Variety selection is crucial to soybean yield and quality

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Abstract
Soybean variety selection is crucial for high soybean grain yield and quality and is one of the most important decisions a grower makes every year. Variety selection is the foundation for an effective and successful management plan. Although weather conditions cannot be predicted during the growing season, selecting the right variety can help to minimize weather-related risks.

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There are many soybean varieties available, which can make selection seem like a challenge. Compared with the options 10 years ago, there are now higher yielding varieties with better pathogen and insect resistance, varieties with improved specialty traits, and varieties resistant to nonselective herbicides. Recently, the focus has been on selecting soybean herbicide programs. However, when choosing a variety it is not only important to select one that matches your herbicide program but also one that maximizes yield and profitability.

Variety performance

Each variety has a maximum yield potential that is genetically determined. This genetic yield potential is realized only when management and environmental conditions are perfect, and such conditions rarely exist. The performance of a variety may vary from year to year, even within the same field. When varieties are tested over a range of locations and years their performance changes, which indicates that some varieties are better adapted to a specific environment than others. It is not unusual for one variety to outyield another variety by 15 to 20 bushels or more in the same field. Selecting a variety that is yield-stable within a region and across years will more accurately indicate the variety performance and stability. Currently, many varieties are sold for only 3 to 5 years, and sales of a particular variety might be declining by the time multiple-site and year data are available to the grower. To minimize risk when selecting a variety, look at the variety information obtained from state performance trials that are replicated in numerous locations.

Variety characteristics

Soybean characteristics that need to be considered in variety selection include maturity, yield potential, disease and pest resistance, iron deficiency, lodging score, height, and quality traits. Disease resistance has been a major topic over the past couple of years. Selecting soybean varieties that have resistance or tolerance to major diseases can be an effective and economical method to control disease. Many varieties have good resistance or tolerance to most of the major diseases in Iowa, such as sudden death syndrome, brown stem rot, phytophthora, and white mold. Resistant varieties also are available for soybean cyst
nematode. If the history of disease or pest problems in a field is known, a resistant variety should be selected to target those specific problems.

**Seed quality**

Seed quality is very important to overall plant success, and planting high-quality seed is essential to a profitable production system. High-quality seed has high varietal purity, high germination, uniform size, no weed or other crop seed or green immature seed, no seed coat cracking, no disease or discoloration from fungal or viral pathogens, and no splits. Certified seed is the main source meeting these requirements. However, few growers save their own seed for planting, which is satisfactory if high quality is maintained and if the seed quality is known before planting. Use only seed produced the previous crop year. Seed 2 years old or older usually has lower germination and less seedling vigor.

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