

Soybean Row Spacing and Seeding Rate

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Introduction

Recommendations for soybean seeding rates have been targeted between 125,000 and 140,000 seeds/acre with the objective of targeting a final plant population of at least 100,000 plants/acre. It is understood a 15-in. row spacing has approximately 4.5 bushels/acre higher yields than 30-in. row spacing. Even though this advantage has been identified, the shift to 15-in. rows has not occurred. In recent years, 20-in. row spacing planters have become available. Therefore, this trial was designed to begin to look at seeding rate advantages in 20-in. rows compared with 15-in. and 30-in. row spacing.

Materials and Methods

This set of trials was conducted in 2017 using two Asgrow varieties (AG20X7 and AG21X7) in one trial and two Pioneer varieties (P24T93 and P25A70) in the second trial. These trials were not designed to compare brand genetics. Each trial was set up as a randomized complete block design. Seeding rates used were 120,000, 150,000, and 180,000 seeds/acre at a 15-in., 20-in., and 30-in. row spacing for each variety.

Results and Discussion

In the Asgrow trial, AG20X7 has a significantly greater yield than AG21X7 by three bushels/acre (Table 1). No other main effects were found to be significant. Additionally, no interactions were found to be significant.

In the Pioneer trial, the main effects of variety, seeding rate, and row spacing were found to be significantly different. P24T93 yielded 1.8 bushels/acre more than P25A70. The 180,000 seeding rate was significantly higher yielding than both 120,000 and 150,000 seeds/acre. The 30-in. row spacing was significantly higher yielding compared with the 15-in. and 20-in. row spacing.

The interaction between row spacing and variety also was significant. In this interaction, the 30-in. row spacing was significantly greater than the other row spacing for P25A70. However, for P24T93 there was no row spacing response. This suggests there is a varietal response to row spacing.

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Table 1. Soybean grain yields for the Asgrow variety x seeding rate x row spacing trial in 2017.¹

	AG20X7	AG21X7	120,000 seeds/ac	150,000 seeds/ac	180,000 seeds/ac	15-in. row	20-in. row	30-in. row
grain yield (bushels/acre)								
AG20X7	<u>65.2</u>							
AG21X7		62.2						
	P = 0.0004							
120,000 seeds/ac	64.3	62.6	63.5					
150,000 seeds/ac	65.4	62.3		63.9				
180,000 seeds/ac	65.8	61.6			63.7			
	P = 0.4157		P = 0.9155					
15-in. row	65.8	62.8	63.7	64.5	64.4	64.2		
20-in. row	64.3	61.1	62.6	62.7	62.8		62.7	
30-in. row	65.5	62.6	64.0	64.3	63.9			64.1
	P = 0.9721		P = 0.9954			P = 0.2060		

¹P-values within boxes are used to compare yields of the main effects or interaction effects within each box. Underlined yields are significantly higher at P < 0.05.

Table 2. Soybean grain yields for the Pioneer variety x seeding rate x row spacing trial in 2017.¹

	P24T93	P25A70	120,000 seeds/ac	150,000 seeds/ac	180,000 seeds/ac	15-in. row	20-in. row	30-in. row
grain yield (bu/ac)								
P24T93	<u>65.6</u>							
P25A70		63.8						
	P < 0.0001							
120,000 seeds/ac	64.4	63.3	63.9					
150,000 seeds/ac	65.6	63.3		64.4				
180,000 seeds/ac	66.8	64.7			<u>65.8</u>			
	P = 0.2494		P = 0.0001					
15-in. row	<u>65.8</u>	63.2	63.5	64.3	65.7	64.5		
20-in. row	<u>65.2</u>	61.9	62.4	63.0	65.2		63.5	
30-in. row	<u>65.8</u>	<u>66.3</u>	65.7	66.0	66.4			<u>66.1</u>
	P < 0.0001		P = 0.2465			P < 0.0001		

¹P-values within boxes are used to compare yields of the main effects or interaction effects within each box. Underlined yields are significantly higher at P < 0.05.