

Michigan Dairy Review

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Silage & Bunk Management

Faith Cullens & Craig Thomas
Extension Dairy Educators

This year's milk price makes recommended harvesting and packing practices even more. Your cows will be living with the results of the corn silage harvest for a whole year. So let's review the strategies to optimize harvest and packing of this important feed crop.

When to Harvest

Kernel milk line is not the best indicator of corn silage maturity -- whole plant moisture is the way to go in determining when to start chopping. Digestibility of neutral detergent fiber (NDF) and starch is closely linked with whole plant moisture (or dry matter) content.

Dry matter between 32-36% (moisture levels 64-68%) indicates that the digestibility of NDF and starch are optimal. Another consideration for when to harvest is the storage type (see Table 1 for moisture goals by storage type). If silage harvest is too wet, fermentation will be dominated by undesirable clostridial and butyric acid-forming bacteria which can lead to poor feed intake and milk yield. If silage is harvested too dry, starch digestibility will be lower. Drier silage is difficult to pack, resulting in too much oxygen present and causes heating and molding of silage.

Harvesting Tips

When the crop is ready, it should be harvested quickly to minimize the exposure to oxygen. You should chop, spread and pack the crop within two hours to minimize losses due to exposure. Chop at proper length of cut, generally $\frac{1}{2}$ inch for unprocessed and $\frac{3}{4}$ inch for processed silage, to ensure proper compaction minimizing oxygen entrapment. Using a kernel processor will increase starch availability and reduces waste from uneaten cobs. Raising the cutting height from 6 to 18 inches will increase total plant digestibility, but will reduce total silage yield by 15%.

It's all about Density

A reasonable goal for packing density of corn silage is 15 lb DM/cu ft³, however, many producers are struggling to meet this goal. If you head out to a farm that uses a custom harvester or dairy well equipped with packing machinery, it is not hard to see why. The amount of corn silage delivered to the bunk is phenomenal - unfortunately it can be too much to pack properly in the time available. As a general rule, the calculation for tractor packing weight is 800 times the tons per hour delivered to the bunker. If you are short of packing weight, consider adding another tractor, adding weight to the front

or rear of tractors, adding tire weights, or slowing down harvest. The layers being packed should be 6 inches thick or less. Thicker layers trap more oxygen resulting in poorer quality feed.

Cover Quickly

Finally, cover and seal the bunker or pile tightly and quickly after harvest. When silage is not covered, air and moisture can easily enter the silo and adversely affect both the ensiling process and the quality of silage during storage and feeding. This creates a great potential for excessive dry matter and nutrient losses, moldy feed and other problems. The extent of these losses in the top 2 to 4 ft, if there is no protection, is far greater than most people realize.

Several studies at Kansas State University have reported at least a 30% loss from the top 3 feet of silage in uncovered bunker silos versus bunkers covered with plastic sheeting weighted down with tires. In a 12 ft high X 80 ft wide X 140 ft long bunker, the top 3 ft of silage contains approximately 226.8 tons of dry matter.

Therefore, properly covering the bunker could prevent the loss of about 80 tons of dry silage matter. If corn silage (34% DM) is worth \$35 per ton (as fed), the total savings potential, in terms of lost corn silage dry matter, is approximately \$8,000. This does not take into account any negative effects that the top 3 ft of spoiled material might have on intake, milk production, or reproduction.

After the plastic sheet is placed over ensiled forage, it must be weighted down. Tires are the most commonly used weights, and they should be placed close enough together so they touch (about 20 to 25 tires per 100 sq. ft.). To reduce the number of tires needed, and water pooling inside the tires, cut tires in half and place the open side down.

In addition to the standard bunker management practices, the last few years have brought a number of feed shrink reducing improvements to the industry including oxygen barrier plastic covers that yield almost zero spoilage on the top, covering sidewalls with plastic, overlapping plastic, bunker facing equipment, and aerobic stabilizing inoculants.