Growing Beef

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Protecting your cattle from the dangers of summer heat stress

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The afternoon high on July 11, 1995, in west central Iowa was 104ºF, 50 percent relative humidity, no wind, and no cloud cover. By the end of the day on July 12, an estimated 3,750 cattle had died of heat stress within those two days.

As the hot summer days draw near, it's important to start preparing now for conditions like those described above. What are you doing to protect your cattle this summer?

Protection Methods

A survey of producers revealed practices effective in reducing death losses during the summer of 1995, including adequate shade, water spraying, careful monitoring, and proper feeding and watering.

Adequate Shade

Pens with shade had death loss only slightly above normal. Non-shaded cattle sustained higher death loss when dark hided or heavier, or when the lot slope was facing west or south. Twenty square feet of shade per head is effective.

Water Spraying

When asked what emergency measures were effective, 89 percent of the producers indicated spraying with water was the most effective. Methods included fire trucks, water tanks with oscillating sprinklers or running water on the ground for cattle to stand in.

The ability of livestock to sweat is very limited, but the cooling effect of evaporating sweat can be duplicated by alternately wetting the skin and allowing the water to evaporate. Use an intermittent (five minutes out of 30) coarse spray to get through the hair to the skin, and provide air movement and time for the water to evaporate. A fine mist is not effective. Intermittent sprinkling can also cool the ground surface by as much as 35 degrees.

The effects of shade and sprinklers are not additive. Use either shade or sprinklers, but not both.

Careful Monitoring

Monitor air temperature, humidity, wind speed and cloud cover during hot weather events. Overnight lows greater than 74ºF do not allow cattle to adequately cool overnight, requiring heightened monitoring the following day. Abnormal behaviors can be used as signals for needed intervention.

Proper Feeding and Watering

The heat of digestion occurs four to six hours after feed consumption. Feeding cattle once per day in late afternoon reduces heat stress during daytime hours and produces a slight increase in cattle performance.

Daily water intake increases with temperature to more than 20 gallons per head at 90ºF. Additional water tank space and flow rate may be needed during stress periods.

Iowa Beef Center's Cattle Feeders' Conference

HOPING TO GET A BETTER HANDLE ON THE FORCES THAT IMPACT YOUR OPERATION IN THE LIVESTOCK INDUSTRY'S CURRENT CLIMATE?

The Iowa Beef Center, in partnership with the Iowa Cattlemen's Association, will be holding a summer conference for feedlot operations, "Cattle Feeder's Conference: A New Era of Management – People, Cattle, Business."

The conference, held June 10-11, 2009, at the Holiday Inn in Ames, will focus on making management decisions based on the current internal and external forces that impact cattle feeders. To learn more, as well as to register for the event, go to www.iowabeefcenter.org.

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New solutions for wet distillers' grains storage challenges

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The drying of dry distillers' grains with soluble (DDGS) represents as much 30% of the energy costs and 50% of the natural gas usage in a typical dry mill ethanol plant.

To help lessen these costs, ethanol plants are attempting to create a market for wet distillers' grains, thus eliminating the cost of drying the grains they sell as feed. Wet distillers' grains offer a significant cost savings for beef producers in the form of lower-cost feeds per unit of energy or protein.

Iowa ethanol plants, like the one shown above, can offer cattle feeders a cheap feed alternative with wet distillers' grains if producers are able to utilize special storage methods to overcome the feed's challenges.

Since large quantities of wet distillers' grains cannot be transported economically for great distances, this represents a real opportunity for Iowa cattle producers. As much as 30 percent of the ethanol production in the United States occurs within Iowa's borders.

However, one major limitation to the feeding of wet distillers' grains is the product's short shelf life. In a 2005 Iowa Beef Center survey, cow-calf and small feedlot operations indicated that they fed less distillers' grains because of these challenges.

Since then, producers have been developing techniques to successfully and economically store wet distillers' grains for long periods. Even larger producers are sometimes storing these feeds long term to take advantage of seasonal pricing opportunities that can occur, often in the summer, when cattle on feed numbers are lower relative to available feed supplies.

Wet distillers' grains represent a unique storage challenge though. When delivered directly from the ethanol plant, often the temperature on arrival at the feedlot will be in excess of 130 degrees. The pH is very acidic (near 4). And while depleted of starch for the fermentation of ethanol, the product may still be in some respects an active yeast culture.

When stored in the open, exposed to air, wet distillers' grains will deteriorate rapidly. Mold fungi can develop in just a few days. While these molds by themselves are not toxic they certainly are unpalatable to cattle and potentially can produce mycotoxins. These mycotoxins, if produced in high enough concentrations can negatively affect animal health and productivity. A recent Iowa Beef Center survey indicated that most producers discard moldy feed.

Storage studies at universities in the Midwest indicate that while wet distillers' grains may not go through a classic fermentation because of the lack of fermentable carbohydrates, they are stable in the absence of oxygen.

Various storage systems have been successful, including bagging and covering small piles of modified distillers' grains (50-55 percent dry matter) with plastic.

Wet distiller's grains may require mixing with 10 to 20 percent dry forage (as fed) to produce a 60 percent moisture mixture that can be packed into silos or silo bags.

Layering of forage and wet distillers' grains can also be a successful strategy into a bunker silo. Research at Iowa State has found storage losses to be 7 to 12 percent, with cost per ton as low as $5, using these techniques.

As ethanol plants continue to offer this cheap feed alternative, producers should be aware of promising research that helps them overcome the storage challenges of wet distillers' grains.