

Soybean Variety by Row Spacing and Seeding Rate

RFR-A1848

Terry Tuttle, farm superintendent
Mark Licht, assistant professor
Emily Wright, research associate
Department of Agronomy

Introduction

Recommendations for soybean seeding rates have been targeted between 125,000 and 140,000 seeds/acre with the objective of 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 2018 using an Asgrow AG21X7 and Channel 1818R2X variety in one trial and two Pioneer hybrids (P22T73R and P25A70R) 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 Monsanto trial (Table 1), Asgrow AG21X7 had significantly greater yield than the Channel 1818R2X by 2.6 bushels/acre. The seeding rate and row spacing main effects were not significant. Additionally, no interactions of main effects were found to be significant.

In the Pioneer trial (Table 2), the main effects of variety and seeding rate were found to be significantly different. P22T73R yielded 2.9 bushel/acre more than P25A70R. And the 150,000 seeding rate was significantly higher yielding than both 120,000 and 180,000 seeds/acre. The row spacing and all interactions of main effects were not significant.

Acknowledgements

This project would not have been possible without seed donations from DuPont Pioneer and Monsanto. 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 Monsanto variety x seeding rate x row spacing trial in 2018.¹

	Asgrow AG21X7	Channel 1818R2X	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)								
Asgrow AG21X7 Channel 1818R2X	65.8	<u>68.4</u>	P = 0.0018					
120,000 seeds/ac	66.4	68.6	67.5					
150,000 seeds/ac	66.2	69.6	67.9					
180,000 seeds/ac	64.7	66.9			65.8			
P = 0.7853								
15-in. row	66.1	68.5	68.4	68.7	64.8	67.5		
20-in. row	65.3	67.8	66.5	67.9	65.2	66.5		
30-in. row	66.0	68.8	67.7	67.1	67.4			67.4
P = 0.9807								
P = 0.3963								
P = 0.6210								

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 2018.¹

	P22T73R	P25A70R	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)								
P22T73R P25A70R	<u>71.1</u>	68.2	P < 0.0001					
120,000 seeds/ac	69.9	68.0	69.0					
150,000 seeds/ac	72.6	68.8	<u>70.7</u>					
180,000 seeds/ac	70.8	67.7			69.2			
P = 0.3578								
P = 0.0371								
15-in. row	71.1	68.7	68.8	70.6	70.3	69.9		
20-in. row	70.1	67.5	68.3	70.0	68.1	68.8		
30-in. row	72.2	68.3	69.9	71.4	69.3			70.2
P = 0.4992								
P = 0.7118								
P = 0.1102								

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.