

# HEAT STRESS IN LIVESTOCK



Heat stress is hard on livestock, especially if it is in combination with high humidity and low wind speed. The level of heat stress is dependent on the animal's activity, body condition, coat cover and color, and disposition.

## Signs of Heat Stress

- Bunching in the shade
- Slobbering or excessive salivation
- Foam around the mouth
- Panting or open mouth breathing
- Lack of coordination
- Trembling

## Effects of Heat Stress

- Reduced feed intake
- Reduced weight gain
- Poor breeding efficiency
- Lower milk production
- Increased disease susceptibility
- Changes in behavior
- Death can occur

## Water Requirements

- At 90° F, water consumption can be almost twice that at 70° F
- Requirements will vary depending on the weight of the animal, lactation needs, and outdoor temperature
- Dependent on the amount of water lost through evaporation from the skin or lungs, as well as through urination
- An increase in environmental temperature and/or physical activity, will also increase water losses through evaporation and sweating

## What is a Heat Index?

Environmental stress is dependent on temperature, humidity, wind speed, and solar radiation; which is best determined by an index. The index that is most commonly used is the same one used for humans, which is also the same one reported on TV stations and the radio during the summer. This index has a threshold that is very close to the old livestock temperature-humidity index.

### Heat Index above 105°

- Still stressful for the animal
- Will be able to tolerate if the outside wind speed is at least 10 mph.
- Show animals will need shade and/or moving air via fans.

### Heat Index above 110°

- Stressful regardless of wind speed
- Show animals should be in the shade with fan
- Have plenty of access to water
- All livestock shows should be completed by noon, if possible
- Loading of livestock should also be completed by noon

### Heat Index above 115°

- Avoid moving or handling market ready animals, if possible
- Livestock show rings should be shaded with fans and misters; the show should also be postponed due to excessive heat

### Heat Index above 120°

- No activity should occur for animal or human
- May cause serious health risks or even death

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## Management Options

Some management options include providing: shade; ventilation and air flow; clean and cool water; wetting; cool water drench; and sprinklers or hoses.

- **Shade** can be provided by trees, buildings, or other sunshades. In addition, the temperature can be lowered by spraying cool water on the roof of buildings where the animals are being housed.
- **Improved ventilation** can be provided by fans or opening windows on a breezy day. Sunshades should be high enough off the ground to allow for adequate air movement.
- **Clean and cool drinking water** is essential to keeping the animal's internal body temperature within normal limits. Providing cool drinking water will help cool the animal's core. If water space is limited, provide additional portable water troughs.
- **Wetting** is a good way to cool an animal suffering from heat stress. The animal should be gradually wetted with cool water. This process may need to be repeated until the heat stress symptoms have dissipated.
- **Cool water drench** (administer orally) may help quickly decrease the animal's core temperature. This very effective method should be performed by someone who has experience in drenching an animal.
- **Sprinklers or hoses** can provide some relief to heat stressed animals. The water droplet size should be large; misting (small droplets) may only add humidity and moisture to the air. Keep in mind, if animals are not acclimated to sprinklers they may become frightened, which will add to their stress level.

## Resources

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- Mader, T. (2011). *Heat stress on show animals*. University of Nebraska – Lincoln. Personal communication on Oct. 02, 2011.
- Rasby, R. J. & Walz, T. M. (2011). *Water requirements for beef cattle*. University of Nebraska – Lincoln. Found online Oct. 12, 2011 from <http://www.ianrpubs.unl.edu/live/g2060/build/g2060.pdf>

### Did You Know?

#### Past History

- Animals that have had past health problems will be more affected by heat stress than animals with no prior health problems
- These animals will generally be the first to show signs of heat stress and be the most severely affected

#### Avoid Overworking the Animals

- Body temperatures of livestock exposed to high daytime temperatures tends to peak in the early evening, decline during the night, to reach a low point in the hours after sunrise, and building again slowly throughout the day
- Work livestock in the morning vs. in late afternoon or early evening

#### Animals in Confinement

- Usually have higher heat loads than animals on pasture

#### Animal Weight

- Livestock that are heavier in weight are generally more susceptible to higher heat loads than livestock that are lighter in weight

#### Hide/Pelt Color

- Animals that are dark hided are more susceptible to heat stress than their light hided/pelted counter parts

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