

## Selecting corn hybrids for performance and profit

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One of the most important management decisions a corn grower makes each year is the selection of corn hybrids for spring planting. During the past 40 to 50 years, there has been continuous improvement in the genetics of corn hybrids which has contributed to steady increases in grain yield potential ranging from 0.7 to 2.6% per year. To stay competitive growers must introduce new hybrids to their acreage on a regular basis.

Growers should choose hybrids best suited to their farm operation. Corn acreage, previous crop, soil type, tillage practices, desired harvest moisture, and pest problems determine needs for such traits as drydown, insect and disease resistance, early plant vigor, etc. End uses of corn should also be considered - is corn to be used for grain or silage? Is it to be sold directly to the elevator as shelled grain or used on the farm? Are there premiums available at nearby elevators or from end- users for identity-preserved (IP) specialty corns such as food grade or non-GMO (non-transgenic) corn? Capacity to harvest, dry and store grain also needs consideration. The following are five steps to consider in choosing hybrids that are best suited to various production systems.

### Step 1

Select hybrids with maturity ratings appropriate for your geographic area or circumstances. Corn for grain should reach physiological maturity or “black layer” (maximum kernel dry weight) one to two weeks before the first killing frost in the fall. Use days-to-maturity and growing degree day (GDD) ratings along with harvest grain moisture data from performance trials to determine differences in hybrid maturity. Because fossil fuel prices have risen significantly recently, corn producers should give careful attention to moisture differences between hybrids when evaluating grain yield. Grain drying represents a major portion of the energy requirement for corn production. It may be preferable to select short to mid season hybrids than full season hybrids for grain, especially if planting is delayed until late May. Results of recent Ohio Corn Performance Tests indicate that the average yields of hybrids entries in the early maturity test were similar to those in the late maturity test but that the average grain moisture of hybrid entries in the early test was 1.5 to 3.5 percentage points lower than those in the full season test.

### Step 2

Choose hybrids that have produced consistently high yields across a number of locations. The Ohio Corn Performance Test results indicate that hybrids of similar maturity can vary in yield potential by as much as 60 bu/A depending on test site. Similar differences in grain yield among hybrids are common in other state performance trials. Choosing a hybrid simply because it's a “triple stack” or “quad stack” or possesses appealing cosmetic traits, like “flex” ears, will not ensure high yields; instead, look for yield consistency across environments. Hybrids will perform differently, based on region, soils and environmental conditions, and growers should not rely solely on one hybrid characteristic or transgenic traits to make their product selection. There is likely to be just as much variation in yield potential for hybrids with transgenic traits as there was for conventional (non-traited) hybrids in the past. In recent years, the Ohio Corn Performance Tests have revealed that stacked trait hybrids not only produce the highest grain yields in the trials but also the lowest. Although non-transgenic hybrids now account for less than 10% of the entries in the Ohio Corn Performance Tests, several non-transgenic hybrids (suitable for use non-GMO grain production) have produced yields not significantly different from the highest yielding triple/quad stack entries.

When planting fields where corn rootworm (RW) and European corn borer (ECB) are likely to be problems (in the case of RW - continuous corn, presence of the rootworm variant, and in the case of ECB - very late plantings), Bt traits offer outstanding protection and may mitigate the impact of other stress conditions.

### Step 3

Plant hybrids with good standability to minimize stalk lodging. This is particularly important in areas where stalk rots are perennial problems, or where field drying is anticipated. If a grower has his own drying facilities and is prepared to harvest at relatively high moisture levels (>25%), then standability and fast drydown rates may be somewhat less critical as selection criteria. There are some hybrids that have outstanding yield potential but are more prone to lodging problems under certain environmental conditions after they reach harvest maturity. Traits associated with improved hybrid standability include resistance to stalk rot and leaf blights, genetic stalk strength (a thick stalk rind), short plant height and ear placement, and high “staygreen” potential. Staygreen refers to a hybrid’s potential to stay healthy late into the growing season, after reaching maturity, and should not be confused with late maturity. European corn borer (ECB) Bt resistance minimizes ECB stalk injury that can promote stalk rot in corn. However, the Bt trait is not a substitute for good stalk quality and tolerance to stalk rots. Bt rootworm resistance can significantly limit root lodging caused by western and northern corn rootworm and thereby minimize yield losses where rootworm pressure is heavy.

### Step 4

Select hybrids with resistance and/or tolerance to stalk rots, foliar diseases, and ear rots. The Ohio Field Crops Diseases web page online at <http://www.oardc.ohio-state.edu/ohiofieldcropdisease/> describes some of the most common disease problems of corn in the Corn Belt. However there are diseases showing up in Iowa that we have yet to encounter as problems in Ohio. The Iowa State University Integrated Crop Management web site <http://www.ipm.iastate.edu/ipm/icm/> provides excellent corn disease updates during the growing season. In recent years, several diseases have adversely affected corn grain yields and quality- including northern corn leaf blight, gray leaf spot, anthracnose stalk rot, diplodia ear rot, and Gibberella ear rot. In the Eastern Corn Belt, Gibberella ear rot and mycotoxins associated with this problem caused major economic losses in 2009. Corn growers should obtain information from their seed dealer on hybrid reactions to specific diseases that have caused problems or that have occurred locally.

### Step 5

Never purchase a hybrid without consulting performance data. Results of state, company, and county replicated hybrid performance trials should be reviewed before purchasing hybrids. Because weather conditions are unpredictable, the most reliable way to select superior hybrids is to consider performance during the last year and the previous year over as wide a range of locations and climatic conditions as possible. However, multi-year data for hybrids is becoming increasingly difficult to obtain. In last year’s Ohio Corn Performance Test, only 14% of the hybrid entries had been entered in the test for two years and only 6% of the entries for three year. Therefore, if limited to single year data, it’s important to try to evaluate a hybrid’s performance across a range of different growing conditions. For example, compare the hybrid’s performance at test sites where rainfall was adequate with those where rainfall was limited and stress conditions may have occurred. Since assessment of a hybrid’s performance is enhanced by using a number of test sites, check your neighboring state’s test results with The University Crop Testing Alliance web site (<http://www.ucta.org/>), which provides links to corn hybrid test results from state universities across the Corn Belt.