

FOR IMMEDIATE RELEASE

For more information,
Contact: Wendie Powell
Livestock Production Agent, Wildcat Extension District
wendiepowell@ksu.edu, (620) 784-5337

Large Round Bales Lose Value During Storage

Large round bales really ramped up their popularity in the 1970s, mostly because of their low labor requirements. Just one or two people can harvest and store these large bales. When you compare that to the crew of two to four able bodies you need for small square bales, there's quite a labor savings. Adding to that, producers found that these bales naturally shed precipitation and so be stored outside, saving storage costs. Square bales have to be stored away from weathering. While it is quite true that the round shape of the bale does allow rain to slide right off, and coupled with the binding material- especially net wrap, some moisture is prevented from deteriorating the bale. Still, there has been quite a lot of discussion and research exploring the economics of storage systems for big round bales.

Generally, the value of a storage system depends on the projected hay loss while in storage and the price of hay when sold or used. If hay with a market price of \$80 per ton has a 20% loss during storage, then the value of the hay lost would be \$16 per ton. This cost of hay value lost added to the cost of the storage system, like an enclosed barn, gives the total storage cost, which can be used to compare various types of storages. One of the biggest problems in determining the total storage cost of a system is estimating the loss of hay value during storage.

Dry matter losses can reach 50% depending on bale quality, storage conditions and length in storage. Severe deterioration is usually confined to the outside two to eight inches of the bale. Depending on the bale's diameter, just two inches can represent over 10% of the bale's dry matter. The depth of weathering depends on many factors, including amount of rainfall and environmental conditions (temperature and humidity) during the storage period, the hay type and condition when baled, and bale shape and density.

Bales should be well-shaped and as dense as possible. One of the important keys to reducing weathering is the tightness of the outer layer of the bale. The tighter the outer layer, the lower the losses regardless of whether the bale was formed using a variable or fixed-chamber baler. Outer layer "tightness," or density, is not easy to measure. One rule of thumb is to push on the outer surface of a newly-formed bale with the palm of your hand. If you can depress the surface more than about a half-inch, the bale could undergo significant storage losses when placed outside and unprotected. If using sisal or plastic twine, wraps should be no greater than eight inches (preferably six inches) apart on the bale. This does, however, require additional time and expense

during baling. If bales are stored outside, the added time and expense are easily justified. Research shows net-wrapped bales have storage losses similar to the standard plastic or twine wrap when the outer layers are the same density.

The storage site is another important consideration in reducing bale losses. Store your round bales at a site that is not shaded and is open to breezes to enhance drying conditions. As much as 12 inches of the bottom of a bale can be lost through moisture absorption, so the area should also be well-drained. Ground contact can account for over half of the total dry matter losses. Where practical, keep bales off the ground using low cost, surplus materials such as discarded pallets, racks, fence posts, railroad ties, or used tires. Another alternative is to use a layer of crushed rock about six inches deep to ensure good drainage within and around the storage site.

Bales should be stored in rows, buffed end-to-end. For maximum air flow and sunlight penetration, orient the rows in a north/south direction and allow at least three feet between each row. Vegetation between rows should be mowed. Research has shown that orientation is a minor consideration if the bales are used before early spring because the losses are relatively small until that time. If stored into the summer, bales oriented in an east-west direction can experience severe deterioration on the north-facing surface.

There has been quite a lot of information gathered concerning the economics of large round bale storage. It all comes down to the value of the hay loss in storage. Ideally, the value of the lost hay would be recovered in material costs. I would be happy to chat with you about storage facilities and other options. I can be reached at (620) 784-5337, wendiepowell@ksu.edu..

###

K - State Research and Extension is an equal opportunity provider and employer