



DAIRYINFO

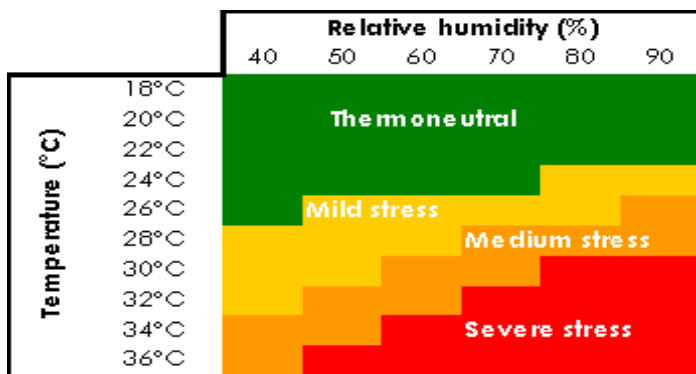
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Taking service to another level!

Heat Stress in Dairy Cows: Implications & Nutritional Management (I)

Dairy cows are very sensitive to heat stress, which can significantly impact economics for the producer, not only by lost productivity and milk quality (increased somatic cells count), but also by health-related problems. The producer is usually aware of essential and necessary herd management practices during this critical period; however, some nutritional solutions may not be as well known. In particular, probiotics, which, by improving rumen conditions and functions affected by heat stress, can help maintain the cow's digestive health and overall productivity. During periods of heat stress, oxidative balance is also affected and it is very important to increase the antioxidant intake in order to preserve the cow's reproductive health and immunity.

1. Defining heat stress and its implications: The severity of heat stress is correlated to both the humidity level and the ambient temperature (see temperature-humidity index below). The cow's thermal comfort zone is approximately 12°C – 25°C. Within this temperature range, the animal comfort is optimal, with a body temperature between 38°C and 39°C (Lefebvre & Plamondon, 2003). Above 20°C the cow suffers from heat stress: its health status and general performance are affected.



- Body temperature (rectal) >39.4°C
- Respiratory frequency >80 breaths per minute
- Dry Matter intake decreases – 10% = high stress; 25% = severe stress

2. The financial impact of heat stress: Severe heat stress can result in substantial financial losses. An estimated 80% of these losses are associated with a loss of productivity, and 20% with health issues such as reproduction and immunity problems, which translate into increased mortality and mastitis frequency in particular.

3. A disrupted energy balance: Cows have two ways

of maintaining their thermal balance and regulating their body temperature under high heat (and humidity) conditions. They rely essentially on both:

- **Favoring heat dispersion**, in particular through evaporation, by increasing subcutaneous blood flow, panting, etc. These activities increase the maintenance energy needs of the animal by an estimated 20% at 35°F. In the case of a dairy cow, this means that part of her production energy will be redirected to thermal regulation.
- **Limiting heat production**, by reducing activity and changing her feeding pattern. Indeed, significant heat production in dairy cows results from rumen fermentation. The cow's DMI can be reduced by 10-30%. Also, rumination, which produces heat, decreases dramatically. Cows will tend to eat less overall during the day, but more often and in smaller quantities. They will tend to consume more feed at night when it is cooler, slug feed, sort feed and choose feeds that produce less heat during digestion, selecting concentrates over forages.

4. Acidosis risks: In periods of heat stress, the risk of acidosis increases. Factors that can contribute to rumen acidosis problems may be: decreased DMI with a lower proportion of forage and higher levels of fermentable carbohydrates, decreased rumination, decreased saliva to the gut (a source of bicarbonate), with a reduction of its buffering power due to increased CO₂ expelled (panting). Additionally, a decrease in rumen pH impairs fiber digestion efficiency: rumen fibrolytic bacteria are the most affected when rumen pH drops (below 6.0). All of these factors contribute to reduced feed efficiency, and consequently, milk yield, and often milk fat. Moreover, acidosis is proven to affect the cows' overall health status, fertility and longevity.

It is important to keep cows cool throughout the hot, humid summer months. We'll have more on managing for heat stress in our next edition.

(Edited from an article by Lallemand Animal Nutrition)



Interested in discussing topics in this newsletter, or want to do a better job feeding and managing your cows? Call us! Our goal is to help you - the W-S Feed commitment!

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Summer Heat...

Spring is here... summer's on the way. We often pay attention to reducing heat stress for dairy cows, but calves and heifers are frequently overlooked. The impact that heat stress has on these young animals can be critical. They need protection from the summer sun, heat and humidity! This includes not being exposed to direct sun and providing adequate shade to minimize the impact of heat! Housing must be well-ventilated with adequate air flow at all times. Like cows, they usually exhibit heat stress by going off feed, lying down less and increasing their rate of respiration. Death may result, if extreme conditions are not addressed quickly. They also need access to fresh, clean water throughout the day. Last is the need to maintain good hygiene in all housing areas! Calves and heifers represent your future lactating herd. So – *keep 'em cool this summer!*

Are Your Cows Eating Well?

There are many things that influence feed intake, including:

- Feed availability & timing of feeding
- Feedbunk management
- Feeding frequency and mixing sequence
- Ration moisture content
- Grouping strategies
- Avoiding sudden ration changes
- Heat & humidity during late spring and summer months
- Making sure cows have sufficient fresh, clean water at all times

It is recommended that feed be available at least 22 hours a day in most feeding programs. You want your cows to have feed available when they want to eat. Generally, cows eat after milking or whenever feed is pushed up to them. Research (Michigan State) shows that 65-70% of daily dry matter intake occurs during daylight hours. So, ask yourself, are the cows eating well? Or are they eating as well as possible? Take time to review your feeding program and consider making the most of these natural feeding patterns. This can make a difference to your herd throughout this summer and all year-round, impacting productivity and the helping them to counter the effects of heat, humidity and possible stress!



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CHECK IT OUT!