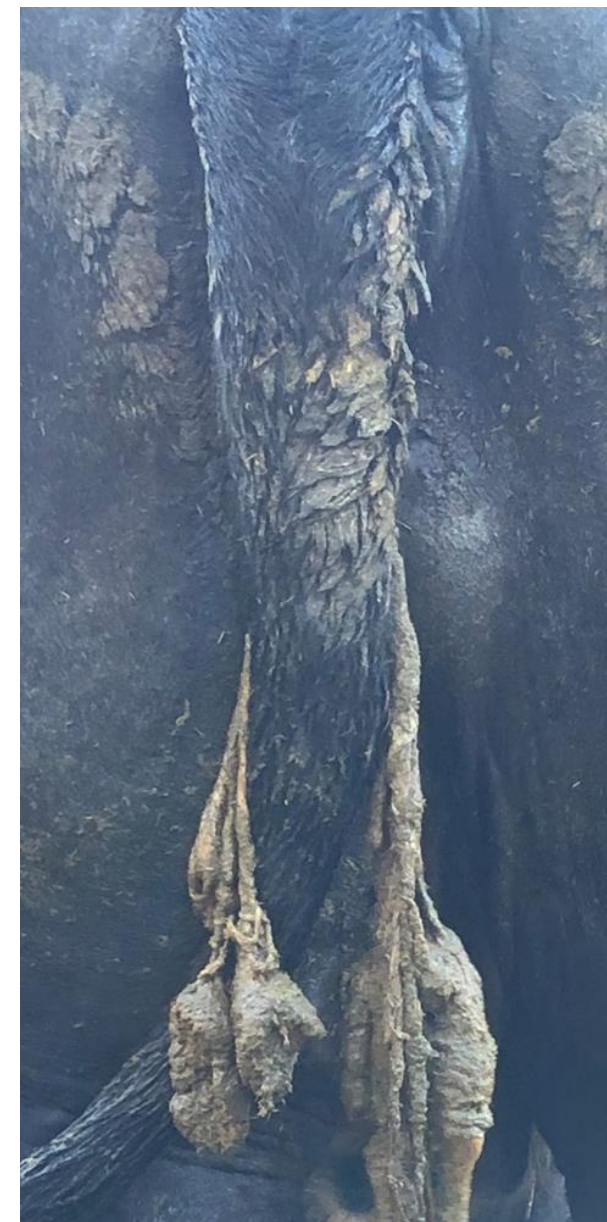
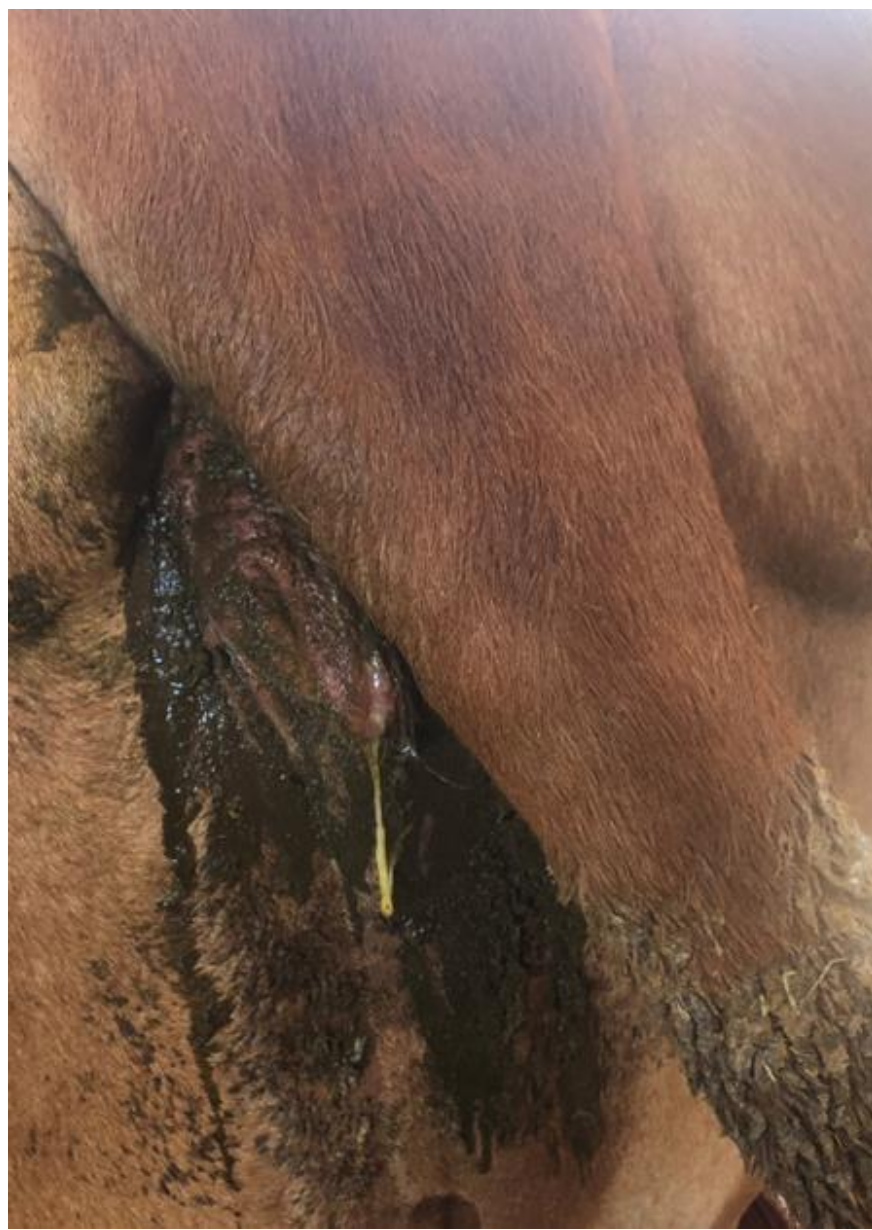
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# Venereal infections – ‘Vibrio’ and ‘Trich’

