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Hybrid selection for corn following corn

by Jim Rouse, Department of Agronomy

Good crop production strategies will not increase the yield of the hybrids you grow. Instead, good production practices help hybrids yield closer to their genetic potential by reducing yield-robbing factors in the field. This concept underscores the significance of hybrid selection. Since there are no management techniques to increase the genetic potential of hybrids, it is important to select hybrids with high yield potential.

Growing corn following corn presents a variety of management challenges compared with corn following soybeans. Hybrid selection procedures, however, remain the same regardless of your crop rotation. This article will highlight the most important aspects of hybrid selection and some pitfalls to avoid.

Two mistaken beliefs that often mislead growers are:

- corn-following-corn data are different from corn-following-soybean data; and
- data from a field near your farm are more useful than data from sites farther away.

These false perceptions produce selection errors by causing growers to focus on single-location information. Single-location data can be used to view the relative performance of hybrids for the current growing season but not to make predictive decisions about next season.

The information from a single location is a measure of the yields produced by the interactions of the hybrids (genetics) with the environment--soil type(s), soil conditions, weather, nutrients, pests, and pathogens during that season. But the only factors in this equation that you can know for next season will be the soil type(s) where you plant and the hybrids you choose.

Because of this you cannot expect the results from a single yield trial in one season to be duplicated in another season.

Some people point out that hybrid rankings will differ between a corn-following-soybean site and a corn-following-corn site. But the missing information in this scenario is that hybrid rankings also differ between various corn-following-soybean sites and between various corn-following-corn sites, too. This variability is caused by the hybrid/environment interactions mentioned above. Because of the unpredictable nature of the interactions, and because one cannot predict the weather for the upcoming growing season, it is prudent to select hybrids that will perform well regardless of the environment. This is done by using the multiple-location summaries of yield trial reports.
Regional summaries combine data from several locations, and each location is a different environment. A hybrid with consistently good performance in several environments is more likely to perform well on your farm next season. Even though it seems contrary to expectations, research has shown that combined data from a few locations will give more reliable predictive information than single-location data from a trial on your own farm! Regional summaries of experiments from outside your normal maturity range also may be useful, particularly if they contain hybrids that can be grown in your area.

Hybrid selection is composed of two distinct but related components. The first is selecting high-yielding hybrids for your operation. The second is risk management, as defined by the number of hybrids you select, their mix of maturities, seed treatments, traits, and acreage allocation. If hybrid selection was just about finding a high-yielding hybrid, it would be a simple task: use district summaries to identify the top hybrids. It is the risk management element that makes hybrid selection difficult. Growers will use yield trial data in different ways to reach their appropriate combination of hybrids, maturities, etc.

Even though the risk management aspect of hybrid selection can instill some variability in methodology, there are certain aspects that should remain consistent among all users of yield trial data:

- only multiple-location data should be used to make selection decisions;
- increased yield doesn't necessarily mean increased profit--maturity and seed costs also must be considered;
- yield trials don't have to be performed on your farm, on your soil type, or even under your crop rotation scheme to provide relevant data;
- remember to follow all required insect resistance management protocols when using transgenic hybrids;
- single-location data should not be used for variety selection; and
- more information is better information, so use all reliable sources of data.

Remember that all of your other crop management techniques are utilized to protect the yield potential of your chosen hybrids. It makes sense to spend a little bit of effort to ensure you are maximizing that potential by using proper selection strategies.
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