

# Don't Let Hay Storage Losses Rob You This Winter

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A lot of time and energy is spent putting up quality hay, which can be wasted without proper hay storage. Up to 50% losses in dry matter (DM) and quality can occur in some instances – the equivalent of leaving half of your hay acres unharvested. Prevent unnecessary hay losses in the next year by: making dense bales of dry (<20%) hay; stacking hay so it does not trap moisture; improving storage pad drainage; and considering buildings, tarps, or bale wraps to keep hay covered. Even small changes can have large impacts on hay storage losses, forage quality, and profitability.



Hay has the same enemy in the field as it does in storage – moisture. Preventing moisture contact with bales should be a top priority. Moisture enters hay from the top and bottom, from rainfall as well as wicking up from the soil. Keeping hay off of the ground and under a structure prevents the majority of moisture problems. Hay properly stored should only lose 2-5% of DM over several years of storage. If hay gets wet, however, microbes come to life. Those microbes start eating away at the hay, which leads to DM losses and deterioration in quality. The simultaneous loss of DM and forage quality decreases hay value. In just 8 months, losses in forage quality and DM can reduce hay value by more than \$30/ton. Whether your hay is stored indoors or not, evaluate the ground your hay is stored on. If you are storing it on poorly drained soil such as sod or black soil, water will wick up. Hay that is dry at harvest can increase to >30% moisture through wicking. This level of moisture can cause spoilage and DM losses >20% even over a short period of time. Losses may approach 50% if stored for more than one year. Storing hay on a well-drained surface such as gravel, rock, or old tires or pallets to keep hay out of contact with the soil should minimize DM losses to <15%.

If hay must be stored outside, a number of small changes can minimize storage losses. Square bales will be fine outside if you cover them and elevate them off the ground. Round bales are a better option if you do not cover the hay, as they shed water better. Tightly rolled round bales shed water best. If you can push into the side of the bale <math>< \frac{1}{2}</math> inch, then the bale should be tight enough to shed water well. Net-wrapping improves the ability for bales to shed moisture, resulting in 32% less DM losses compared to twine bales. If twine is used, spacing bales <math>< 6</math> inches apart will improve their ability to shed water.

Making larger bales means a greater percentage of the hay is protected inside the bale. The outer several inches of a bale tend to have the greatest spoilage, meaning larger bales help minimize storage losses outdoors. The outer 2 inches of a 4-foot bale contain 16% of the bale's DM, while just 11% of DM is contained in the outer 2 inches of a 6-foot bale.

Another hay storage consideration is stacking method. Pyramid stacking of round bales should be avoided if bales are left uncovered. This traps moisture and causes the largest DM losses. End-to-end stacking, so bale ends are touching, is the best choice for outdoor bale storage. Leaving 3-5 feet between rows of bales allows water a place to go and air movement between the bales. A north-south orientation of bales is best, as it permits more uniform sunlight to reach bales. This is especially the case if bales are stored through summer months.

If you need to preserve high-quality hay and have little tolerance for losses, consider covering bales stored outside. Covering bales can reduce DM losses by an additional 6% or more compared to storing on a well-drained pad. Depending on the quality of hay, it could be well-worth the hassle and extra work of covering hay outside with plastic or tarps. Another option is to use one of the newer bale-covering technologies such as bale sleeves or bale wraps. These may be more realistic alternatives compared to covering with a tarp, and can minimize losses so they are more similar to that of indoor storage.

To minimize your hay storage losses – do everything you can to keep hay dry. Even small changes can minimize storage losses and allow you to preserve high-quality hay.