

## Investigating Lodging Mitigation Strategies for Soybean in Mississippi

2014

### Study Background

- In the Mississippi Delta, soybeans are planted using various row spacings and configurations.
- Planting dates typically range from late-March through June and seeding rates vary from 110,000 seeds per acre to more than 160,000 seeds per acre.
- Soybean varieties differ in their ability to resist lodging.
- Lodging tends to be worse on productive silt loam soils and exacerbated by wide row spacings, high populations, and May plantings.
- Reducing seeding rates, especially in wide row spacings, has often been used as a strategy to reduce lodging.

### Objective

- Evaluate the effects of planting date, seeding rate, row spacing, and variety on lodging and yield of soybeans grown in Mississippi on a productive silt loam soil.

### Study Description

- **Plot Layout:** On-farm strip trial
- **Location:** Leland, MS
- **Year:** 2014
- **Factors:**

Variety/Brand<sup>1</sup>:

P47T36R (Standability score = 8)

P49T80R (Standability score = 7)

Row Spacing and Configuration:

8-row 38 inch spacing

13-row 19 inch spacing with wheel skips

Seeding Rate:

100,000 seeds per acre

140,000 seeds per acre

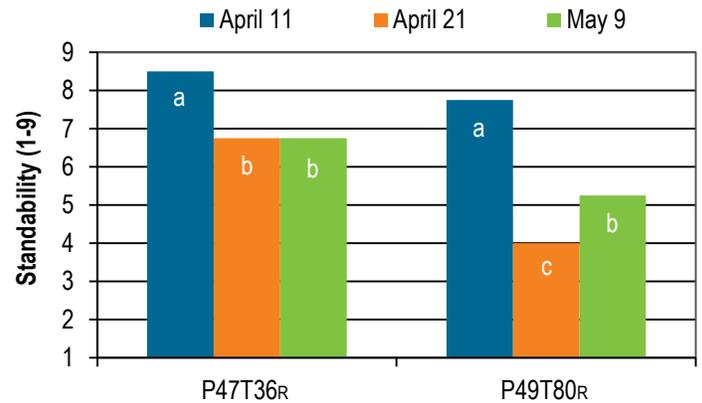
Planting Date:

April 11, 2014

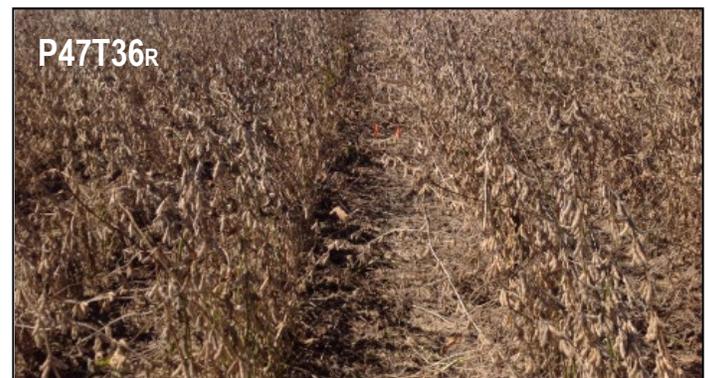
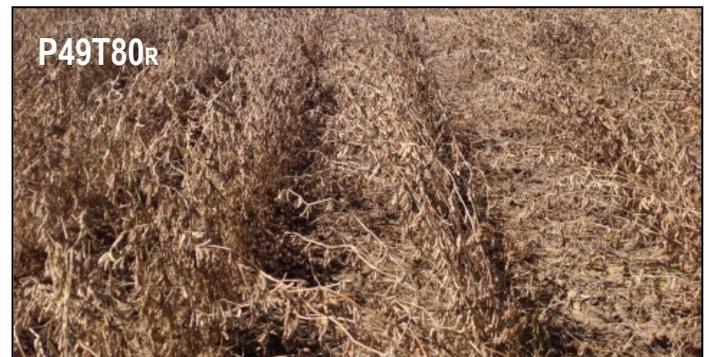
April 21, 2014

May 9, 2014

**Figure 1.** Effect of planting date and Pioneer® brand soybean on harvest standability near Leland, MS in 2014.\*



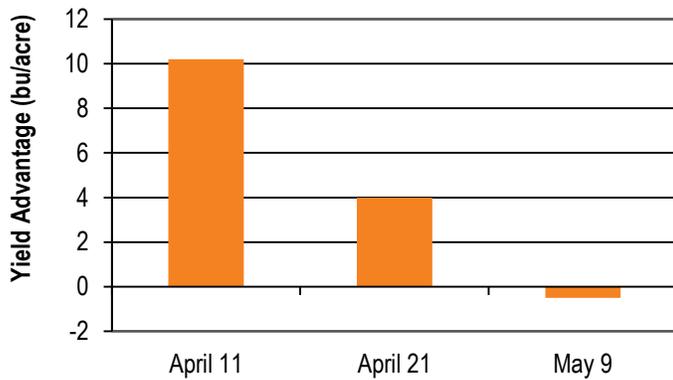
\*Means followed by the same letter within individual varieties are not significantly different based on Tukey's HSD test conducted at the alpha=0.05 level. Harvest standability score based on 1-9 scale where 1=completely lodged and 9=planted completely vertical. Means averaged across 2 seeding rates and 2 row spacings.



