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Mark Licht

Iowa State University, lichtma@iastate.edu

Chad Huffman

Iowa State University

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Soybean Row Spacing and Seeding Rate

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Mark Licht, assistant professor and extension cropping systems specialist
Department of Agronomy
Chad Huffman, interim farm superintendent

Introduction

Recommendations for soybean seeding rates have been targeted between 125,000 and 140,000 seeds/acre with the objective of achieving a final plant population of at least 100,000 plants/acre. It is well understood 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 15- and 30-in. row spacing.

Materials and Methods

This set of trials was conducted beginning in 2016 using two Asgrow varieties (AG2136 and AG2336) in trial one and two Pioneer hybrids (P24T93 and P25T51) in trial two. 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 120,000, 150,000, and 180,000 seeds/acre at a 15-, 20-, and 30-in. row spacing for each variety.

Results and Discussion

In both trials, the main effects of genetics, seeding rate, and row spacing, as well as their interactions, were not statistically significant.

In trial one, the 120,000 seeds/acre rate yielded 75.6 bushels/acre compared with 75.7 bushels/acre at 150,000 seeds/acre and 75.1 seeds/acre (Table 1). The 15-in. row spacing yield was 75.8 bushels/acre compared with 75.7 at 20-in. and 75.0 at 30-in. row spacing.

In trial two, the 120,000 seeds/acre rate yielded 78.8 bushels/acre compared with 77.7 bushels/acre at 150,000 seeds/acre and 78.3 seeds/acre (Table 2). The 15-in. row spacing yield was 79.0 bushels/acre compared with 78.4 at 20-in. and 77.4 at 30-in. row spacing.

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Table 1. Soybean grain yields for trial one (Asgrow), variety × seeding rate × row spacing, 2016.¹

	AG2136	AG2336	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)								
AG2136	75.6							
AG2336	75.3							
	P = 0.6159							
120,000 seeds/ac	75.9	75.4	75.6					
150,000 seeds/ac	75.9	75.6	75.7					
180,000 seeds/ac	75.2	75.0	75.1					
	P = 0.9726		P = 0.6993					
15-in. row	75.8	75.9	75.6	75.8	76.0	75.8		
20-in. row	75.7	75.7	75.5	76.6	75.0	75.7		
30-in. row	75.6	74.4	75.8	74.9	74.3	75.0		
	P = 0.7011		P = 0.7838			P = 0.5649		

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 trial two (Pioneer), variety × seeding rate × row spacing, 2016.¹

	P24T93	P25T51	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)								
P24T93	78.5							
P25T51	78.0							
	P = 0.4076							
120,000 seeds/ac	79.1	78.5	78.8					
150,000 seeds/ac	77.8	77.6	77.7					
180,000 seeds/ac	78.6	78.0	78.3					
	P = 0.9657		P = 0.2405					
15-in. row	79.3	78.6	80.1	78.0	78.8	79.0		
20-in. row	78.4	78.3	78.3	77.8	78.9	78.4		
30-in. row	77.7	77.2	78.0	77.2	77.1	77.4		
	P = 0.9253		P = 0.7135			P = 0.0646		

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.