- Occur worldwide affecting all breeds of cattle
- Bulls are the major reservoir of infection but perhaps 1 in 10 infected females become carriers following infection
- Bulls greater than 5 years of age much more likely to become long-term carriers of both infection
- Infected bulls show no signs of infection
- Mobs of bulls on a property can be infected with both Vibrio and Trich
- Both infections cause cattle to be infertile for several months or to abort between 2-4 months (Trich) or 5-7 months (Vibrio)
- Overall impact in mobs mated for short periods is reduced pregnancy rate, and in those mated for long periods or continuously mated is cattle calving 3-6 months later than expected



# Signs of abortion





# Testing for Trich and Vibrio

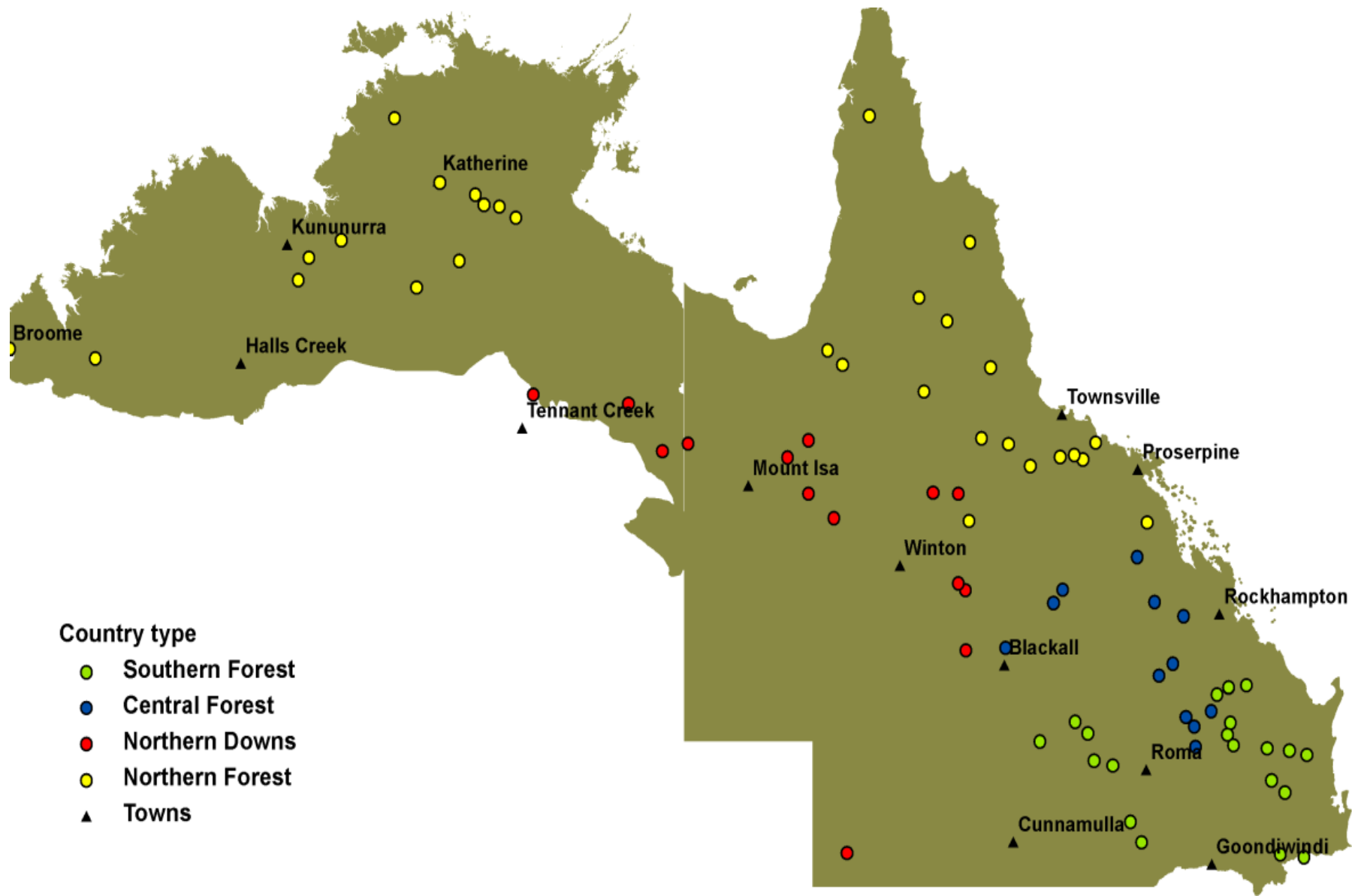
Collection of Tricamper samples from lining of sheath, penis, or from vagina + cervix. PCR test.



Collection of vaginal mucus swabs.  
Test for immune response to Vibrio  
A herd test  
**When to test?**



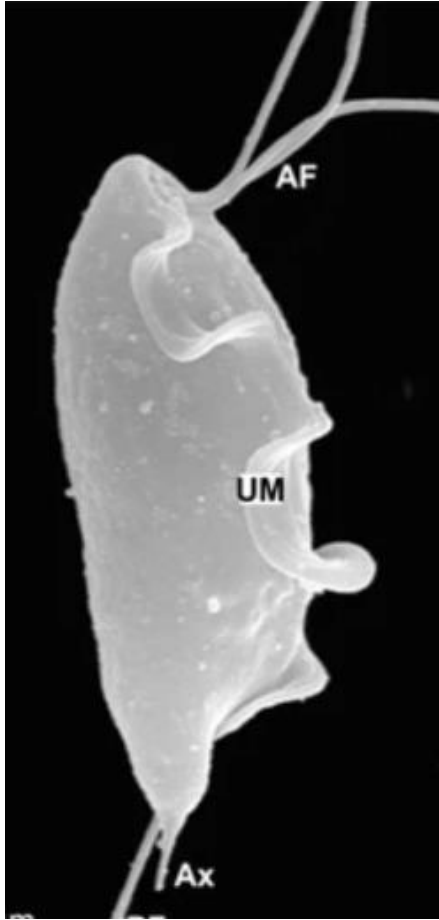
Cash Cow found that about 50% of mobs had evidence of *Vibrio* infection and, about 10% had evidence of widespread infection.



