Harvesting and Storing High Quality Silage

by Neil Broadwater, University of Minnesota

Minimum shrinkage and spoilage are major goals for harvesting and storing corn silage. The rule of thumb is to have less than 10% loss from field to feed bunk. Whether using bunkers, piles or bags, research shows there can be 25% or more in loss. In comparison, the dry matter losses in well managed tower silos range from 2-15%, with 8% being average.

Moisture Content - Corn plant moisture, rather than kernel milkline, should determine when to start chopping. Storage moisture recommendations: stave silo – 55-65%; oxygen limited silo – 50-60%; bag – 55-68%; bunker/pile – 63-68%.

Fiber length - Fiber length affects corn silage quality, compaction for proper fermentation and roughage value for proper rumen function. The recommended theoretical cut is ¼". If a corn processor is being used, then ¾" is recommended. If particle size is being reduced by the silo unloader, augers or TMR mixing equipment, a somewhat longer theoretical cut may be needed.

Corn Silage Storage System - There is not one system applicable for all farm situations. Actually, with proper management, there is little difference in silage quality from the various types. The key is to get anaerobic fermentation and to reach a pH below 5.0 as rapidly as possible. The factors that influence this goal include: fill as rapidly as possible to minimize exposure time to oxygen, keep knives sharp and cut forage at correct length, ensile at correct moisture and make sure the density/ft^3 is adequate throughout the storage system.

Tractor weight, packing time, layer thickness, height of silage and moisture content all affect packing. Bunkers and silage piles need to be covered as soon as possible using 6 mm plastic with tires touching and sealing the edges. Keep it covered for at least two weeks to minimize undesirable fermentation and spoilage.

Density - High density increases storage capacity and reduces silage porosity, which reduces oxidation loss and preserves the high quality feed harvested. It is recommended that the density be at least 14 lbs dry matter/ ft^3 throughout the storage area. For bunkers and silage piles, density depends on allowing 5 minutes per ton of packing time and spreading the silage in less than 6" layers. Silage density will depend upon the bagging machine and the operator.

Maintenance - All plastic covers should be protected from punctures by rodents, livestock, dogs, cats, and small wild animals. Inspect weekly for holes in the plastic cover and repair them to exclude air and water. Mowing around the silo and bags tends to discourage rodents. Each ft^2 of surface exposed could result in the loss of 10 lbs of silage DM.