

DairyBeef 500 Factsheet

Calf housing

Providing the correct housing environment is central for a calf to perform during the rearing period and to avoid stress and other health issues.

Ventilation

- Natural ventilation is the most efficient and least expensive method of providing an optimum environment.
- Ventilation is predominately provided by a combination of wind and stack effect in Ireland.
- Eliminates noxious odours, draughts and stagnant air, while also providing fresh air.
- Crucial to maintain environmental humidity levels and to decrease airborne dust, endotoxin levels and pathogens.
- Must serve to maintain temperatures within 15-20°C – calf performance maximised.
- At least five or six air changes per hour required within a calf shed.
- At least 7m³/calf of total air capacity should be provided to young calves; 10m³/calf required by two months old.
- Long, narrow sheds are easier ventilated than wide, square houses. Width should not exceed 11m.

- A calf shed should be stand-alone, located up wind of other cattle housing facilities and at right angles to the prevailing wind.

The stack effect

- The stack effect is the same principle by which smoke is drawn up a chimney.
- Air inlets and outlets are required.
- Air heated by livestock rises, escapes through the outlet area (highest point of the shed) and is replaced by fresh air through the inlet area.
- The inlet needs to be two to four times the area of the outlet.
- An outlet of 0.04m²/calf is desired.
- Yorkshire boarding is preferred over space boarding or vented sheet as an inlet; it supplies draught-free air without allowing rain in.
- Effective air outlets include a simple ridge outlet, ridge upstands or ridge capping.



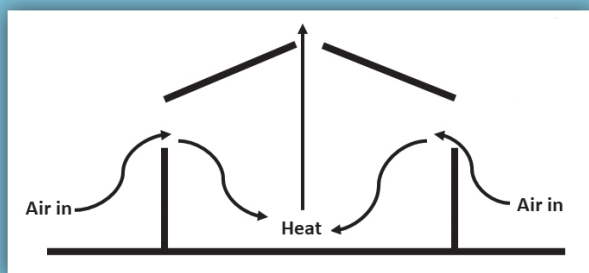


Figure 1: Stack effect

Drainage and dry bedding

- Calves can spend 80% of their time lying down; the type and depth of bedding is important.
- Deep beds of straw are an effective way of protecting calves from the cold.
- Avoid damp bedding; it facilitates the survival and spread of bugs and reduces temperature.
- Use the 'knee test' to determine the dryness of bedding.
- Flooring should facilitate the easy cleaning and removal of excess moisture from the shed.
- A 1:20 floor slope is recommended.
- Waste channels are required to carry excess liquid out of shed to an external storage point.

Hygiene and cleaning

- Hygiene is critical; calves are most vulnerable to pathogens and disease during the rearing period.
- Easily-cleaned floors and walls are required to permit the deep cleaning and disinfection of pens between batches of calves.

- Once cleaned out and disinfected, a long rest period is an effective means of ensuring that bugs are eliminated from the calf house.
- The use of water should be kept to a minimum when calves are present in the shed.

Other considerations

- Clean water must be available to calves at all times.
- Contamination of feed and water from other calves, vermin and flies should be avoided.
- The correct feeder and drinking space must be provided to encourage feed and water intake.
- Calf sheds need ample lighting. At least 10% of the roof area should be clear sheeting.
- Where artificial lighting is used, 50 lux is the threshold.
- Better performance and less disease is associated with a space allowance of 2-2.5m²/calf.



Table 1: Shed design problems

Common design problems	Consequences	Recommendation
Inadequate roof pitch (<15%).	Air deflected downwards, leading to draughts.	Pitch of 22° recommended.
Inappropriate inlet location and poor design.	Reduced effectiveness and downward deflection of air.	Eave inlets are ideal, 1.8-2.5m above floor. Gable ends are less effective.
Space boarding restriction of inlet.	Inadequate flow of air across the house.	Ensure space boarding is not covering or obstructing inlets.
Spaces under doorways and pen divisions.	Can cause low level draughts.	Reduce spaces, fill gaps.
Large height differences between inlets and floor.	Influences the pattern of airflow in windy conditions. Reduces the stack effect in calm conditions.	Have height difference of <3m between inlets and floor.
Obstruction of outlet.	Reduces effectiveness of ventilation.	Simple open ridge space works best. Make sure that capped ridge outlets are properly designed and constructed.
Buildings wider than 10m.	Makes it difficult to get an even airflow across the building as the roof pitch tends to be lower, creating poorer air circulation.	Can be overcome by using spaced roof sheets or raised roof sheets.
Poor site location.	Major impact on air flow.	Ensure shed is positioned at right angles to the prevailing wind. Use mechanical ventilation.

More information on the Teagasc DairyBeef 500 Programme can be found at Teagasc.ie

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