Have you ever wondered how your cattle feel on these hot summer days? If you are uncomfortable, they are too hot, and if you are too hot, they are in serious danger. Cattle have an upper critical temperature that is approximately 20 degrees F cooler than humans. High humidity also affects cattle more seriously than it does us. While humans are cooled primarily by sweating and the subsequent surface evaporation, cattle primarily rely on evaporation in the oral and nasal passages. When the humidity is high, this evaporation is much less efficient. Another heat factor that cattle must contend with that humans need not worry about is the heat produced by fermentation in the rumen. Warm drinking water raises the temperature in the rumen, and thus the blood temperature. This elevated temperature of the circulating blood triggers receptors in the brain that shut off or reduce the animals desire to graze. Shade is important, but if it is limited it may actually intensify problems as the cattle crowd closer together. Larger cattle, fatter cattle, and dark colored cattle all have more problems. Confinement also intensifies heat stress problems. Cattle that have previously been sick, especially with respiratory disease, usually will show symptoms before healthier cattle. Ventilation, or breeze, is important for efficient cooling. We often think of hot days being the problem, because we humans are relatively comfortable at night, but cattle need night temperatures of 70 degrees F or less to completely dissipate the daytime heat build up. When nights are warm, the heat load gradually increases because the cattle never really get cool. In extended heat periods, often the first hot day with no air movement is sufficient to push the heat load beyond critical, and multiple deaths can occur.

Acute signs of heat stress include bunching, panting, slobbering, open mouthed breathing, lack of coordination, and trembling. According to the USDA more than 90 breaths per minute indicates heat stress, and any cattle respiration rate above 110 indicates a dangerous level. Cattle in pastures will stand in the pond while confined cattle will congregate at the water tank. If solutions are not found soon, they experience weight loss or poor weight gain, decreased grazing or feed consumption, decreased milk production, and a corresponding decrease in weaning weights. When the heat load becomes severe enough, death occurs. Reproductive efficiency also suffers under excess heat conditions. Heat causes a high percentage of early embryonic death, so that cows become pregnant, but the pregnancy fails and they return to heat, causing lengthened calving seasons, open cows and increased calving intervals. Bulls experience a serious decrease in semen quality when heat stressed. Poor bull fertility becomes a factor 1 to 2 weeks after severe heat episodes, and the problem will persist for 6 to 8 weeks after the onset of normal temperatures. This can have a devastating effect when one bull has several cows that come into heat at the same time anytime within this 8 week period.

The first step in minimizing the impact of heat stress is to realize that it is going to happen and be prepared with both a suitable plan and the supplies and equipment required to enact your plan. The ideal temperature range for beef cattle is between 41 degrees and 77 degrees F. Cattle are at risk when temperatures exceed this, especially under conditions of high humidity and/or low wind speed. The accompanying chart gives producers a way to predict the danger level based on temperature and humidity. Another way to predict stress levels in your area is the Heat Stress Forecast put out by the USDA. These forecasts provide a little more
accurate projection because they also take into account wind speed and solar radiation. These forecasts can be found on the internet at

http://www.ars.usda.gov/Main/docs.htm?docid=17130. The photo of the heat stress forecast screen show the levels of heat stress across several July days in Oklahoma.

There are several management things you can do to protect your cattle in times of heat stress. Keep cattle off of pastures that have a high fescue component during hot weather. The ergot associated with fescue causes the body temperature to be elevated when it is a significant portion of the diet. It is not uncommon to see cattle standing in the ponds on fescue pastures when the neighboring cattle are out grazing on native grasses or bermuda grass. A long term solution for those who must rely on fescue pastures in the summer is overseeding with clovers. This serves to dilute the fescue effect by diluting the fescue component of the daily consumption.

Supplying adequate water consumption is the most important part of managing heat stress, and supplying shade is a close second. Under heat stress conditions cattle can drink up to 1% of their body weight per hour. This means an 800 pound yearling can consume 1 gallon per hour. Water delivery systems must be adequate to deliver this amount. At 95 degrees water consumption is 2 ½ times what it is at 75 degrees. Adequate access is just as important. On hot days cattle need about 3 inches of linear access per head. If 50 head are standing around one automatic waterer, some of them are going to have problems, no matter what the delivery rate. If water access is marginal, be prepared to provide temporary tubs or portable troughs of water when the heat stress forecast predicts problems. Water temperature influences water consumption. Cattle drinking warm or dirty water from ponds will not drink enough for adequate cooling. Systems
that prevent entry of cattle into the ponds, such as controlled drinking areas, keep water cooler and cleaner. Research has shown with such systems yearling cattle spend less time fighting heat load, more time grazing, and gain up to 20 additional pounds per summer grazing season. Remember that when water consumption goes up, so does urine output and the resulting loss of salt and some minerals. Trace mineralized salt should be provided free choice at all times, but it is especially important at times of high heat risk.

Working cattle should be avoided as much as possible during hot weather. If it has to be done, schedule it for the early morning hours. Human cattle handlers may be more comfortable after sundown but it takes cattle at least 6 hours to dissipate the heat load from the day. Their body temperature is highest in the evening and lowest in the hours before sunup. Artificial lighting in the chute area may pay by allowing work to start in the predawn darkness and conclude before the day gets hot. Confine cattle in small groups with plenty of space and don’t confine more than you can process in 30 minutes.

Sprinkling cattle in extremely hot weather really helps reduce the heat load by surface evaporation. If a mist is used, however, it may hurt more than it helps by raising the relative humidity. Use sprinklers that deliver a large droplet. Automatic timers can be used to sprinkle the cattle for a short time at frequent intervals. A sprinkle application of 3 minutes in a cycle of 15 minutes usually allows for increased cooling without making mud or raising the humidity significantly. Controlling biting flies by eliminating weeds, brush, or old hay areas, or spraying breeding areas with residual insecticide is helpful. Biting flies cause cattle to bunch up, which makes it much harder for them to dissipate body heat.

Hot summer weather is inevitable in Oklahoma, but once again the producer who anticipates the problem and plans ahead can minimize the impact on his cattle’s performance, eliminate heat related deaths, and keep his balance sheet in the black.