

Storing Forage in Piles

by Jerry Clark

Introduction

For a number of years farmers have utilized silage piles for short-term storage of forage crops. Proper management of a silage pile is crucial to assure that forage quality is maintained for delivering to livestock. The most critical step in silage pile management is packing. Without proper packing, silage losses can easily exceed 30% of ensiled dry matter. However, with proper management, silage piles serve as a short-term storage option with dry matter losses as low as 15%.

What factors are important when preparing a site for a silage pile?

Because heavy equipment traffic will be expected at feed out, an improved surface allows for all weather access to the pile. The surface under the pile is not frozen and if the pile is located on bare soil, it will be difficult to drive on during wet periods, and will lead to feed contamination and loss.

The best choice for silage piles is to build on a concrete or asphalt slab. If that is not possible, then a macadam surface is the next best alternative. Several resources are available that explain proper pad construction including: "Using All-Weather Geotextile Lanes and Pads (AED-45) from the Midwest Plan Service; and UW-Extension Bulletin (A3511) "Drive Over Silage Pile Construction".

One important design criteria is to construct the pad above existing ground level to allow rainfall and silage seepage to drain quickly from the pile. A 2% slope for the pad is required to encourage water runoff and to aid in safety during pile construction.

If more than one pile is to be constructed, the piles need to be separated from each other to ensure water runoff does not interfere with feed-out or the

Jerry Clark, UWEX Chippewa County, Soil and Water Educator
jerry.clark@ces.uwex.edu

other piles. One recommendation is to have enough space between piles so that tractors, TMR mixers, or feeder wagons can easily pass between them. Silage piles may be placed near other storage structures to form a feeding center if the layout of these structures allows this.

How far away from a well should silage piles be placed?

To ensure well safety and prevent water contamination, silage piles should be at least 100 feet away and down slope from any existing well. On lighter soils, or with shallow well depths, this distance should be greater.

What shape should a silage pile be and how should it be constructed?

Silage piles are best constructed using the progressive wedge technique, where forage is pushed up the filling face and deposited in thin layers (6 inch maximum). Use a side slope of 3:1 (3-ft horizontal for each 1-ft vertical). Slopes greater than 3:1 are less safe to drive on and should be avoided. It is important to driving over the entire top and side surfaces to ensure proper packing of the forage. Systems that have steep side slopes will have inadequate side slope packing and appreciably higher silage losses on the sides.

The cross-section of a silage pile can be either a triangle or a trapezoid. The triangle shape is best suited for small silage piles, while the trapezoid is best for larger piles. Pile height should be limited to the maximum reach of unloading equipment.

How much silage should be removed from the face of the pile each day?

When constructing the pile, plan for at least twelve inches of feed removal per day. Therefore, when planning for a 270-day feed storage period, the length of all piles should add up to 270 feet long. This helps to minimize spoilage due to oxygen exposure. A lesser amount may be removed from the face during the winter months.

How and when should piles be covered?

Piles should always be covered as soon as possible after the pile is built. A 6-mil black plastic sheet should be pulled over the pile and tightly sealed along the sides by piling sand or limestone along the edge. Tires (touching each other) are good for holding plastic tightly against the top surface of the pile. This helps to prevent silage spoilage due to air exposure.

What moisture level should forage be for pile storage?

Forage should be a little wetter than for a concrete stave upright silo. For a pile, forage moisture should be at 65 to 70 percent to increase packing effectiveness and quality.

Summary

The primary advantage of a silage pile is that it provides a relatively inexpensive way to store surplus forage. Direct expenses associated with storing forage in a pile include the cost of an all-weather pad, labor, packing equipment, and 6-mil black plastic. One of the indirect expenses is the cost due to forage dry matter losses during storage. These losses are higher than in upright silos because of the larger exposed surface that leads to more spoilage. Harvesting forage at the correct moisture, proper construction and packing of the pile, and immediate covering will reduce dry matter losses.

© University of Wisconsin Board of Regents, 2000

