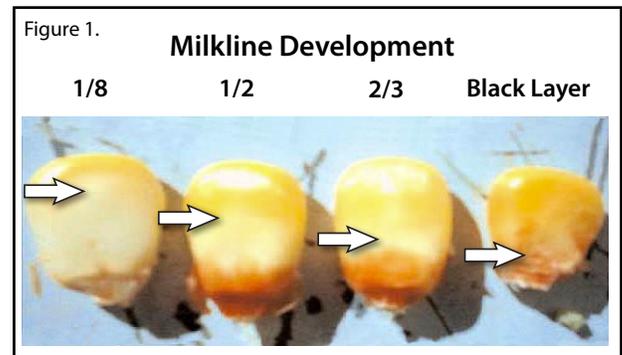


## Guidelines for Harvesting and Preserving Corn Silage

Storing your corn crop as whole-plant corn silage can be an excellent way to preserve the maximum amount of digestible nutrients from your corn crop. However, there are some key criteria that must be followed to prevent significant nutrient losses during harvest and storage.

### Dry Matter and Maturity

The first critical step in retaining the maximum amount of digestible nutrients is to harvest the product at the correct maturity and dry matter (DM) content. Ideal DM content is between 30 and 35%. The optimum stage of maturity for harvesting whole-plant corn silage is when the corn kernel reaches 1/2 to 2/3 milkline. This is illustrated in Figure 1.



### Chop Length and Kernel Processing

#### *Check particle length of corn silage.*

- When checking conventional corn silage with the Penn State Particle Shaker (PSPS) box it should be 3-8% top screen, 45-65% middle screen, 30-40% lower screen, <5% in the pan. Most choppers will produce this at a theoretical length of cut (TLC) of 3/4 inch.
- When checking BMR corn silage and the intent is to feed over 15 lb of dry matter, aim for 10-20% top screen, >50% middle screen, <30% lower screen, and <5% pan. Most choppers will give you this at 1 inch TLC.
- Re-check particle size when changing varieties, moistures, fields, etc.

#### *Check the degree of kernel processing of corn silage.*

- Collect a 32 oz cup of fresh cut silage and place in a pan of water
- Gently agitate the silage for 3-5 seconds
- Skim off the fodder floating in the water
- Drain out the water
- If there are more than two kernels that are half or whole remaining in the pan then the corn silage is not processed well enough.

### Microbial Inoculants

Dr. Keith Bolsen summarized over 1,000 silage trials conducted during his tenure at Kansas State University and found that silage inoculants showed a benefit more than 90% of the time.

#### *Here are a few key points to ensure getting maximum value when applying an inoculant.*

- Use a well-proven inoculant backed by research data.
- Have sufficient inoculant inventory on hand before harvest starts.
- Calibrate the applicator and confirm it is working correctly before harvest.
- Be sure an applicator that has been used for other purposes (such as applying hay preservatives) is free of residues harmful to live bacteria. Use clean water that does not contain a harmful level of chlorine.
- Store and mix the inoculant according to label directions.
- Keep solutions of mixed inoculants cool on hot days by placing cold packs or plastic jugs of frozen water into the applicator tank.

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### **Achieve Adequate Packed Density**

A key component for achieving the right fermentation is exclusion of oxygen from the packed silage. This is accomplished as bunker silos are filled by packing the surface with heavy vehicles after each added load. Use the following guidelines to determine if sufficient weight is being used to match the filling rate of the bunker silo.

$$\text{Optimum packing vehicle weight (lb)} = \text{filling rate (tons/hour)} \times 800$$
$$\text{Optimum filling rate (tons/hour)} = \text{vehicle weight (lb)} / 800$$

- Use the progressive wedge system when filling a bunker silo.
- Spread each load so it is less than 6 inches deep before packing it.
- Cover every square foot with the packing vehicle at least once, preferably twice, before adding another load.
- Operate packing vehicles at a slow, safe speed and avoid steep inclines.

A good goal for packed density is 50 lb silage DM/cubic foot.

### **Cover for Maximum Preservation**

Cover the bunker pile as you go each day (*cover within hours - not days – after filling*)

- Have covers present pre-harvest
- Use an oxygen barrier plastic layer in addition to conventional 6-mil plastic cover
- Consider heavier plastic for the top cover or consider a double layer of conventional 6-mil plastic.
- Have enough people so the job gets done fast and appropriately
- Maintain tire to tire contact to minimize air entrapment under the cover
- Seal the edges of the cover at the bottom of the pile or along the sides of the bunker walls.

Silage represents a significant dollar investment and is a key component for formulating well balanced ruminant diets. The extra effort involved in following these guidelines to preserve a high quality silage will pay off many fold in extra weight gain and/or milk production.