

## Heat Stress And The Cow

The summer season has arrived, and in full force! The smell of BBQs, sunscreen and campfires fill the air as the sun shines down bright. As temperatures continue to rise, remember to bring your lawn chair with you to the beach, but also ... remember to alleviate your cows' heat stress with some of these strategies and considerations!

A cow has a varying range of environmental temperature where she is most comfortable, but it often falls between -1 and 24 C. The range is wide because it's not just about environmental temperature; the **relative humidity** also has a direct impact on a cow's comfort zone. As the outdoor temperature approaches 24 C and beyond, and/or the relative humidity pushes the Temperature Humidity Index up, these amazing heat-generating ruminants take a big hit.

Heat stress can be a MAJOR disruption to your herd as affected cows will experience a dramatic drop (10-25%) in both feed consumption and milk production. Other consequences of heat stress include decreased fertility, suppressed immune systems, and subsequently, higher susceptibility to disease.

The cow is great at a lot of things, but not at dissipating body heat. She doesn't sweat very effectively and that rumen is always churning, increasing her core heat load throughout the day. Although she pales in comparison to the panting of a dog, a cow will also use respiration to expel body heat; making **respiratory rate** a good surveillance tool to identify the heat stress level in your herd. Grab your phone or watch and count the number of breaths a cow, that you suspect as heat stressed, takes for an entire minute. A healthy normal cow should register less than 60 breaths per minute. A recording which exceeds this rate indicates that the cow is experiencing heat stress.

Cows may be subtle, but they do tell us a lot! Watch for other behaviour changes, such as how often cows get up and down, where they are congregating in the pen, and how many of them are perching in free-stalls (a sign they're trying to dissipate heat and are too hot to lie down). Also be on the lookout for some of the moderate to severe signs, like open mouth or laboured breathing, depressed attitude, and excessive sweating/drooling.

Heat abatement is important for minimizing cow health problems in summertime while maintaining a comfortable, productive environment for your cattle!

### Summertime Cow Considerations

**1. Water:** The most important factor in battling heat stress is WATER. Cows drink between 35 and 55 gallons of water per day, but when they're heat stressed they look to consume up to 50% more! Bountiful access to clean, fresh water is paramount for: sustaining the immune and reproductive systems of a cow, maintaining dry matter intakes and production, and for replenishing the lost water used to keep cool.

Provide additional water sources as needed (i.e. water tank in the return lane where space allows) and decrease the amount of cows per waterer in the pen to allow for increased access.

**2. Comfort:** Maintaining dry, comfortable stalls and bedding is important for dissipation of heat, reducing humidity around the cow, and sustaining proper udder health. Additionally, optimizing ventilation at all levels and corners of the pen is important in removing environmental heat and cooling off cows during periods of heat stress. Strategically placed fans, positive pressure tubes, natural cross-ventilation with curtains, misters, chimneys/roof gaps, etc. are all tools we can use to improve ventilation in the barn. *Remember: As the herd demographics of our barns change to appropriately house more higher producing cows, additional ventilation may be warranted.* When a cow sweats, she releases body heat via evapotranspiration. Therefore, the fresh air ventilation across the body of the cow is essential in accelerating this evaporative heat release. Misters are also a great tool for cooling off cows (usually set in feed alleys and/or holding pens) but remember that you still need ventilation to dry off the mist and achieve heat release through the skin! Too much mist and poor evaporative ventilation will increase the humidity around the cow and do more harm than good.

Maintaining high standards of cow comfort and ventilation in the barns will maximize your herd's capacity to cool!

**3. Health:** A cow's immune system relies greatly on water and energy to effectively fight off disease, develop a timely response to it, and prevent it from recurring. Heat stress is both a direct and indirect threat to the immune system as it leads to reduced intakes (preventing the cow from getting much needed energy and nutrient) and depletes the much needed water stores throughout the body. It also leads to higher incidences of ketosis, milk fever, retained placentas, mastitis, metritis, lameness, ruminal acidosis, and respiratory disease. Any of these conditions will stifle the lifetime health and productivity of the cow, so **prevention is key!**

Heat abatement strategies are as important in the dry pen as they are for your milk cows. Studies show that heat stressed dry cows produce less milk and have more health problems throughout their subsequent lactation. Furthermore, daughters born during a period of heat stress would experience similar consequences throughout their own adult lives. Knowing this, it is even more important that we optimize ventilation in dry pens and give these girls greater access to space, feed, and water.

**4. Nutrition and Reproduction:** As cows sweat more and eat less during times of heat stress, the rumen produces less volatile fatty acid, and milk production decreases. Impactful nutritional strategies to consider, and discuss with your herd vet and nutritionist, during the hot months include: Increasing nutrient density of the diet (minerals, energy, buffers, and B Vitamins for the immune system), feeding higher quality forages, with higher digestibility, and increasing feeding frequency. In hot weather, mixing and feeding twice daily is recommended to promote dry matter intakes and avoid ration heat-up.

Mitigating heat stress is also important for herd fertility. As the weather gets warmer, cows will show shorter and less intense signs of estrus. Additionally, excessive body heat can damage follicular

development on the ovaries, decrease insemination success rates, and compromise embryonic development and growth. By optimizing the points above, we can reduce the effects of heat stress on your herd's reproductive performance.

Take the time now to evaluate your farm's breeding program with your vet as timed Artificial Insemination (AI) synch protocols may be warranted for you, to provide consistent fertility solutions in the midst of your other heat abatement strategies!

**5. Honourable Mentions:**

Ensure access to shade as it is critical for cattle to cool off while out on pasture.

Handle your cows during the coolest times of day (vaccinations, treatments, breedings, etc.).

Get aggressive with fly control, as biting flies force bunching (and heating up) of the herd.

Optimize ventilation for calves and the replacement herd as heat stress can affect their growth and development.

If you have any questions or you would like to go over your farm's heat stress considerations/update your strategies, give us a call and talk to your herd veterinarian; lots of resources available here for you!

