

# The Digestive Tract

## Minimize hay losses this winter.

by Dan Shike, University of Illinois



Production agriculture can be challenging at times, to say the least. Livestock production, the

commercial cow-calf sector in particular, is no exception. Considering that cow-calf operations are grazing-based, with forage availability and quality dependent on the weather, it is no surprise that it seems there is rarely a normal year.

Sure, strong management and sound grazing plans are key to successful cow-calf operations. However, even when you plan for

the unexpected, the challenges and obstacles can seem daunting.

Persistent drought conditions have led to poor pasture conditions and depleted hay supplies in many regions of the United States. If you are in a situation where your hay supply is likely to be limited, it is time to reevaluate your plan.

### Take inventory

The first step is to get an accurate inventory of your hay supply. This inventory should record quality as well as quantity of hay on hand. Yes, descriptions of forage — including species (grass or legume) and stage of

maturity (vegetative or full-bloom) — are helpful in characterizing the potential quality of the hay. However, there is no substitute for an actual analysis of the forage.

When hay supplies are tight, knowing the quality of the hay is imperative for devising a plan of when to use specific hay sources and how much hay will need to be fed (especially important when limit-feeding strategies are employed).

Number of bales on hand is not a precise measurement of inventory. All bales are not the same. Take the time to weigh a few bales from each source/type

of hay so you have a more accurate inventory of amount of hay in storage.

### Assess need

Next, you will need to determine how much hay you will need. This can be a challenging step. The amount of hay the cows “need” is typically a much smaller number than the amount of hay you will need to have to meet these “needs.” This is because of three main factors:

- ▶ storage loss;
- ▶ feeding loss, or waste; and
- ▶ excess consumption when hay is fed *ad libitum*.

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We will discuss management strategies to address all three of these factors later.

Depending on which, if any, of the management practices are used, the amount of hay you need will change dramatically.

Once you have determined how much hay you will need per cow to get through the winter, you need to compare that to your inventory and then make some decisions. If you do not have enough hay, you either have to sell cows, buy hay or figure out a way to make the hay you have go further.

We are going to assume you want to maintain your herd size and that buying hay is going to be costly. Stretching your current hay supply is likely the best approach.

### Store strategically

How hay is stored can have a significant effect on dry-matter (DM) loss, spoilage and future waste. If hay is stored in an enclosed building for less than nine months, loss will be about 2% (see Table 1). At the other end of the spectrum, if hay is stored outside on the ground and uncovered, losses could be as high as 20% during the same nine-month period and as high as 35% if stored for 12-18 months.

Not everyone has access to a building in which to store hay; however, there are some steps to take to minimize loss if storing hay outside. One of the most helpful strategies is getting the bales off the ground by placing them on pallets or tires. Covering bales can also significantly reduce the storage loss. Other commonsense practices include storing bales end to end, keeping a few feet between rows, and orienting rows north and

south to allow sun to shine through rows in winter months.

### Feeding tips

How you feed your hay can also have a big effect on your hay needs. Hay waste can range from less than 5% to nearly 40%, depending on hay-feeder design. Studies at Michigan State University (MSU) and the University of Missouri (MU) have documented the effects of feeder design on hay waste. In both studies, cone-type feeders were superior and resulted in the least loss (see Tables 2 and 3).

Cows are grazers and prefer to eat in a head-down position. Cows will pull hay out of feeders and onto the ground. With most hay-feeder designs, this means the hay is exposed to mud and manure. Ultimately, a portion of it is lost as waste. The cone feeders allow for the hay that is pulled out to still be inside the sheeted ring. This results in much less waste.

Limiting hay intake can be another approach in stretching hay supplies. Cows do not eat to meet their requirements. Cows eat until they are “full.” When cows are consuming primarily forage or hay, the quality of that hay affects digestibility and, ultimately, passage rate. The poorer the hay, the less they can eat.

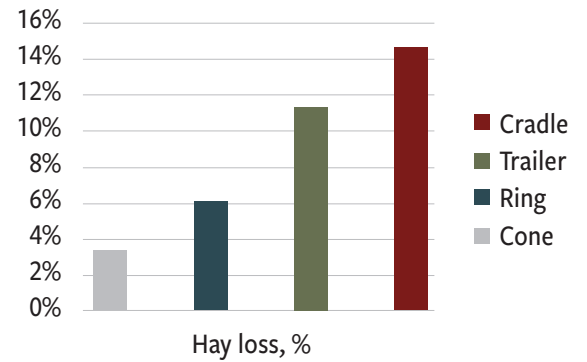
Intake of really poor-quality hay can be so low that sometimes cow requirements are not met. But when hay quality is average to good, cows can eat more hay than they actually require.

This is why it is important to know the quality of your hay. If you have poorer-quality hay, it should be fed to cows when requirements are lower. If your hay is average to good quality, it should be saved for when cow requirements are higher (lactation or cold weather).

Since the cows will always eat until they are “full,” sometimes the best strategy is to limit them. This can be done by either processing hay and limit-feeding cows using a feed wagon, or by limiting time of access to hay.

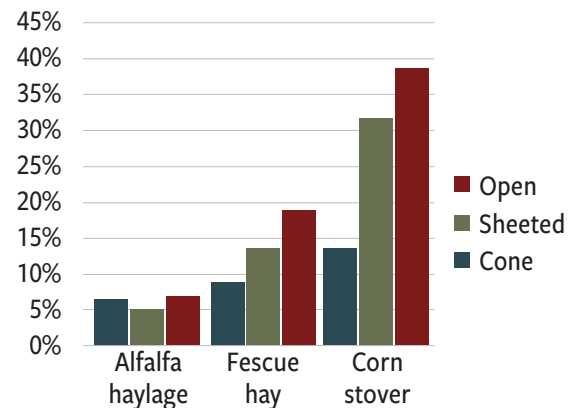
A series of experiments were

**Table 2: Hay loss, %, by feeding method**



SOURCE: Buskirk et al., 2003 — MSU.

**Table 3: Hay loss, %, by feeding method**



SOURCE: Moore and Sexten, 2013 — MO.

conducted at the University of Illinois to determine the effects of limiting the time of access to hay. When time of access was limited to eight hours per day, cows still had acceptable performance, but hay waste and manure production were significantly reduced.

If this strategy is employed, it is important to have adequate space at the hay feeder so all cows can consume at the same time.

### Summary

If your current hay inventory does not match your projected hay needs for this fall and winter, it is time to make some decisions. If selling cows or buying hay is not what you have in mind, there are options. By minimizing storage losses, feeding losses and overconsumption (waste), you can stretch your hay supply and improve your operation’s efficiency. **ABB**

Editor’s note: “The Digestive Tract” is a regular column focused on nutrition for the beef cattle life cycle. Dan Shike is associate professor in animal sciences at the University of Illinois.

**Table 1: Percent dry-matter loss, by storage method and length of storage**

Storage method	Storage period (months)	
	0 to 9	12 to 18
<b>Ground</b>		
... Covered	5%-10%	10%-15%
... Exposed	5%-20%	20%-35%+
<b>Elevated (pallets/tires)</b>		
... Covered	2%-4%	5%-10%
... Exposed	3%-15%	12%-35%
<b>Enclosed barn</b>		
Under roof (open building)	~2%	2%-5%
Under roof (open building)	2%-5%	3%-10%

SOURCE: Huhnke, 2003 — OSU.