On-Farm Demonstration Trial: Crop Production Studies Soybean Date of Planting Trials

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Objective

Determine the effects of soybean maturity and planting date on yields to define best management practices.

Introduction

Timely soybean planting and choosing soybean varieties of the appropriate relative maturity is important to optimize soybean yields. As soybean genetics improve, farmers are attempting to plant soybean at earlier timing and using different maturity groups for their areas. 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 maturity, and fungicide use on soybean yield.

Key Takeaways

- Trial 210001 displayed statistically significant differences based on planting date with the early planting date yielding higher.
- Four trials (210414, 210505, 210601, 210604) all displayed significant differences between the varieties tested, but not with planting dates.
- Three trials (210104, 210701, 210801) had no significant differences between treatments.
- Overall conclusion for best management practices of maturity and planting date is not possible.
- 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.

Materials and Methods

Crop Year–2021

Trial	210001	210104	210301	210414	210505	210601	210604	210701	210801
Trial County	Lucas	O'Brien	Monona	Hancock	Boone	Pottawattamie	Adair	Washington	Chickasaw
Soil Type	Haig, Grundy	310B, 91	Monona, Ida	Canisteo, Webster	Nicollet, Clarion	Marshall	Macksburg	Mahaska	Kenyon, Floyd, Clyde
Previous Crop	Corn	Corn	Corn/Rye CC	Corn	Corn	Corn	Corn	Corn	Corn
Tillage	Conventional	Conventional	No-Till	Conventional	Conventional	No-Till	No-Till	No-Till	No-Till
Current Crop	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean	Soybean
Hybrid–Variety Number	P31A22X P37A27X	P23A15X P28A42X	TP18E9 TP25E8 TP33E8	20N04E 26N06E	P20T64E P26T23E	CZ2501 GTLL CZ3131 GTLL	CZ2706 GTLL CZ3099 GTLL	Osage 2025E Arthur 2230E	P18A98X P25A04X
Hybrid–Variety Company	Pioneer Corteva	Pioneer Corteva	Titan Pro	NuTech	Pioneer Corteva	Credenz	Credenz	Mershman	Pioneer Corteva
Row Spacing	30-in.	30-in.	30-in.	30-in.	30-in	30-in	30-in	30-in	30-in
Seeding Rate	140,000/ac.	140,000/ac.	140,000/ac.	140,000/ac.	140,000/ac.	140,000/ac.	140,000/ac.	140,000/ac.	182,000/ac.
Planting Date	April 21 June 1	April 22 May 2	May 6 May 19	April 23 May 11	May 6 May 25	April 26 May 12	April 29 May 13	April 26 May 12	April 13 May 13
Harvest Date	October 18	November 1	October 12	September 28	September 29	October 18	September 30	October 13	October 18
Fungicide	Miravas Neo 18 oz./ac.	Miravas Neo 20.8 oz./ac.		Miravas Neo 13.7 oz./ac.		Miravas Neo 13.7 oz./ac.	Miravas Neo 13.7 oz./ac.	Miravas Neo 13.7 oz./ac.	Miravas Neo 13.7 oz./ac.
Experimental Type	On-Farm Demo	On-Farm Demo	On-Farm Demo	On-Farm Demo	On-Farm Demo	On-Farm Demo	On-Farm Demo	On-Farm Demo	On-Farm Demo
Replications	4	3	4	3	4	3	3	4	4

Results

Trial Number	Variety	Planting Date	Maturity	Fungicide	Yield (bu./ac.)[a]	P-value[b]
210001	P31A22X	4/21/2021	3.1	No	75 b	<0.01
	P31A22X	6/1/2021	3.1	No	63 c	
	P37A27X	4/21/2021	3.7	No	82 a	
	P37A27X	6/1/2021	3.7	No	65 c	
	P31A22X	4/21/2021	3.1	Yes	87 ab	0.01
	P31A22X	6/1/2021	3.1	Yes	71 c	
	P37A27X	4/21/2021	3.7	Yes	95 a	
	P37A27X	6/1/2021	3.7	Yes	78 bc	
210104	P23A15X	4/22/2021	2.3	Yes	73 a	0.49
	P23A15X	5/2/2021	2.3	Yes	73 a	
	P28A42X	4/22/2021	2.8	Yes	75 a	
	P28A42X	5/2/2021	2.8	Yes	75 a	
210301	TP18E9	5/6/2021	1.8	No	65 d	<0.01
	TP18E9	5/19/2021	1.8	No	68 cd	
	TP25E8	5/6/2021	2.5	No	74 ab	
	TP25E8	5/19/2021	2.5	No	73 bc	
	TP33E8	5/6/2021	3.3	No	79 a	
	TP33E8	5/19/2021	3.3	No	75 ab	
210414	20N04E	4/23/2021	2.0	No	66 b	<0.01
	20N04E	5/11/2021	2.0	No	66 b	
	26N06E	4/23/2021	2.6	No	77 a	
	26N06E	5/11/2021	2.6	No	79 a	
	20N04E	4/23/2021	2.0	Yes	66 b	<0.01
	20N04E	5/11/2021	2.0	Yes	70 b	
	26N06E	4/23/2021	2.6	Yes	84 a	
	26N06E	5/11/2021	2.6	Yes	84 a	
210505	P20T64E	5/6/2021	1.9	No	60 b	<0.01
	P20T64E	5/25/2021	1.9	No	66 b	
	P26T23E	5/6/2021	2.6	No	82 a	
	P26T23E	5/25/2021	2.6	No	80 a	
210601	CZ2501 GTLL	4/26/2021	2.5	Yes	83 b	<0.01
	CZ2501 GTLL	5/12/2021	2.5	Yes	85 b	
	CZ3131 GTLL	4/26/2021	3.1	Yes	108 a	
	CZ3131 GTLL	5/12/2021	3.1	Yes	100 a	
210604	CZ2709 GTLL	4/29/2021	2.7	Yes	59 b	0.02
	CZ2709 GTLL	5/13/2021	2.7	Yes	61 b	
	CZ3099 GTLL	4/29/2021	3.1	Yes	77 a	
	CZ3099 GTLL	5/13/2021	3.1	Yes	64 ab	
210701	Osage 2025E	4/26/2021	2.5	No	73 a	0.31
	Osage 2025E	5/12/2021	2.5	No	70 a	
	Arthur 2230E	4/26/2021	3.0	No	74 a	
	Arthur 2230E	5/12/2021	3.0	No	71 a	
	Osage 2025E	4/26/2021	2.5	Yes	72 a	0.60
	Osage 2025E	5/12/2021	2.5	Yes	69 a	
	Arthur 2230E	4/26/2021	3.0	Yes	70 a	
	Arthur 2230E	5/12/2021	3.0	Yes	67 a	
210801	P18A98X	4/13/2021	1.8	No	58 a	0.84
	P18A98X	5/13/2021	1.8	No	59 a	
	P25A04X	4/13/2021	2.5	No	62 a	
	P25A04X	5/13/2021	2.5	No	60 a	
	P18A98X	4/13/2021	1.8	Yes	56 a	0.17
	P18A98X	5/13/2021	1.8	Yes	57 a	
	P25A04X	4/13/2021	2.5	Yes	61 a	
	P25A04X	5/13/2021	2.5	Yes	58 a	

[a]Values denoted with the same letter within a trial are not statistically different at the significance level of 0.10.
[b]P-value = the calculated probability that the difference in yields can be attributed to the treatments and no other factors. For example, if a trial has a P-value of 0.10, there is 90% confidence the yield differences are in response to treatments. This is consistent for demonstration trials.