

As county fairs and livestock shows get underway, it is important to be mindful of the heat in regard to the safety and well being of your animal along with the Exhibitor. Cattle are more sensitive to high temperatures than humans. Heat stress goes beyond simply checking the forecast for the day. Because temperature is not the only measurement associated with heat stress, show livestock tend to express signs of heat stress more often than livestock in their natural habitat.

Cows will start to show heat stress at temperatures above 72 degrees F if the humidity is high. Moderate heat stress signs will show as the temperature goes above 80 degrees. The higher the humidity, the less the temperature has to be for animals to show heat stress. The worst heat stress will happen when the night temperature stays warm. Long durations of heat stress or the failure to cool the cows will lead to problems in the future. "Livestock start to experience heat stress at 70-degrees, and we know from personal experiences those barns can be hotter than 70. We also need to remember that their rumen is working extra hard to break down their feed, raising their internal temperature even more." Cattle's core temperature peaks 2 hours after peak environmental temperature. It also takes at least 6 hours for cattle to dissipate their heat load. Therefore, if peak temperature occurred at 4:00 pm cattle will not have recovered from that heat load until after 12:00 am and it will be later than that before cattle have fully recovered from the entire days heat load. The comfort zone for animals varies depending on age. Young animals generally have a narrow comfort zone between 45 degrees F and 80 degrees F; while the range in temperatures of the comfort zone of mature animals can be wider. Show animals should be in the shade with fans, especially market ready animals, and have plenty of access to water.

Temperature levels that may not pose a threat at lower humidity levels can become dangerous as humidity increases. For example, consider an 88-90-degree F day. At 15% humidity, a watchful eye is needed; livestock drift into the "danger" level at 35% humidity, and are considered to be in an "emergency" situation at 65% humidity. At 100 degrees Fahrenheit, 10% humidity pushes livestock into the danger zone, with 30% translating into an emergency situation. Also be aware that heat could have implications which may not be seen immediately. If you are in breeding season with your cow herd, heat stress could result in greater losses in the first few weeks after conception.

		Beef Cattle Temperature Humidity Chart											
		Relative Humidity (%)											
		30	35	40	45	50	55	60	65	70	75	80	85
Temperature (°F)	100	84	85	86	87	88	90	91	92	93	94	95	97
	98	83	84	85	86	87	88	89	90	91	93	94	95
	96	81	82	83	85	86	87	88	89	90	91	92	93
	94	80	81	82	83	84	85	86	87	88	89	90	91
	92	79	80	81	82	83	84	85	85	86	87	88	89
	90	78	79	79	80	81	82	83	84	85	86	86	87
	88	76	77	78	79	80	81	81	82	83	84	85	86
	86	75	76	77	78	78	79	80	81	81	82	83	84
	84	74	75	75	76	77	78	78	79	80	80	81	82
	82	73	73	74	75	75	76	77	77	78	79	79	80
	80	72	72	73	73	74	75	75	76	76	77	78	78
78	70	71	71	72	73	73	74	74	75	78	76	76	
76	69	70	70	71	71	72	72	73	73	74	72	75	
		Temperature Humidity Index (THI)											
		Normal <75		Alert 75-78			Danger 79-83			Emergency >84			

Figure 1: Cattle Temperature Humidity Index Chart

This chart is a factor in figuring heat stress on cattle. The warning is based on a temperature-humidity index, which increases as the temperature and humidity increase. The danger level is indicated by an index value of 79, which is reached in various combinations of temperatures with humidity. As temperatures increase, slightly lower humidity can still create dangerous and emergency conditions.

Keep in mind that using the heat index value does not account for night time cooling, which can be a good indicator of overall heat stress. When animals do not cool down at night, they become compromised and are less capable of handling a heat load. Livestock that are heavier in weight or that have a higher body condition score are generally more susceptible to higher heat loads than livestock that are lighter in weight or with a smaller body condition score.