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Cooperative Extension

Heat Stress Abatement Strategies

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Shade – Protection from direct and indirect solar radiation. Providing well designed shade can reduce the total heat load by 30 to 50%. Cows in shaded areas had lower rectal temperatures, reduced respiratory rates, greater rumen function and 10% more milk production to cows that had no shade.

Shade provided by trees is the best and most natural environment, however cattle may compact the area around the trees leading to vegetation death. If crowding does occur, a mudhole may be created, thus leading to an increase in mastitis. Temporary or portable shades can be used and rotated to various areas in a pasture to prevent loss of vegetation.

Air – airflow, air exchange and fans. Fans promote cooling by convection (blowing heat away from an object) and evaporation.

- Provide 4 to 6 mph of airspeed over cow beds and feed alleys.
- Fan height should be a minimum of 8' (above cows and machinery).
- 36" fans spaced 20 to 24' apart in free-stall and headlock/feed space
- Angle fans downward approximately 15 to 30^0
- Move air across and towards back of holding pen
- Maintain fans – clean blades , oil, repair damage, tighten bolts, realign.

Heat abatement strategies

- Holding pen: Sprinklers & fans
- Maternity pen: Sprinklers & fans
- Pre-fresh pen: Sprinklers & fans
- Lactating cows
  - Free-stalls – Fans
  - Feed area – Sprinklers
- Pastures – Shade

Access to clean and cool water!

Water – for sprinklers and consumption. Sprinklers should wet the back and then stop to allow the water to evaporate prior to another cycle beginning.

- Feed-line sprinklers should deliver 0.5 to 1.0 gallons per minute.
  - 70^0F = 1 to 2 minutes ON every 15 minutes, reduce cycle interval as ambient temperature increases
  - 85^0F = 1 to 2 minutes ON every 6 minutes
- Holding area sprinklers should deliver 1 to 8 gallons per minute.
  - 70^0F = 1 to 2 minutes ON every 6minutes

Water is the primary nutrient needed to make milk. Intake increased by 1.2 kg/^{0}C increase in ambient temperature. Cattle may consume up to 50% more water when the THI is above 80 percent. Offering chilled drinking water leads to increased water intake, increased feed intake and helps alleviate heat stress by reducing body temperature.

- Water intake increased to 50 to 60 gallons during heat stress

- Cattle consume 30% of daily water intake in exit lanes
- Provide a minimum of 2 water locations/group
- Keep water tubs cool and clean

Implementing heat stress abatement strategies on your dairy may seem like a great cost (electricity, purchase costs and water). However, the cost to not implement heat stress abatement strategies may be greater than input cost. Current research suggests that production losses caused by heat stress in the summer can be seen into the winter months, thus having an even greater economic cost. Be proactive, and reduce the potential of heat stress through abatement strategies.