

# Key Steps in Corn Hybrid Selection



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## Key Steps in Corn Hybrid Selection

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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 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.**

The following are guidelines to use 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 corn heat unit (CHU) ratings along with grain moisture data from performance trials to determine differences in hybrid maturity.

#### **STEP 2. Choose hybrids with consistently high yields across a number of locations and/or over years.**

Choosing a hybrid because it possesses a particular trait, such as big ears, many kernel rows, deep kernels, prolificacy, or upright leaves will not ensure high yields; instead, **look for stability in performance across environments.**

### **STEP 3. Use hybrids with good standability.**

This trait is particularly important in areas where stalk rots are perennial problems, or where field drying is anticipated. If you have your own drying facilities and are prepared to harvest at relatively high moisture levels (>25%), then standability and fast drydown rates may be somewhat less critical as selection criteria.

### **STEP 4. Plant hybrids of different maturity.**

This reduces damage from diseases and environmental stress at different growth stages (i.e. improve the odds of successful pollination) and spreads out harvest time and workload. Consider spreading hybrid maturity selections between early-, mid-, and full season hybrids, e.g. a 25-50-25 maturity planting, with 25% in early- to mid season, 50% in mid- to full season, and 25% in full season.

Planting a range of hybrid maturities is probably the simplest and most effective way to diversify hybrid genetics. Another way to ensure greater diversity is to purchase seed from one company because seed companies are unlikely to handle genetically identical hybrids in their lineup.

### **STEP 5. Plant only high quality seed with excellent emergence potential.**

Since seed vigor is influenced by drying, handling, etc., a company's quality control standards for seed conditioning are an important consideration.

### **STEP 6. Choose hybrids which best match specific end uses.**

**Tall, leafy field hybrids with good yield potential are usually good choices for silage.** Although differences in feed quality associated with grain protein and silage digestibility do exist among hybrids, these quality differences are usually small and the yield differences among comparative hybrids are much greater. **Do not sacrifice hybrid yield performance for marginal differences in quality.** If corn hybrids are to be used exclusively for silage they can be up to ten days later in maturity than the standard grain hybrids.

### **STEP 7. Never purchase a hybrid without consulting performance data.**

Evaluate results of provincial and company performance trials. Because weather conditions are unpredictable, **the most reliable way to select superior hybrids is to consider performance last year and this year over a wide range of locations and climatic conditions.** When using provincial performance trials results, two years of data from several locations is usually adequate; **test summaries for three or more years may exclude newer genetics with better performance potential.**

**On-farm strip tests should not be relied on heavily in hybrid selection because they cannot predict hybrid performance across a range of environmental conditions.** However, on-farm hybrid tests can be useful in evaluating various traits which are not reported in the large-scale provincial or commercial tests, e.g., harvestability (ease of shelling, ear retention, etc.) disease resistance, and staygreen.

## Other Considerations for Selecting Hybrids

### Test Weight

Higher test weight is often considered an advantage from a marketing standpoint and therefore a desirable hybrid characteristic. However, there is little relationship between grain test weight and kernel breakage or nutritional value. The test weights of hybrids differing widely in kernel moisture percentage (e.g. short vs. full season hybrids) should not be compared because the drier hybrid has an unfair advantage. Test weight increases as kernel moisture decreases unless corn is immature, severely combine damaged or dried at extremely high temperatures. **Test weight is most effectively used as a criterion in hybrid selection when comparing hybrids of similar maturity.** Hybrids with similar maturity ratings (i.e. CHU's) may differ by as much as 2 to 4% kernel moisture during the harvest period because certain hybrids possess characteristics such as loose husks, thin seed coats, and small cobs which contribute to faster drydown rates.

### Management Interactions

Many seed companies are marketing hybrids based on differences in hybrid response to management practices such as soil type, plant population, tillage, soil fertility, herbicides, and crop rotation. While some differences do occur among hybrids under various cultural practices, **superior hybrids are often top performers regardless of cropping systems or practices.** Usually it is a difference in hybrid maturity or an interaction with environmental conditions that accounts for the varying responses of hybrids to cultural practices.

### Hybrid Rotation

If you are locked into a continuous corn cropping system, then consider rotating corn hybrids each year in any given field to partially offset the yield disadvantage of continuous corn. According to research in Minnesota and Iowa, hybrids often yield less when following themselves in continuous corn than when grown in rotation with other hybrids. Such hybrids should also be selected for high levels of resistance to diseases which are more likely to be a problem in continuous corn (especially continuous no-till corn).

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