

Harvesting Late Planted Corn for Silage

We have some very late planted corn this year that will be harvested for silage. Some of this corn was planted early enough to produce grain and will reach normal stages of maturity for silage harvest before a frost. The normal maturity stage for full-eared corn when the whole-plant dry matter content is correct for direct chopping and ensiling (32-36% dry matter, 64-68% moisture) usually occurs shortly after the corn kernels are fully denting and the milk line is in the upper half of the kernel.



But some corn was planted so late this year that pollination will not occur, and the stalks will be barren of grain. Other corn plantings will produce ears but will not reach the proper dry matter content in the dent stage before a frost. How should these two cases be managed? Joe Lauer, Extension Corn Specialist at the University of Wisconsin, addresses these scenarios in detail in the references listed at the bottom of this article, and are available online. Other references listed provide additional details that apply to these conditions. Below are a few salient points taken from these references.

1. Corn producing ears with grain has two peaks in forage quality, with the first occurring at pollination (tassling/silking); however, whole plant moisture is too high at this stage for direct chopping and ensiling. After pollination, forage quality of the whole plant decreases until grain content increases sufficiently to begin offsetting the forage quality decline of the forage portion of the corn crop. Forage quality improves with increasing grain fill until reaching the second peak of forage quality, which occurs just after the grain kernels are fully denting and the milk line is about halfway down the kernel.
2. The median frost date in Ohio ranges from October 10 in the northwest to October 20 in southern Ohio and near Lake Erie and the Cleveland area (Ohio Agronomy Guide, 15th edition).
3. In Ohio, corn kernels will reach the dough stage 24 to 28 days after tasseling/silking (Ohio Agronomy Guide, 15th edition). **If corn plants are severely frosted before dough stage**, the whole plant moisture will seldom drop enough to reach acceptable levels for proper fermentation before the plants rot in the field. Therefore, if it is anticipated that corn will NOT reach dough stage before a killing frost (consider median frost dates and current predictions of first frost date) then it is advisable to cut the corn with a mower earlier and wilt it in the field to the dry matter content that ensures good fermentation (see accompanying article in this newsletter "*Wilted Corn Silage Before Ensiling*").
4. If frost occurs in the dough stage (at least 24 to 28 days after tasseling) but prior to 50% milk line in

the dent stage (45 to 52 days after tasseling), then the crop should be allowed to field-dry until whole-plant moisture drops to 64 to 68% (see accompanying article "*Harvesting Immature Corn as Silage*"). The more mature the kernel is prior to frost, the lower the whole plant moisture will be and the shorter the drying period necessary. Be sure to test moisture content before chopping.

5. Cutting height can also be raised to achieve drier forage, but this occurs at the expense of yield. Based on a meta-analysis of multiple published studies, researchers at the University of Florida (Paula et al., 2019) concluded that a 12-inch increase in cutting height of corn silage would increase the dry matter percentage of the silage by 2.5 – 3.0 units, but decrease forage yield by 0.7 tons/acre (on dry matter basis, not as-fed). The 12-inch cutting height increase caused forage quality to be improved (milk production per ton of silage increased) but milk production per acre of land decreased because of the lower forage yield.
6. Forage yield and quality of barren and poorly pollinated corn was evaluated in Wisconsin and provides useful information for what to expect with varying degrees of barrenness (see reference article below "*Yield and Quality of July Planted Corn*"). The planting date and timing of a killing frost will have a big effect, especially on forage yield achieved.

References:

1. Lauer, J. 2019. The "Normal" Pattern of Corn Forage and Grain Development. University of Wisconsin Agronomy Advice, Field Crops 28.5-132. Available at <http://wisccorn.blogspot.com/2019/08/B105.html>.
2. Lauer, J. 2019. Yield and Quality of July Planted Corn. University of Wisconsin Agronomy Advice, Field Crops. University of Wisconsin Agronomy Advice, Field Crops 28.47-134. Available at <http://wisccorn.blogspot.com/2019/08/B106.html>.
3. Carter, P.R. and O.B. Hesterman. 1990. Handling Corn Damaged by Autumn Frost. National Corn Handbook NCH-57.
4. Paula, E.M., B.A. Saylor, J. Goeser, and L.F. Ferraretto. 2019. Influence of cutting height on nutrient composition and yield of whole-plant corn silage through a meta-analysis. J. Dairy Science Vol. 102, Suppl. 1, page 104.

Topics:

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ABOUT THE C.O.R.N. NEWSLETTER

C.O.R.N. Newsletter is a summary of crop observations, related information, and appropriate recommendations for Ohio crop producers and industry. C.O.R.N. Newsletter is produced by the Ohio State University Extension Agronomy Team, state specialists at The Ohio State University and the Ohio Agricultural Research and Development Center (OARDC). C.O.R.N. Newsletter questions are directed to Extension and OARDC state specialists and associates at Ohio State.

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