Minimize Costs of Feeding Hay this Winter

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Feeding hay over the winter is a substantial cost for many livestock operations. Thinking ahead so you are feeding the right amount of the right type of hay at the right time can drastically influence efficiency and cost-savings. Several key factors can help you make hay feeding plans and save money:

- Know quality and how much of each hay type you have.
- Know livestock nutritional needs at different stages (and how cold weather affects nutritional needs).
- Use body condition scoring and targeted hay feeding (do animals need to gain weight or just maintain condition).
- Supplement grain or other feed ingredients when needed or when less expensive than feeding hay.
- Ensure access to each hay type when needed (e.g., mud or snow will not cause accessibility issues).
- Minimize waste with a suitable feeding system.

Take Forage Inventory. The first step in developing a feeding plan is also one of the easiest – add up all your forages. If you did not take forage quality samples earlier in the season, now is a good time to do so. Even if you checked forage quality earlier in the year, the hay may have deteriorated in quality, so check it again.

Knowing exactly what (and how much) you have in storage will help you decide what hay you should feed now, sell, or feed later. You likely have some variability in the quality of stored forages on the farm. The key to being successful is knowing how and when to use each type.

What are the Nutritional Needs? Cattle, and other livestock, have different nutritional requirements depending on their physiological stage. A cow needs more protein and energy during late gestation and early lactation compared with mid-gestation and mid- to late lactation (Table 1). As a rule, cows require feed with Total Digestible Nutrients (TDN) >55% and Crude Protein (CP) >8%, but this increases for late gestation and early lactation, when they require feed with TDN >62% and CP >10%. Cows typically consume 1.8-2.2% of their body weight in dry matter each day, depending on forage quality eaten. Late gestation and early lactation cows typically consume 2-2.2% of their body weight in dry matter.

Table 1. Approximate nutrient requirements for beef cows to maintain body condition under good environmental conditions. Cold weather and a need to build body condition increases feeding requirements.

Winter Feeding Requirements for Beef Cows	
Late gestation - Early lactation (60 days before calving - 90 days after calving)	All other times
CP > 10%	CP > 8%
TDN > 62%	TDN > 55%
- Important - Increase daily TDN requirements by 1%/degree drop in average daily temperature below 20°F	

Source: U of M Beef Cow Ration Balancer, Mike Boersma, available at extension.umn.edu/beef/beef-cow-calf#nutrition-2371513.

If we think of a cow in the fall after weaning and in mid-gestation, she will be just fine eating marginal hay (i.e., mature grass hay) if she is in good condition and the weather is favorable. Her nutritional needs increase as the weather gets colder and she gets closer to calving. When the temperature drops below 20˚F, TDN requirements increase by ~1% for each degree drop below 20˚F. A cow being fed low-quality forage (i.e., mature grass hay) will need to either be supplemented with several pounds of grain or be fed hay with higher TDN when the temperature drops. Wind chill should be factored in as well. This is a reason why having wind breaks is important in reducing feed costs.

During the last trimester of pregnancy there is a drastic change in feed quality required lasting through early lactation. Cows in late gestation and early lactation need high-quality forage (hay or pasture) to maintain body condition. One of the benefits of calving later in the spring (from a forage perspective) is that cows can be fed marginal forage most of the winter, since the early spring growth in well-managed pastures can provide the high-quality forages required for late gestation and early lactation animals.

Develop a Feeding Plan. If you have several animals in lower condition, they probably should be getting higher-quality feed to build condition and avoid health and longevity issues. Consider sorting cows by body condition

and age to create more targeted feeding groups. Body condition scoring is an important tool to evaluate cow health and makes sorting into groups relatively easy. Separating cows by body condition requires added management (and another pen), but it will improve feed efficiency.

If you have beef cattle set to calve in the spring and only high-quality alfalfa on hand, it may make financial sense to sell some of the high-quality alfalfa and buy lower-quality hay more closely matching livestock needs. If you need to improve body condition or if you calve in the fall or in very early spring, you need to have higher-quality forages on hand so you may not be able to sell higher-quality hay. In some situations, it may make financial sense to feed corn silage or other forages to meet nutritional requirements.

Table 2. Forage quality reference values to give an approximation of CP and TDN levels of various forages. Significant variation exists within types of forages, making forage quality testing essential to know exact values.

	CP	TDN
	---- % ----	
Alfalfa hay (early bloom)	19	60
Vegetative grass hay	11	65
Mature grass hay	8	50
Corn silage	8	72
Corn grain	9	88

What Does this Mean for Your Operation?

- Every operation is unique, so there is no 'one-size-fits-all' approach to developing winter feeding plans. Now is a good time to think through what your feeding needs are for the rest of this year and into the future. Do your feeding needs match your forage production capabilities? Cows need high-quality forage when lactating and rebreeding. This means the time frame for calving is one of the most important decisions in determining your stored forage needs.
- Do you consistently struggle to put up higher-quality hay required by late gestation and early lactation cows? If so, consider a later start date for calving. Spring pasture growth, rather than stored hay, can provide much of the high-quality forage needed with this strategy. If you have access to cheap grain, silages, or alternative feed ingredients, perhaps an earlier calving distribution makes more sense to take advantage of more favorable environmental conditions (i.e., no mud), marketing opportunities, etc.
- Ensure your system maximizes feed efficiency to minimize feeding costs. If you struggle with minimizing waste, evaluate your feeding system and consider limit-feeding if you have adequate bunk space. If using round bale feeders, limiting the time cows have access can also increase efficiency. With the appropriate number of round bale feeders, hay needs can be cut by 33% just by limiting the access time. Cows typically eat hard for ~6 hours and then they just play with forages and make bedding.
- Regardless of the type of livestock you are feeding this winter, maximizing feed efficiency will help you maximize profitability. An effective hay feeding program revolves around several key pieces of information: 1) knowing the nutritional needs of the livestock, 2) knowing the quantity and quality of the hay on hand 3) body condition scoring (BCS) and targeted feeding (through sorting), 4) having an efficient feeding system (and the right amount of bunk space), and 5) knowing if there are cheap alternative feed ingredients available.