

On-Farm Soybean Date of Planting Demonstration Trials

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Introduction

Timely soybean planting and choosing soybean varieties of the appropriate relative maturity is important to optimize soybean yields. Soybean management systems that include a foliar fungicide can improve soybean yields if foliar diseases are present. The objective of these trials was to investigate the effect of planting date, soybean variety, and fungicide use on soybean yield.

Materials and Methods

In 2019, 11 trials investigated the effects of planting date and soybean variety on soybean yield (Table 1). In six trials, an early- and a late-maturity soybean were planted on an early- and late-planting date (Table 2). In one trial, three different varieties (an early-, mid-, and late-maturity) were planted early and late. In four trials, soybean planted on an early-planting date was compared with soybean planted on a late-planting date. In all trials, except Trial 3, Delaro[®] fungicide at 8-11 oz/acre was applied at R3-R4 to the early-planted soybean. No fungicide was applied to the late-planted soybean in any of the trials. All of the trials were conducted on research farms. Strips were arranged in a randomized complete block design with at least three replications per treatment. Strip length and

width varied from field-to-field depending on field and equipment size. All plots were machine harvested for grain yield.

Results and Discussion

In Trials 1 and 2, there was no difference in yield among the two planting dates and two varieties at $P = 0.05$. In Trial 3, there was no difference in yield between the two soybean varieties, but the early-planted soybean with fungicide yielded more than the late-planted soybean without fungicide ($P = 0.03$). In Trial 4, there was no difference in yield between the early-planted soybean with a fungicide versus the late-planted soybean without the fungicide. In Trials 5, 6, and 10, the early-planted soybean with a fungicide yielded more than the late-planted soybean without a fungicide ($P \leq 0.08$). The yield difference may have been due to the fungicide, variety, or both. In Trial 7, the late-maturity variety yielded more than the early- and mid-maturity varieties on both planting dates. There was no difference in yield between the two planting dates. In Trial 8, the late-maturity variety planted early with fungicide yielded more than the early-maturity variety planted late without fungicide. In Trial 9, the late-maturity variety planted early with fungicide yielded more than the late-maturity variety planted late without fungicide. In Trial 11, the late-maturity variety planted early with fungicide yielded more than the early-maturity planted early with fungicide, and both yielded more than the early-maturity variety planted late without fungicide.

These trials suggest soybean planted in late April or early May may tend to yield more than later plantings. Late-maturity, full-season varieties tend to yield more than shorter season varieties. The fungicide may or may not have increased the yield of the early planted soybeans.

NOTE: The results presented are from replicated demonstration trials. Statistics are used to detect differences at a location and should not be interpreted beyond the single location.

Table 1. Variety, row spacing, planting date, planting population, previous crop, and tillage practices in the 2019 date of planting trials on soybean.

Exp. no.	Trial	County	Variety	Row spacing (in.)	Planting dates	Planting population (seeds/ac)	Previous crop	Tillage
190001	1	Lucas	Pioneer P31A22X Pioneer P37A27X	30	4/22/19 & 6/3/19	140,000	Corn	No-till
190125	2	O'Brien	Pioneer P23A32X & Pioneer P28A42X	30	5/7/19 & 6/3/19	140,000	Corn	Conventional
190206	3	Buena Vista	ISU IA 1022 & ISU IA 2106	30	5/3/19 & 6/4/19	140,000	Corn	Mulch till
190603	4	Pottawattamie	BASF 2601	30	4/15/19 & 5/6/19	143,000	Corn	No-till
190605	5	Adair	BASF 3548	30	4/15/19 & 5/6/19	143,000	Corn	No-till
190606	6	Adair	BASF 2601	30	4/15/19 & 5/6/19	143,000	Corn	No-till
190310	7	Monona	LG C1870R LG C2441R LG 3321R2	30	5/3/19 & 5/17/19	140,000	Corn	No-till
190410	8	Hancock	Nutech 20N03E Nutech 25NO3E	30	5/6/19 & 6/3/19	140,000	Corn	Conventional
190503	9	Boone	Pioneer P24A99X Pioneer P29A25X	30	4/26/19 & 5/6/19	140,000	Corn	Fall disk rip spring field cultivate
190602	10	Pottawattamie	BASF 3548	30	4/15/19 & 5/6/19	143,000	Corn	No-till
190815	11	Floyd	Pioneer P18A98X Pioneer P24A80X	30	5/7/19 & 5/31/19	140,000	Corn	No-till

Table 2. Yields for on-farm soybean date of planting trials in 2019.

Exp. no.	Trial	Treatment	Yield (bu/ac) ^a	P-value ^b
189001	1	Pioneer 31A22X (early maturity) planted 4/22/19	79 a	0.08
		Pioneer 37A27X (late maturity) planted 4/22/19	85 a	
		Pioneer 31A22X (early maturity) planted 6/3/19	70 a	
		Pioneer 37A27X (late maturity) planted 6/3/19	80 a	
190125	2	Pioneer P23A32X (early maturity) planted 5/7/19	65 a	0.06
		Pioneer P28A42X (late maturity) planted 5/7/19	67 a	
		Pioneer P28A42X (late maturity) planted 6/3/19	66 a	
		Pioneer P23A32X (early maturity) planted 6/3/19	63 a	
190206	3	IA 1022 (early maturity) planted 5/3/19	55 a	0.03
		IA 2106 (late maturity) planted 5/3/19	54 a	
		IA 2106 (late maturity) planted 6/4/19	47 b	
		IA 1022 (early maturity) planted 6/4/19	45 b	
190603	4	Planted 4/15/19	63 a	0.41
		Planted 5/6/19	62 a	
190605	5	Planted 4/15/19	77 a	<0.01
		Planted 5/6/19	67 b	
190606	6	Planted 4/15/19	76 a	<0.01
		Planted 5/6/19	63 b	
190310	7	LG3321R2 (late maturity) planted 5/3/19	59 a	<0.01
		LGC187OR (early maturity) planted 5/3/19	52 b	
		LGC2441R (mid maturity) planted 5/3/19	51 b	
		LG3321R2 (late maturity) planted 5/17/19	59 a	
		LGC2441R (mid maturity) planted 5/17/19	50 b	
		LGC187OR (early maturity) planted 5/17/19	51 b	
190410	8	NuTech 20N03E (early maturity) planted 5/6/19	63 ab	0.02
		NuTech 25N03E (late maturity) planted 5/6/19	69 a	
		NuTech 20N03E (early maturity) planted 6/3/19	59 b	
		NuTech 25N03E (late maturity) planted 6/3/19	65 ab	
190503	9	Pioneer P24A99X (early maturity) planted 4/26/19	56 ab	0.01
		Pioneer P29A25X (late maturity) planted 4/26/19	57 a	
		Pioneer P24A99X (early maturity) planted 5/6/19	51 bc	
		Pioneer P29A25X (late maturity) planted 5/6/19	48 c	
190602	10	Planted on 4/15/19.	63 a	0.08
		Planted on 5/6/19.	56 a	
190815	11	Pioneer P18A98X (early maturity) planted 5/7/19	61 b	<0.01
		Pioneer P24A80X (late maturity) planted 5/7/19	65 a	
		Pioneer P18A98X (early maturity) planted 5/31/19	58 c	
		Pioneer P24A80X (late maturity) planted 5/31/19	63 ab	

^aValues denoted with the same letter within a trial are not statistically different at the significance level of 0.05.

^bP-value = the calculated probability that the difference in yields can be attributed to the treatments and not other factors. For example, if a trial has a P-value of 0.10, then we are 90 percent confident the yield differences are in response to treatments. For P = 0.05, we would be 95 percent confident.