

# SOYBEAN PRODUCTION SYSTEMS

## Profitability of Cutting Seeding Rates: Fact or Fiction

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- In most situations a uniform stand of 100,000 plants per acre will yield 100% yield potential in drilled soybean. Rowed beans require a minimum of 80,000 plants per acre.

Seed input costs coupled with tighter profit margins are forcing growers to reconsider their soybean seeding rates. In a recent soybean production survey growers were asked to list their current row spacing and soybean seeding rates (Table 1). The results of this survey indicated that 57% of Indiana soybean growers are planting in rows spaced  $\leq 10$  inches apart, 31% of growers are between 11 and 20 inches, and 12% of growers are  $\geq 21$  inches. Within each row spacing category, growers may be over-planting as much as 6% ( $\leq 10$  inches), 24% (between 11 and 20 inches), or 33% ( $\geq 21$  inches). These results suggest that growers are relatively close to the Purdue University recommendations for row spacings  $\leq 10$  inches; however there is less confidence in the seeding rate recommendations in rows spaced  $\geq 11$  inches. Those growers at  $\geq 11$  inches would benefit most by re-evaluating their current seeding rate practices.

To continue to refine Purdue University seeding rate recommendations, research was conducted at six locations across Indiana in 2005. Our results indicate that if growers have a relatively uniform soybean stand of 100,000 plants per acre or greater, yield potential is 100% in full season soybeans (Table 2). This data supports findings from research done several years ago. To achieve a more uniform soybean stand under reduced seeding rates it may prove cost effective to use a fungicide seed treatment. Decades of Purdue University data has shown no effect of soybean seed treatments on grain yield; however we have often seen a significant increase in stand. The key is to keep final soybean stands above 100,000 plants per acre. Growers should run the numbers for their farm to determine if it is more cost effective to plant more seeds or utilize a seed treatment.

Table 1. Comparison between Purdue University soybean seeding rate recommendations and actual grower practices (1330 responses).

Row spacing (inches)	Actual seeding rate (seeds per acre)	Purdue recommendation (90% germination)	Percent of respondents
$\geq 21$	155,000	116,200	12%
$11 \geq x \leq 20$	180,000	145,200	31%
$\leq 10$	198,000	186,700	57%



Table 2. Impact of plant population (7.5 inch rows) on soybean grain yield.

Target stand <sup>3</sup>	Northern locations <sup>1</sup>		Southern locations <sup>2</sup>	
	Actual stand	Yield (bu/a) <sup>4</sup>	Actual stand	Yield (bu/a)
50,000	46,100	66.1 c	50,600	78.8 b
100,000	94,000	72.6 b	101,200	87.7 a
150,000	141,300	75.7 ab	144,300	91.2 a
200,000	170,600	78.8 a	208,000	91.1 a
250,000	209,200	79.0 a	261,507	92.6 a

<sup>1</sup>Purdue University Agricultural Centers: PPAC, TPAC, NEPAC, and Davis.

<sup>2</sup>Purdue University Agricultural Centers: SEPAC and SWPAC.

<sup>3</sup>Plots were seeded assuming 90% germination.

<sup>4</sup>Within a column of yield data, there is a 95% probability that means followed by a letter in common are not statistically different.



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