MANAGING CORN FOR SILAGE

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Different management decisions must be sometimes made when growing corn for silage use rather than for grain use. Some decisions depend upon the amount of flexibility a producer wants to have at harvest. Some decisions must be made in the spring, which thereby locks a field into silage harvest in the fall. For example, high plant populations will require that the field be harvested for silage because leaving it for grain harvest would be more risky due to lodging potential.

In Wisconsin, relatively few cornfields planted in the spring are managed for silage harvest in the fall. In most years, the decision to harvest a field for grain or silage is made in the fall. Should cornfields be managed differently if they are planned for fall silage harvest? Does it make any difference economically?

Hybrid selection for silage fields should be based on both high grain and silage yield, while hybrids planted in fields harvested for grain should be selected for grain yield. The decision to plant a field to a silage hybrid, such as a 'leafy' or brow midrib hybrid, should only be made if you plan to harvest that field for silage only. Usually silage only hybrids have grain yield potentials 10 to 20 % below that of grain hybrids. Selecting silage hybrids with both high grain and silage yield potential allows the producer some flexibility in the fall when most silage harvest decisions are made. The hybrid selection decision should be made on multi-environment average data that performs well consistently in numerous environments.

In a silage field, full-season hybrids can be 5 to 10 days longer season than what would normally be grown for grain because concern for getting the field to black layer is not as great as it is with grain. The greater expected yield potential with longer season hybrids often makes it worth the greater risk. This means that the range of hybrids planted on a farm should be greater if both corn grain and silage is being produced. This will also help minimize the risk of weather problems during a particular growth stage (particularly pollination/silking) and improves the workload during harvest. Growers should plant 505 of their corn acreage in the mid-season maturity range and 25% on the full- and shorter season range.

Good standability and pest resistance should be present in the hybrid selected. This allows flexibility for harvesting the field as either corn for grain or silage in the fall. Corn hybrids with poor standability must be harvested as silage, because if lodged will not be able to be picked up with a corn head.

Recent evidence suggests that softer kernel texture provides greater digestibility and energy in the silage. This may be managed by using kernel processors. Kernel processors can also extend the harvest season by breaking kernels that might be too hard in typical grain hybrids.

Certain hybrids with specialty traits may be appropriate for fields grown specifically for silage. The decision to grow specialty silage corn decreases flexibility in the fall at harvest due to lower yield potential. Brown midrib corn has greater digestibility of the stover portion of corn silage and can be an advantage in dairy systems where digestible fiber is limiting. Leafy type hybrids produce very high tonnage. Specialty hybrids where flexibility may not be sacrificed are Bt hybrids. Recent evidence from Iowa suggests that the incidence of mycotoxin development is lower in Bt hybrids, which are also typically high grain producers.

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Stover quality in silage hybrid should include low NDF and high digestibility traits. These traits maximize feed intake and energy potential of the forage. These traits are not as important in grain hybrids.

The optimum planting date for corn grown for grain is May 1 in southern and May 7 in northern Wisconsin. Since we are not as concerned about black layer formation in the fall with corn silage, a slightly later planting date can be used without detrimental effects. However, significantly late planting dates will affect silage yield and quality potential as it does grain yield potential. June planting dates yield only about 1/3 to 1/2 of early May planting dates.

In Wisconsin significant responses to row spacing are more often seen with corn grown for silage than with grain. Silage yield increases have averaged 9% with no changes in quality, while grain yield increases have averaged 4 %. With the new chopper heads currently available, narrow row corn production is not difficult for corn silage.

Optimum plant populations for grain production range between 28,000 and 32,000 plants/A. Corn silage optimum plant populations are similar, but yield has been observed to continue increasing through the range of 42,000 plants/A. Significant quality changes occur at higher plant populations.

Corn silage is a more valuable crop when marketed as beef or milk and thus economic thresholds for pest are lower than corn grown for grain. Greater nutrient removal occurs with corn silage because both grain and stover are removed from the field.

Harvesting corn silage requires great care in the timing of harvest. Once the crop is ready, it usually requires more equipment to chop, transport fill and pack the silos for safe storage. Markets are usually more local than the corn grain markets. Due to high water content, it is usually not economical to transport corns silage more than 100 miles from where it is grown and eventually stored and fed to livestock.

Table 1. Summary of management considerations and adjustments depending upon grain or silage use.

Decision	Grain	Silage
Hybrid Selection	High grain yield	High grain and silage yield
Yield Potential	Base on multi-environment average performance and consistency	
Full-season	---	5-10 RM days longer
Maturity	8-10 day range	8 - 14 day range
Standability	High	High (Allows flexibility)
Pest Resistance	High	High (Allows flexibility)
Ear and Kernel Traits	Hard	Soft
Specialty Traits	Bt, RR, LL	Bt, Leafy, BMR
Stover Quality	---	Low NDF, high digestibility
Management		
Planting date	May 1 - 7	May 1 -15
Row spacing	15 to 30 inches	15 inches
Plant population	28,000 to 32,000 plants/A	28,000 to 42,000 plants/A
Pest management	Higher economic threshold	Lower economic threshold
Fertilizer inputs	High	Greater nutrient removal
Harvesting and storage	Expensive	More expensive
Use and Market	On-farm, local and export market	On-farm or local market