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Feeding in the Cold

Cold temperatures are not fun for producers or our animals to deal with. Most producers have been through cold snaps before and are aware of the challenges they present, frozen water sources, increased feed requirements, and keeping a closer eye on the herd to make sure nothing goes awry.

Properly understanding what resources we have and how much of an adjustment to make, is critical to properly manage herd nutrient requirements during this time of increased demand.

Let's start by looking at what cold does to energy needs.

Cattle in general do pretty well with cold temperatures, especially if they are carrying average condition, their winter coat has developed, and there is no moisture they have to deal with. An average conditioned cow with a dry winter coat of 0.7"-1.0" doesn't normally see an increase in energy need until the temperature drops below 32°F. The chart below developed by Dr. Rick Rasby cow/calf production specialist at UNL, gives the Lower Critical Temperature (LCT) for beef cows with different body condition, coat condition, and coat score.

	Dry			Wet		
Coat Description	**Thin**	**Average**	**Fleshy**	**Thin**	**Average**	**Fleshy**
Heavy Winter, >1.0"	**27°F**	**19°F**	**11°F**	**61°F**	**53°F**	**45°F**
Winter, >0.7-1.0"	**40°F**	**32°F**	**24°F**	**63°F**	**55°F**	**47°F**
Fall, 0.3-0.6"	**53°F**	**45°F**	**37°F**	**66°F**	**58°F**	**50°F**
Summer, <0.2"	**67°F**	**59°F**	**51°F**	**69°F**	**61°F**	**53°F**

Once we know the LCT for our animals, we can figure out what level of cold stress we have by subtracting that number by the windchill index for the day.

Wind Speed, mph	Temperature °F							
Calm	**-10**	**-5**	**0**	**5**	**10**	**20**	**30**	**40**
10	**-21**	**-16**	**-11**	**-6**	**-1**	**8**	**18**	**28**
15	**-25**	**-20**	**-15**	**-10**	**-5**	**4**	**14**	**24**
20	**-30**	**-25**	**-20**	**-15**	**-10**	**0**	**9**	**19**
30	**-46**	**-41**	**-36**	**-31**	**-26**	**-16**	**-6**	**3**
40	**-78**	**-73**	**-68**	**-63**	**-58**	**-48**	**-38**	**-28**

Cold Stress = LCT – Windchill Index. For example if we have our average condition cows with dry winter coats, the LCT is 32°F. If the temperature is forecast to reach 0 degrees with 15 mph winds, then the windchill index is -15. So 32 – (-15) = 47.

Studies have shown that for each degree of cold stress a cow faces, they increase their energy requirements by 1%. So in our case, we need to increase our fed energy by 47%.

For example, if under normal conditions our herd is requiring 12 lb of TDN (energy) per head per day, we need to increase our ration to have 47% more, or 5.5 lb more TDN/hd/day. We figured that number by taking 12 x 1.47. We just jumped up to 17.5 lb of TDN/head/day.

The cows are being feed grass hay which tested at 57% TDN, so we divide our 17.5 lb requirement by our TDL level to find how much hay is needed on a dry matter basis. 17.5 ÷ 0.57= 30.7 lb. dry matter/head/day

Now since most people don't dry out their hay before feeding, we need to adjust that number one last time. We can figure that hay is around 88% dry matter, so we again divide our 30.7 lb/hd/day by 0.88 and come up with just under 34.9 lb per head per day. So our herd this week is going to need just shy of an additional 23 lb of hay per head per day.

At this point, we have to feed our grass hay at 39 lb/hd/day to meet energy requirements. Again that is on an as fed basis. Typically, we can get a cow on an average energy diet (TDN content 52%-59%) to consume around 2.3% of their body weight on a dry matter basis. For a 1,300 lb animal, to eat our entire hay ration and meet energy requirements, she will have eaten 2.7% on a dry matter basis. She physically cannot eat enough hay to meet her energy needs at this point.

A better option here would be to provide a higher energy hay, like alfalfa for the week, or give free choice to the grass hay with a high energy supplement and keep a close eye on animals to make sure they are handling conditions ok.

If that didn't thoroughly confuse you, Dr. Rasby has a great webinar on the topic you can find at beef.unl.edu and search "Caring for Cattle in Cold Weather" in the upper right hand corner of the page.

You can also call your local extension office for personal assistance working with your operations ration balancing and nutritional requirements.

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