

## Managing Balage-Effects on Intake and Thus Performance of Beef and Dairy Cattle

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Hay is the primary method of storing forage for use in later feeding beef or dairy cattle. It can be stored for long periods of time and a market for cash sales does exist. In Kentucky, it can be very difficult to properly cure hay in either early spring or late fall. As a result, much spring hay is made after the forage has lost quality due to advancing plant maturity and fall made hay may often heat and mold due to not drying sufficiently before baling. These problems can be avoided by making round bale silage or Balage.

Balage is the product resulting from harvesting a forage crop with conventional equipment, wilting to between 40 and 60% dry matter, round baling and completely wrapping the bale in plastic to exclude oxygen. The forage will ensile and be preserved as round bale silage or balage.

Preserving a high quality forage crop as balage offers several advantages over preservation as dry hay or silage stored in conventional structures. Balage requires less capital investment compared to storing silage by conventional methods. Mowers and round balers are often all ready on the farm and additional equipment is not necessary. Compared to hay, a much higher quality feed can be produced, while at the same time, lowering harvesting and storage losses (Table 1).

<b>Table 1. Alfalfa Balage vs Hay, Quality and Dry Matter Loss</b>				
	Hay		Balage - 51% Dry Matter	
Sample Time	Prestorage	Post Storage	Prestorage	Post Storage
C. Protein %	18.2	17.5	23.1	22.3
Digestibility %	67.2	51.9	62	65
Wt., lbs DM	609	495	537	541
AGR - 173, Univ. Of Kentucky				

Balage resulted in a 22% increase in crude protein content compared to dry hay. Leaf loss can be minimized by baling when moisture is present in the hay. Dry hay stored outside had a loss of 19% of the dry matter. Balage had no loss of dry matter due to storage. Nutrient loss can occur when balage is put up too wet and seepage occurs. Wrapping when the crop is between 40 and 60% dry matter will prevent this from occurring. In a Kansas study, field wilting alfalfa to 40% dry matter and storing as silage produced 20% more pounds of gain per acre compared to storing and feeding the forage as dry hay.

Some problems can occur with balage. Research has generally shown an increase in gain and feed conversion in feedlot cattle receiving alfalfa silage compared to alfalfa hay as the roughage source (Table 2). In almost all cases;

<b>Table 2. Alfalfa Hay vs Alfalfa Silage in High Corn Feedlot Rations</b>				
	Alfalfa Hay		Alfalfa Silage	
	ADG, lbs	F/G, lbs	ADG, lbs	F/G, lbs
Trial 1	3.17	6.87	3.33	6.58
Trial 2	3.07	7.14	3.18	6.76
NE mp 54, p. 43, 1989				

however, the silage has been chopped into short particles and stored in conventional silos. Also in feedlot rations, forage composes a small amount of the total dry matter intake. In growing rations, forage composes a greater amount of the dry matter intake and any factor affecting intake could have a large effect on performance.

In balage, alfalfa is rolled long and the center of the bale may be quite dense. In some cases, field observations indicate cattle may have difficulty in consuming the material due to increased density. A trial comparing processing of alfalfa silage when storing in round bales on intake and performance of heifers has been conducted (Table 3). Balage was made with a conventional round baler (C), a round baler fitted with a knife to slice the forage prior to rolling (S) and a prototype baler fitted with a chopper on the pickup head (P). Cattle were given unlimited access to bales elevated off the ground in cone feeders during period 1, limited to 2 hours per head daily feeding time with bales in cone feeders and limited to 2 hours per head daily feeding time with bales in round ring feeders. Regardless of feeding method, cattle consumed more and gained faster when provided access to the sliced balage compared to balage made with the conventional baler. Processing method does influence balage intake and cattle performance.

<b>Table 3. Effect of Processing Round Bale Alfalfa Silage on Intake and Gain</b>			
Processing Method	Conventional Baler	Baler with Slicer	Baler with Chopper
Period I, intake lbs	23.9	25.2	24.8
Period II, intake lbs	13.4	14.9	13.2
Period III, intake lbs	13.5	16.9	14.3
ADG, lbs	1.78	2.20	1.58
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