

Weaner management in northern beef herds

An introduction



Weaning is a well-established practice across Australian beef herds.

This guide focuses on:

- the importance of weaning for productivity and profitability
- best practice management of young cattle
- animal health and welfare considerations.



Why do calves need milk?

Calves are born without antibodies in their system and must consume colostrum within the first 36 hours after birth – preferably in the first six hours.

Calves are also born with a non-functional rumen, which takes about 8–10 weeks to develop. The rumen is the main fermentation chamber which allows ruminants to digest fibrous plant feeds. The fermentation process takes place prior to feed moving to the abomasum (or ‘true stomach’). Calves must have milk or a milk substitute for at least the first six weeks of their life.

Cow’s milk is about 88% water and has an energy content of around 23–26MJ of ME/kg depending on fat, protein and solids content. This satisfies the requirements of a growing calf.

What is weaning?

Weaning is the process of removing a calf from its mother and her milk, and means the diet of the newly weaned calf may need additional supplements depending on its age and the pasture quality, if it is to reach target growth rates. Weaning provides benefits for both cows and calves, depending on the circumstances, and is an essential practice in Australian beef enterprises.





Top five reasons to wean

If cow's milk is the best feed for a calf, why is it necessary to wean?

Weaning allows a producer to:



Manage the body condition of the breeder cow

A cow that produces 8–10L of milk a day requires almost twice as much energy or feed as a dry cow. If energy from the pasture is insufficient for milk production, the additional energy comes from her own fat reserves. A lactating cow will lose body condition if her total requirements aren't met. A cow who is losing condition will also struggle to get back in calf.



Reduce the amount of supplementary feeding to breeders

Ideally, cows should calve with a body condition score above 3.0 to have the maximum chance of getting back in calf within three months. At the time of weaning, breeders should already be back in calf. Weaning will then ensure the breeder's energy requirements are reduced and she enhances her ability to calve at her optimum body condition. It's also cheaper to feed a weaner than a mature cow.



Maximise cows' milk production in the next lactation

All calves should be weaned, regardless of the cow's condition. On good quality pastures this could be at least two months prior to the birth of the next calf. This will ensure the cow's next lactation isn't compromised and some weight gain and body condition is achieved.



Educate and train young cattle

Weaners benefit from being yarded, handled by humans and familiarised with various feeders, feeds and rations. These processes expose young cattle to different environmental factors and common practices will help them to get used to new experiences.



Establish specific mobs/lines of cattle according to age and weight

Targeted mob management facilitates marketing and feeding strategies. This can reduce subsequent mustering and drafting costs, which can help cattle to meet Meat Standards Australia (MSA) requirements.

If the practice of weaning is understood and managed properly, producers can ensure their cattle are set up to be superior performers.

When to wean

Producers should avoid removing milk from a calf's diet until the calf is at least 10 weeks old, when the rumen becomes functional. Powdered milk or dry milk replacers can be used where a calf doesn't have access to its mother (refer to *Weaner management in northern beef herds*).

Table 1 below indicates the categories for weaning based on age, weight and reason for transitioning the calf to an adult diet.

Table 1: Weaning categories

Type of weaning	Poddy calves	Radical	Early	Normal
Age	Under one week	Under three months	3–5 months	5–8 months
Weight	<60kg	60–100kg	100–150kg	>150kg
Reason for weaning	Calf usually orphaned or ill	Drought conditions; welfare of dam	Calves born late in the season	Usual time to transition to adult diet

