

# Making Good Corn Silage

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As corn silage harvest approaches it is important to recognize the importance of silage density as a key component of high quality silage. Greater silage density results in less oxygen remaining in the silage and better fermentation. Many growers have begun making silage in tubes or bunkers without fully appreciating the need for high bulk density and have been disappointed with the silage quality they have attained. A silage density of 14 lb DM per ft<sup>3</sup> is necessary to exclude sufficient air for good silage fermentation.

The first important step in good bulk density is to harvest at the proper silage moisture content. Corn should be harvested at 60-65% moisture. Greater moisture may lead to leachate loss (reducing protein and energy content of the silage) and lower moisture will reduce the ability to pack silage.

Research has shown considerable range in silage density of both bunkers and tubes. It appears that in both cases the management of the filling process is more important than the design of the bunker or tube filling equipment.

To have high density in silage tubes it's necessary to control the moisture content of the silage going in, the fill management, and the uniformity of the tube. Lumpy tubes have more air remaining in the tube.

Management in obtaining high silage density in bunkers relates to moisture content of the silage, particle size and packing management.

As particle size increases, the difficulty of packing silage increases. The recommendation is to chop silage at 3/8 inch theoretical length cut for unprocessed silage and 3/4 inch theoretical length for processed silage. Larger particle size increases effective fiber and reduces the energy of chopping, but increases packing requirements. Three fourths inch theoretical length will be difficult to adequately pack as silage moisture falls below 65%.

The importance of bunker packing is often underestimated. As the fill rate exceeds 20 tons (65% moisture) of silage, it is not expected to be able to pack a bunker adequately with a 20,000 lb tractor running the whole time (100%) the silo is filling (Figure 1). This is a fairly low filling rate (about three wagon loads per hour); it is rare to see more than one tractor packing a silo despite the higher filling rates. If the fill rate is 30 tons silage per hour, one tractor is needed full time and a second tractor half time (150%) to pack the silage adequately when packing a 6-inch thick layer (Figure 2).

One option to increase packing, beyond having the packing tractor run full time, is to reduce the thickness of the layer being packed. As the packed layer is thinner less tractor time is needed to properly pack the layer. With the last example we can pack the silage in the bunker to a density of 14 lb DM/ft<sup>3</sup> if 4-inch thick layers are packed instead of 6 inch thick layers.

In summary, good corn silage needs to be packed to a density of 14 lb DM/ft<sup>3</sup>. A spreadsheet to help you calculate what is needed on your farm is available at [www.uwex.edu/ces/crops/uwforage/storage.htm](http://www.uwex.edu/ces/crops/uwforage/storage.htm). Select "Bunker Silo Density Calculator" on this page.

