

HARVEST ALERT

FACT SHEET # 4

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Frost on Corn for Silage

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(Reprinted from the 1996 Harvest Alert #12)

This year's corn crop has been two to three weeks behind in maturity when compared to previous years. Because of this, there is concern about a frost occurring before the corn crop is fully dented and what affect this will have on corn silage.

An early September frost may stop all plant growth/maturity activity but the crop can still make good corn silage. The key in harvesting corn for silage is the dry matter content of the silage. Freezing of the corn will cause rapid drying and farmers will need to monitor the dry matter of the corn and start harvest when the corn reaches 30% dry matter. Frosted corn doesn't need to be chopped immediately after a frost as it may require additional time to dry to 30% dry matter. However, if the corn is near 30% dry matter when a frost occurs and then followed by dry, windy days, the plant may very rapidly dry down and the corn silage will become too dry for good fermentation.

Summary

- Frost will not adversely affect the quality of corn silage.
- Harvest corn for silage when it reaches 30% dry matter; the dry matter range for corn silage is 30-45%.
- Don't harvest silage below 30% dry matter just because it was frosted, wet silage undergoes extensive fermentation and yields poor quality and unpalatable silage.

Harvesting Immature Corn for Silage

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(Reprinted from the 1996 Harvest Alert #12)

Much of the corn harvested for silage in Michigan this year may be immature at harvest because of delayed planting and a cooler growing season. Although silage from immature corn can be an excellent forage, certain factors related to harvesting and feeding should be considered.

When to harvest

Immature corn is considerably wetter than normal and seepage from the silo will be extensive if harvested too wet. In addition, very wet corn silage may reduce dry matter intake if it is included in the diet at high levels. Moisture content should be less than 72% when stored in bunker silos and less than 65% when stored in upright silos. This is likely to require harvesting after a frost, particularly for corn planted in late June or early July. The best way to determine when to harvest is to harvest a representative sample of each field (not border rows) and determine the moisture content using a microwave or forced air drier. Do not decide when to harvest by just looking at the corn; leaves dry quickly and turn brown following a frost and the corn appears to be drier than it really is. Leaves are a small fraction (<15 %) of the entire plant and the plant may still be too wet when the leaves are brown and dry.

Silage additives

Immature corn should ensile well if harvested at the appropriate moisture content. There will be a more than adequate supply of sugars for the microbes to ferment because less sugar has been translocated to the ear and converted to starch. Avoid treating



corn forage that is greater than 70% moisture with anhydrous ammonia as it might encourage growth of undesirable organisms resulting in a poor fermentation. Inoculants shouldn't be necessary if the corn is harvested during warm weather but should be considered for corn forage harvested during cool weather late in the season. If the daily high temperature is less than 55 to 60°F for several days prior to harvest, inoculants should be considered because the naturally occurring microbes which are desirable may be low in number.

Length of cut

Chopping coarsely will increase the effectiveness of fiber at stimulating chewing and salivary buffer flow into the rumen. Immature corn forage can be chopped more coarsely than mature corn for silage because the ears are much less developed and kernels, if present, are soft and do not need to be ruptured during harvest to be digested. Cob disks will also be less of a problem with immature ears.

Feeding value

The feeding value of silage from immature corn depends partly on the degree of maturity at harvest. In general it will have higher fiber, slightly higher protein, and slightly lower energy content than normal corn silage. The fiber content may exceed 55% NDF for very immature corn silage or for wet corn silage that has had extensive seepage. Digestibility might be 10 to 15% lower for very immature corn silage because of the higher fiber content and diets based on these forages must be adjusted with higher concentrate levels.

Silage from corn that is only slightly immature may have fiber levels that are close to normal even though the grain content may be considerably lower. This is because grain filling occurs by translocating sugars from the stover and the total sugar plus starch content of the plant may change little during grain filling. Slightly immature corn silage has similar or even higher digestibility than mature corn silage. This is because digestibility of starch and fiber decreases as the corn plant matures. Although the grain content increases, the grain becomes harder and more kernels pass through the cow undigested. The non-structural carbohydrates of immature corn are highly digestible sugars and starch. The digestibility of fiber decreases as the corn plant matures giving an advantage to immature silage. Although silage from immature corn may require more grain in the diet than normal, if it is harvested at the appropriate moisture content, it might improve milk production because of higher starch and fiber digestibility.

