Tips on Hay Storage

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High-quality hay is presently selling at record prices throughout the United States and in most upper midwestern states. These high prices are great for the cash hay producer, but not for the hay buyer. Therefore, with high hay prices, paying additional attention to storage will either increase the price received or reduce the need for purchasing high-quality hay by reducing the losses in storage.

The best method to reduce losses is to store hay under cover. If indoor storage facilities are available, storage losses can be reduced 10-35% depending on the amount of precipitation, site location, and condition of the bale. If storage losses can be reduced by 25%, the value of the hay saved in a building with a 20-year lifespan would allow an investment of about $15/\text{ft}^2$ or about 250/ton of storage space.

Storage barns need maintenance to protect the hay. Patch or replace leaky roofs, animal proof enclosed storage areas, plug rodent holes with steel wool or rat-wire mesh, and attempt to deter larger wildlife, such as raccoons, from moving in during winter months by covering openings near the ground. Not only do these animals produce waste, but they can also chew through twine, making a mess out of the hay storage area.

Buildings that are entirely enclosed need some form of ventilation to remove the moisture given off during the normal sweating process that all hay must undergo. A properly sized vent fan should prevent the accumulation of moisture and potential deterioration of properly dried hay. Pole barns with only a roof are cheaper to construct and provide fair protection from rainfall, but snow may accumulate on the top of the bales, melt, and cause deterioration if unprotected.

Bales that are stacked outside should have a temporary cover for the duration of the storage. The outer 4" layer of a 6' round bale contains 25% of the total volume and will likely be weather-damaged if stored improperly. Consider placing a plastic cover over outside hay piles. Tarps are not cheap, but the hay saved by tarping easily pays for their cost, especially with high-priced hay. Use care to adequately secure the tarp, and check frequently, making adjustments if necessary to ensure it is secure. Some types of tarps can be used for multiple years, which increases cost-effectiveness.

Sites for bales stored outside need to be selected carefully. Most losses that occur during storage take place on the bottom of the bales where moisture levels remain high and air movement is low. The following are storage techniques that help to minimize outdoor storage loss:

- Store hay on pallets. Hay bales stored on wet ground can take on moisture, leading to early deterioration and as much as 50% spoilage. Pallets can help prevent the bales from "wicking-up" moisture and encourage air circulation beneath the bales. Pallets can also be used for indoor storage to prevent moisture uptake on concrete floors that sweat during the spring and fall. An alternative is to develop a hay lot on a sandy soil site or use a 4-6" crushed rock base to help prevent moisture uptake and twine deterioration.
- Use plastic or net wraps. Wraps can reduce storage losses by 5-10% depending on the amount of rainfall. Be sure bales are properly formed and are tight to reduce bale sag that increases the amount of the bale contacting the ground. If twine is used, space no more than 6-10" apart and wind tight to prevent sag. Tight bales also form more dense surface layers that will shed more rainfall.
- Never store round bales in pyramids unless covered or stored indoors. Water shed off the top row of bales tends to enter the second level at the point of contact, increasing bale deterioration. Single-rows with bales end-to-end is the preferred method for round bale storage, but this increases contact with the soil. A gently sloping site with southern exposure is preferred to maximize solar drying and drainage. Turning the bale on end with one on top is also used to prevent twine deterioration, but this increases the contact with the soil and rain shed from the top may enter the exposed end of the lower bale.
- Stack bales for air circulation. Large square bales should have a 4-6" gap between bales to increase air circulation for both indoor and outdoor storage and allows for the natural hay sweating process. Place the bottom layer of small square bales on their sides so the uneven, non-stringed surface rests on the floor (if pallets are not used) to aid air circulation throughout the stack. Leave space between the bales in each row and alternate the orientation of successive layers so bales are at right angles with layers above and below. This pattern "ties" the stack together, while also keeping bales from packing together too tightly. Rows of large round bales should be separated by 3-4' to aid air circulation. Reduced storage losses means less purchased hay or more hay to sell in this high-priced period for hay.