Country type

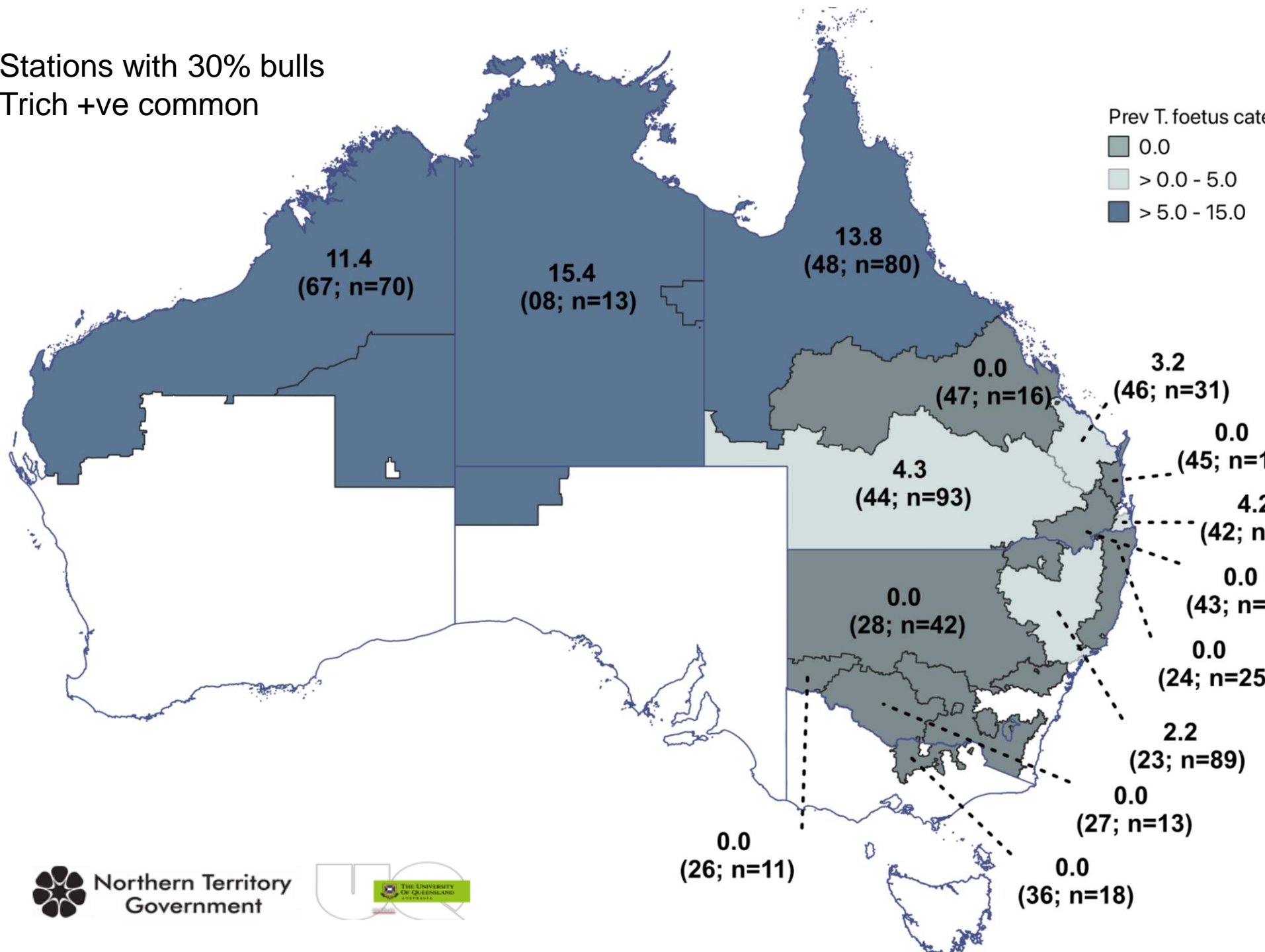
- Southern Forest
- Central Forest
- Northern Downs
- Northern Forest
- ▲ Towns