Development of the rumen

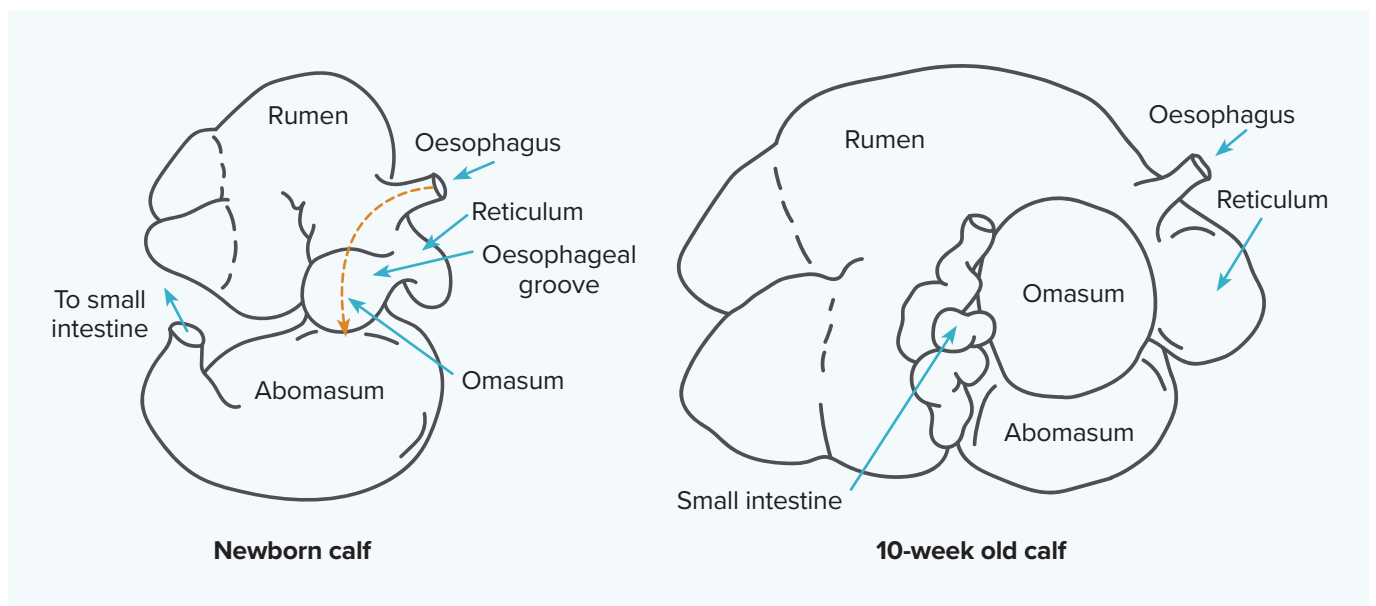
The rumen and reticulum start developing within a few weeks after birth as the calf begins to eat fibrous feed, with the rumen microorganisms ('bugs') being transferred from adult cattle.

Under normal paddock conditions, the rumen will be functional by the time the calf is 10 weeks old (see Figure 1). Milk remains the best source of energy, protein, calcium and phosphorus for the unweaned calf, but at this stage can be completely substituted.

Following weaning, the weaner must obtain all of its nutrients from a pasture-based diet typically high in fibre. In grazing cattle, the rumen microbes primarily break down this plant fibre through fermentation, which becomes the energy source for the animal.

Changes in any diet throughout the animal's life must be made gradually so that the rumen microbes can adjust. A rapid change from a fibre diet to one high in starch (grain) results in the rumen contents becoming too acidic, causing severe metabolic disorders or even sudden death.

Figure 1: Ruminant development from birth to 10 weeks



The age at which a calf is weaned determines its diet for the next few months, especially if weaning occurs in the dry season. Urea can be used as a non-protein based nitrogen supplement, but calves without a functioning rumen cannot utilise this. If they consume it without a fully functioning rumen, they may die.

The nutrition of a growing calf has a significant impact on its performance as it reaches maturity. Providing the correct diet following weaning, regardless of age, ensures optimum performance of the animal.

What to feed

If the feed on offer is good quality wet season pasture, that is highly digestible and high in protein, calves weaned as light as 100kg don't need any supplements. However, very few enterprises wean over the wet season as most are generally calving at that time in northern Australia. Most weaning occurs from the beginning of the dry season.

When weaning occurs with adequate green feed available, the only supplements that may be required are phosphorus, copper, cobalt or selenium. Chemical analysis of grazing pastures will provide a guide to the availability of these minerals.

The main challenge for beef enterprises, particularly in northern Australia, arises when calves are weaned during a period of declining feed quality. Supplementation programs can be designed for weaners of various weight ranges on a low or declining level of nutrition as shown below.

