

# Milk feeding systems

On-Farm  
Research

## Key Points

1. Understand the strengths and limitations of the different systems.
2. It is the combination of the system and the people and farm resources that determine the success of a system.
3. Choices include once a day or twice a day, low or high milk volumes.
4. High milk volume systems require twice a day feeding but calves can be let outside early and fed in larger mob.
5. With high volume milk systems calves need to be older before they can be weaned.
6. Low milk systems require calves to be kept inside until weaning and the feeding of pellets or meal. But these calves can be weaned between 5 and 7 weeks depending on weight and meal intake.
7. Colostrum and whole milk are generally preferred on dairy farms.
8. Calf pellets or meal encourage early rumen development.



Factsheets published by On-Farm Research, [www.on-farmresearch.co.nz](http://www.on-farmresearch.co.nz)

While all due care has been taken in preparing these documents, people acting on this information do so at their own risk.

Calf Rearing Fact Sheet 3.2

## General

- There are many systems for rearing calves. Each system has advantages and disadvantages and principles that need to be followed to be successful. It is the combination of the feeding system and the rearer that determine the success of a system. Attention to detail and good observation skills are critical.
- Calves are born with a non-functioning rumen and it is the development of the rumen that controls the age at which calves can be weaned. Calves with a poorly developed rumen cannot digest grass. Pellet or meal intake encourages rapid rumen development and enables earlier weaning.
- Grass is a very bulky feed so even though a calf might have a well developed rumen, it is still relatively small and pellets or meal will still be required until the calf's rumen is large enough for it to digest adequate quantities of grass to provide the nutrients required for optimum growth and good health.

## Options

### Once a day or twice a day feeding?

- Twice a day feeding requires a higher labour input but means that each calf can be individually checked twice each day (see Fact Sheet 3.3).
- On a high volume milk system calves are usually fed twice a day to reduce the risk of nutritional scours from the large milk volumes used.
- On a restricted milk system, calves are fed twice a day for the first 7-10 days although small calves and Jersey calves are fed for longer (see Fact Sheet 3.4).
- Pellets or meal and clean drinking water must be available when calves are fed once a day.



### Low or high milk volumes?

- Low milk volumes require compartmentalised feeders, housing of calves until weaning and the feeding of calf pellets/meal but calves can be weaned off milk between 5 and 7 weeks of age.

- High volume milk systems mean calves can go outside earlier and can be fed using large calf trailers. Less calf pellets or meal are fed.
- Rumen development is slower in high milk volume systems and calves cannot be weaned until they are about 9-10 weeks old. More milk is fed in these systems and reduced rumen development can result in a post weaning check.

### Inside or outside?

- Calves on high volume milk systems can be placed outside from as early as one week of age as long as they have access to sheltered paddocks. However cold will increase the energy demands of the calf. A Friesian calf will begin to shiver at 5 °C when there is no breeze or rain. However shivering commences at 12 °C when it is windy and wet. Shivering calves are using energy to keep warm. This energy could be used for growth.
- Calves being fed a low milk system need to be kept inside until they are weaned off milk at 5-7 weeks of age.



### Colostrum, milk or milk powder?

- Quality colostrum is best followed by milk, followed by calf milk powder.
- Generally, whole milk or colostrum are the preferred feeds on dairy farms because they are readily available and easy to feed. They are cheaper than CMR (calf milk replacer) and there is no extra work with mixing.
- If a calf milk replacer is fed it is important to feed a high quality milk powder for at least the first two weeks. High quality milk powders are those containing whole milk powder or skim milk powder (see Fact Sheet 3.1).
- The advantage of calf milk replacers is that calves can be fed away from the milking shed without having to transport milk to the calves. Calf milk replacers are often the only option for bull calf rearers without access to whole milk.

### Concentrates or not?

- Concentrates include calf meals and pellets. They increase the rate of rumen development and allow calves to be weaned off milk earlier thus reducing costs.
- It can be difficult to get calves to eat concentrates when they being fed *ad libitum* milk. They aren't hungry so don't bother with the meal. It is rather like filling a child up on ice cream and then a parent suggesting they eat cereal!
- If calves are being fed restricted milk and not eating the concentrates, they may be unpalatable. Calves do not like meal/pellets containing palm kernel.

### The most appropriate choice will depend on:-

- the facilities available,
- amount and skill set of labour available,
- the required performance and
- the cost.

When reviewing costs it is important to remember that the protein and metabolisable energy in concentrates generally cost only 40 and 60%, respectively, of those in whole milk. It therefore makes good economic sense to have a high proportion of calf diet made up of concentrates.