



Department of Agronomy

Variety Selection

Key Facts

Soybean variety selection is crucial to achieving high soybean yield and better grain composition; therefore, it is one of the most important decisions a producer makes each year. Variety selection is the foundation to developing an effective and successful crop management plan.

The maximum yield potential of each variety is genetically determined. This yield potential is only achieved when management and environmental conditions are perfect. Unfortunately, such conditions rarely exist.

It is not unusual for one variety to out-yield another by 15 to 20 bushels or more in the same field, so choosing the right variety can help assure success and profitability for the next growing season.

Risk management

Today, managing risk in soybean production is more critical than ever as production costs continue to rise. Variety selection is primarily about risk management.

A seed company's soybean product portfolio can contain as much as 50 percent new releases, creating a challenge for producers to select the right varieties. Some varieties are released to producers without a significant amount of historical performance information. Requesting proof of yield and agronomic performance from the seed sales representative prior to ordering can minimize the risk of planting such varieties. If data are not available, it is recommended to take a cautious approach and only plant a small acreage with the new variety.

Soybean variety characteristics that need to be considered in variety selection include yield and yield stability, disease and pest resistance, iron deficiency chlorosis, maturity, quality traits, lodging and plant height (Figure 1). It is also important to remember the disease triangle and how environment-host-pathogen interactions can influence a variety's performance.

Variety characteristics

The diagram in Figure 1 shows how producers should prioritize varietal characteristics when selecting a variety. Beginning with the most important:

- **Yield and Yield Stability.** Selecting a variety that is high yielding and yield-stable across multiple locations (and years) will more accurately indicate the variety performance and stability, minimizing your risk of a product failure.

If multi-year data are not available from the seed company, producers should consider data from replicated, independent yield trials. Data combined across multiple locations will provide more reliable data than a single-location data set. A variety with stable performance at several locations in the same region is more likely to perform well on a particular farm.

- **Disease resistance.** The agronomics of high-yielding varieties should match the known history of diseases within each field. Planting varieties with resistance to major soybean diseases is an effective and economical method of disease control. Many varieties have good resistance or tolerance to most of the major diseases that occur in Iowa, such as soybean cyst nematode (SCN), sudden death syndrome (SDS), brown stem rot (BSR), iron deficiency chlorosis (IDC) and Phytophthora root and stem rot.

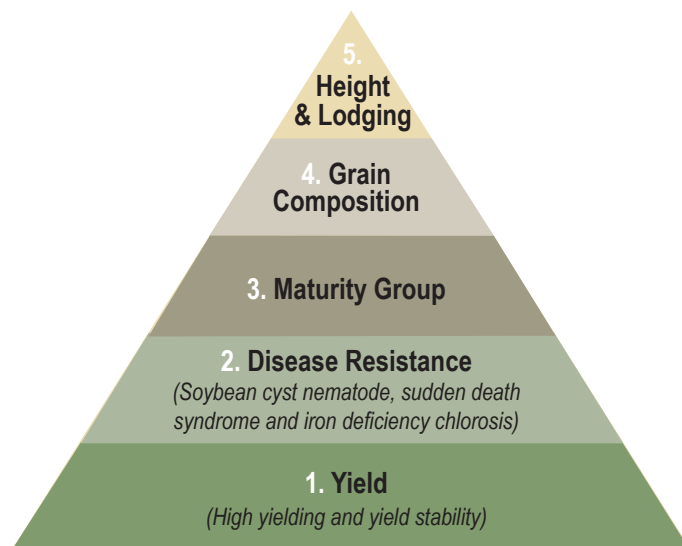


Figure 1. Soybean variety selection hierarchy in Iowa.

- **Maturity group (MG).** Most varieties planted in Iowa are late-MG 1 through mid-MG 3. The maturity classification describes the time from flowering to harvest maturity. Planting soybeans from different maturity groups can help producers minimize risk of a drought by spreading out flowering, seed fill and physiological maturity.
- **Grain composition.** High oil, protein and amino acid content are important to improve the value of a soybean crop. Some delivery points offer premiums for grain with elevated levels of these traits. Seed sales representatives can provide information about varieties that may have high-value traits.
- **Height and lodging.** Taller plants are generally more susceptible to lodging; lodging ratings give an indication of standability. Lodging will, based on the severity, reduce yield and make harvest more difficult.

Seed quality

High-quality seed has high varietal purity, high germination, uniform size, no weeds 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 will meet these requirements. High seed quality is important for overall performance of a variety.

Resources available to producers in Iowa

Hundreds of soybean varieties are available to producers in Iowa today. This can make variety selection challenging. Compared with the options 10 years ago, there are now higher yielding varieties with better pathogen and pest resistance, varieties with improved specialty traits and varieties resistant to nonselective herbicides.

So what variety is best to plant? Overall, the emphasis is on yield and yield stability. After that, the answer is determined by recording information about each field. Information from a specific field and its history related to pests and pathogens is most valuable in determining specific needs. Taking notes on disease incidence and severity will provide useful information for future soybean selection. Spending time and effort on selecting the right variety is a good investment and will assure maximum yield and/or profitability.

Two independent variety trials are conducted through Iowa State University. Information about the Iowa Crop Improvement Association Crop Performance Test can be found at www.croptesting.iastate.edu, and the Iowa State University Soybean Cyst Nematode resistant variety trial can be found at www.isuscnavarietytrials.info. Good information is also available from many seed companies. Because more data and information is better than no information, using multiple sources of data can be an advantage.

For more information about soybean management, go to www.soybeanmanagement.info.



Figure 2. If a farm has a history of sudden death syndrome (SDS), or another disease or pest, a resistant variety should be selected to target that specific problem.



Figure 3. Soybean cyst nematode (SCN) is the most damaging pathogen in Iowa soybean fields and is found throughout most of the state. Above: SCN-susceptible (left) and SCN-resistant (right) varieties tested side by side in a SCN environment.

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