Figure 2: Weaner feeding decisions

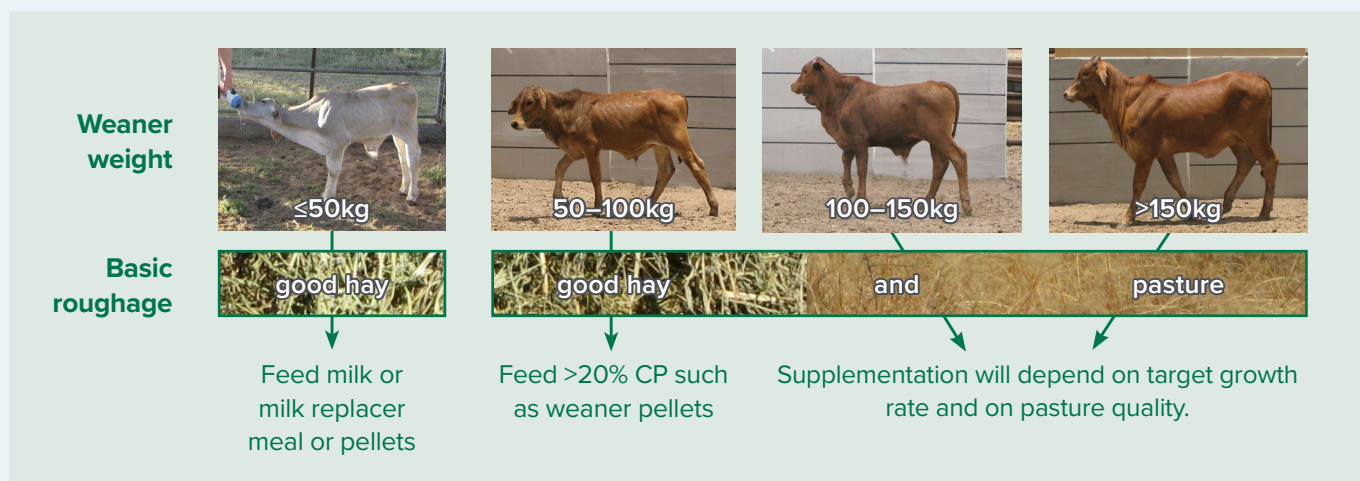


Table 2: Supplement requirements for weaners of various ages and weights on two different pasture qualities

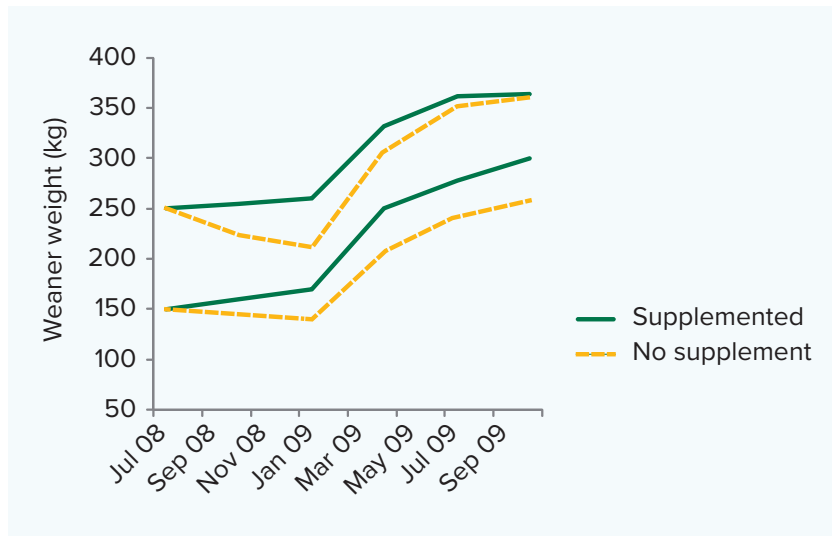
	Poddy calves 0–6 weeks ≤50kg	Radical <3 months 50–100kg	Early 3–5z months 100–150kg	Normal 5–8 months >150kg
Maintenance quality pasture (<55% DMD, 7.7 MJ ME and <7% CP)	Milk or milk replacer and high quality calf meal/pellets	High quality hay and calf meal/pellets	Protein meals	Protein supplements (dry licks, blocks and liquid supplements)
Good quality pasture (>55% DMD, 8.6 MJ ME, >10% CP)	Milk or milk replacer and high quality calf meal/pellets	Calf meal/pellets	Fortified molasses	Not required

* Calves <150 kg require a minimum of 15% crude protein for unrestricted growth

The cost benefits of feeding supplements to weaners depends on supplement prices and the value of the animals. There may be little benefit in supplementing heavy weaners unless their survival is compromised by other events such as sudden cold/wet periods. Other benefits created by good weaning supplementation practices include selling steers earlier and ensuring heifers achieve their critical mating weights at joining. See Figure 3 for an example of achievable weight gains for supplemented and unsupplemented weaners.



