TIPS & TOOLS

NORTHERN CATTLE

What's causing reproductive loss?

There are many reasons for foetus and calf loss and unless calves are examined soon after abortion or death, it's extremely difficult to accurately determine the cause. Many calf loss issues are related to management and environment e.g. predation, mustering technique, husbandry procedures, calf scours, dystocia, misadventure and calf diseases. Careful observation and attention to detail will help investigation.

Why is understanding the causes of reproductive loss so important?

- each breeder cow that fails to produce a weaner can represent a reduction in business income of more than $400/head

- animal welfare implications pose a risk to beef industry's reputation among consumers

- knowing the cause of reproductive loss is the first step towards to defining the most effective solution; solving underlying problems will contribute to whole-herd productivity.

How do we know a problem exists?

- a disappointing result at pregnancy diagnosis
- less calves than expected at weaning time
- aborted foetus or deceased calves are observed.

Addressing the problem step-by-step

A: On-farm diagnosis

- determine when losses are occurring – pregnancy diagnosis is essential to determine if it is failure to conceive, abortion or losses at or after calving

- examine last year's calf drop – consider numbers, age range and any differences this year

- assess breeder body condition and pastures

### B: Sample collection and laboratory confirmation

- submit samples for analysis from non-pregnant breeders or deceased calves

- seek help to interpret laboratory findings.

A: Tips for on-farm diagnosis

1. Last year's performance: A quick look at the age distribution of the calves in the yard should provide an indication of the conception picture obtained by foetal ageing results and the expected calving pattern for next year.

2. Cow body condition: If pregnant cows are in body condition score <2.5 (on scale of 1–5), nutrition could be an issue – check pastures.

3. Pregnancy status of different age groups: Lower pregnancy rates in first-calf cows than mature cows also indicate nutritional issues.

4. Maiden heifer performance: Low pregnancy rates in maiden heifers may mean they were below critical mating weight but if above, this is a good indicator disease exists as these animals are the easiest group to get pregnant e.g. a saddle pattern in the pregnancy rate curve indicates a venereal disease such as vibriosis (see figure).

Classic 'saddle shaped' pregnancy distribution in herd of maiden heifers with vibriosis
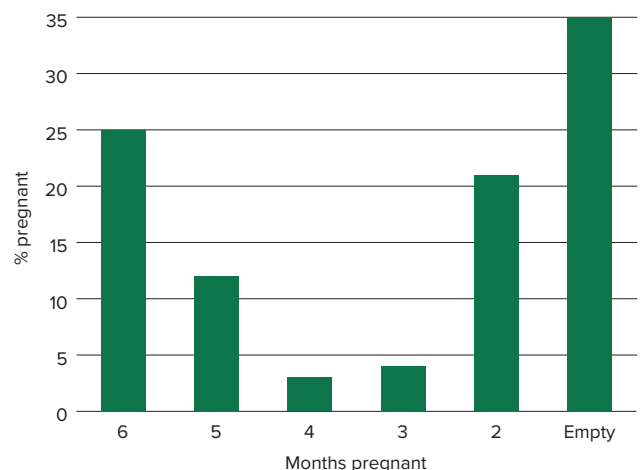
5. **Pregnancy and lactation status (wet or dry cows):** For continuously-joined herds in northern Australia, the classic pattern is dry (non-lactating cows) calve early while lactating cows in lighter condition calve later in the wet season (see figure).

6. **Fat breeder cows:** Most fat cows should be pregnant. A non-lactating cow at pregnancy diagnosis suggests abortion or calf loss. Fat, non-lactating and non-pregnant cows suggest a permanent infertility problem.

7. **Bull evaluation:** A completely infertile bull is easy to detect in single sire herds with indications including zero pregnancies or obvious defects e.g. preputial prolapse, swollen penis, lameness or illness history. The sub-fertile bull poses the most challenges and can be readily diagnosed with a Bull Breeding Soundness Examination. Individual bull assessment is less critical in multiple sire herds if the bull percentage is ≥2.5%.

Expected calving pattern of dry (non-lactating) and wet (lactating) breeders in continuously joined herds
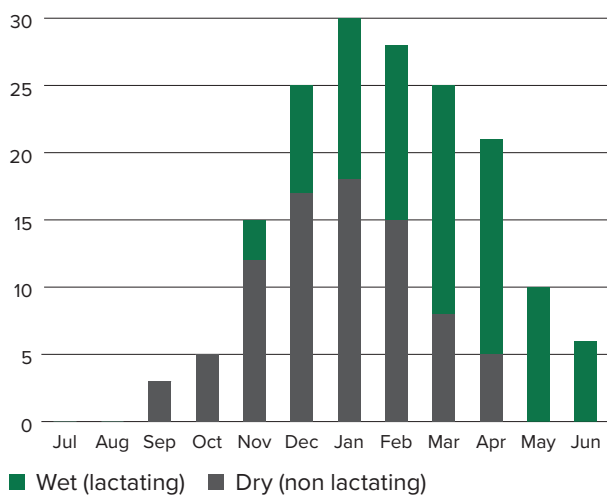
Source: NT Technical Bulletin

Neonatal (newborn) calf loss

Causes of neonatal calf loss are difficult to determine in extensive beef operations as they're often first detected as breeders "fail to raise a calf" at a weaning muster.

