

Small Seed Size in Soybean

Questions arise annually regarding the effects of soybean seed size. It is helpful to remember how seed size is determined, and to keep the importance of seed size in perspective when selecting soybean varieties. Yield potential, disease tolerances, and agronomics should be the most important selection criteria.

Soybean Seed Size: Cause and Effect

While seed size is influenced partially by genetics, the environment during seed fill can be a significant factor. Small and large seeds of the same variety have the same genetic material and therefore, the same yield potential. Under most conditions, seed size does not affect emergence or yield potential¹. In extreme situations, differences may be observed¹:

- In adverse conditions that delay emergence (such as cool soil temperatures or excessive planting depths), large seed may be able to survive a longer period of time prior to emergence due to having a larger energy reserve. Planting soybeans 1 to 1.5 inches deep into soils that will consistently be warmer than 60 °F, can be beneficial for soybean emergence. When planting smaller soybean seed, consider planting closer to 1 inch deep versus 1.5 inches deep, if field conditions and soil moisture allow. Regardless of seed size, it is not recommended to plant soybeans less than 1 inch deep.
- Smaller seed requires less energy to emerge from the soil, due to the size of cotyledons being relative to seed size.
- Smaller seeds require less moisture for emergence and in limited moisture situations this may be an advantage.

Importance of Variety Selection

Soybean variety selection is a critical part of maximizing yield potential. Some of the key selection elements to consider in order of importance include varietal yield potential, disease tolerance, relative maturity (RM), plant height, and standability.

Yield Potential. Varieties should maintain high yield potential and stable performance across multiple locations in the growing region. When possible, use multi-year data summaries to aid in variety selection.

Disease Tolerance. Several diseases, including soybean cyst nematode (SCN), late season phytophthora, sudden death syndrome (SDS), southern stem canker (SSC), and brown stem rot (BSR), do not have rescue options and are primarily managed with variety selection.

Soybean seed might be smaller than normal for this planting season, but that should not overshadow the importance of selecting varieties based on performance.

Relative Maturity. To mitigate the risk of poor weather during pod fill, and help maximize yield potential with fuller season varieties, a range of relative maturities can be selected.

Plant Height and Standability. For fields with high fertility, a short or moderate plant height with good standability can help minimize lodging concerns. When planting in less fertile soils, taller plant types often set pods a bit higher, which allow for greater harvest efficiency.

Summary

- Soybean seed size will vary from variety to variety and year to year, based on genetics and weather during pod fill.
- Variety selection should be based on yield potential and agronomic characteristics, not seed size.

Soybean seed might be smaller than normal for this planting season, but that should not overshadow the importance of selecting varieties based on performance when it comes to making soybean variety purchasing decisions.

Source:

¹Pedersen, P. April 3, 2006. Soybean seed quality in 2006. Iowa State University Extension. Integrated Crop Management. <http://www.ipm.iastate.edu> (verified 4/6/2011).



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