

# Livestock

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August 2003

## Managing Heat Stress Returns Dividends

In the months ahead, most West Virginia beef producers will be preparing to market feeder calves or yearlings. It is also a time that producers must be aware of heat stress, particularly when handling and transporting cattle to market. A large percentage of West Virginia feeder cattle are marketed between August and November, when daytime temperatures and humidity are elevated. Special precautions must be taken to keep cattle comfortable and avoid heat stress.

Cattle are more sensitive to heat stress than humans. High temperature and humidity raise concern about heat stress on cattle. Cattle dissipate heat through breathing and panting more than sweating. Many factors affect the range of tolerance cattle have to heat stress. Animal factors such as age, hair color, hair length, and nutritional status interact with such environmental factors as temperature, humidity, and wind speed to determine the animals' tolerance to heat.

Producers can implement a number of management strategies to help alleviate heat stress. An adequate supply of cool, fresh, clean water is essential to keep the cattle's internal temperature within the normal limits and minimize the effect of heat stress. In the summer, cattle will consume 2 gallons of water per 100 pounds of body weight. The average cow and calf will need about 30 gallons a day. A yearling can consume 16 gallons to avoid a loss in productivity. Monitor water troughs to keep them clean of algae and cool to enhance consumption.

Water temperatures that increase from 70 degrees to 95 degrees F can increase water requirements 2.5 times. Adequate recovery of water levels is important, and fields should be stocked to match the available water supply. Production gains are severely reduced when water is limited. In drought years when

water has to be hauled to grazing yearling steers, it is often to the producer's advantage to market the cattle because gains are so poor they rarely offset the additional cost. Many county fairs and festivals take place in late summer when heat stress is a greater risk. Fortunately, most fair animals are used to the routine and welcome the baths and fans that help reduce the stress factors. Just be sure that someone keeps an eye on the cattle at home while you are at the fair. Producers participating in the West Virginia Quality Assurance Feeder Calf sales will be gathering cows and calves to vaccinate and/or wean while the daytime temperatures and humidity are still high. Special care should be taken to work cattle early in the morning or later in the evening to minimize stress. Handling elevates the body temperature of calves about 3 degrees.

Precautions should be taken to protect the vaccine from sunlight and heat. Heat can alter the chemical composition of some vaccines and create toxins. The vaccine will fail to provide immunity to the calves if the animals are stressed. Administering vaccines and other animal health procedures should be scheduled to minimize stress and discomfort. Keep all animal health products in a cooler when working cattle. A successful vaccination program is designed to improve the immune status of the animals so they are better able to handle the stresses of transportation and marketing.

The weaning process can be one of the most stressful periods in a life of a calf, particularly if it occurs in the stock trailer moving down the interstate. If you are hauling calves to the graded sales, take precautions to see that the calves will be comfortable. Fresh bedding in the trailer will hold down humidity. Use a tarp to provide shade if they are transported in an open-rack pickup. Avoid overcrowding the calves in the trailer since you will likely have to wait in the sun before they're unloaded.

The more the calves are stressed, the more shrink you will have to deal with. Cattle lose approximately 1 percent of their body weight per hour for the first three or four hours and then 0.25 percent an hour for the next eight to ten hours. The first shrink is usually body fill and urine. After the first shrink, the calves begin to lose fluids from tissue, and stress factors begin to take effect. That is one of the reasons calves get sick when they have to withstand all the stresses of transportation, marketing, and a change of environment.

When weaning calves or receiving a new set of calves, move the feeding schedule to the evening if daytime temperatures are still elevated. The metabolic heat of digestion increases when cattle are on dry feeds. That is likely one reason why weaning gains of calves supplemented on good second-growth pastures are equal to or exceed gains in dry lots. The calves are more comfortable when they are not confined or crowded.

Cattle on grass should be rotated through the fields more rapidly and in the evening hours rather than morning. This allows the heat of digestion to dissipate at night when ambient temperatures have declined. Plenty of shade helps to provide relief for cattle and to reduce heat stress.

In this part of the country where humidity levels are high, shaded areas are insurance against performance losses.

A good fly control program also reduces stress and improves performance. If cattle are bunching up, that is a pretty good indication that flies are bothering them. The bunching up also promotes heat stress because the air doesn't circulate. If the condition persists, pinkeye will break out break soon. Many of the pour-on fly control products will provide relief from flies for about 30 days.

Monitor mineral feeding closely during periods of high temperatures. A good loose mineral should be available 24 hours a day every day during the summer. Copper, selenium, zinc, and phosphorus levels should be supplied in your mineral mix. Cattle that are short on copper tend not to shed and maintain longer hair coats, much like cattle that are stressed on fescue pastures. Maintaining an adequate selenium level ensures the immune system is prepared to fight off respiratory infections or even pinkeye. If cattle are bawling and wandering the pastures uncomfortably, they probably have run out of minerals and/or salt. Cattle dealing with mineral imbalances run the risk of heat stress.

The Mesonet Cattle Stress Index was designed to alert producers when cattle stress occurs from either high or low temperatures. The cattle stress index is a calculated value unique to livestock and is different than the human heat index or air temperature. The heat index is also unique to cattle outdoors. The danger level is indicated by a heat index value of 79, which occurs when the temperature is above 85 degrees and the humidity is high. Emergency levels are reached when the index exceeds 84 or the temperatures are in the 90- to 100-degree range.

Observe cattle for signs of heat stress and use common sense to ease the effects. Reducing heat stress in the beef cow herd can result in fewer production losses and healthier cattle.

#### **The Cattle Heat Stress Index Formula\*\***

$$THI = tair - [0.55 - (0.55 * relh / 100)] * (tairf - 58.8)$$

Where THI = Temperature-Humidity Index  
tair = air temperature in Farenheit  
relh = percent relative humidity

*\*\* Developed by Oklahoma State University in conjunction with the Intermountain Fire Sciences Lab of the U.S. Forest Service*

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