



Best practice farms provide bespoke, clean, comfortable, indoor and outdoor environments that support calves' social and mental development as well as their growth. Such farms are more likely to have healthy, vigorous calves expressing a range of positive natural behaviours.

Why is this important?

Calves are more sensitive to environmental conditions and infections than older animals on the farm. Well-designed calf housing and facilities significantly reduce the spread of contagious disease, increase growth rates and decrease morbidity and mortality. Calves who have the opportunity to learn social and feeding behaviours from either their dam or a foster cow, are more likely to develop into resilient, healthy animals. The environment in which these social groups are accommodated should encourage a range of positive behaviours which include exercise, play and positive human-animal interactions.



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



Good practice

- ✓ Housing facilities should allow ready access to clean and safe feed and water, and accommodate feeding equipment that allows natural feeding behaviour 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.

See  **Calf Nutrition factsheet**

Additional good and best practices to manage nutrition of calves are detailed in the  **Calf Nutrition factsheet**





Good practice

- ✓ Whether reared indoors or outside, calves should be provided with a spacious, clean, dry, draught-free and non-slip lying area. Shelter should be provided as required. The use of ample bedding (e.g. deep straw, sawdust, wood chips or sand) will encourage exploration and play behaviours as well as helping to maintain body temperature. Comfortable lying areas encourage relaxed lying postures, synchronous resting and behaviours, which help maintain temperature during cold weather.
- ✓ Calves under 21 days of age should be provided with a warm environment to help maintain core body temperature. The temperature of their environment should be checked and maintained between 7-28°C. Temperatures above or below the recommended range, result in energy expenditure to maintain body temperature, to the detriment of their growth and immune system. See **Figure 1**.

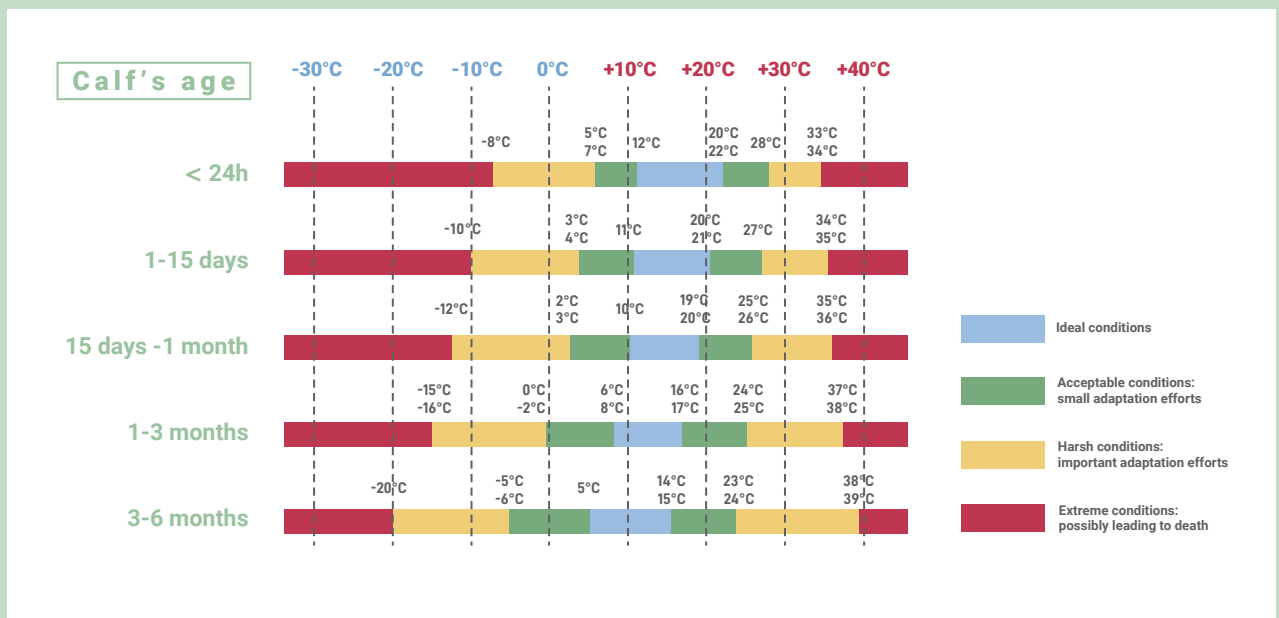


Figure 1

Objectives of housing temperature and their consequences on calves' comfort and health. Consequences are given for a dry and draught-free environment.

(adapted from Institut de l'Élevage, 'Des veaux laitiers en bonne santé - Moins d'antibiotiques avec de bonnes pratiques d'élevage et des nurseries performantes', 2014)

- ✓ Calves should be observed for thermal comfort and the temperature of an individual calf checked if concerned. Neonatal calves should be provided with a warm environment (7 - 28°C) to help maintain body temperature (38.5 - 39.5°C). The use of calf hutches with deep bedding, and presence of the cow or other calves will help to keep calves warm. If the calf has difficulty maintaining body temperature, infrared lamps or calf jackets can be used to help warm them.
- ✓ Each calf should have at least 7m³ of air space, with ventilation speed below 1km/hour (i.e. imperceptible), dust below 10 mg/m³, ammonia below 10 ppm, humidity below perceived saturation (no condensation on surfaces, dry bedding, calf coat is dry to the touch).
- ✓ If reared outside, calves should have an option to shelter from wind and humidity, e.g. using hutches. Renew the air regularly (0.4m³/hour per calf for mechanically ventilated barns or 4 air changes per hour). Side wall openings in naturally ventilated barns should remain uncovered for optimal air circulation. Providing optimal environmental conditions and renewing the air regularly will promote comfort of the calves and will help reduce the risk of respiratory disease spread.





