

Turning down the heat in the calf shed

Heat-stress in the adult herd is a familiar concept but the effect of high ambient temperatures on dairy calves is often not considered.

CALF COMFORT ZONE

The 'normal' body temperature of a calf is 38.6°C (range 38.5–39.5°C). The ambient temperature range at which a calf does not require any additional energy to actively warm or cool its body, is called the thermoneutral zone. For a new-born calf this is 10- 25°C. This zone changes as a calf grows due to the production of heat from ruminal fermentation.

Calves tolerate higher ambient temperatures better than adult cows: their larger body surface to live-weight ratio allows better heat dissipation. Signs of heat stress may be apparent when the ambient temperature is >25°C and the relative humidity is ~80%. High daily temperatures followed by cooler nights allow calves to dissipate accumulated body heat. The highest risk of heat stress occurs when there are high daily and night-time temperatures on consecutive days.

IMPACT OF HEAT STRESS

In periods of heat-stress, starter (grain) consumption is often reduced. Additionally, more energy is used to maintain body temperature by sweating and panting, with the overall effect being a reduction in weight gain. Heat stress can also compromise immunity rendering these calves more susceptible to disease.

SIGNS OF HEAT STRESS

- Reluctance to move/lie down
- Reduced feed (milk and grain) intake
- Increased water consumption
- Seeking shade
- Standing/splashing water
- Increased respiratory rate
- Panting/open-mouth breathing
- High rectal temperature (if >41.5°C then high risk of death)



MANAGEMENT

ENVIRONMENT

Aim to reduce ambient temperature to 10-25°C so that less energy is needed to regulate body temperature. Provision of shade is essential, along with modifying shed design to improve ventilation. Side-wall vents, open-pitched roofs and whirlybirds can aid passive ventilation systems.

Some bedding retains more heat than others. Straw retains heat well during winter months while sand, sawdust and woodchips will dissipate heat better during summer months.

NUTRITION

Access to ad lib clean, fresh water from birth is essential. A heat-stressed calf may consume 5–10 litres of water/day, to replace losses from increased breathing and sweating. Automated water troughs should be checked daily and cleaned at least once weekly. In non-automated systems, ensure multiple small buckets of water are replaced daily to ensure optimal cleanliness.

Provide clean fresh starter daily in troughs that allow easy access to all calves. As starter consumption is reduced in hot weather, increasing the nutrition from the milk-diet can help maintain live-weight gains. This may include increased frequency of feeding/ volume fed per day or feeding fortified milk. Always discuss fortified milk feeding with your veterinarian prior to starting a program.

Electrolytes can be routinely fed to all calves during the summer months to replace lost water and essential salts. Calves fed milk once daily can have an electrolyte feed in the afternoon and calves fed milk twice daily can be fed electrolytes 2–3 hours before and after a milk feed, for example at midday.

HUSBANDRY

Routine husbandry such as disbudding, vaccinating and transportation should occur early in the morning when the ambient temperature is coolest and the calf's body temperature is at its lowest. These activities are stressful and should not be carried when the risk of heat-stress is high.