

Best practice farms have healthy and vigorous calves by providing tailor-made, balanced nutrition, in an enriched environment that supports natural behaviours, and by using management strategies that mitigate stress experienced during weaning.

Why is this important?

Good nutrition plays a key role in calves' health, growth and productivity. Early feeding management influences rumen development, the composition of the ruminal microflora and the development of healthy feeding behaviour. Investment in optimal nutrition in early life will provide future benefit for any dairy operation, with a direct effect on the lifetime milk yield of cows.




All calves should be treated in the same way to ensure their welfare and health, whatever their economic value and future destination.



Good practice

- ✓ Clean water must always be available ad libitum.

Good management of colostrum

- ✓ To ensure adequate passive transfer of antibodies all calves should consume colostrum following good and best practice guidance as detailed in the  **Calving Care-Calf factsheet**
- ✓ After the first intake of colostrum, calves should be given high quality colostrum, transition milk or mixed milk-colostrum for at least 4 days.
- ✓ The quantity of milk or colostrum intake should be checked by palpating the calf's belly and checking their sucking reflex. Special attention should be paid to weak calves or calves with low birthweight. This might include additional time or physical assistance.
- ✓ Feeding equipment (teats, bottles, buckets, stomach tubes) should be cleaned and disinfected after each use and always between calves.

Good management of general nutrition

- ✓ After the colostrum feeding period, an average quantity of milk volume at 20% of the calves' body weight (e.g. 10 litres for a 50 kg calf), should be fed daily for at least the first 6- 8 weeks. This enhances growth rate, gastrointestinal development and reduces stress at weaning. For female calves this will also improve udder development resulting in improved milk production later in life.
- ✓ During the first 2 weeks of life, group housed dairy calves raised indoors, gradually increase milk consumption and plateau at 15 litres/day, consuming up to 5 litres in one meal. The volume and energy requirement of their ration should be adjusted as the animals grow to ensure both nutritional need and their feeling of satiety, which in turn will reduce inappropriate suckling behaviours.
- ✓ Calves raised with their dams will typically suckle in bouts of 8–11 minutes, in 9-10 suckling bouts per day at 4 weeks of age. Bout duration and frequency gradually reduce with age. Suckling bouts stimulate oesophageal groove function and abomasal activity as well as fulfilling their need to suckle. When calves are not fed by their dam or a foster cow, they should be fed milk or milk replacer as frequently as possible, with a minimum of 2 feedings per day. The maximum delay between feedings should not exceed 12h, and once daily feeding is unacceptable in calves, as regulated by the European Directive 2008/119.





Good practice

- ✓ Where milk replacers are necessary, they should be good quality, with 25-28% crude milk protein (vegetable proteins are not suitable for young calves) and 15-17% fat. They should be fed warm (38-40°C). Feeding cold milk to calves under 8 weeks of age is unacceptable.
- ✓ Bottles or buckets with nipples should be used when feeding milk or milk replacers to calves. Teats should be left with the calves for 20-30 minutes after feeding to reduce cross-sucking. Teats stimulate milk intake, fulfil the need to suckle and prevent rumen fermentation and bloat.
- ✓ Feeding should be monitored and encouraged, especially during the first week of life. Calves should be able to access milk positioning their heads to suckle naturally (without risk of air gulping or over-straining their necks). The correct use of the feeding device will help ensure sufficient food intake and good digestion. If applicable, this will also ensure that the calf is able to feed during transport.
- ✓ Forage should be available for calves from Day 1. It should be non-lignified (rich in sugars), in a long cut format of at least 4cm and easily digested by the immature rumen. Providing fibre encourages foraging behaviours, stimulates rumination and salivation, supports optimal rumen pH, rumen development and gut microflora.
- ✓ All feed must be kept fresh and free from water or manure contamination, and supplemental water must be provided in separate buckets.
- ✓ Calves must be provided with dry starter feed (concentrates) during the first week of life to encourage them to start eating solids. It should be formulated with easily digestible ingredients and have good quality and adequate amounts of protein, minerals, vitamins, and iron. Access should be ad libitum for calves. Feed should be replaced daily, and any leftovers discarded (even if it looks acceptable, it may not be palatable).

