



Ridin' Herd

► by Rick Rasby, University of Nebraska

Getting prepared for the winter feeding program

Producers want to meet their cows' nutrient requirements, but they sure don't want to overfeed expensive forages. Forages continue to be expensive in many locations. With harvested forages being expensive, closely estimating the amount of feed needed to get through the winter will be important to contain cost.

Intake on a dry-matter vs. as-is basis

Forages contain moisture, but not all forages contain the same amount of moisture. If forage intake can be determined on a dry-matter (DM) basis, it can easily be converted to an "as-is" or "as-fed" basis. As an example, if it were determined that the daily dry-matter intake (DMI) of a group of 1,200-pound (lb.) cows eating an average-quality hay is 24 lb., and that the hay the cows are consuming is 88% dry matter, these cows would consume about 27 lb. (24 lb. ÷ 0.88) per head per day on an as-fed basis. This does not include feeding losses.

What determines daily forage intake?

There are a number of different factors that determine the daily intake of a cow. The primary factors are cow weight, forage quality and stage of production (gestating or lactating). When feeding the same forage, cows that weigh 1,300 lb. will consume more on a daily basis compared to lighter-weight cows that weigh 1,100 lb. In addition, cows that are lactating will consume more feed than cows that are not lactating.

As forage quality increases, indicated as an increase in total digestible nutrients (TDN) of the forage, the amount of the forage that the cow can consume increases. As forage quality increases, there is more leaf as compared to stem.

When quality is low, there is more stem

and, therefore, more cell wall contents that are not easily digested. As a result, the forage does not pass through the rumen very fast. In addition, as forages increase in maturity, there is an increase in lignin content. Lignin is not digested by the rumen microbes.

As an example, wheat straw is low in protein and energy — 4.0% crude protein (CP) and 40% TDN. When cows have full access to wheat straw, they don't quit eating wheat straw because they don't like it; they quit eating it because they can't stuff any more into their rumen. Straw has such a low digestibility that it takes extra time in the rumen for it to be digested and passed through the rumen before more can be consumed. Daily intake on a DM basis may be 1.6%-1.8% of her body weight.

In comparison, corn silage will typically be about 70% TDN, and lactating beef cows can easily consume 2.5%-2.7% of their body weight on a DM basis of this feed.

When forage quality is low (52% TDN or less) and cows are not lactating, they will consume 1.8% of their weight on a DM basis. If the forage quality is average (TDN content between 52% and 59%), non-lactating cows will consume about 2.0%-2.3% of their body weight daily on a DM basis of this forage.

As an example, if the forage were 55% TDN and gestating cows on the average weigh 1,200 lb., it could be estimated they would eat 26 lb. (1,200 lb. × 0.022) of hay

daily on a DM basis. If the hay were 88% dry matter, on an as-fed basis, the cows would eat about 30 lb. (26 lb. ÷ 0.88) daily. If there were 200 head of cows in the herd, it would take 3 tons of this hay per day [(200 head × 30 lb. per head per day) ÷ 2,000 lb.] not accounting for any waste.

Preparing for cold winter conditions

Moisture, high winds and cold temperatures increase the cow's energy requirements. Cows in optimal body condition [body condition score (BCS) 5 to 6] are better able to withstand adverse environmental conditions. As a risk-management strategy at the ranch level going into the winter, reduce the number of BCS 4 cows in your herd and increase the number of BCS 5 cows in your herd.

Table 1: Lower critical temperatures for beef cattle, assuming no wind chill

Coat description	Thermoneutral temperature	
Summer coat or wet coat	59° F	15° C
Fall coat	45° F	7° C
Winter coat	32° F	0° C
Heavy winter coat	18° F	-8° C

Source: David Ames, Colorado State University.

Another management strategy is to provide cattle with an area where they can be protected from the wind. The lower critical temperature (LCT) of a beef cow is the lowest temperature that a cow can be exposed to before she needs to have some changes metabolically to help her cope with cold stress. Usually what happens metabolically is

Table 2: Wind chill factors for cattle with dry winter coats

Wind speed, (mph)	Temperature (°F)													
	-10	-5	0	5	10	15	20	25	30	35	40	45	50	
Calm	-10	-5	0	5	10	15	20	25	30	35	40	45	50	
5	-16	-11	-6	-1	3	8	13	18	23	28	33	38	43	
10	-21	-16	-11	-6	-1	3	8	13	18	23	28	33	38	
15	-25	-20	-15	-10	-5	0	4	9	14	19	24	29	34	
20	-48	-25	-20	-15	-10	-5	0	4	9	14	19	24	29	
25	-60	-32	-27	-22	-17	-12	-7	-2	2	7	12	17	22	
30	-78	-73	-36	-31	-27	-21	-16	-11	-6	-1	3	8	13	

Source: David Ames, Colorado State University.

cows begin to shiver. These processes require extra energy.

LCT for beef cows is influenced by hair coat condition (dry or wet/muddy), body condition (thin, moderate, fleshy) and hair coat description (heavy/winter, winter, fall or summer). As hair coat changes from summer to winter, BCS changes from thin to fleshy, and hair coat is dry compared to wet, the LCT decreases, which means cows can withstand harsher conditions without an increase in energy needs.

Magnitude of coldness is equal to LCT minus the wind chill index. Energy requirements increase about 1% for each degree of cold stress.

As an example, cows that have dry, heavy winter hair coats and that are in BCS 5 have a LCT of 19° F. Let's say, for the next week the temperature is going to be 5° F, and the wind is going to be out of the North at 15 mph, putting the wind chill index at -10°. At those environmental conditions, energy needs of the herd increase by about 30%.

If the TDN requirements of the cows were 12 lb. of TDN per head per day for this week, you would consider bumping the ration to 15.5 lb. per head per day. This is an increase in 3.5 lb. of TDN per head per day.

If grass hay is 57% TDN, that's an increase of about 6 lb. per head per day on a DM basis. If the hay is 88% dry matter, then each cow would receive an additional 7 lb. per head per day.

It would not be advisable to change rations daily; however, if it is predicted that weather conditions will be severe over a period of time, then ration changes may be warranted. The proactive approach would be to have cows in adequate body condition and provide shelterbelts in the winter. Sometimes the weather conditions are so severe that cattle cannot be fed enough to meet the increase in energy needs. In these conditions, just getting feed to them is the best that can be done. Most of these extreme conditions don't last for a long period of time, but the effects may.

Final thoughts

Estimating daily feed intake of your cow herd is the first step in determining the amount of forage that is needed to be on hand for the winter feeding program. Have a plan for how cows will be handled during severe conditions that can occur in the winter.



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