



Impact of heat stress and abatement strategies for calves

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Calves under three weeks of age have a thermal neutral zone (**TNZ**) between 59 to 78⁰F. Below this zone they begin to experience cold stress, and above this zone they experience heat stress. Calves and heifers over three weeks of age begin to experience heat stress at 70⁰F.

Impact of heat stress on calves:

- **Energy requirements increase.** Similar to lactating cattle, heat stress causes a decrease in feed intake. However, heat stress also causes an increase in energy requirements due to increased respiration and metabolic rate.
 - **Immune system weakens.** Energy that was supposed to go towards supporting the immune system is shifted to respiration. Cortisol (the “stress” hormone) is also increased with heat stress, leading to a weakened immune response
 - **Reduced growth rates.** Energy for growth is shifted towards respiration.
- **Water intake increase.** Calves will (and need to) consume 1 to 2 gallons of water/day, this value increases as the temperature climbs. This is water that is separate from what is provided in the milk/milk replacer. Inadequate water intake can lead to dehydration and death.

Heat stress abatement strategies

Heat Stress Abatement Strategies

1. SHADE
2. TIMING
3. FRESH & CLEAN
4. WATER
5. FEEDING FREQUENCY
6. BEDDING
7. ELECTROLYTES
8. FLY CONTROL
9. AIR FLOW

Shade: Make sure calves have access to a shaded area and are never in direct sunlight. Hutches can be realigned to capture shade and the prevailing winds, or a temporary shade canopy can be constructed.

Timing: Increased body temperature from heat stress can lead to a compromised immune system. Perform potentially stressful activities (moving, grouping, vaccinating and dehorning) in the early morning when it is still cool.

Fresh & Clean: Feed or bedding this is important!

- **Feed** – Keep starter and water fresh. Calves eat more starter when it is cool out (6:00 pm to 6:00 am). Provide fresh starter in every evening (to prevent spoilage) instead of the morning. Fresh, clean and cool water should be provided throughout the day. Make sure you clean feed, water and milk buckets regularly to prevent bacterial growth.
- **Bedding** – bedding loaded with manure or urine not only heats up, but also attracts flies. Keep it clean to keep it cool.

WATER: Heat stressed calves can drink 3 to 6 gallons/day. Providing fresh, clean and cool water helps cool the calf, reducing the effects of heat stress.

Feeding Frequency – Feed calves in the early morning and late afternoon to prevent peak temperatures coinciding with digestion peaks. Increasing feeding frequency stimulates starter, thus hopefully preventing a decrease in feed intake that can lead to additional negative performance parameters.

Bedding: Sand makes comfortable and cool surfaces in hot weather. Try to avoid straw bedding during summer months as it holds more heat and will attract flies.

Electrolytes: Calves lose water and electrolytes through panting and sweating thus leading to dehydration. In addition to water, consider adding a midday electrolyte feeding to calves. If calves exhibit signs of dehydration, they have likely been dehydrated for 6 or more hours, and you should administer oral electrolytes immediately.

Fly Control: In addition to heat during the summer, calves are also a hot spot for flies. Weakened immune systems in combination with the diseases that flies can carry could lead to disaster. Talk with your nutritionist about feeding a milk replacer or starter that contains a fly control product. Keep calf pens clean and dry, and feed dry and fresh to reduce fly populations.

Breeze: Whether you can capitalize on the natural breeze, or create one with fans, it will keep calves cool, the area dry and discourage flies. Hutches can be elevated on one side to create a “tip”. This leads to increased ventilation and cooler internal hutch temperatures.

During the summer there’s lots to get done on a farm. Hay needs to be mowed, chores need to be done, fence moved, lactating cows need to be cared for... this list goes on and on. Everyone (cows and people) are hot and tired. Calves are often easily overlooked at the end of a long day; however, this can cost you. Decreased feed intake, growth and weakened immune systems can lead to increased treatment costs, deaths and cull rates, all impacting your bottom line. Include these heat stress abatement strategies into the normal management protocols on the farm and reduce one potential headache.