

Weather Effects on Livestock

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Livestock producers know that cold weather increases the nutritional requirements of livestock. What may not be understood is that energy for maintenance is the only nutrient that needs adjusting during cold weather. Some winter rations may be low in energy during extremely cold weather. Adjustments need to be made in feed quality or quantity when cold weather hits.

Animals perform best in their thermal neutral zone. This is a time when temperatures are neither too hot nor too cold. When the “effective ambient temperature” is outside the thermal neutral zone, animals may be stressed. The effective ambient temperature considers wind, humidity and solar radiation in combination with air temperature. We know this as the “wind chill index”.

When animals have shelter from the wind, the effective ambient temperature is the same as the air temperature. The wind chill index lowers the effective ambient temperature. In addition to weather conditions, the amount of insulation an animal has influences their lower critical temperature.

An animal’s lower critical temperature is a temperature where their performance begins to decrease because they aren’t comfortable. Beef cattle have four critical temperatures which are dependant on the amount of hair coat they have.

Estimated Lower Critical Temperature for Beef Cattle

Coat Description	Critical Temperature
Summer Coat	59° F
Dry fall coat	45° F
Dry winter coat	32° F
Dry heavy winter coat	18° F

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A general rule of thumb is that for every degree (F) the temperature drops below effective ambient temperature you increase the energy ration by 1 %.

To increase the energy consumption of animals, you have to increase the energy density of the diet by feeding high quality forage or high energy feedstuff such as a small grain. Corn, wheat, oats, barley and sorghum are common small grains. There are liquid supplements, cake, pellets or “tubs” that also have high energy content.