Good practice

- ✓ Light intensity during the daytime should be minimum 50 lux, provided by windows or an outdoor area. When housed indoors, periods of dark or dimmed lighting should be provided to help encourage resting/lying behaviours.
- ✓ Pens should have designated lying, feeding and exercise areas. Housing requires provision of ample space (at least 3m² per calf, 2m² of which should be lying area), deep bedding, options for being in light or dark. Housing should provide protection from health or weather risks, while encouraging a range of positive natural behaviours such as resting, voluntary social interactions, grooming, exploration, foraging, and play.
- ✓ Slatted floors should be avoided but where slats are used, partial rubber coating or use of rubber mats on concrete floors should be employed to improve comfort. Rubber provides a soft, non-slip surface that facilitates expression of natural behaviours (grooming, exercising) and improves insulation from cold.
- ✓ Whether indoors or outside, buildings, flooring, fences and fittings or fixtures should be kept safe and clean e.g. no sharp or loose parts.
- ✓ The feeding and drinking areas are prone to soiling and should be positioned away from the resting area, with flooring which is easily cleaned and well drained. Renew bedding around this area to help minimise soiling and keep it clean.




Best practice

- ★ **Best practice** farms provide an environment temperature of around 10-20°C for calves. See **Figure 1**.
- ★ **Best practice** farms provide calves with an enriched environment, including pasture, when farm conditions allow it. Use of open hutches containing bedding materials and/or access to their dam or a foster cow, will help provide shelter and maintain body temperatures. Housing should provide protection from health or weather risks, while encouraging a range of positive natural behaviours such as resting, social interactions, grooming, exploration, foraging, and play. Rearing outdoors, with provision of adequate shelter and comfortable lying areas can improve health and lower morbidity and mortality rates. Access to an exercise area (indoors or outside) during daylight with a minimum area of 10m² per calf for a few hours every day (e.g. between feedings) can be provided.




Good practice

- ✓ Calf environments should accommodate appropriate biosecurity and the possibility to isolate sick calves in a dedicated 'hospital area'. See  **Calf Health factsheet**
- ✓ Indoor and outdoor calf environments should have fittings (e.g. floors, walls or fences) and equipment with smooth surfaces, which are easy to clean and disinfect when necessary. Holes or cracks should be repaired rapidly, as they provide a nidus for infection.



Best practice

- ★ **Best practice** farms use a dedicated 'medical area' for medical and surgical procedures on healthy calves, that is distinct from the 'hospital area' (or cuddle boxes in cow-calf contact systems). See  **Calf Health factsheet**





Good practice

- ✓ Calves should never be permanently tethered, as it does not allow the calf to express natural behaviours such as foraging, playing, grooming or socialising. Tethering should be avoided as much as possible, and should always be strictly limited to one hour during feeding of group-housed calves. Tethering of calves is regulated under the European Directive 2008/119.
- ✓ Where calves are not raised with their dam or a foster cow (whether suckling is permitted or not), they should be kept in pairs or small (maximum of 8), stable groups of similar age (preferably few days, no more than 14 days apart) and size, from the age of at least 24 hours until weaning and later. See Care4Dairy Review on Group Housing of Calves.
- ✓ Single housing does not fulfil the socialisation needs of the calf, but may be employed where homogeneous grouping of calves is not possible, or where there is exceptionally high disease risk that outweighs the benefits of direct social contact. Isolated calves must be able to see and touch (through the fence) other calves of a similar health status. Such indirect social contact is the minimum required by the European Directive 2008/119. See Care4Dairy Review on Group Housing of Calves.
- ✓ Veterinary advice should be taken regarding the risk-benefit analysis of pair/ group housing of calves. Calves with similar "health status" can be housed together, though isolated from the main calf group.



Best practice

- ★ **Best practice** farms rear calves with their dam or a foster cow until 12 weeks of age or later (for late weaning), whether suckling is permitted or not. The cow provides warmth and shelter to the calf, in addition to social support. See  **Calf Behaviour factsheet**
- ★ **Best practice** farms provide 2 or more forms of enrichment within the calves' environment. See  **Calf Behaviour factsheet**
- ★ **Best practice** farms provide options for calves to mix with the group or withdraw to rest or to avoid negative social interactions. This can be achieved by adding stacked straw bales or opaque panels attached to fences in the pen, making sure that observation of all animals from outside the pen is still facilitated.





Summary



Farm

Calf environments should favour implementation of health-focused practices around calves: individual monitoring and medical treatment, hygiene and biosecurity. Grouping calves with adult cows (dam or foster cow) and/or other calves is best for calf health and welfare, improving performance on farm and reducing potential losses.



Calves

Calf environments should be adapted to calves' specific needs and encourage natural behaviours which include socialisation (with an adult cow or other calves), exploration and exercise.



Handler

Whether housed indoors or outdoors, the environment used for calves should be designed to ease workload, ensure the safety of handlers, and protect from zoonoses.

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

Additional resources



Care4Dairy.eu