Good management of weaning

- ✓ Weaning should be a gradual and low-stress experience for calves. This can be done over a 2 week period, as a minimum, by progressively increasing the time spent with restricted access to milk.
- ✓ Calves should be eating at least 1-1.5kg starter feed consistently (for at least 3 consecutive days) and have their rumen developed before weaning (removing access to milk). This ensures they have sufficient energy and microbial proteins to maintain growth. This usually occurs by 8-9 weeks of age, and weaning should not be attempted before this age. The volume of liquid diet offered can influence the timing of weaning and high milk component diets might result in weaning closer to 12 weeks of age. A suitable strategy might be reducing milk at 4-5 weeks of age by 25% of the previous daily milk provided, followed by another 25% decrease when the calf's starter feed intake goals are reached.



Best practice

Best management of general nutrition

- ★ When calves are not fed by their dam or a foster cow, **best practice** farms feed milk or milk replacer as frequently as possible, with a minimum of 4 feeds/day. The maximum gap between feedings should not exceed 8h.

Best management of weaning

- ★ **Best practice** farms wean calves later e.g. 12-17 instead of 8 weeks of age, because their rumen capacity is larger, allowing higher intake of solid feed. This helps to reduce the risk of post weaning weight loss.
- ★ **Best practice** farms wean calves gradually to allow both gastro-intestinal and behavioural adaptation. Calves raised in cow- calf- contact systems (or ad libitum with automatic feeders) are usually more nutritionally dependent on milk. Restriction of suckling from the cow can be achieved using fences which allow partial social contact, or using calf nose flaps.
- ★ **Best practice** farms provide a choice of feedstuffs for weaned calves that are enjoyable to eat. This can include mixed herbage pastures or a variety of types and sizes of feeds suitable for ingestion by young calves.



Good practice



Best practice


The environment should be clean and safe and provide ready access to feed and water.

See  **Calf Environment factsheet**



Good practice


- ✓ The behaviour of individual calves should be monitored at least twice daily, ideally by the same person. This will include their feeding motivation (drinking speed, milk intake, food consumption, visits to the feeder), their level of activity, their muscular tone, reflexes, respiration, the time spent lying down or isolated, their social interactions, and signs of lameness or other sources of pain (especially after surgical procedures such as disbudding). Behavioural observation is a useful indicator of both health and welfare.
- ✓ Weaning off milk should not coincide with any other stressful events for calves (e.g. re-grouping, changing location on the farm, disbudding, castration, or transport). If calves show any sign of disease, weaning should be delayed until they have fully recovered. Weaning can be a stressful experience, which is a major risk factor for diseases and impedes ingestion and growth of calves.

For additional good and best practices to manage health of calves,
refer to the  **Calf Health factsheet**






Good practice

- ✓ Calves should be left to suckle their dam for 24 hours after calving, to enable the calf to benefit from the physical support and colostrum provided by their dam. The exception is where there is a known risk of infectious disease transmission. See  **Calving Care-Calf factsheet**
- ✓ Calves should be encouraged to work for their feed and to feed frequently by e.g. using straw racks. Frequent feeding provides enrichment and supports development of good digestion.
- ✓ All calves should have access to feed and water without competition. This can be achieved utilising a number of measures: ensuring one feeding source (nipple bucket, bottle) for each calf, low number of calves accessing each automatic feeder (based on manufacturer guidance), providing a minimum distance of 35 cm or a solid partition between feeding sources, providing free access to calf creep areas or use of closable feeders.



Best practice

- ★ **Best practice** farms allow the calf to suckle the dam or foster cow. The number of calves per foster cow should be adapted to the milk yield of the cow and the duration of the suckling period (based on intended age at weaning). Gradual behavioural weaning can be spaced out from nutritional weaning to reduce stress, and should not begin before 12 weeks. See  **Calf Behaviour factsheet**



Summary



Farm

Providing tailored nutrition for calves from birth will optimise their growth and future performance. It also ensures that time, effort and financial resources are focused on positive outcomes rather than dealing with complications or ill health.



Calves

Retaining contact with their dam (or foster cow) and having the opportunity to interact with other calves, will help calves develop positive feeding behaviours which support their immune systems and help them to stay healthy.



Handler

Planning and monitoring to ensure calves stay healthy helps to reduce workload and provide opportunities for positive human-animal interactions.

Take pride in all of your farm's good and best practices towards animal welfare!

Additional resources



Care4Dairy.eu