Does It Pay To Cover Hay Bales?

Carl S. Hoveland, Joseph C. Garner, and Mark A. McCann
University of Georgia

Most of the hay harvested in Georgia is stored outside in large round bales. During the months outside it is exposed to rain and some of it deteriorates before feeding in winter. A recent hay storage trial at the Central Georgia Station with tall fescue and bermudagrass indicates that these outdoor storage losses can be substantial and costly.

How the trial was done

Four 6 x 4 foot round bales each of bermudagrass and tall fescue were stored after harvest in three ways: uncovered outside, covered with a waterproof tarp, and in a pole barn. A 'HayGard' breathable tarp (Xton, Inc., Florence, AL) was used. All bales were stored on the ground. Forager endophyte-free tall fescue was fertilized with 50 lb N/acre on February 16, 1996, cut May 6, and baled May 9, 1996. Alicia bermudagrass was fertilized with 300 lb/acre 0-17-35 May 6 and 60 lb N/acre May 29, 1996. It was cut June 28 and baled July 1, 1996. Four bales of each grass were stored uncovered outside, covered with a tarp, and in a barn until February 6, 1997 when they were weighed and spoilage evaluated. Spoilage depth was measured and the amount of spoilage calculated. Moisture content was measured and nutritive quality determined.

What did we find out?

Moisture content of the hay at the beginning of storage was 7% for bermudagrass and 12% for tall fescue. When the bales came out of storage on February 6, bales stored outside uncovered were the wettest, 15% for bermudagrass and 22% for tall fescue. Basal portions, especially of the tall fescue bales, were slimy and stunk badly. Bales stored outside under a tarp had less moisture and those stored in the barn were lowest. Forage quality of the unspoiled hay was similar for both bermudagrass and tall fescue under all storage methods; 10% crude protein and 56% TDN (total digestible nutrients).

We measured the depth of obvious spoilage at various points on the top and sides of the bales and found they were similar for both grass hays. Uncovered bales stored outside had about 4 inches of top and side spoilage with none on bales stored under a tarp or in a barn. However, spoilage depth was much greater on the bottom of bales stored uncovered outside. Bermudagrass bales had over 10 inches of spoilage on the bottom which reached upward along the lower sides of the bales. Spoilage depth on the bottom was reduced on bales stored under a tarp. Bales stored on the ground in a barn had no spoilage.

Spoilage losses measured in this study were high for bales stored outside without cover, 31 % for bermudagrass and 28% for tall fescue. This is undoubtedly a conservative measurement of loss as hay adjacent to the visually spoiled hay smelled musty and would likely be rejected by livestock eating from the bale. Thus, it is likely that the losses incurred would be one-third or more of the bale, hay that would not be consumed by livestock. This means that one-third of the cost of producing and harvesting the hay would be wasted. Assuming a realistic hay value of $50 per ton or $21 per 850 pound bale, then the loss from uncovered outdoor storage is $7 per bale. In addition, there would be the cost of hay needed to replace the spoiled hay.

The tarp used in this study greatly reduced spoilage losses. If the bales had been stored off the ground on a rack or on tires, it is likely that spoilage losses could be reduced even further. Even so, the use of a tarp appears to be a realistic way to reduce spoilage losses of hay stored in the field. Tarps offer a low cost method of protecting hay bales in locations close to where they will be fed. Indications are that

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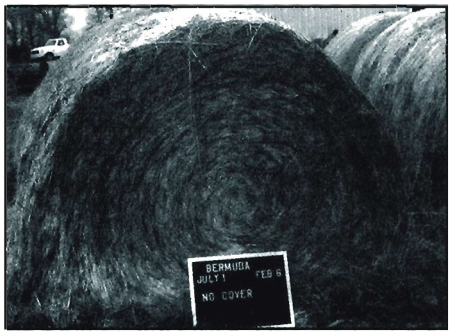

Bermudagrass hay bales stored uncovered outside from July 1 to February 6.

Tall fescue hay bales stored uncovered outside and under a tarp from May 9 to February 6.

Hay moisture content and depth of spoilage in round hay bales as affected by storage.

		Percent moisture		Spoilage depth, inches	
Grass	Treatment	Initial	Feb 6	Top & Sides	Bottom
Bermuda	Uncovered	7	15	4	10
	Tarp	7	10	0	5
	Barn	7	8	0	0
Fescue	Uncovered	12	22	4	9
	Tarp	12	12	0	7
	Barn	12	9	0	0

Spoilage loss in round hay bales as affected by storage method.

		Spoilage loss, percent		
Grass	Treatment	Top & Sides	Bottom	Total
Bermuda	Uncovered	15	16	31
	Tarp	0	8	8
	Barn	0	0	0
Fescue	Uncovered	14	14	28
	Tarp	0	12	12
	Barn	0	0	0

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the tarps can be reused for many years.

Conclusion

Results of this study at the Central Georgia Branch Station are similar to those reported from other states. For instance, in Louisiana, annual ryegrass hay bales stored uncovered on the ground had 28% loss with additional animal refusal of 22%, giving a total loss of 50%. With such high losses, hay actually consumed by livestock becomes very expensive. Savings from reduced spoilage of hay bales can quickly pay the cost of tarps or a simple pole barn.