Heat Stress…

Don't Let It Ruin Your Year

by ***Jimmy Horner***

Stress is continually imposed upon production animals to provide more meat and milk products. To maximize yield, it is imperative to keep animals as comfortable as possible and to maintain feed intake for conversion into meat and milk.

The effects of heat stress have proven to be a great hindrance to the efficiency and productivity of cattle, especially dairy cattle. Dairy cattle are more susceptible to heat stress because of their select inherited ability to ingest vast quantities of dry matter, thus producing greater metabolic heat from rumen fermentation as well as from the process of milk production. During periods of thermal stress, cows voluntarily reduce dry matter intake, thus limiting milk production. Reproduction as well as embryonic development and survival also suffers as a result of thermal stress.

Compared to other animals, cattle cannot dissipate their heat load very effectively. Cattle do not sweat effectively and rely on respiration to cool themselves. A compounding factor on top of climatic conditions is that the fermentation process within the rumen generates additional heat that cattle need to dissipate. Since cattle do not dissipate heat effectively, they accumulate a heat load during the day and dissipate heat at night when it is cooler. During extreme weather conditions with insufficient environmental cooling at night, cattle will accumulate heat that they cannot disperse.

According to Dr. Grant Dewell, veterinary diagnostic and production animal medicine professor at Iowa State University, heavy cattle cannot handle heat stress compared to lighter-weight cattle.

"Increased fat deposition prevents cattle from regulating their heat effectively," he says. "Solar radiation is a critical component that can lead to death loss from heat stress. Typically, proportionally more black hided cattle die during heat waves than other hide colors. Since cattle rely on respiration as a method to manage heat, respiratory function is important. Cattle that had severe respiratory disease early in the feeding period will have decreased ability to regulate their heat load."

During times of increased heat stress, cattle feed intake will drop off and cattle become restless. As heat stress increases, cattle will begin to slobber and respiration rates will increase. Eventually, cattle will begin to group together. In severe heat stress, cattle will be open-mouth breathing with a labored effort. Feedlots need to monitor for heat stress and

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implement strategies to minimize effects on cattle to prevent severe death from heat stress.

We discovered an all-natural product (Matrix®) that has proven highly effective in mitigating the effects of heat stress in cattle and dairy animals. There is no other product like this available, and it's based on natural vasodilators and direct fed microbials (DFM).

Natural vasodilators

This product truly represents the industry's next generation in feed additives. Not only does it address the animal's entire digestive and circulatory systems through natural means, it is highly beneficial, resulting in increased growth, milk yield, more consistent feed intake, improved metabolic efficiency, and, most importantly, a more productive, healthy animal. Matrix contains a highly concentrated combination of isolated natural plant extracts (live and naturally occurring), host-specific strains of beneficial bacteria, active live yeast, highly refined yucca extract, DFM *Aspergillus oryzae*, natural toxin fighters and natural parasite control.

Highly concentrated natural plant extracts

This is the industry's only all-natural vasodilator feed additive designed to specifically enhance blood flow and nutrient uptake in animals. Natural vasodilators act directly on the lining of blood vessel walls to make them widen or dilate. Because of the widened vessels, blood flows through more rapidly and provides more oxygen, glucose and other essential nutrients at the tissue or cellular level.

Vasodilation is one means that an animal can use to lose body heat and to maintain normal body temperature. It helps the animal lose more heat because of the increased blood flow to the body surface and helps transfer the body core heat to the skin surface. In dairy cows and other cattle, this vasodilation is accompanied by an increased sweating rate, which helps further cool the body. Cooler body temperature will, in turn, increase growth and muscle deposition in growing animals, intramuscular fat deposition and loin eye area in finishing cattle, and milk and component yield in lactating animals.

The potent vasodilation effects of certain plant extracts have been studied and utilized in human medicine for almost 20 years with benefits including lowering cholesterol, reducing heart disease, increasing endurance in athletes and reducing pain.

DFMs

This feed product also contains highly concentrated DFM components that are not only species specific, thereby greatly enhancing their activity in the animal, but also highly concentrated (240 billion CFU's per ounce) and uniquely delivered in an encapsulated form, which increases the actual intestinal uptake of the bacteria.

Competitively speaking, most microbial products on the market today do not contain live, viable, species-specific bacteria and are often completely inactivated after being consumed. For a product to be classified as a "competitive exclusion" culture by FDA (Food and Drug Administration), it must contain beneficial bacteria from the same species as the recipient animal which actually reach the animal's lower gut in order to displace or prevent the colonization of pathogenic bacteria.

Matrix and fescue toxicity issues

The other direct benefit with this product is its activity to lower the incidence of fescue toxicity. Light calf-weaning weights, lower gains, lower milk production and reproductive problems associated with fescue toxicity account for millions of dollars in losses to producers each year. Also referred to as "summer slumps," because symptoms usually occur in warmer months, fescue toxicity causes reduced weight gains, depressed feed intake, elevated respiration rates and reproductive failures. Consumption of fungus (endophyte) infected fescue results in the animal's inability to properly regulate body temperature due to vasoconstriction of peripheral blood vessels.

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The research-proven ingredients in Matrix have been selected based on their ability to improve vasodilation and enhance blood flow and nutrient uptake in heat stressed and high-production animals. Improving blood flow by widening blood vessels allows improved blood flow in heat stressed (from endophyte infection) animals and, in turn, increases growth and muscle deposition in growing animals, intramuscular fat deposition and loin-eye area in finishing cattle. When combined with the DFMs and vasodilator actions of Matrix, cattle are better prepared to perform on fescue pastures. Matrix is a useful tool to help producers unlock the potential of their cattle grazing fescue pastures.

Low cost, big yields

What's really exciting about this new technology is its low cost to implement. It is fed to beef cattle at only 0.5 to 1 oz. per head/day and to dairy cows at 1 oz. to 2 oz. per head/day. Baby calves also benefit at only 0.5 oz. per head/day.

Regardless of the size or composition of your herd, lowering the negative effects caused by heat stress is critical to animal health and survivability. Make sure and look into this feed additive to help make your summer heat stress more manageable and productive. HW

Editor's note: *Jimmy Horner earned a Ph.D. in Ruminant Nutrition from Texas A&M University and an M.S. in Animal Science from Oklahoma State University and has been consulting and teaching animal nutrition for more than 30 years. Horner can be contacted at jhorner@protocoltech.net.*