

# CHOOSING A CORN HYBRID

One of the most important decisions in growing corn is that of hybrid selection. Choosing the wrong hybrid could mean the difference between a profit and a loss. Selecting a hybrid that will perform under the growing conditions and management practices on a producer's farm is step one in optimizing yield potential. There are several factors producers should consider when choosing a potential corn hybrid for their farm.

## Factors in Choosing a Hybrid for Grain Corn

### Corn Heat Unit Accumulation and Maturity Rating of the Hybrid

The first consideration in choosing a grain corn hybrid is the ability of the hybrid to reach maturity before frost in the fall. Frozen immature corn is of inferior quality and difficult to market. The yields of frozen corn are lower and the percentage of broken kernels is higher than for mature corn. However, a hybrid that matures too early for a locality usually yields less because it does not make full use of the growing season.

Once the heat unit rating for a farm has been established, the producer should select hybrids requiring 200 CHU less than the CHU expected. This should ensure that corn planted by mid-May will reach full maturity before a killing frost nine years out of ten. If planting is delayed beyond mid-May, the estimated number of heat units available should be reduced by 100 for each week delay.

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### Yield Potential

Producers should continually evaluate newer hybrids coming into the market, as well as continually evaluate the better known, proven hybrids. The following are factors to consider when evaluating yield potential.

- a) Look for data across years and locations to determine if a particular hybrid will perform under a wide range of environmental and growing conditions. For example, take the top 10 hybrids from different regional locations in 3 different years. Look at the hybrids that pop up in the top slots each year as these hybrids show more reliability and flexibility to environmental conditions.
- b) Look to see if several site years of data is available. The more years the hybrid is tested under, the more reliable the data will be. This also will show how well the hybrid performs under different growing conditions.
- c) If statistical analysis is provided, look at the coefficient of variation (CV). CV is a measure of variation in a trial. A small CV (less than 20) is desirable. A high CV indicates that the difference in values between hybrids is due to some other factors other than hybrid differences. Also, look at the site yield average. This will give an indication of how well all the hybrids performed at that site, as well as show how a particular hybrid did relative to the site average.
- d) Look at different sources of information. The Manitoba Corn Committee (MCC) evaluates different hybrids in various growing regions in Manitoba. The data is published yearly in the Seed Manitoba Guide. The results are available at the Manitoba Corn Growers Association office or on the Manitoba Agriculture, Food and Rural Initiatives website at the following link: <http://www.gov.mb.ca/agriculture/crops/specialcrops/bii01s00.html>. In addition to this source, check with local seed representatives for their publications of demonstration plots and hybrid evaluation trials.

## Hybrid Traits

Most grain corn seed companies and dealers will have data on all the following traits.

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### Standability/Stalk Strength

Under optimum growing conditions, producers won't likely see problems with lodged corn. However, when growing conditions are poor, lodging may increase, leading to decreased yield potential. This is due to the reserves of carbohydrates stored in the stalk moving into the grain during the final stages of grain filling. For example, some hybrids gain a high yield potential at the expense of stalk strength by 'draining' the stalk of all its reserves. Under good growing conditions, the stalk may contain enough carbohydrates to fill a large ear while maintaining stalk strength. However, if conditions have been stressful, reserves in the stalk will be low and will be depleted quickly. The result will be premature death of the stalk and severe lodging or breakage. Thus, these hybrids produce exceptionally high yields under good growing conditions, but go down badly under poor conditions. Assessing the stalk strength of a particular hybrid will also be important when seeding at higher populations.

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### Disease Resistance/Tolerance

Many grain corn companies will have disease resistance/tolerance ratings for various diseases (such as *Fusarium* ear rot, head smut, *Gibberella* ear rot, northern leaf blight) for their hybrids.

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### Test Weight or Density

Markets will often require a minimum test weight or density. For the Gimli distillery, samples must have a minimum bushel weight of 56 lb/bu. As well, the feed market often want high quality grain corn. Density, like protein in wheat, can be highly influenced by management practices and environmental conditions. However, producers should look at test weight data across years and locations to determine if a particular hybrid will achieve high test weights under a wide range of environmental and growing conditions.

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### Dry Down Rate

It is also important to look at the dry down rate of hybrids. Grain corn is physiologically mature at a moisture content between 31-35%. However, corn is usually harvested at a moisture content between 20-27%. The rate of dry down depends mainly on the weather, although differences between hybrids is also important as some types tend to give up moisture more slowly than others. Thinner, looser husks is one important hybrid characteristics that can increase rate of drydown. As well, many of the early-maturing hybrids are known as flint-dent crosses. Flint-dent hybrids produce kernels which have a hard, rounded shape with a dent. Flint-dent are early in maturity but their grain is slow to dry because of the harder nature of the kernel. Fortunately, this hardness can allow for these hybrids to be harvested at higher moisture contents than dent corn. This can be a significant advantage when growing corn in short-season areas.

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### Herbicide Tolerance

There are hybrids available that have tolerance to Round Up and Liberty herbicides, and newer hybrids tolerant to dicamba and 2,4-D. **Note:** Some hybrids have reduced tolerance to sulfonylurea herbicides.

## **FACTORS IN CHOOSING A HYBRID FOR SILAGE CORN**

Yield, maturity, and lodging resistance are also important considerations in choosing a hybrid for silage. Corn reaching the dent stage (R5), (i.e. when most of the kernels are dented or glazed) makes the best silage. At this stage, the whole plants contain 65-70% moisture. The highest yielding hybrid that generally reaches this stage before frost damage is the one to grow. It is a common error to choose late-maturing hybrids that look attractive because of their vigorous growth. However, a hard frost can cause lodging in plants with over 75% moisture and poor silage may also result because of low dry matter content, high sugar content, and low silage pH. Also, there will be less trouble with freezing and spoilage in piles or bunkers of silage made at the proper moisture level.

Experience has demonstrated that hybrids producing high grain yields also produce good silage yields. When choosing hybrids specifically for whole-plant silage, a yield advantage can usually be obtained by selecting hybrids rated 100 to 200 heat units later than those selected for grain.

Since it is unlikely that one hybrid will excel in all of the desired characteristics for a particular farm, judgement is still necessary in making a selection. The producer growing corn for the first year should choose two or three hybrids on the basis of test information and grow them to find out which one is best for that farm and the management practices used by the producer. The producer who grows corn regularly and has established preferences should review hybrid selection every year, because new hybrids are continually coming on the market.