



Hay Storage

Effective Ways to Minimize Wildlife Damage

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It is not uncommon to see baled hay left scattered in fields across Minnesota’s agricultural regions. Such practices leave an open invitation to wildlife damage. When damage occurs there is little that can be done to protect the remaining hay. It is often inaccessible to equipment, frozen to the ground, or the structural integrity of the bale has been compromised. Left exposed in this manner the hay loses nutritional value, palatability, and economic value. Fifty percent of the volume of a 5’ round bale is contained in the outer eight inches. A better practice to improve hay quality is to stack the hay in the manner shown in the photo to the left. Stacking hay two high on end with a third bale as a cap reduces



exposure of the hay and the cap bale helps shed water protecting the bales underneath. Hay stacked in this manner is much easier to protect in emergency situations. Low quality hay, straw, baled corn, tarps, geo-textile fabric, plastic deer netting, woven wire fabric, or snow fence, can all be used to protect the hay from damage by



white-tailed deer. Covering the top of the hay with tarps will further protect the nutritional value of the hay.



Even better options are to move the hay into an area designed and built to keep deer out. Fenced hay-yards afford protection to hay and silage bags from damage by deer. See the “Hay Yard Cost Sheet” for a materials list and breakdown of costs.



Covered & enclosed pole buildings offer the greatest protection to stored forage from wildlife damage. The additional protection improves the retention

of nutritional quality and the structures are easily made deer proof if necessary.



Weathering & Nutritional Losses of Hay Stored Outdoors, Uncovered, on Sod

Weathering losses are contained to the outer 4-8" of a round bale 5' in diameter. 1/3 of the bale's volume is contained in the outer 4", and >50% of the volume is contained in the outer 8". Therefore 30-50% can be lost to weathering. Nutritional losses are more difficult to determine in dollar amounts. However, it should be noted that while livestock will eat the weathered portion (if not given a choice), they will be getting much less feed value from it, as digestibility is lower. Therefore, rate of gain will also be lower. Considering these factors, weathering and nutritional losses can easily exceed 50%.

Please refer to the calculations below to determine dollar loss of hay stored outside, uncovered, on sod. Note that these figures do not account for additional nutritional loss when fed to livestock, nor do they include losses in fuel, labor and equipment costs associated with baling hay that will become unusable. Lastly, additional losses may be incurred due to wildlife, such as deer.

Protection of hay will require an investment in materials; however, the money spent on protecting forage is often less than the losses outlined above. Methods include barn storage, stacking hay on gravel pads, covering with waterproof tarp or geo-textile fabrics, and woven-wire hay yards.

Storing hay inside a building is best, but not always feasible. Some sources do indicate, however, that the cost of constructing a building for storage may be offset by reduced losses within a few years. Barn storage dry matter losses average 5%, as opposed to the 40% incurred by outside storage on sod. In addition, nutritional losses are far less, and deer damage is virtually eliminated.

Stacking hay can also greatly reduce damage. Bales should be stacked on a gravel pad, pallets, logs, or tires to prevent rewetting. This method of stacking as described on the front page is far better than traditional pyramid stacking in so far as shedding water. In addition, the upper 2 layers of bales are out of reach of deer, and are not in contact with the ground, limiting most of the damage to the bottom row. Therefore, it is advisable to use lower quality hay on the bottom of the stack (i.e. 1st cutting alfalfa), with higher quality bales placed on top (i.e. 2nd & 3rd cutting alfalfa).

If stacks are covered with geo-textile fabric or tarps, damage is further reduced. When covering the stack, leave the ends open so that the stack is well ventilated. For protection against deer damage, corral panels or orange diamond safety fencing can be used to cover the ends.

Woven-wire hay yards are a permanent solution to deer damage. While they will not prevent weathering, they will eliminate deer damage to stored forage. Therefore, stacking of hay inside the yard is recommended to prevent dry matter losses due to weathering, and to maximize the number of bales that can be protected inside the fence.

Prime Hay

Round bale diameter: 5'

Loss during outside storage: 40% (average)

Current price: \$123.62/ton (Midwest average 1/28/11)

Annual hay production: 200 tons/year

200 x \$123.62/ton = \$24,724.00

\$24,724.00 x 40% = \$9,890 loss

Grade 1 Hay

Round bale diameter: 5'

Loss during outside storage: 40% (average)

Current price: \$62.98/ton (Midwest average 1/28/11)

Annual hay production 200 tons/year

200 x \$62.98 = \$12,596

\$12,596 x 40% = \$5,038 loss

