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, 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, plant height, etc. End uses of corn should also be considered. Is the 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 corn 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 rather than full-season hybrids for grain, especially if planting is delayed until late May. Recent Ohio Corn Performance Test results indicate that the average yields of hybrid 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 the test site. Choosing a hybrid simply because it’s a “triple stack” or “quad stack” or because it possesses appealing cosmetic traits like big “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 trait 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 in 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 (due to continuous corn or presence of the rootworm variant in the case of RW, or very late plantings in the case of ECB), Bt traits offer outstanding protection and might mitigate the impact of other stress conditions.

**STEP 3. To minimize stalk lodging, plant hybrids with good standability.** This is particularly important in areas where stalk rots are perennial problems, or where field drying is anticipated. In 2008, severe lodging was present in many corn fields in western Ohio due in large part to the high winds associated with Hurricane Ike on September 14. However, severe water stress in July and August in parts of Ohio may have also predisposed the crop to stalk rots. Major differences in lodging were evident among hybrid entries in the 2008 Corn Performance Test, with plant lodging percentage ranging from less than 5% to over 90% at certain test sites. If a grower has his or her 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; however, staygreen should not be confused with late maturity. 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.** Consult the Ohio Field Crop Diseases web page (http://www.oardc.ohio-state.edu/ohiofieldcrop-disease/) for the most common disease problems of corn in Ohio. In recent years, several diseases such as the following have adversely affected the corn crop: gray leaf spot, northern corn leaf blight, Stewart’s bacterial leaf blight, and diplodia ear rot. However, according to many plant pathologists, stalk rots are the most common corn diseases in Ohio and the most significant yield limiting diseases of corn. 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 increasing difficult to obtain. In the 2008 Ohio Corn Performance Test, only 20% of the hybrid entries had been entered in the test for two years, and only 3% of the entries had been entered for three years. 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. To assess a hybrid's yield averaged across multiple Ohio test sites, consult the “Combined Regional Summary of Hybrid Performance” tables. These tables and other results for the Ohio Corn Performance Test are available online (http://www.oardc.ohio-state.edu/corntrials/ and http://agcrops.osu.edu/~perf/). Because assessment of hybrid performance is enhanced by using a number of test sites, corn growers farming along our borders with neighboring states should check results of the Purdue, Kentucky, Michigan State, Pennsylvania, and West Virginia Corn Test results. The University Crop Testing Alliance web site (http://www.agry.purdue.edu/pcpp/UCTA/index.html) provides links to corn hybrid test results from state universities across the Corn Belt.