# Trich survey



Tritrichomonas foetus

Stations with 30% bulls  
Trich +ve common



Prev T. foetus cate  
 0.0  
 > 0.0 - 5.0  
 > 5.0 - 15.0



# Current control of venereal infections

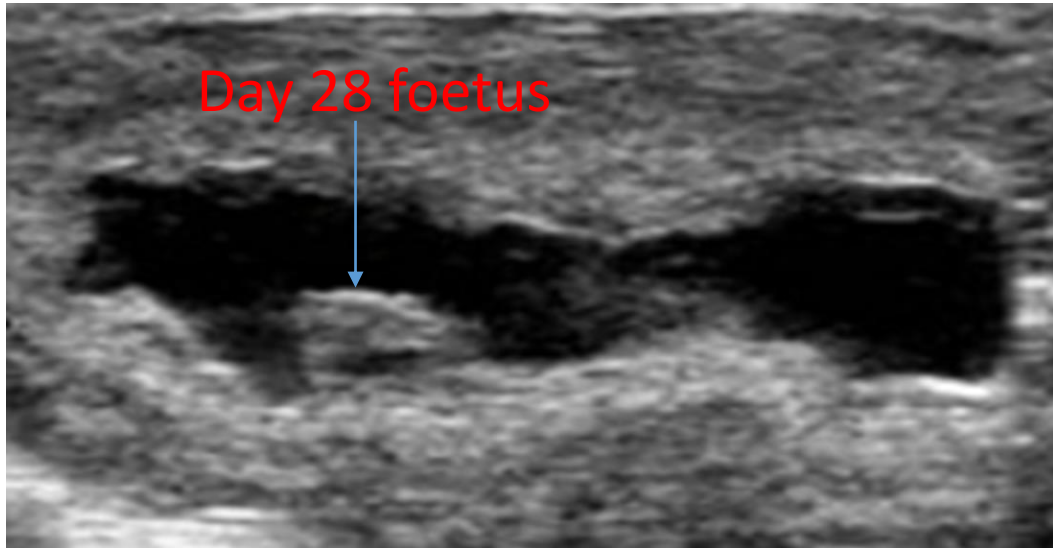
- Vibrio - vaccination – bulls – initially need 2 shots 1-6 months apart – should aim to give 2<sup>nd</sup> shot a 1-2 months before start of mating. Thereafter, bulls need an annual booster before start of mating. In continuously mated herds give annual booster at 2<sup>nd</sup> round muster. **If bulls are already infected vaccination will eliminate infection in about 90% of cases.**
- Vibrio – vaccination - heifers – depends on age first mated – yearlings need 2 shots, 2year-olds only one shot prior to mating
- Trich – no vaccine - test and cull infected bulls main approach – big issue is clean musters
- Maintain a young bull herd (<6 years of age) - both
- Maintain good biosecurity – only purchase replacement bulls vaccinated twice for Vibrio. Trich test new bulls, particularly mature bulls.

# Pestivirus (BVDV)

Cash Cow found that 10 to 30% of cow and heifer mobs annually had evidence of widespread recent infection i.e these mobs had experienced an outbreak of pestivirus infection.

**Myth** – pestivirus is everywhere and most cattle eventually become immune

**Facts** – about 1/3 of heifer mobs have no natural immunity, and 1 in 10 herds are completely susceptible



Infection of a naïve female between about 3 weeks and 5 months of gestation can result in the birth of a calf persistently infected (PI) with pestivirus. About 1 in 200 cattle in the national herd are PI's. Life expectancy of PI's is short – most die within 2 years but some live to 10+ years.

In close contact situations if a PI is present Pestivirus can spread quickly



In situations such as these transmission may occur within 1-2 hours and over 24 hours approximately 60% of susceptible cattle may become infected. Over the fence transmission more common than realised



## Myth - All PI cattle are 'poor-doers'





Introductions of pregnant females very risky because they may be carrying a PI foetus – ‘Trojan horse’.



