



DAIRYINFO

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Nutritional Strategies to Help Cope with Heat Stress

It is July and one of the hottest months of the year. As summer's heat and humidity grow, so too do the resulting production losses and health risks for dairy cattle - challenges that often persist beyond the return of cooler weather in the fall. Today's dairy cows begin to experience heat stress at lower temperatures than many people realize. Recently updated guidelines indicate that, for cows making 35+ kg of milk, production and reproductive losses begin at an average daily Temperature Humidity Index (THI) of 68 (23°C at 40% RH, or 20°C at 85% RH). Even in herds averaging less than 30 kg of milk, remember that the high producing cows will be negatively affected, and so in turn will the bulk tank average.

Focus on Facilities First: Heat stress, like most challenges faced by today's dairy producer, is one that is most effectively addressed with a multi-pronged approach. The largest and most cost-effective opportunities to reduce heat stress are facility-based. Ensuring that cows have adequate shade and abundant water provision are attainable goals for all dairies. Beyond those considerations, dairies in humid climates (typical of the northeast and mid-Atlantic regions) can most effectively cool cows by repeatedly wetting cows down and blowing air over them on a cycle that increases in frequency with a higher THI. Blowing hot, humid air over hot cows is ineffective.

Ration Formulation Considerations: First and foremost, ensure that the dairy ration fed during hot weather is rumen-friendly. Heat-stressed cows are more likely to experience rumen health problems. Daily eating patterns may be altered by hot weather, increasing the risk of slug feeding. Hot cows stand more, and will often pant as a means of trying to cool off. The more they pant, the less they chew their cud, and these two behavioral changes combine to reduce the amount of saliva that is produced and swallowed. This in turn means less bicarbonate enters the rumen to function as a buffer, and a greater risk of sub-acute rumen acidosis results.

Heat-stressed cows also eat less. In an attempt to compensate for this, past nutritional approaches often included increasing ration energy density, commonly achieved (at least in part) by feeding more grain. Given the rumen health risks already present, feeding more grain (starch) is generally ill-advised. Instead, ration changes should focus on feeding less total and/or rapidly fermentable starch, more fermentable fiber, and potentially more fat, as diets so formulated should not add to the risk of acidosis. Brown mid-rib (BMR) forages and high-fiber (or low starch) byproduct feeds like soy hulls fit well with this nutritional approach. Feeding lower starch rations may reduce feed efficiency, but this measure tends to be poorer for heat-stressed cows to begin with. Furthermore, this approach should help minimize the risk of a significant nutritional contribution to the increase in lameness cases many herds experience in late summer or early fall.

Strive to feed appropriate protein levels. Overfeeding protein (or feeding excess protein relative to the amount of fermentable carbohydrates in the ration) can increase MUN (milk urea nitrogen) levels. If MUNs are significantly elevated, they may further contribute to the reduced conception rates

typical of heat-stressed cows. Excess ration protein may also unnecessarily increase ration costs, depending on the source(s) used.

Ration Additives: A variety of research-proven feed additives are available that may help with milk production and/or cow health during hot weather. However, nothing works everywhere (except good management!), and for many of the products listed below, the research data has yielded mixed results, with some studies showing a benefit to feeding the product whereas others do not. Live yeast and yeast culture products from several manufacturers have shown improved rumen function, milk production, and/or feed efficiency when fed to dairy cows under heat stress conditions. Research has also found that cows fed an extract from the fungus *Aspergillus oryzae* may better tolerate hot weather, with cows making more milk and/or having slightly lower body temperatures in some trials. Seaweed/kelp (*Ascophyllum nodosum*) meal and niacin are two other products that have shown benefits in some studies, but not others, when fed to heat-stressed cows.

Several studies have shown benefits to increasing ration DCAD (dietary cation-anion difference) levels through the inclusion of sodium bicarbonate and/or potassium carbonate, particularly in early lactation cows. Feeding additional sodium bicarbonate helps offset the reduced saliva production and rumen buffering experienced by heat-stressed cows. Cows lose more potassium as they sweat more during hot weather. Feeding potassium carbonate can help offset this loss and increase the cows' blood buffering capacity, and often contributes to higher milk production or improved butterfat percentage in the process.

Rumensin® is a feed additive labeled to improve milk production efficiency in dairy cows that typically generates a strongly positive economic return when it is fed. Research-to-date shows that this improvement in milk production efficiency is maintained in heat-stressed cows.

It is important to consider the use of any of these additives with input from a knowledgeable nutritionist. The additive(s) that are most likely to be appropriate and/or cost-effective may vary somewhat from herd to herd, and over time, depending upon feeding strategies, ration composition, desired response from the cows, milk component concentrations, and milk price.

(Article by Dr. Tom Bass, Renaissance Nutrition, Inc., 2012)

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CALL TODAY!

HEAT STRESS!

The heat and humidity of summer have arrived! And with it the potential of heat stress for livestock. Are you prepared? Reviewing ration and management programs can help livestock avoid many of the problems associated with rising temperatures and humidity. We have several products to help meet your herd's special needs during times of heat stress. Additionally, it is important to review your farm's management program to ensure livestock are equipped to cope with the heat. Be sure to consider every group on your farm from calves and heifers, to the lactating and dry cow groups!

Cool off with... W-S FEED!

**Make a difference this summer.
Minimize heat stress and its consequences!**

Water analysis: Get a good sample first

Water, both availability and quality, are critical for your cows. It is important to obtain an accurate water-quality analysis on a regular basis, which begins with proper water sampling. When you're assessing the quality of your herd's water supply, take two samples, advises Dave Beede, professor of dairy nutrition at Michigan State University. Take one sample as close to the well or primary source of the water supply as possible. Then, take a second sample after the storage compartment of the reserve tank/pressure tank or as close to the cows as you can. Avoid sampling from tanks and other water sources that cows come into contact with, since this can contaminate the sample.

Submit the sample for a standard lab analysis for livestock water. Then, for instance, if the lab report shows iron concentrations greater than 0.3 parts/million (ppm), or either sulfate or chloride concentrations greater than 250 to 500 ppm, take two more samples and send each to a different certified lab for another analysis and to obtain a comparison. "This may seem like over-kill at the time, but water treatment systems can be a major investment, so it is important to know absolutely for sure that concentrations of a particular analyte are in excess," Beede says. Water quality is important to your livestock! Also, when collecting water for analysis, label and seal two additional samples in screw-top bottles to serve as back-ups and as a historical record.

(Edited from an article by Kim Schoonmaker, Dairy Herd Management)



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July 2012...

Nutritional Strategies... Heat Stress! Water Analysis

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