

REDUCE COLD STRESS

Producers should be proactive to prevent cold stress from affecting their herd.

by Kaci Foraker

One of the biggest issues on producers' minds when the temperature starts to drop is protecting their cattle from intensely low temperatures. Though some cattle are more adapted to deal with extreme environments, cold stress can affect any animal.

Lower critical temperature (LCT) is the benchmark researchers use to describe cattle's ability to withstand cold temperatures. Once an animal reaches its LCT, it will have to expend energy to maintain body heat. For every degree below the LCT, a cow's energy (total digestible nutrients, or TDN)

requirement increases by 1%, notes David Hartman, extension educator with Pennsylvania State University.

Cattle do adapt to the cold. "As nights begin to get cooler, cattle will start growing their winter coats," says beef cattle physiologist George Perry, who recently moved from South Dakota

State University (SDSU) to Texas A&M University. "Additionally, as calves' demand for milk begins to decrease, cows will begin to increase body condition. This increased body condition gives them that extra energy they need for winter."

With a summer coat and fall



coat, LCT is reached around 60° F and 45° F, respectively, Perry says. Cattle with winter coats reach their LCT at or below 30° F.

Moisture throws a wrench into an animal's ability to deal with the cold. A wet coat greatly reduces the coat's ability to trap heat and maintain the animal's internal body temperature.

To deal with less-than-normal conditions, cattle's sympathetic nervous system activity will dramatically increase to conserve energy in an effort to remain in homeostasis. Cattle will attempt to maintain their core temperature by designating their blood flow to their center body rather than extremities. Yet, cattle's physiological built-in heat regulation processes are not enough at times.



Benchmark

Lower critical temperature

Summer hair coat = 60° F

Fall hair coat = 45° F

Heavy winter coat = 30° F

Bulls vs. cows

Differing sexes and ages each need special considerations to make it through the winter without any ill effects.

“On bulls one of the biggest concerns is frostbite of the testicles, so bulls need more bedding to make sure their testicles are not on the frozen ground when they are laying down,” Perry says.

A main component of caring for cows in the winter deals with their stage of gestation. Maintaining a

female’s proper body condition score (BCS) means a cattleman needs to be regularly checking their stock.

“If cows are close to calving, they need more nutrients and protection,” Perry says. “These needs are especially prevalent after they calve.”

With calves having a smaller body mass, it is harder for them to keep their core temperature at a manageable level. Newborn calves are at the greatest disadvantage being wet in cold environments.

Their outer limbs, including their tails and ears, are especially vulnerable.

Prevention

Preparation for winter temperatures can vary between operations based on their setup. Windbreaks are the most useful structures, Perry says. A large number of cattle can benefit from a windbreak, and most are low-input to construct. Any kind of

shelter blocking the wind and rain will create a vastly improved

environment, as the wind speed plays a critical role in determining the equivalent temperature (see table on page 66).

Additionally, Perry recommends putting down bedding for cow herds. Bedding serves as a barrier between the cold ground and helps encapsulate the heat cattle are constantly producing.

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Be prepared to tweak feeding programs, Hartman advises. “Cows normally consuming 2.5% of their body weight in hay may increase to 3.5%.”

Provide higher-quality forage if available, he says. “Digestibility and energy levels in the forage are the key things to focus on. Higher-energy forage will help cattle deal with increased energy expenditure.”

Reduce mud to the extent possible, Hartman says. In addition to bedding, moving hay feeding areas can help. At the very least, ensure cattle have a dry place to lay down if possible.

“One area of concern that we sometimes forget about is transporting animals in cold weather,” Hartman reminds, referring to the effect of wind speed. “If it’s 20° F and the wind is 40 mph, the wind chill is -21° F. If you haven’t done something to

		Actual thermometer reading, °F											
		50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
		Equivalent temperature, °F											
Wind speed, miles per hour	Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	5	48	37	27	16	6	-5	-15	-26	-35	-47	-57	-68
	10	40	28	16	3	-9	-22	-34	-46	-58	-71	-83	-95
	15	36	22	9	-5	-18	-31	-45	-58	-72	-85	-99	-112
	20	32	18	4	-10	-24	-39	-53	-67	-81	-95	-110	-129
	25	30	16	1	-15	-29	-44	-59	-74	-88	-103	-118	-133
	30	28	13	-2	-18	-33	-49	-64	-79	-93	-109	-125	-140
	35	27	11	-4	-20	-35	-52	-67	-82	-97	-113	-129	-145
	40	26	10	-5	-21	-37	-53	-69	-84	-100	-115	-132	-148
	45	25	9	-6	-22	-38	-54	-70	-85	-102	-117	-135	-150
		Zone 1				Zone 2				Zone 3			
		Little danger to mature animals.				Increasing danger; will freeze exposed flesh such as teats and scrotums; will stress animals, causing latent diseases to appear.				Great danger, especially to young animals.			

SOURCE: Adapted from John Herrick, Iowa State University, extension veterinarian.

block the airflow in your trailer, those animals are having a pretty chilly ride.”

Being aware of the weather conditions and how cattle are responding is critical for all

producers. Some cattle may be more sensitive to the cold and lose weight drastically or suffer frostbite. Staying aware of the cow herd’s conditions lets producers alter their practices or implement

new additions to ensure their herd’s productivity throughout the winter months. |

Editor’s note: Kaci Foraker was the Angus Media 2019 editorial intern.