

# AGRONOMIC Spotlight



## Considerations for Large Soybean Seed

Due to favorable conditions during in the 2009 growing season, soybean seeds in some areas may be larger than average. What does this mean for growers planning for the 2010 planting season?

### Germination and Growth

Small and large seeds of the same variety have the same genetic material; therefore, the same yield potential. While seed size is influenced partially by genetics, the environment during seed fill plays a larger role. Under most conditions, seed size does not affect germination and emergence. In some extreme situations, differences may be observed, but they are rare. For example, large seed may be able to survive a longer period of time prior to emergence under adverse conditions due to a larger reserve of energy. However, the larger reserve of energy can also be detrimental, as the increased size of the cotyledons requires more energy to be pulled above the ground. Additionally, larger seeds, which require more moisture for germination, could suffer from extremely dry soil moisture conditions. Given that these are extremes and do not normally occur, the optimum seeding depth for the majority of soybean seeds and environmental conditions is 1 to 1.5 inches.

### Seeding Rate

Seeding rate recommendations in some regions have changed in the past few years (Figure 1). Please note that these recommendations are from Iowa, and may differ in your geography. Even though yields may be maximized at higher seeding rates, growers may be able to better maximize profitability at more moderate seeding rates. The yield



**Under most conditions, seed size does not affect germination and emergence.**

potential at lower plant populations is due in part to better weed control options and the availability of better planters.

Historically, most soybean seed has been sold by bag weight. In a year with large seed, such as 2,200 seeds per pound, the number of bags required to plant the desired population will be higher than in years with 'normal' seed size, such as 3,000 seeds per pound (Figure 2). Genuity™ Roundup Ready 2 Yield® soybeans are being sold based on seed count, not bag weight, reducing the effect of variable seed size.

to pg. 2 ▶

**Figure 1. Decision tree on how to get a final stand of 100,000 plants per acre using a planter.**

- + Good seedbed ("tillage")
- + 1 to 1.5 inch planting depth
- + Relatively new planter (<5 years old)
- + Moderate planting speed (<6 mph)
- + Excellent seed quality

5 "+": The seeding rate should be 125,000 seeds per acre.  
4 "+": The seeding rate will be 140,000 seeds per acre.

Source: P. Pedersen, IA State Univ. 2007. *Decision Tree on How To Get To a Final Stand of 100,000 Plants per Acre Using a Planter?* <http://extension.agron.iastate.edu> (verified 2-10-10)

**Figure 2. Pounds of seed required per acre for various seed sizes and planting populations.**

Seeds per Pound	Planting Population (seeds per acre)				
	125,000	140,000	150,000	175,000	200,000
2,000	63	70	75	88	100
2,200	57	64	68	80	91
2,400	52	58	63	73	83
2,600	48	54	58	67	77
2,800	45	50	54	63	71
3,000	42	47	50	58	67
3,200	39	44	47	55	63

from previous page

## Considerations with Large Soybean Seed

### Adjusting Planting Equipment

Planters and drills should be calibrated to adjust for larger soybean seed size to help achieve accurate seeding rates. With larger seed, under seeding is a more likely problem than over seeding. While soybeans can often compensate for lower populations, the uniformity of the stand is still critical. To help achieve a stand with the desired population and uniformity, the planter should be adjusted according to the recommendations found in the operating manual for the specific planter being used. Often air planters, either vacuum or positive air flow planters, may require more pressure. Some planters may require a different disc or altered baffle settings. Again, please refer to the operating manual that directly relates to the planting equipment in your operation.

Planters and drills should be calibrated to adjust for larger soybean seed size to help achieve accurate seeding rates.



### Tips To Remember When Calibrating Planting Equipment:

1. Planting equipment should be calibrated for the seed size and seeding rate used. Planter settings should be adjusted for larger seed size.
2. The operator's manual should be referred to for planter calibration instructions and seeding rate charts with specific settings and seed sizes.
3. The seeding rate should be checked in the field by catching the seed coming from the meters when traveling a known distance and counting the number of seeds collected to determine the population.
4. Planters and drills should be calibrated on the basis of seeds per foot of row and never on the basis of pounds of seed per acre.

Remember that under most conditions, seed size does not affect germination and emergence. Also, planters and drills should be calibrated to adjust for seed size which can help achieve to accurate seeding rates. Most importantly, when determining what soybean product to plant, remember that product performance, placement, and good quality seed, not seed size, are the most important factors to consider.

Sources: P. Pedersen, IA State Univ. 2007. *Decision Tree on How To Get To a Final Stand of 100,000 Plants per Acre Using a Planter?*  
<http://extension.agron.iastate.edu> (verified 2-10-10)

B. Wiebold. *Soy Doc. Missouri Univ. Agron. Ext.* 2005.

Monsanto Company is a member of Excellence Through Stewardship® (ETS). Monsanto products are commercialized in accordance with ETS Product Launch Stewardship Guidance, and in compliance with Monsanto's Policy for Commercialization of Biotechnology-Derived Plant Products in Commodity Crops. This product has been approved for import into key export markets with functioning regulatory systems. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying position for this product. Excellence Through Stewardship® is a registered trademark of Biotechnology Industry Organization.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

**ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® brand agricultural herbicides. Roundup® brand agricultural herbicides will kill crops that are not tolerant to glyphosate. Genuity™, Roundup®, Roundup Ready®, Roundup Ready 2 Yield®, and Technology Development by Monsanto and Design(SM) are trademarks of Monsanto Technology LLC. ©2010 Monsanto Company. 02222010EJP