



Bunker Silo Management



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Background



- Bunker silos are becoming more common, especially on larger dairy farms.
- High quality silage can be made in bunker silos, but good management is critical.
- The change in the level of management is particularly noticeable for farmers moving to bunkers from tower silos.
- Key areas of management are: filling and packing, sealing the silo and emptying.

Filling/Packing



- A high density is desirable to minimize spoilage losses and increase silo capacity.
- We surveyed filling practices and measured densities in 175 bunker silos in Wisconsin with the help of county extension agents.
- The most important factors for high density were spreading the crop thinly, using a heavy tractor(s) to pack the crop, packing time, and silo height.

- For more information and help in improving density in your silo, look for the Bunker Silo Density Calculator at: <http://www.uwex.edu/ces/crops/uwforage/storage.htm>

Covering



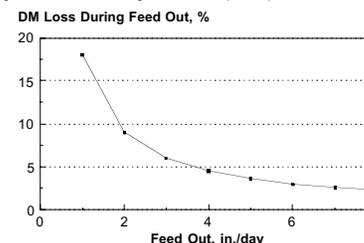
- Sealing the silo is a crucial to minimize storage losses and make a stable silage.
 - Without a cover, a survey of Kansas bunker silos found average losses in the top 18 in. to be >40%.
 - Our analysis has found that using a cover is highly profitable: 8:1 return on investment in plastic and labor.
- White vs. Black Plastic**
- Typically 6 mil black plastic is used to cover bunkers.
 - We have been comparing white (8.5 mil) vs. black plastic.
 - There appears to be less heat damage and spoilage under white plastic although accurate estimates of losses have been difficult to obtain.
 - Based on fermentation, the positive effect of the white plastic is due primarily to its extra thickness.
- Table 1. The average pH (2 yr.) in alfalfa silage below white and black plastic.

Depth	Black	White
	(6 mil)	(8.5 mil)
0 to 6 in.	8.16	6.85
6 to 12	6.75	5.51
12 to 18	5.33	4.87
18 to 24	4.86	4.68
	(8.5 mil)	(8.5 mil)
0 to 6 in.	7.91	7.53
6 to 12	6.76	6.28
12 to 18	5.15	5.92
18 to 24	4.50	4.99

Emptying Rate

- Losses during emptying are related to how many inches of silage are taken off the face each day.

Fig. 1. Losses in corn silage at 65% moisture and a density of 14 lbs. dry matter (DM)/ft³.



Emptying Technique

- Does it pay to use a special machine to mill a smooth surface? Our research indicates it could at low removal rates.

Fig. 2. Increased income using a milling machine relative to a skid-steer loader for emptying bunker silos on a 100-cow dairy.

