

**Cattle Business in Mississippi – June/July 2013**  
**“Stocker Cents” article**

## **Coping with Heat Stress**

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As we enter the summer months, and temperatures and humidity begin to rise heat becomes a major issue for beef producers to consider. Often planning focuses on selection, feeding, or reproductive management, and we often neglect to consider the effect it may have on the productivity of our calves and the cow herd.

Previous research has shown the impacts of heat stress on growth, milk yield, reproduction, and carcass traits (Baumgard and Rhoads, 2012). Previously, (St-Pierre et al. 2003) it has been estimated that heat stress costs the beef industry \$370 million in economic losses. The effects of heat stress, and of particular concern in Mississippi the combination of high heat and high humidity, have been well documented.

Of particular concern in growing cattle is the effect of heat stress on intake. Most producers have likely observed that growing cattle will reduce their feed intake in the hot summer months. This in turn results in fewer nutrients available to the animal for growth. This in turn will reduce average daily gains, which will impact profit for the stocker producer, and development considerations for replacement heifers. Often for both of these set of cattle, a final weight is projected (either a sale weight or a required weight at breeding), and the reduced growth in the summer months may lead to these goals not being met.

It is important in the summer months to observe cattle frequently for sign of heat stress. The first sign is typically an increase in breathing rate. As the stress progresses, cattle may resort to panting and slobbering. If cattle are not provided a way to cool themselves, cattle may go down and not recover. While these signs are easily observed, there may be some effects of heat stress that are not immediately noticeable. For example, heat stress may result in temporary decreases in semen quality of bulls during the breeding season, thus impacting conception rates.

Several simple measures can be put into place on your farm or ranch to reduce the impacts of heat stress on your cow herd. One easy to incorporate addition is simply not transporting, handling, or processing cattle. If handling or processing must occur, it is best to schedule it for the cooler portions of the day. Cattle should be handled early in the morning using low stress techniques. If cattle must be transported, plan ahead to travel early in the morning, late evening or at night if possible. It is very important that cattle are not allowed to remain on the trailer for long periods of time during the heat of the day.

Water is also a key component for combating heat stress. Cattle should always be provided with a source of cool, clean drinking water, but this source becomes even more important during high heat. Be sure there is adequate space and water flow to accommodate the number of head in a pasture or pen. Table 1 shows the estimated water intakes for different classes of cattle as the temperature rises. Note that with 90°F temperatures growing calves (800 lbs) will drink 15 gallons of water per day. This may mean that during extreme heat, it may be necessary to add additional water sources to ensure all animals have access. It is also important to check water supplies daily during the summer months since without access to water cattle will quickly succumb to dehydration. Water temperature is also an important consideration. Warmer water may lead to an increase in water requirements to regulate the animal's body temperature.

| Table 1. Water intake estimates, gallons |                 |      |      |      |      |      |
|--|-----------------|------|------|------|------|------|
| Weight, lb                               | Temperature, °F |      |      |      |      |      |
|  | 40              | 50   | 60   | 70   | 80   | 90   |
| Growing beef calves                      |                 |      |      |      |      |      |
| 400                                      | 4.0             | 4.3  | 5.0  | 5.8  | 6.7  | 9.5  |
| 600                                      | 5.3             | 5.8  | 6.5  | 7.8  | 8.9  | 12.7 |
| 800                                      | 6.3             | 6.8  | 7.9  | 9.2  | 10.6 | 15.0 |
| Finishing cattle                         |                 |      |      |      |      |      |
| 600                                      | 6.0             | 6.5  | 7.4  | 8.7  | 10.0 | 14.3 |
| 800                                      | 7.3             | 7.9  | 9.1  | 10.7 | 12.3 | 17.4 |
| 1,000                                    | 8.7             | 9.4  | 10.8 | 12.6 | 14.5 | 20.6 |
| Pregnant cows                            |                 |      |      |      |      |      |
| 900 <sup>1</sup>                         | 6.7             | 7.2  | 8.3  | 9.7  | NA   | NA   |
| Lactating Cows                           |                 |      |      |      |      |      |
| 900                                      | 11.4            | 12.6 | 14.5 | 16.9 | 17.9 | 16.2 |
| Mature bulls                             |                 |      |      |      |      |      |
| 1,400                                    | 8.0             | 8.6  | 9.9  | 11.7 | 13.4 | 19.0 |
| 1,600+                                   | 8.7             | 9.4  | 10.8 | 12.6 | 14.5 | 20.6 |

<sup>1</sup>NA = not available.

Adapted from NRC, 2000. NRC Nutrient Requirements of Beef Cattle, 7th revised edition.

Providing access to adequate shade is extremely important during periods of heat stress. Shade serves to reduce the thermal load, and is particularly important for dark hided cattle. For 400 lb calves it is recommended to provide at least 18 ft<sup>2</sup> per head, 25 ft<sup>2</sup> per head for 800 lb calves, and 30 to 40 ft<sup>2</sup> per head for mature cows. Shade should be at least 10 feet high to ensure adequate air flow. It is also important to monitor conditions under shade structures, if conditions become excessively muddy under shade, it may be a good idea to rotate cattle to a different pasture. Shade can be provided by natural or artificial means. Shade can be provided by trees, building, or portable shade structures.

Developing a plan to combat heat stress is important for producers to consider. It is important to consider options for mitigating heat stress, and hopefully reducing production losses before the temperatures become excessive.

For more information about beef cattle production, contact an office of the Mississippi State University Extension Service, and visit [msucare.com/livestock/beef](http://msucare.com/livestock/beef).

#### References:

Baumgard, L.H. and R.P. Rhoads. 2012. Ruminant Production and Metabolic Responses to Heat Stress. *J. Anim. Sci.* 90: 1855-1865

St. Pierre, N. R., B. Cobanov, and G. Schnitkey. 2003. Economic losses from heat stress by US livestock industries. *J. Dairy Sci.* 86:E52–E77.