

# Michigan Dairy Review

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## Feed Inventory Management

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Feed costs are the single largest expense on most dairy farms comprising between 40 and 60 percent of the total cost of producing milk. It is thus important to closely manage farm inventories of feeds in order to maximize the margin potential of the farming enterprise. Feed inventory management focuses on determining the amount of feeds required for the dairy, the amount of feeds that are available and optimal allocation of available feeds to meet the nutritional requirements of the different categories of cattle on the farm.

1. Managing feed inventories on your farm involves first taking inventory of the average number of livestock anticipated to be on the farm for the next year and the rations desired to be fed to them. Fermented or wet feeds should be converted to a dry matter basis.

***Example: 100 cow group is fed 40 lb corn silage per day on an as fed basis. Forty pounds as fed corn silage x 35% dry matter = 14 lb corn silage dry matter per cow per day. Fourteen pounds dry matter x 100 cows x 365 days = 511,000 lb pounds or 256 tons of dry matter. Therefore, to feed the 100 cow group at a rate of 40 lb of corn silage per head per day will require 256 tons of corn silage dry matter.***

When these calculations have been totaled for all the livestock on the farm including dry cows, heifers, bulls and steers, then we have determined our annual feed requirements on a dry matter basis.

2. Strategize the optimal means of supplying the required amount of feed for the livestock. Information required for this includes available acreage, accurate estimates of crop yields, crop rotations and current feed inventories. Availability and size of feed storage facilities is also an important consideration. Adequate feed storage facilities enable producers to separate stored feeds by quality as well as allowing wet feeds to fully ferment before they are utilized. Recommended minimum feed removal rates should be followed to ensure that forage quality is optimized and spoilage and losses are minimized (Table 1).

**TABLE 1: Minimum silage removal rates.**

Storage Type	Cold Weather (inches/day)	Warm Weather (inches/day)
Tower silo, top unloading	2	4
Tower silo, oxygen limiting	2	2
Bunker silo/silage pile	4	6
Silo bag	4	6

Calculating the capacity of a bunker silo or the amount of feed contained within requires determination of the cubic feet of capacity or contents, and the density of the stored feed.

*For example, a bunker silo that is 25 feet wide, 130 feet long and averages 10 feet in height equals 32,500 cubic feet of capacity. If the silage has a density of 15.75 lb of dry matter per cubic foot, the silo can hold 32,500 cubic feet x 15.75/ cubic foot = 511,875 pounds or 256 tons of silage dry matter.*

This silo would seem to be adequate in size to contain the corn silage required for the 100-cow group mentioned previously. In actuality an additional 25-50 tons of silo capacity and silage would be required to compensate for storage and feeding losses.

The following spreadsheets can be found at the University of Wisconsin Team Forage Harvest and Storage website: <http://www.uwex.edu/ces/crops/uwforage/storage.htm>

- Silage Pile Capacity Calculator
- Silage Pile Dimension Calculator
- Bunker Silo Density Calculator
- Bunker Silo Sizing Calculator

Silage density can be determined by weighing cored samples from a bunker silo, comparing a measure area of silage removed with its observed weight, or estimating from readily available data tables. (See website above).

TABLE 2: Estimated % Silage Losses during Operations.

Silo Type	Moisture %	Filling	Storage	Feed Out	Total Losses
Upright	65	1-3	11	1-5	13-19
	60	1-3	9	1-5	11-17
	50	2-4	8	1-5	11-17
Sealed upright	60	1-2	5	0-3	6-11
	50	2-3	4	0-3	6-12
	40	2-4	4	0-3	6-13
Bunker, no cover	70	2-5	19	3-10	24-34
	60	3-6	22	5-15	30-43
Bunker, covered	70	2-5	11	3-10	16-23
	60	3-6	10	5-15	18-31
Stack, covered	70	3-6	11	3-10	17-27
	60	4-7	12	5-15	21-34
Silage bags	60-70	1-2	7	1-5	9-14
Wrapped silage bales	50-60	2-3	12	1-5	15-20

3. Feed supplies can be inventoried at any time during the year but there are three periods when it is especially advantageous to assess the status of feeds. In the fall, feed supplies should be measured and any shortfalls can be addressed by purchasing feed.

This is also a good time to make ration adjustments to avoid running out of feed or having to make future drastic or undesirable ration adjustments.

An early summer feed inventory identifies potential shortfalls in feed supplies and may suggest the purchase of standing crops from other producers. A late summer feed inventory can be helpful in deciding how much corn should be harvested as silage or as grain.

### Conclusion

The primary purpose of managing feed inventories is to balance the amount of available forages and grains with the nutritional requirements of the livestock production unit. Careful management of inventories allows advantageous purchases of required feeds, is helpful in planning for production of feeds, and ultimately can play a critical role in providing sufficient quantities of feed to allow optimal production by the livestock enterprise.

### References

Bickert, et al. 1997. Dairy Freestall Housing and Equipment. (MWPS-7). Midwest Plan Service, Ames, Iowa.

Holmes, B. and Muck, R. 2000. Preventing Silage Storage Losses.  
[www.uwex.edu/CES/crops/uwforage/prevent-silage-storage7.PDF](http://www.uwex.edu/CES/crops/uwforage/prevent-silage-storage7.PDF)>.