

# AGRONOMIC Spotlight



## Hybrid Selection in Corn Production

Maximizing yield potential and minimizing risk are two main goals when planning for the next growing season. Planting a well-planned package of hybrids with different relative maturities (RM) and different growing degree unit (GDU) requirements until mid-pollination, as well as rotating germplasm in continuous corn fields can help reduce risks associated with various environmental conditions.

### Qualities of a Good Package of Hybrids

**Good Yield Potential and Agronomics.** Generally, the first selection criteria when evaluating hybrids is yield potential, followed by various agronomic characteristics (Figure 1). Hybrid performance in plots across multiple locations and years can indicate the consistency and yield potential of a hybrid, and in which environments it tends to excel or falter. A few variables about each location to consider are soil type, crop rotation, tillage, temperature, and rainfall.

Commercial hybrids often have very good or excellent vigor and emergence ratings. Hybrids with poor emergence or vigor are generally not advanced to commercial status. A strong emergence and vigor rating for a commercial hybrid is especially beneficial if that hybrid will be placed in a no-till or reduced tillage field, or will be planted early.

It is important to evaluate hybrids for tolerance to diseases that are common in your geography. Keep in mind that fungicide applications may mitigate some of the negativity associated with a hybrid's susceptibility to fungal diseases such as gray leaf spot,



**Figure 1.** Emergence, vigor, disease tolerance, root and stalk strength are key hybrid characteristics to consider, in addition to yield potential.



**Figure 2.** Having a package of hybrids with a spread of relative maturities can help manage harvest schedules and decrease the risk of damage from an early fall frost.

and northern corn leaf blight, among others.

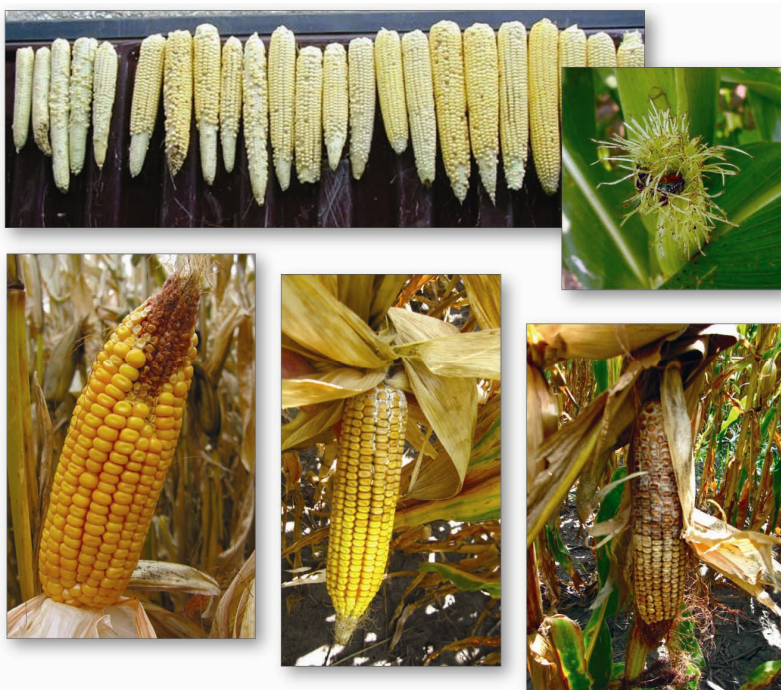
Drydown, stalk quality, and root strength can help manage harvest schedules. Several variables can affect these characteristics such as stresses endured throughout the growing season, untimely frosts, and various pathogens.

**Different Relative Maturities.** A good management practice is to plant a package of hybrids that has a combination of early-, mid-, and full-season hybrids to help spread out the harvest schedule and help minimize losses from drying costs and lodging. The early hybrids can help with getting harvest equipment set properly and/or fulfilling early fall delivery commitments to elevators. Often, the majority of acres in an operation should be planted to mid- and full-season hybrids due to the tendency for them to have higher yield potential since they have more days to photosynthesize and fill grain. In addition to helping manage harvest schedules, having a spread of relative maturities (RM) can help mitigate risks associated with an early fall frost, such as low test weight, lower yield potential, and poor drydown (Figure 2).

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**Figure 3.** Having a package of hybrids with various GDU requirements to mid-pollination can help reduce the risk of poor pollination due to heat and drought stress, zipper ear, diplodia ear rot, and silk clipping from insects such as Japanese beetle and corn rootworm.

**Different Requirements for Growing Degree Units to Mid-Pollination.** An often overlooked characteristic when selecting a package of hybrids is growing degree unit (GDU) requirements to flowering or mid-pollination. Spreading out GDU requirements to mid-pollination can help decrease risks of heat and drought stress during pollination, silk clipping, and diplodia ear rot (Figure 3).

A package of hybrids with different RMs may or may not result in a package with differing GDU requirements to flowering. For example, a requirement of 1300 GDUs to mid-pollination can commonly be found in 103 through 113 day corn. Conversely, two hybrids of the same RM can have significantly different GDU requirements to mid-pollination. For example, two 111 day hybrids have GDU requirements to mid-pollination of 1300 and 1340. An average daily accumulation of 25 GDUs is common during the prime pollination period. Therefore, a difference of 40 GDUs to mid-pollination might be a difference of 1 or 2 days for flowering. While this might not seem like much, it could be the difference of a cold front coming through or a much needed rain. It could also be compounded with different planting dates.

### Importance of Rotating Genetics

When the environment is right for a disease to infect and develop on a susceptible hybrid, the inoculum load for that pathogen tends to increase. Many of these diseases overwinter in crop residue and are already present when second-year corn is planted (Figure 4). Overwintering diseases include anthracnose, diplodia ear rot and stalk rot, gray leaf spot, and northern corn leaf blight. If the same corn product is used in two consecutive years, there is a greater risk of disease having a negative effect on yield potential in the second year of production. To address this problem, carefully consider disease ratings and rotate to a different, unrelated hybrid each year.



**Figure 4.** Rotating genetics can help decrease the potential damage from pathogens, such as anthracnose, diplodia, gray leaf spot, and northern corn leaf blight, that overwinter in corn residue.

**Individual results may vary**, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** Technology Development by Monsanto and Design(SM) is a servicemark of Monsanto Technology LLC. ©2010 Monsanto Company. 09.09.2010.EJP