Ridin' Herd

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Minimize hay storage losses

High-profit cow-calf enterprises seem to have at least one management practice in common: They feed less harvested forages, having cows graze to meet their nutrient needs. In addition, high-profit producers use strategic supplementation to meet nutrient gaps when the grazed forage doesn't meet their requirements. As input costs for the cow-calf producer continue to rise, it will take timely management of all resources to remain competitive.

There are situations where cows need to be fed harvested forages. 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 or purchased will not equal the pounds of forage fed because of storage losses. How forage losses during storage are managed will affect feed costs.

Dry-matter losses

Moisture content of forage bales affects losses that occur from harvest to feeding. Dry-matter losses during storage are due, in part, to plant respiration.

Plant respiration is a normal plant process that occurs even after harvest. If the bales are less than 20% moisture, there are fewer dry-matter losses and lower numbers of microbes to carry on the respiration processes as compared to bales that are greater than 20% moisture. At bale moisture contents greater than 20%, the chances of mold growth are increased, bale heating occurs and dry-matter losses are greater.

Reduce storage losses

There are a number of management practices that are inexpensive and commonsense strategies that will help reduce forage losses during storage.

Storage losses for large round bales can occur due to how the bale is packaged. There is physical loss of forage, but there also can be losses due to leaching of nutrients and losses due to minor or major heating of the baled forage.

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

Most producers will use plastic twine to tie a bale instead of natural-fiber twine. Plastic twine resists weathering, insects and rodents better than natural-fiber twines. Some producers will use a plastic wrap to wrap around the bale. Bale wraps will help shed rain.

Store bales in 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 allow moisture/rain to drain away in all directions for the bales. A well-drained, 4-inch (in.)-6 in. coarse rock base will minimize bottom spoilage. The coarse rocks are not essential, but consider preventing weed growth around bales. Weeds shade the bales and can cause snowdrifts.

Stack yards should be located a reasonable distance from where the forage is going to be fed. Stack yards, in addition to being well-drained, need to be positioned 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.

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. Leave 3 in.-4 in. between bales so moisture can't be trapped between bales. Orient the bale 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.

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

Research observations

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. 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. 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 had losses of 29%.
- Bales that were stored on used tires and covered with a tarp recorded losses of 8%.
- Bales that had a net wrap and were stored on the ground had losses of 19%.

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- Bales that were stored inside a barn recorded losses of only 6%.

If not producing hay for sale, it is likely not practical to invest in buildings for storage. For these data, the next best option is storing hay bales on something that gets the bales off of the ground using a wrap that sheds the rain. Although not tested in this study, hay stored on the ground in a well-drained area would have storage losses similar to hay stored on tires.

Not all states have similar environmental conditions. In drier environments, storage losses are less and storage management may not be a great concern.

Final thoughts

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. Moisture content of the bales at harvest affects dry-matter losses. In drier, low-humidity climates, forage storage losses are less. 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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