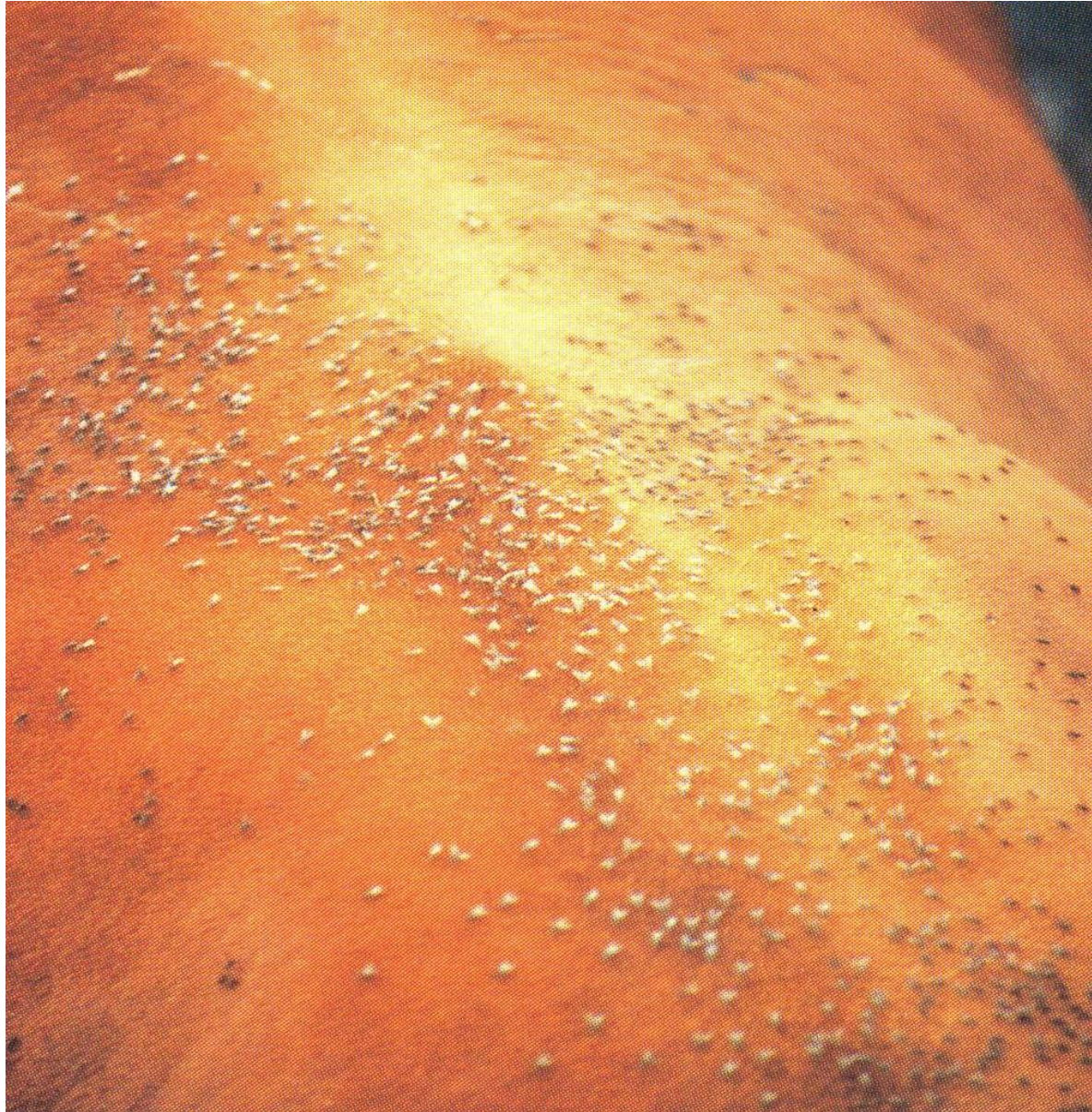
Pestivirus may persist in the reproductive tract of transiently infected cattle (both male and female) for at least 6 weeks.

Custom collected semen – has the bull been tested?

Pestivirus can survive in slurry or composted manure for several weeks but is inactivated by UV radiation and most commonly used disinfectants.



