

Soybean Variety by 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. Also, it is well known a 15-in. row spacing has approximately 4.5 bushel/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 look at seeding rate advantages in 20-in. rows compared with that of 15-in. and 30-in. row spacing.

Materials and Methods

This set of trials was conducted in 2019 using Asgrow AG20X9 and AG21X9 in one trial and Pioneer P23A32X and P27A17X in the second trial. These trials were not designed to

compare brand genetics. Each trial was set up as a randomized complete block design. The seeding rates used were 90,000, 120,000, and 150,000 seeds/acre at a 15-in., 20-in., and 30-in. row spacing for each variety.

Results and Discussion

In the Bayer trial (Table 1), the main effects of variety and seeding rate were not significantly different; however, the 15-in. row spacing yielded more than both the 20-in. and 30-in. row spacing. The two-way interaction of variety, seeding rate, and row spacing were not significantly different.

In the Corteva trial (Table 2), the main effects of seeding rate and row spacing were not significantly different. However, variety P23A32X yielded 3.6 bushels/acre less than P27A17X. The two-way interactions were not significantly different.

Acknowledgements

This project would not have been possible without the seed donations from Corteva and Bayer. Sorensen Equipment and Kinze Manufacturing provided planter units at cost to build a 20-in. planter for the trials.

Table 1. Soybean grain yields for the Bayer variety x seeding rate x row spacing trial, ISU Northwest Research Farm.¹

	AG20x9	AG21X9	90,000 seeds/ac	120,000 seeds/ac	150,000 seeds/ac	15-in. row	20-in. row	30-in. row
grain yield (bushels/ac)								
AG20X9	73.3							
AG21X9	74.6							
	P = 0.0995							
90,000 seeds/ac	72.5	73.6	73.1					
120,000 seeds/ac	73.2	74.7	73.9					
150,000 seeds/ac	74.2	75.3	74.7					
	P = 0.9731		P = 0.2092					
15-in. row	75.1	76.1	74.2	75.6	76.9	75.6 A		
20-in. row	72.3	73.6	72.2	73.4	73.3	72.9 B		
30-in. row	72.5	74.0	72.9	72.9	74.1	73.3 B		
	P = 0.9666		P = 0.8986			P = 0.0138		

¹P-values within boxes are used to compare yields of the main effects or interaction effects within each box. Yields that are significantly different at $P < 0.05$ have different letters following the yield values within each box.

Table 2. Soybean grain yields for the Corteva variety x seeding rate x row spacing trial, ISU Northwest Research Farm.¹

	P23A32X	P27A17X	90,000 seeds/ac	120,000 seeds/ac	150,000 seeds/ac	15-in. row	20-in. row	30-in. row
grain yield (bushels/ac)								
P23A32X	68.6 B							
P27A17X	72.2 A							
	P = 0.0007							
90,000 seeds/ac	68.1	71.4	69.8					
120,000 seeds/ac	66.8	73.4	70.1					
150,000 seeds/ac	70.9	71.8	71.4					
	P = 0.0642		P = 0.3719					
15-in. row	67.7	72.2	70.2	68.1	71.6	70.0		
20-in. row	68.6	71.9	68.5	71.1	71.2	70.2		
30-in. row	69.5	72.5	70.6	71.0	71.3	71.0		
	P = 0.8063		P = 0.5288			P = 0.6893		

¹P-values within boxes are used to compare yields of the main effects or interaction effects within each box. Yields that are significantly different at $P < 0.05$ have different letters following the yield values within each box.