Assessing breeders that have lost calves

- Cows that have lost calves at or around birth will often be in better body condition than the rest of the herd. They will have watery/milky secretions in their udders.
- Heifers that have lost calves will display some degree of teat development compared to heifers that have aborted.
- Heifers that are sterile or abort early have very small teats often known as 'rose bud' teats. If fertility and/or calf loss problems persist, contact your local veterinarian for assistance.

B: Sample collection and laboratory confirmation

Some reproductive diseases are infectious to humans – protective clothing and strict hygiene are essential. When collecting samples, focus on:

1. **Cow history:** Accurately record identity, PIC (Property Identification Code), age, pregnancy status, lactation status and body condition score for all animals sampled.

2. **Calf/foetal/placenta specimens:** If a fresh foetus, deceased calf or placenta (afterbirth) is available, these can be collected, preferably by a veterinarian with the appropriate transport and storage. If a veterinarian is unavailable, fresh specimens can be kept chilled (refrigerator or on ice) until one can be contacted.

3. **Cow samples:** Approximately 15–30 blood samples and vaginal swabs should be collected from non-pregnant and pregnant cows in mobs. Remember to keep records for each cow sampled.

4. **Bull samples*:** Preputial swabs should be collected from bulls where the pregnancy rate is low or where a venereal disease is suspected in maiden heifers.

* These samples are not routinely collected in a Bull Breeding Soundness Examination.

🔍 Interpreting laboratory findings

With most reproductive diseases, the investigation occurs many months after the incident and so the presence of antibodies or antigens (infective agent) may provide a diagnosis.

1. **Pestivirus/bovine viral diarrhoea virus:** Many Australian cattle herds are exposed to the virus and show evidence of previous infection but frequently with no reproductive loss. The antibody titres obtained help interpret the significance of the findings:

   titres 1 and 2 = low or old exposure to the virus

   titres ≥3 = high or recent infection i.e. the past 1–9 months

   Titres ≥3 in non-pregnant animals indicate a pestivirus infection which caused infertility or early abortion during mating. Pregnant animals with titres ≥3 may be carrying an infected calf which could die before weaning or may survive as a 'persistently infected' carrier animal. These animals could spread infection to other females. The ear notch test detects virus/antigen and is used to find infected animals that spread the disease.

2. **Vibriosis/campylobacteriosis:** Vaginal swabs placed in transport media and kept chilled are best for diagnosis. Preputial swabs can also be collected from the bulls by a veterinarian.

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3. **Trichomoniasis:** The best samples to collect are vagino-cervical mucus from heifers, pus from uterine discharges and preputial samples. The organism can sometimes be detected directly by microscopy.

4. **Bovine ephemeral fever (three-day sickness):** Three-day sickness is commonly seen in endemic areas and interpretation is difficult. A virus neutralisation test detects antibodies and titres >40 are considered positive while those >640 have been recently infected. Sample both pregnant and non-pregnant animals to determine if the viral infection has caused the abortion.

5. **Leptospirosis:** Abortion usually occurs in the last trimester of pregnancy. The most common isolates are Pomona and Hardjo which are detected using the microscopic agglutination test (MAT). Samples with a MAT titre of >100 for each serovar are considered positive where no vaccination has been used and samples ≥800 indicate recent infection. Vaccination does induce MAT titres of ≥200 for about six months afterwards. Two blood tests about 2–4 weeks apart ('paired sera') are recommended, with the first sample taken as close as possible to the time of infection.

6. **Neosporosis:** Although infection is widespread in some regions, evidence of significant foetal/calf loss is only occasionally observed. Testing is very accurate.

7. **Akabane disease (curly calf syndrome):** Common in endemic areas but losses are hard to determine. Calves are born alive but deformed or weak and unable to suckle. A post-mortem examination of the calf and sampling the brain and spinal cord, is the most effective diagnostic. Other insect-borne diseases such as aino virus can cause similar losses.

8. **Vitamin A deficiency:** This is mainly seen in open downs country following a failed wet season where little green pick is available and top feed is scarce. Post-mortem examination of the calf and cranial cavity, submitted with brain and liver to the laboratory, is best.

9. **Genetic defects:** Hereditary defects occur in all cattle breeds but some are strongly associated with certain breeds. Most occur rarely and are of little economic importance, but some can cause significant losses. Genetic marker tests are available to identify carrier animals and preferably the sire and dam should be tested. Obtain information from breed societies on genetic defects affecting your breed.

Disclaimer

More information

You can download the full Tips & Tools suite at: www.mla.com.au/reproperf, including:

- What females should I sell?
- What joining system should I use?
- How do I manage heifers pre-joining to improve reproductive performance?

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