



HEAT BECOMING A STRESS



MILKING COWS

HEAT STRESS SIGNS

- **Lungs and blood:** Breathing increases (>70/h) to reduce the body temperature, which decreases the concentration of bicarbonate in the blood
- **Skin and sweat:** High production of sweat to cool the body by evaporation, causing the loss of sodium, potassium and magnesium
- **Saliva and ingestion:**
 - High loss of saliva
 - Low rumen activity and reduced ingestion (<10–20%)
 - Ruminal acidosis.
- **Feet:**
 - Increased risk of disease
 - Laminitis
 - Lameness.
- **Milk:**
 - Milk production decreases
 - Milk fat decreases
 - Increased risk of mastitis.
- **Liver and urine:** High loss of bicarbonate in urine, which affects the pH of the blood.
- **Ovaries and uterus:** Negative impact on reproduction/fertility (silent heat, embryonic death, foetal abortion, etc.)

HOUSING AND ENVIRONMENT

- **Check water inputs are keeping up with increased demand:**
 - 3–4 litres water/litre of milk (normal consumption)
 - 90–120 litres/day, up to 250 litres on very hot days
 - Availability 10–15 cm per cow at 2–4 sites
 - Clean troughs often to improve palatability
- **Wet and dry in the holding pen:**
 - Minimal air speed needed: 1–2 m/sec (3 is the ideal!), 28 m3/cow/min
 - Big droplets that soak the skin
- **Airspeed: 3 m/sec**
- **Cycles**
 - Every 5 min
 - Large droplets for 30 sec to 1 minute
- **Fans continuously blowing**
- **Laying area:**
 - 10 m2/head (min)
 - 12–14 m2 close-up/fresh

FEEDING AND NUTRITION

- **Shift feeding times to cooler parts of the day**
- **Minimise feed sorting**
- **Ensure uniformity of mixed and delivered rations**
- **Ensure availability of fresh, palatable high-quality feed**
- **Maintain a healthy rumen function**
- **Avoid excess dietary protein**
- **Limit NEB via optimal nutrient supply:**
 - Provide highly digestible feed
 - Review energy density of feed and increase if necessary
 - Maintain safe forage:concentrate ratio (70:30)
 - Avoid unnecessary energy losses from animals



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MILKING COWS (Continued)

- **Fat:**
 - Often useful for increasing dietary energy
 - Ideally use fractioned and/or highly digestibility fat sources
- **Forage:**
 - Needs to be good-quality with highly digestible NDF
 - Use highly digestible forages (i.e., cereal, grass and alfalfa silages).
- **Carbohydrates (CHO) and sugar:**
 - Choose starch with slow degradation rates (e.g., maize vs. barley).
 - Maintain dietary sugar levels at 5–6%
- **Minerals:**
 - Sweating, panting, drooling = increased requirements for certain minerals
 - Recommended levels: K (1.5–1.6%), Na (0.45–0.6%), Mg (0.35–0.40%)
 - Ensure provision of key vitamins and trace minerals — Vitamin E, selenium (Se) and zinc (Zn)
- **Feed Yea-Sacc® to help stabilise the rumen environment and optimise function**
- **Feed Optigen® to increase nitrogen use efficiency**