## Transmission via blood feeding insects



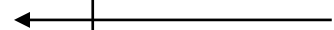
Uncommon but does occur



Paddock	Age of Cows	No. Cows	% Cows previously infected and now immune
I	2 yr Brahman	55	6%
II	Mixed Mature Brahman	150	40%
III	2 yr Santa	100	0%
IV	2 yr Brahman	30	33%
V	Mixed Mature Brahman	59	80%
VI	4-5 yr Santa	68	10%
VII	4-5 yr Brahman	50	10%

The pestivirus immune status can vary considerably between different management groups within a herd

This paddock probably contains a PI animal and is beside paddocks containing mostly cattle without any immunity to pestivirus



# Syndromes caused by or associated with Pestivirus infection

- Conception failure with females returning to service at either normal or prolonged interval
- Abortions, stillbirths, premature births
- Birth of weak, abnormal or poor-doing calves
- Cattle which develop severe presentations of common diseases and don't respond to treatment
- Acute and chronic mucosal disease
- Immunosuppression in transiently infected cattle resulting in increased prevalence and severity of common infectious diseases such as BRD, scours

*Detecting PIs – test blood, hair, skin sample – should test twice several weeks apart*  
*Determining immune status of mob – blood sample from cross section of 15-30 animals prior to mating*

## Mucosal disease – only occurs in PI cattle





# Options for the control of Pestivirus

Need to know immune status of each breeding mob + risk of planned/unplanned cattle introductions

1. Do nothing e.g if testing shows most females have natural immunity
2. Adopt management practices and biosecurity measures which minimise the risk of introduction of BVDV e.g quarantine all introduced pregnant females until they calve
3. Detect and cull PI cattle
4. Expose heifers to a PI animal – very risky approach

## 5. Whole herd or heifer-only vaccination

- Whole herd vaccination – all breeding cattle need to be initially vaccinated twice **before start of mating** – interval between 1<sup>st</sup> and 2<sup>nd</sup> vaccination can vary from 1 to 6 months so can fit in with routine musters. Thereafter to maintain immunity cattle need an annual booster **prior to start of mating**.
- Vaccinating the heifers only – protects the group of females typically that have lowest proportion immune

# Lepto

Cash Cow found that about 10% of mobs had some evidence of recent infection with the two most common types of Lepto (*L.hardjo* and *L.pomona*). However, there are at least 21 other types of Lepto in Australia. Rodents, feral animals, wildlife important sources.

Chronic infection of kidneys main problem.

Lepto bacteria can survive for several months in wet, muddy conditions.

Can be transferred via waterways from one site to another.



# Lepto

Infected cows usually show no signs of infection.

Pregnant cows may abort but much less common than in '60's-80's.

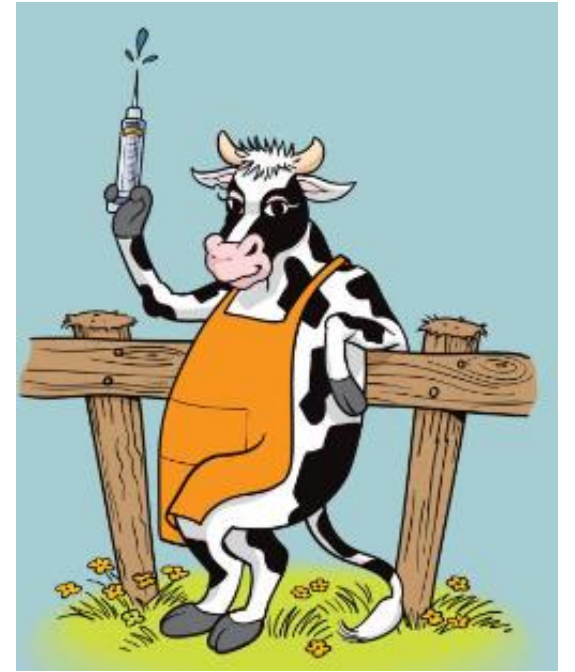
Death of calves showing signs of severe anemia, red urine

Important to recognise that Lepto can infect humans.

Sources of human infection – contact with urine from infected cattle, urine contaminated water, mud, aborted/stillborn calves + placenta, milk.

Measuring immune response to Lepto in blood samples main means of confirming but need to know vaccination history.

Vaccination of cattle main means of reducing risk of infection in people – need two shots initially then annual booster. Also reducing risk of contact with infected urine – boots, gloves, glasses.





