

Cooler cows for hotter profits

Climate change is leading to warmer Australian summers with an increased number of hot days and warmer nights. This increases the risk of heat stress leading to adverse effects on herd health and farm profitability.

EFFECTS OF HEAT STRESS

Reduced milk production (up to 40%) is an obvious effect of heat stress in dairy cows but other losses include:

Poorer herd fertility- reduced intensity and length of oestrus, lower conception rates, increased risk of embryo death, decreased in-calf rates/increased not-in-calf rates, decreased calf birth weight leading to poorer calf viability.

Reduced milk quality components- increased somatic cell count from behavioural compensation and reduced protein.

Loss of body condition score- reduced feed intake and increased use of nutrients to regulate core body temperature.

Poorer cow health and immune function- hot and humid conditions can challenge the maintenance of rumen pH, increasing the risk of ruminal acidosis and ketosis. Strategies to cool down can increase the risk of opportunistic infections such as mastitis.

HOW DO COWS BECOME HEAT-STRESSED?

Dairy cows need to maintain their core body temperature between 38.5°C and 39.3°C. This core body temperature can change throughout the day, peaking in the early evening and reaching a low in the early morning. In hot weather, dairy cows deal with heat load using a variety of strategies:

Behavioural strategies

- Looking for areas with greater air movement or standing to increase exposure to air.
- Seeking water and shade.
- Changing their orientation to the sun.
- Panting or sweating.
- Stopping or reducing feed intake which decreases rumen heat production.

Physiological strategies

- Decreased feed intake (-10 to 20%) when the air temperature is > 26°C.
- Increased core body temperature.
- Altered blood hormone levels.
- Changed blood flow distribution: decreased blood flow to the gut, uterus and other internal organs; increased blood flow to the skin.

As the heat load increases these physiological and behavioural strategies can no longer cope. It is important to recognise these subtle signs so that prompt action can be taken. Prolonged heat stress can result in open mouth breathing, group seeking of shade and excessive drooling, by which point urgent attention is required.



MANAGEMENT OF HEAT STRESS

Early management strategies are essential to reduce the short- and long-term negative effects of heat stress. An integrated approach works best and some strategies include:

Milk cows later in the day

Cows milked two hours later in the afternoon can produce 1-2 litres more milk than cows milked mid-afternoon;

Use of sprinklers

Sprinkling cows before the afternoon milking will cool cows down provided there is a breeze. It is important to provide a water droplet size which wets cows to their skin: providing a mist that sits on the coat surface will increase heat load by acting as an insulating layer around the cow.

Nutrition

Feed a mixed ration of conserved feeds during the day (preferably in a shaded area). Allow access to good quality pasture at night to maximise pasture intake during the coolest part of the day.

Provide shade

Natural shade trees, shade cloth and galvanised iron roofs have all been used. Any roofing system should be vented and be at a height of at least 3.7m.

Adapted from an original article in Dairy News Australia (December 2018) by Apiam vet Dr Gemma Chuck.

Reference: "Cool Cows: Strategies for managing heat stress in dairy cows", Dairy Australia.