Side by side of comparison Pioneer® variety P49T80R (top) and P47T36R (bottom) grown in 40-inch rows in a 2014 Pioneer® GrowingPoint® agronomy research trial near Leland, MS.

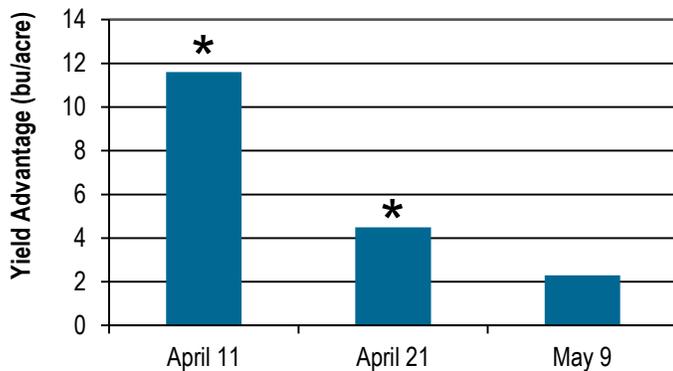
2014 data are based on average of all comparisons made in one location through Nov. 11, 2014. Multi-year and multi-location is a better predictor of future performance. Do not use these or any other data from a limited number of trials as a significant factor in product selection. Product responses are variable and subject to a variety of environmental, disease, and pest pressures. Individual results may vary.

**Figure 2.** Yield advantage of 19-inch row spacing over 38-inch row spacing by planting date for Pioneer® brand soybeans near Leland, MS in 2014.\*



\*Means averaged across 2 seeding rates and 2 varieties.

**Figure 3.** Yield advantage of 140,000 seeds per acre seeding rate over 100,000 seeds per acre seeding rate by planting date for Pioneer brand soybeans near Leland, MS in 2014.\*



\*An asterisk above a bar indicates a significant difference between seeding rates for individual planting dates based on Tukey's HSD test conducted at the alpha=0.05 level. Means averaged across 2 seeding rates and 2 varieties.



Side by side comparison plants sampled from narrow row spacing plots (left) and wide row plots (right) in a 2014 Pioneer® GrowingPoint® agronomy trial near Leland, MS.

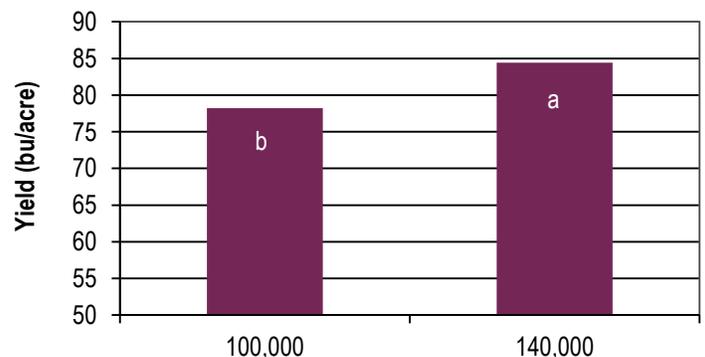


Soybeans struggling to emerge following soil crusting in a 2014 Pioneer® GrowingPoint® agronomy research trial near Leland, MS.

## Results

- Harvest standability was improved with the earliest planting for both varieties (Figure 1). Standability of Pioneer® variety P47T36R was better than Pioneer variety P49T80R at later planting dates (analysis not shown).
- Reducing seeding rate did not improve harvest standability (data not shown).
- Narrow rows were most beneficial with early plantings (Figure 2). The yield benefit of narrow rows was 10, 4, and -1 bu/acre for April 11, April 21, and May 9 planting dates, respectively.
- Overall, narrow rows yielded an average of 3 bu/acre better than wide rows (data not presented).
- Higher seeding rates were more beneficial with earlier planting dates (Figure 3). The yield benefit associated with increased seeding rates was 12, 5, and 2 bu/acre for April 11, April 21, and May 9 plantings, respectively.
- Increasing the seeding rate from 100,000 seeds per acre to 140,000 seeds per acre increased yields 6 bu/acre on average (Figure 4). Packing rains shortly after April plantings resulted in crusting that reduced stands. Higher seeding rates likely aided in stand establishment.

**Figure 4.** Effect of seeding rate on yield of Pioneer brand soybeans near Leland, MS in 2014.\*



\*Means followed by the same letter are not significantly different based on Tukey's HSD test conducted at the alpha=0.05 level. Means averaged across 2 row spacings, 2 varieties, and 3 planting dates.



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\* All Pioneer products are varieties unless designated with LL, in which case some are brands. Pioneer® brand products are sold subject to the terms and conditions of sale which are part of the labeling and purchase documents.