Nutrition Focus

Heat Stress: Greater Returns, Improved Animal Welfare, An Easier Summer

These are some benefits to meeting your herd's extra needs

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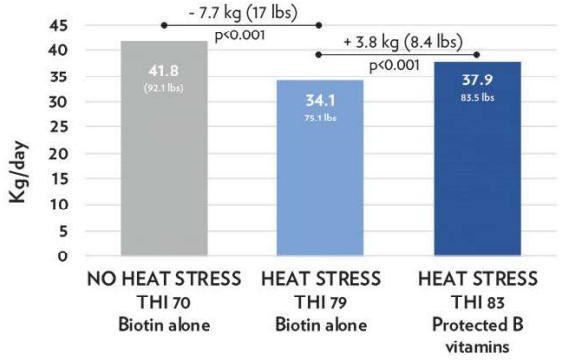
The sustainability of the dairy cow is based on her ability to convert undigestible feeds into energy. This requires growing and thriving rumen microbes which depend on high intake of a well-balanced diet. Fermenting these feeds in the rumen generates a lot of heat. The heat load can increase the rumen temperature. The amount of heat is affected by the type of feed and rate of fermentation. For example, carbohydrates that ferment rapidly can increase the ruminal temperature to above 40°C in a just few hours after feeding. This spike in rumen temperature can put a cow at risk of **subacute ruminal acidosis** (SARA). (Al-Zahal et al 2008)

Effect on milk production ECM[1]
(heat stress during the lactation period)
(Gressley et al., 2018)



During periods of heat stress, rumen health is under pressure.

The Temperature-Humidity index (Figure 1) is used to demonstrate the amount of heat stress in cows. At a high THI, cows struggle to efficiently get rid of heat. The increased core body temperature impairs feed intake resulting in lower component yield, and poor reproductive performance. **Managing your herd and facilities to minimize the negative impact of moderate to high THI is the first step.**

Are your fans clean and well maintained? Dust build-up and worn belts can decrease fan capacity by 30%. Have you ensured fan placement, soakers/sprinklers are optimal? Water availability (flow rates and access) are crucial during the summer, as water intake is expected to increase by 80-90% . Cows' behavior during heat stress changes; more time standing to efficiently get rid of heat can put a strain on hoof health. Ensuring your cows are standing on well balanced, healthy hooves is essential. Feeding management and nutritional strategies should also be modified. Ensure feed is not heating and is formulated for the expected lower feed intake. Consider multiple feedings per day.

All stages of production can benefit from nutritional and management strategies to minimize heat stress. Recent studies have clearly shown that increased production is possible if dry cows are managed and fed to reduce the impact of high THI. Proactive farmers already have seen the negative impact of a high THI not only in milk components but also on DMI during the moment that will define the future performance of the herd: **fresh cow pen!** Investing in nutrition and management during the periods of anticipated heat stress has a high ROI.

New nutritional strategies

Essential B vitamins (the stress vitamins) improve production, cow health and reproduction during heat stress. The cow's rumen microbes produce B vitamins to meet some of her needs. Canadian research has shown that the amount of these B vitamins produced by the rumen is driven by several factors, with feed intake being a key predictor. As you have seen on your farms, feed intake is reduced during stress periods, **especially heat stress**. Lower feed intake results in lower B vitamin production. Meet your cows' high B vitamin demand during periods of low feed intake by supplementing your herd with rumen-protected B vitamins. *It is critical to feed **rumen-protected** vitamins to avoid their degradation in the rumen to ensure the cow absorbs them down stream.*

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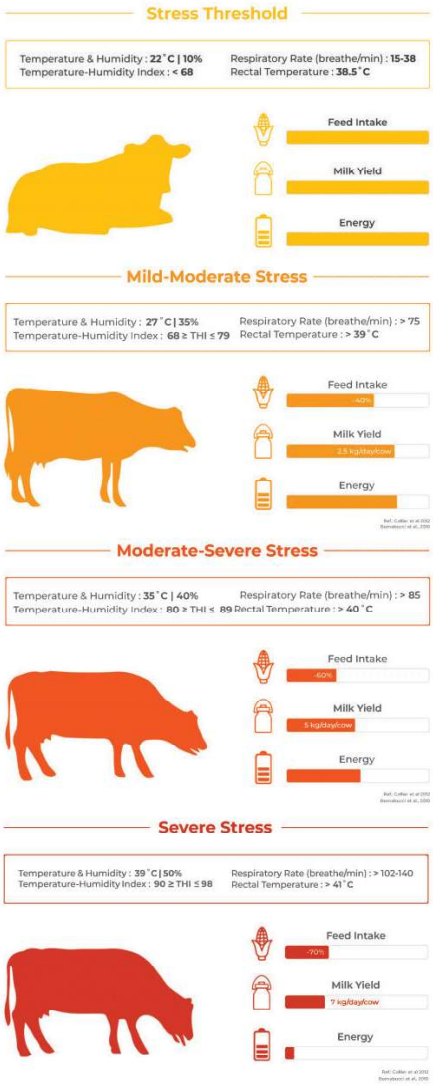

Recent research confirmed improved component yield when rumen-protected B vitamins were fed to heat stressed dairy cows. Heat stressed cows (THI of 83) fed a proprietary protected B vitamin blend for lactating cows produced 3.8 kg more Energy Corrected milk (adjusted to 150 days in milk). This large response has been repeated in other trials in Ontario, California and Mexico.

Supplementing your herd with rumen-protected B vitamins, in particular, during periods of stress (especially heat stress), lower feed intake or changing feeds, has been shown to improve component yield, health and reproductive performance.

Did Cows Save Us from Doom and Misery?

Tars Cheema

In my early herdsman years, I recall the messy fallout of both BVD and Lepto infections. Vaccines were the answer and a strict protocol was followed to ensure the herd was protected. For decades people hardly gave vaccines any notice, until diseases like measles suddenly spiked in small community clusters. But nothing has put vaccines under the microscope like Covid has.

Hundreds of years ago, people recognized that survivors of smallpox became immune, and they were tasked with caring for the ailing. From this premise, many tried to confer protection using some of the pox material to infect others – but it could also be deadly.

Many have heard the vague references to cow pox as the origin of crude, early immunization developments. It was an English country doctor by the name of Edward Jenner who is often credited with developing the foundation of immunology, even though he was not the first one to suggest that cowpox could be protective in humans against smallpox, or the first one to test it out. Recognizing that typically milkmaids did not get smallpox, he theorized that it was the pus from the cows' cow-pox blisters that may be providing protection. In 1796, he took some pus from Sarah's hand (infected by the cow 'Blossom') and inoculated an eight-year old boy in both arms. The boy had a fever and mild symptoms, but no infection. Repeated exposure to other infective material failed to cause disease. Jenner had demonstrated human-to-human protection was possible – not just cow to human. His methods would go on to be used across Europe and it saved hundreds of thousands of lives – possibly millions. Smallpox could have continued ravaging mankind for centuries were it not for the milking of cows.

Blossom the cow helped in the development of early vaccine technology.