



# Heat Stress:

## A Seasonal Concern for Beef Producers



With temperatures on the rise, know the signs and solutions for heat stress.

by *Jaelyn Krymowski*

**H**eat stress is a seasonal concern for cattle producers across the nation. Not only do rising temperatures lessen the quality of an animal's welfare and pose a potential death loss risk, but excessive heat also affects the bottom line through lost efficiency and production.

Displays of excessive body heat and retention during the summer months are something that should be recognized and responded to accordingly. While heat abatement may pose a bit of an additional investment in the form of time or money, the associated loss and risks make it worthwhile for both the short and long term.

With some awareness and a team-wide effort, summer heat-related losses can be greatly reduced, and cattle could be more comfortable even when the climate is not hospitable.

### Who's at risk?

Cattle possess several physiological mechanisms to effectively dissipate their body heat. These include responses such as panting and sweating. However, the extra strain and energy this takes is costly.

Research shows cattle can be influenced by heat as low as 75°F, but this exact measurement is greatly influenced by the humidity index. High humidity levels can lead to heat stress at notably lower temperatures. This is because the more humidity in the atmosphere, the more difficult it is for heat to successfully leave the body through ordinary means like sweating.

Certain animals are more vulnerable to heat stress than others. This includes those that are very young or old and those with pre-existing conditions including lameness, pregnancy or respiratory disease, says Rosslyn Biggs, DVM, assistant clinical professor and beef Extension specialist with the Oklahoma State University College of Veterinary Medicine.

"Thresholds for these animals will generally be lower, and they will experience stress at lower temperatures," she says, adding that fat cattle nearing their harvest weight and black-hided cattle are also at greater risk. "The diet of the animal can also be a contributor."

Besides humidity and temperature, things like access to shade and air movement can also impact how severe the heat is in a particular situation.

### What are the symptoms?

Heat stress ranges in severity based on individual animals, climate conditions and available heat abatement. Animals only mildly affected will show relatively few external signs though they are beginning to suffer the impacts.

"Producers and their veterinarians need to watch cattle closely and understand what is normal, typical behavior for their animals," notes Biggs. "Taking an animal's temperature is a great tool, but may not be practical in a pasture setting."

When observing breathing patterns, she adds animals should be monitored without handling. Heat-stressed animals resort to more rapid breathing which can become panting as their condition becomes more severe. Cattle that are heavily panting may also drool, which is a contributor to decreased rumen activity and an altered rumen pH.

Other signs of heat stress include either lethargy or restlessness. Overheated cattle tend to spend more time on their feet, often in search of shade, which can amplify lameness issues. This may cause them to congregate together which further amplifies their body temperatures. Cattle may be unsteady or weak in their gait as they move about.

Another serious component of heat stress in cattle is decreased feed intake. Not only does this pose a significant inhibition to daily rate of gain, the lack of intake can cause other health issues and negative energy imbalances.

### Beating the heat

While a pastured environment does pose a challenge for implementing heat abatement techniques, there are still options available to manage heat.

"Generally speaking, there needs to be enough shade of some type for all cattle to have comfortable access at one time," says Biggs. "About 20 to 40 square feet per animal is generally recommended."

This could be from natural sources, such as trees, but in open areas it may be necessary to invest in artificial sources and structures.

Cattle that are confined can benefit from additional heat abatement strategies. One of the most crucial elements in facility design is airflow and ventilation. Well-placed fans have been shown

to significantly decrease the burden of heat. Fans should be routinely checked to ensure they are operational and their placement is effective without any barriers.

Sprinkler systems can also aid in areas where cattle must congregate, including holding pens and feed bunks.

Drinking water is essential year-round, but in the summertime those needs increase with temperature and humidity levels as more internal water is lost on a daily basis.

“Water quality is key to keeping animals drinking,” says Biggs. “Water troughs should be cleaned on a regular basis. For some this will be daily; for others it may be multiple times per week. It is critical that automatic watering systems be checked for functionality on a daily basis, especially during the summer months.”

In keeping water clean, Biggs adds that most algae naturally growing in troughs is not toxic. However certain types, such as blue-green algae, can make it all the more imperative that water sources are monitored on a regular basis.

### **Feed accordingly**

As the heat can lead to a decrease in appetite, the proper diet can also make a big difference in how animals regulate their body temperatures. The industry sometimes refers to certain feed ingredients as being “hot” or “cold” in relation to their energy and digestion.

“Corn and other concentrates are sometimes called ‘hot’ feeds,” says Stephen Boyles, beef extension specialist at the Ohio State University in a heat stress article he authored. “This is in reference to their higher energy content compared to hay or straw (cool feeds). However, corn and other concentrates contribute less to the heat of fermentation or digestion than hay.”

According to Boyles, cattle will actually be generating less internal heat from corn consumption compared to consumption of hay and other long-stemmed forages, but care must be taken not to increase concentrates like corn too abruptly in hot weather as acidosis can be a concern — especially for animals already heat stressed.

“One option is to feed more frequently so as to keep the feed fresher (especially silage) and to feed a greater part of the diet in the evening rather than in the morning,” Boyles explains. “Similarly,

high quality forage produces less heat of fermentation than low quality forage. This might be another argument for moving cattle to higher quality pasture or moving more frequently through paddocks.”

He adds that excess protein levels during the summer months can, in fact, be detrimental. This is because of excess nitrogen supplied by protein, Boyles writes, as such detoxification is necessary through urination, a biochemical pathway high in energy demands.

### **Conclusion**

Managing heat is a process with no single, easy solution in all types of beef cattle environments — feedlot, confinement and pasture. Finding ways to mitigate heat stress takes conscious effort and involves team contributions from managers, employees, animal nutritionists and health professionals.

Everyone involved on the team should be aware during the warm summer months and trained to watch for signs of heat stress. Other hot-weather practices, such as avoiding handling or transporting animals during high temperatures and humid conditions, should also be part of the protocol. When this is necessary, animals should be kept in confined spaces for as little time as possible, with as much ventilation, shade and/or sprinkler access as can be provided.

While the tolerance varies by individual animal, heat stress is an issue that can affect all cattle in a wide variety of climates. Avoiding heat stress entirely might not be possible, but there are lots of tools and methods at the disposal of cattle producers to minimize the impact as much as possible. Not only will this reduce losses in efficiency and productivity, but it also will enhance animal welfare and quality of life significantly. **HW**

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### **Sources:**

Boyles, S. (n.d.). HEAT STRESS AND BEEF CATTLE. <https://agnr.osu.edu>.