Figure 3: Weight gains of supplemented and unsupplemented light (150kg) and heavy (250kg) weaners over 15 months



The feed values of commonly fed supplements in weaner diets can be found in *Weaner management in northern beef herds*.

How to wean

Yard weaning is optimum to ensure weaners are accustomed to moving through gateways/races and can be kept secure while being introduced to new rations.



Feeding hay

The best feed for weaners while in the yard is good quality hay; however, lighter and younger weaners need additional supplements such as protein meals for continued growth. Leafy grass hay is convenient for freshly weaned calves and is an excellent and safe starter ration.

Avoid feeding hay or meal on the ground as fecal contamination can occur, leading to coccidiosis and bacterial infections. Using hay feeders, troughs or grain feeders will keep feed elevated and help minimise wastage, which can be substantial with on-ground feeding.

Calves generally lose weight immediately after weaning if the quality or quantity of feed isn't adequate, or if the rumen hasn't developed well enough to digest it. However, calves will recover from this weight loss with good nutrition, as most of the live weight loss is associated with gut fill, which can be regained once animals start eating again.

Recommendations for feeding weaners in yards:

- Allow 15–20cm of trough length per weaner.
- Feed weaner pellets and protein meals twice weekly to minimise bullying and labour costs.
- Make gradual changes in the amount or type of feed to prevent digestive upsets.
- Move calves into weight groups as they grow.
- Keep accurate records to determine if intakes are adequate and cost-effective.
- Set achievable target live weights to determine when weaners can exit the yards.
- Ensure weaners have access to plenty of clean water.

Recommendations for feeding weaners in paddocks:

- Good weaner paddocks have abundant pasture species (>70% 3P – perennial, productive, palatable) or use an oat or stand over sorghum crop.
- Ensure fences are secure and pastures are free of toxic plants.
- Minimise risk of parasite burden by using a spelled paddock.
- Ensure weaners have access to plenty of clean water.

Are there any other considerations?

Cessation of its mother's milk, changes in diet and increased herd size combine to represent a new range of stressors for the young calf. This is often, but not always, accompanied by routine husbandry procedures such as castration, dehorning, ear tagging and branding.

Health

A lifelong animal health program starts at weaning, but depends on a risk assessment and your biosecurity plan. Some disease threats are regionally specific such as botulism, tick fever and ephemeral fever. Others, such as tetanus, are ubiquitous.

Recommendations to improve animal health include:

- protect against clostridial diseases using a 5-in1 vaccination
- in high rainfall zones, drench for worms and other internal parasites
- monitoring for scours and faecal egg counts
- monitoring general health and the need for vaccinations against diseases specific to the herd/property.

Welfare

It's important to maintain animal welfare throughout the weaning process by minimising stress and recognising early signs of distress and disease.

Strategies to improve animal welfare include:

- the provision of good feed, clean water, shade and wind shelter in cold regions
- keep calves confined in secure yards, but always avoid overcrowding
- release and tail weaners daily, yarding them again each night – repeat for several days prior to permanent release
- if trucking to another property/paddock, ensure weaners are well nourished prior to release – newly weaned calves are very prone to plant poisoning in strange environments (check out the *Is the animal fit to load?* guide at mla.com.au/fittoload)
- animal husbandry procedures such as castration and dehorning, if not done at least six weeks before weaning are best done at the property of destination after the weaners have recovered from transportation.

More information

Want to find out more about weaner management in northern beef herds?

The full guide is available at mla.com.au/weaning and includes chapters on:

1. How to rear a poddy calf
2. Regional case studies on different techniques and strategies
3. Management of diseases affecting weaners
4. Pasture evaluation and grazing management
5. Photo standards for estimating the weight of weaners by their height
6. Photos of different facilities
7. Tables on energy and protein requirements
8. Examples on how to calculate the cost of a ration.

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