



# Ridin' Herd

► by Rick Rasby, Extension beef specialist, University of Nebraska

## Reduce hay storage losses

*As input costs for the cow-calf producer continue to rise, it will take timely management of all resources to remain competitive. For the cow-calf enterprise to enhance profit potential, management systems that keep the cow harvesting her nutrients will be more profitable compared to delivering harvested forages to her. There are situations where cows need to be fed harvested forages. Also, it is probably wise to have some inventory of hay on-hand to help manage around situations such as drought or a winter when grazed resources are covered with snow and ice. How forages are stored affects losses that can occur from the time the forage is harvested to the time it is fed. Pounds of forages baled will not equal the pounds of forage fed because of storage losses. How storage forage losses are managed will affect feed costs.*

### Managing forages to reduce storage losses

There are a number of management practices that are inexpensive and kind of commonsense things that will help reduce forage losses during storage. Storage losses for large round bales can occur due to how

the bale is packaged. There are physical losses of the forage, as well as losses due to leaching of nutrients and losses due to minor or major heating of the baled forage that leads to dry-matter losses.

**Make a dense bale.** That doesn't mean make it heavier and more difficult to handle

and haul. A dense bale will "squat" less and have less surface area in contact with the ground. A dense surface layer will shed more precipitation and protect the inner part of the bale from weathering and nutrient loss.

Most producers will use plastic twine to tie a bale instead of natural-fiber twine. Plastic reduces bale squatting, maintains bale shape and provides a tight, smooth surface. Plastic twine will resist weathering, insects and rodents better than natural-fiber twines.

Some producers will use a plastic wrap around the bale. Bale wraps will also aid in shedding rain.

### Store bales on a well-drained location.

Bales will soak up moisture if placed on a wet or poorly drained site, causing a large layer of spoiled hay on the bottom of the bale. The storage site should drain away in all directions. A well-drained, 4- to 6-inch (in.) base of coarse rock will minimize bottom spoilage.

Stack yards should be located a reasonable distance from where the forage is going to be fed. They need to be located for easy access, even in the worst weather conditions. This will reduce fuel usage at the time of delivery and labor needed to complete the task. Locate bale rows away from fences and tree lines to avoid contact with snowdrifts.

Keep livestock and other animals away from bales. Prevent weed growth around bales. Weeds shade the bales and can cause snowdrifts.

**Store round bales end-to-end.** The arrangement of large round bales in outdoor storage can significantly influence the amount of storage loss. Under most conditions, position bales end-to-end in long lines. Orient the line northwest to southeast to allow prevailing winds to blow snow past the bales and minimize drifting and the resulting moisture soaking into the bales.

Put the stem-down side of the bale to the north side of the line. The stem-down side tends to shed rain and snow better than the stem-up side. The stem-up side will then receive more sun to provide some melting and drying to lessen spoilage.

If more than one line of bales is needed, space adjacent lines at least 10 feet (ft.) apart. This will minimize snow buildup between rows and allow the sun to reach the back row.

Stacking large round bales usually

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increases losses. Stacking tends to trap moisture and limits drying action from exposure to the sun and wind.

Consider indoor storage and bale covers if bales are to be marketed, stored for more than one season or the location is in climates with high precipitation. Remember that the outer 4-in. layer of a 6-ft.-diameter round bale contains about 25% of the total bale volume. Studies have shown outdoor storage losses range between 5% and 35%, depending on the amount of precipitation, storage site location and original condition of the bale.

Storage losses are usually reduced by approximately two-thirds with indoor storage and by one-half with good plastic wrap covering if the bales are stored outdoors. Beware of the side forces that stacked, large round bales can exert on the walls of storage structures.

### **What the research says**

Extension specialists at the University of Tennessee conducted a trial to compare different methods of storing large round bales of grass hay. The hay was cut and baled in June in Moore County, Tenn. The

bales were weighed at the time of harvest and storage. The bales were weighed again the following January at the time of winter feeding. The following is a list of the type of storage and the resulting percentage hay loss.

- ▶ Bales stored on the ground with no cover recorded losses of 37%.
- ▶ Bales stored on used tires but with no cover recorded losses of 29%.
- ▶ Bales stored directly on the ground but covered with a tarp also had losses of 29%.
- ▶ Bales stored on used tires and also covered with a tarp recorded losses of only 8%.
- ▶ Bales with a net wrap and stored on the ground had losses of 19%.
- ▶ Bales stored inside a barn recorded losses of only 6%.

The least losses were recorded for bales stored inside. Unless you are producing hay for sale, it may not be practical to invest in buildings for storage. For these data, the next best option is storing hay bales on something that gets the hay off of the ground and using a wrap that sheds the rain. Although not tested in this study, I would suspect that for hay stored on the ground, in a well-drained area,

storage losses would be similar to hay stored on tires. In drier environments, storage losses are less and storage management may not be a great concern.

### **Final thoughts**

Examine ways to reduce feed cost in the cow-calf enterprise. Reducing losses of harvested forages from the time of harvest to the time of feeding will affect forage inventory. Fuel and labor costs have made hay baling an increasingly expensive chore. Harvesting and storing quality hay will be as important in today's economic environment as it has ever been. Once the hay is harvested, keeping maximum energy and protein stored for winter feed will help make the best use of the haying expense.



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**Editor's Note:** "Ridin' Herd" is a monthly column written by Rick Rasby, professor of animal science at the University of Nebraska. The column focuses on beef nutrition and its effects on performance and profitability.