



# 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 m<sup>3</sup>/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 m<sup>2</sup>/head (min)
  - 12–14 m<sup>2</sup> 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 fractionated 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**