CORN TALK NEWS
PENNSYL A MASTER CORN GROWERS ASSOC., INC.

Considerations for selecting corn hybrids

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STANDABILITY

Standability is an especially important hybrid characteristic in Pennsylvania, where the corn harvest often continues late into the fall. Poor standability is primarily due to stalk rot, but can also be caused by weak stalks or root systems

Table 1. Approximate season length and growing degree days (GDDs) available for Pennsylvania corn maturity zones.

MATURITY ZONE	SEASON LENGTH (DAYS)	APPROXIMATE AVAILABLE GDDS	PLANTING DATES
1	90–95	1600–1824	5/15–25
	96–100	1825–2024	
2	101–105	2025–2274	5/1–15
	106–110	2275–2499	
3	111–115	2500–2724	4/25–5/7
	116–120	2725–2949	
4	121–125	2950–3174	4/15–5/1
	126–130	3175 or >	

as well as insect damage. Standability should be an important consideration for fields where a shelled grain or ear corn harvest is planned, and especially for those that will be harvested late. Considerable progress has been made in improving standability, but important differences still remain in commercial hybrids.

YIELD PERFORMANCE

Hybrid yield performance is a critical factor in hybrid selection. The range in yield potential among commercial hybrids frequently is greater than 40 bushels per acre (Table 2). It is essential that performance information be based on the results of several trials and not just one test. Average performance from a number of sites in your region is often a better indicator of future performance than the results of a single test on your farm. Also consider moisture differences between hybrids when evaluating for yield. At a drying cost of $0.04/point/bushel and a corn price of $2.50 per bushel, every 1% moisture difference between two hybrids yielding 125 bushels per acres is worth 2 bushels per acre. This is especially important for corn that will be shelled and dried.

When interpreting yield performance tests grown over a wide region, consider only those hybrids with a maturity adapted to your farm, even though later hybrids in these tests may have higher yields. When grown under your conditions, these later hybrids may not yield as well, and they will have higher moisture levels and an increased risk of frost before maturity. Yield performance can be best estimated by actual harvest-time measurements of grain production. Visual estimates of yield based on ear size, kernel rows, or kernel depth are not reliable enough to use for hybrid comparisons.

When evaluating hybrids for silage production, it is best to base decisions on silage yield performance data if possible. Where this information is not available, a tall, leafy, hybrid with a good grain yield potential would likely be a good choice for silage.

Table 2. Two-year average and range in yields and moisture for hybrids entered in both 1990 and 1991 Pennsylvania Commercial Hybrid Corn Tests.

MATURITY ZONE	YIELD AVERAGE (BU/A)	YIELD RANGE (BU/A)	MOISTURE AVERAGE (%)	MOISTURE RANGE (%)
1	120	88-136	21.3	18.9-23.2
2	118	90-136	25.2	20.3-27.2
3	126	81-139	23.0	19.4-25.1
4	147	122-170	23.5	20.4-24.7

SPECIAL CHARACTERISTICS

A number of other special hybrid characteristics should be considered in selection for specific situations. The importance of these characteristics depends on the specific situation. Generally, they should have a major impact in hybrid selection only if they will have an impact on the yield and quality of the final product. These characteristics include harvestability as ear corn, seedling vigor, test weight, tight husk cover for bird resistance, stay-green potential, and grain or silage quality.

Harvestability of a hybrid can be particularly important for ear corn producers. Some hybrids have the tendency to lose kernels from the ear during the picking process, lowering the yield and quality of the ear corn. On other hybrids, husk removal is sometimes difficult, which contributes to reduced airflow in the bin and increases the potential for spoilage.

Differences in seedling vigor do exist between hybrids and can have an effect on stand establishment in stressful situations, such as early planted no-till corn or corn planted into heavier, wetter soils. The importance of seedling vigor under most other situations, however, is probably secondary compared to maturity, disease resistance, and yield performance.

Test weight differences also exist between hybrids and these should be considered if higher test weight is an advantage from a marketing standpoint. Studies have shown that test weight is not a good indicator of feed value, so there is likely to be little advantage from feeding high-test-weight hybrids.

For growers who frequently experience serious losses from bird damage when corn is in the milk stage, husk tightness and coverage may be important considerations.

Many of the new hybrids being developed possess increased levels of what is known as stay-green, or the ability to retain leaf color past physiological maturity. This characteristic appears to improve late season plant health and to increase the grain dry-down rate. This characteristic may also help to extend the harvest window for silage production by reducing the whole-plant dry-down rate.

Grain and silage quality differences should also be considered, since feed quality differences do exist among hybrids. However, you should monitor the economics of growing hybrids with improved quality traits. Frequently, quality differences among hybrids are small and the yield differences among comparative hybrids are much greater. You usually can't afford to give up very much in yield performance to get the improved quality. In hybrid testing trials, quality differences among groups of hybrids have been shown to range up to 1 percentage point in grain protein and 2 to 3 percentage points in silage digestibility. Recent advances in biotechnology may allow a wider range of hybrid quality differences in the future.

MANAGEMENT INTERACTIONS

The idea that hybrids differ in their adaptation to different management practices such as tillage systems, nitrogen rates, populations, and soil productivity levels remains an area of great debate. One group in this debate contends that hybrid differences under these practices are small and difficult to predict. On the average, this group suggests using hybrids that have performed well under a wide range of conditions. The other group contends that hybrids respond consistently different to some of these changes and that these responses should be incorporated into your plan of placing hybrids in different fields on your farm. Recent research results are beginning to clarify some of these differences.

Recent studies have shown that the best hybrids in conventional tillage are also usually the best in reduced tillage systems. One notable exception to this would be the need for higher gray leaf spot resistance where this disease is a problem. Another consideration may be to put added emphasis on seedling vigor in early season no-till plantings. On the whole, however, tillage practice should not have a large impact on your hybrid selection.

In controlled situations in the greenhouse or laboratory, some researchers have shown differences in how hybrids respond to different forms and timings of N applications. When others have tried to document this in the field, however, they have generally been unable to consistently show the same type of differences. In general, research has shown that different hybrid responses due to the growing seasons are much greater than any differences

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