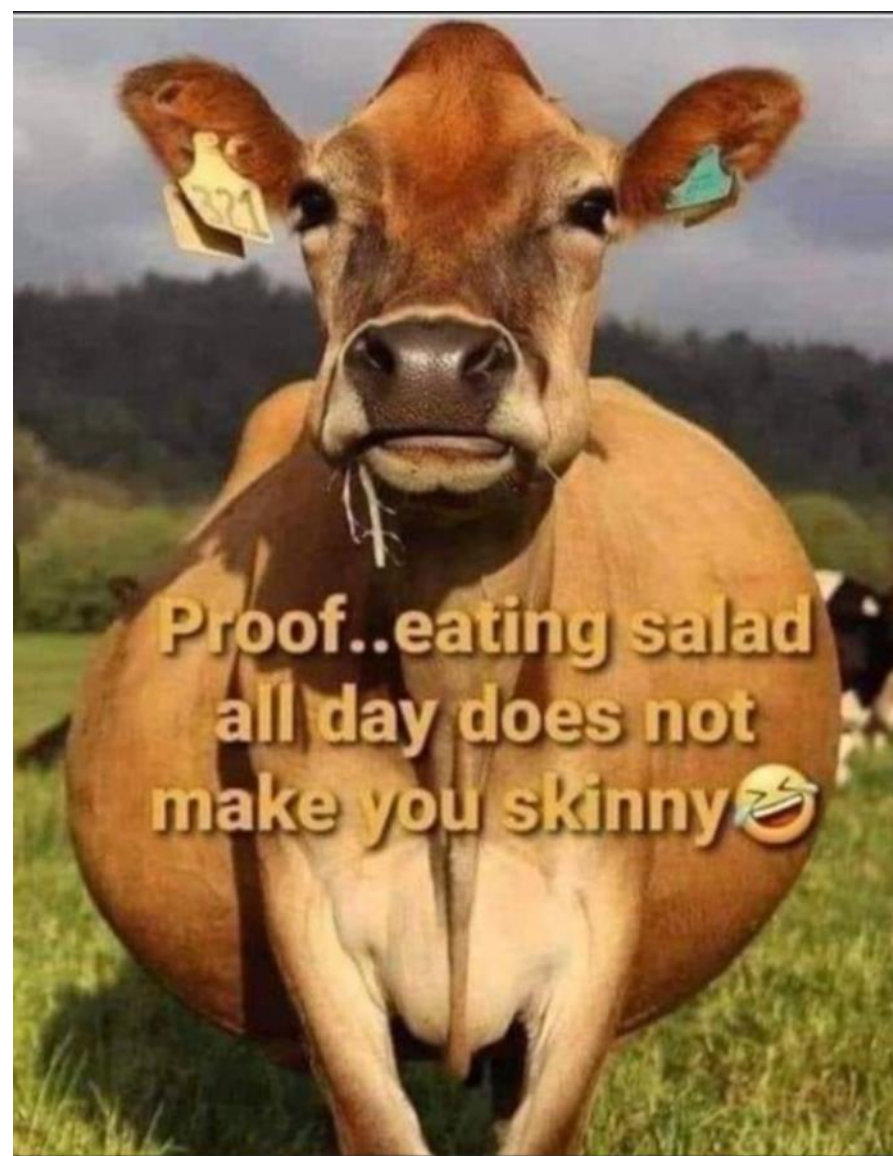
## % of commercial herds vaccinating to control Pesti, Vibrio and Lepto (Cash Cow)

<b>Disease</b>	<b>Group</b>	<b>% Vaccinating</b>
<b>BVDV (pestivirus)</b>	<i>Maiden heifers</i>	Prior to joining <b>8%</b>
	<i>Cows</i>	Annually 6%
	<i>Bulls</i>	Annually 3%
<b>Vibriosis</b>	<i>Maiden heifers</i>	Prior to joining 10%
	<i>Cows</i>	Annually 3%
	<i>Bulls</i>	Annually <b>68%</b>
<b>Leptospirosis</b>	<i>Maiden heifers</i>	Prior to joining 32%
	<i>Cows</i>	Annually <b>22%</b>
	<i>Bulls</i>	Annually 15%

**Primary purpose of vaccinating cattle is to prevent an outbreak of infection i.e you are buying insurance**

Thank you for  
your attention

Questions



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