

## Important Steps When Harvesting Corn Silage

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To harvest good quality silage, the ensiled crop needs to be managed to minimize the amount of oxygen in the ensiled forage to encourage a beneficial fermentation. The rapid removal of air is necessary to prevent the growth of unwanted oxygen-loving bacteria, molds and yeasts. Once oxygen is removed from the ensiled forage, anaerobic bacteria (bacteria that survive in an oxygen-depleted environment) produce products, such as lactic acid which reduces the pH of the silage. This drop in pH is what preserves silage. Several management practices are important for preserving high-quality silage. Many of these management practices help decrease the amount of air trapped in the silage mass.

**1) Sharpen knives-** Sharp knives prevent the shredding of silage, resulting in a more uniform chop. This allows for maximum forage compaction, good fermentation, and sufficient particle size to prevent health problems in the cow herself.

**2) Proper moisture content (stage of maturity) at harvest:** For bunkers, silage should contain between 30 to 35% dry matter or 65 to 70% moisture. Uprights can be a little drier- at 35 to 40% dry matter or 60 to 65% moisture. Silage that is put up too wet results in a butyric acid-type fermentation which decreases feed intake and can result in ketosis in early lactation cows. Silage that is too dry will have more and larger air pockets which results in a poorer fermentation and less beneficial acids for cows to use to make meat and milk.

To judge moisture content, the stage of maturity of the corn kernel has been used. Corn silage should be harvested at 1/4 to 2/3 milk line. Black line stage of maturity may result in more corn kernels passing through the cow and cow performance may be reduced. However, the moisture content of the corn plant varies with variety and weather conditions. This year we really need to be ready to chop since silage may dry down very quickly in areas experiencing limited rain fall.

Moisture content can be measured using a microwave or a commercial moisture tester, such as a Koster tester. To estimate the percent dry matter, you can use the grab test. Squeeze a handful of chopped material as tightly as possible for 90 seconds. Release your grip and if the ball of material expands slowly and no dampness appears on your hand, the material contains 30 to 40% dry matter.

**3) Correct length of chop:** Silage needs to be chopped fine enough for good packing to quickly eliminate oxygen and to establish a good fermentation process. At the same time, the chop length needs to be long enough to promote cud chewing by the cows. Thus, the recommended theoretic length of chop (TLC) is a compromise between these two factors. Alfalfa haylage or silage should be chopped at 3/16 inch, unprocessed corn silage at 3/8

to 1/2 inch, and processed (kernel processor) corn silage at 3/4 inch. (Brown-midrib corn silage should be chopped longer than these TLC.)

**4) Fill silos quickly:** Silos should be filled quickly to help eliminate air from the feed.

**5) Pack, pack, and pack some more:** Tightly-packed silage ferments more quickly and contains less yeasts and molds than loosely packed silage. Packing silage helps decrease the size of oxygen pockets resulting in a fermentation with end products the cow can use better to make milk. For a bunker, the statement that when you think you are done packing, you should pack that much more is definitely true. For silage stored in a bag, it is important to monitor the diameter of the bag to achieve the proper packing density.

**6) Cover silos immediately after filling:** Bunkers or piles of silage need to be covered with 6 mil plastic tarps and weighted with tires (tires should touch each other) immediate after filling. Upright silos should be leveled and capped with a silo cap immediate after completion of filling. Uncovered silos lose a tremendous amount of feed and feed nutrients.

**7) Let silage ferment 3 to 4 weeks before feeding (if possible):** Unfermented feed is higher in fermentable sugars and can cause cows to go off-feed. Gradually transitioning cows over 10 days to new fermented silage is recommended if possible or to use dry hay to buffer cows through the transition.