

# Illinois Soybean Planting Date Management

## 2022 Variety Yield Report

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Crop  
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We examined multiple soybean varieties and management practices across different planting dates to help identify which combinations of seed selection and agronomic management are best suited to optimize soybean yield based on the date soybean is planted.

## Research Approach

Sixteen different soybean varieties (equally represented by Asgrow and Golden Harvest brands) with four different management practices (none, preplant fertility, R3 foliar protection, or preplant fertility + R3 foliar protection) and two row spacings (20 or 30 inches) were replicated across four different planting dates. This approach allows for a comprehensive screening for optimizing seed selection and management practices to achieve highest yield potential based on the date planted.

## Trial Implementation

The experimental plots were planted using a precision plot planter (SeedPro 360, ALMACO). They were sown in replicated blocks on a single field on 23 April, 9 May, 31 May, and 15 June at Champaign, IL (40°2'38"N, 88°13'47"W) (Figure 1). Plots were 16 feet in length and two rows in width. For weed control, pre-plant applications of Warrant Ultra (Bayer) (60 oz/acre) were made on 19 April. In-season weed control was applied 7 June 2022 to all plots with Zidua SC (BASF) (4 oz per acre), FusiladeDX (Syngenta) (8 oz per acre), Interline (UPL) (36 oz per acre), and Roundup PowerMAX 3 (Bayer) (30 oz per acre). Weed escapes were removed by hand to prevent influence of weed pressure on yields across the various planting dates.

## How Varieties Were Tested

The 16 commercial varieties are listed in Table 1 and were assessed for their responses to the different levels of agronomic management across four planting dates (Table 2). Varieties were grown in two row spacing arrangements: 30 inches between rows or 20 inches. Phosphorus (P) and sulfur (S) fertility was achieved by applying 150 pounds/acre of MicroEssentials S10 (The Mosaic Co.) (12-40-0-10S) (18 lbs N, 60 lbs P<sub>2</sub>O<sub>5</sub>, and 15 lbs S per acre) broadcasted

(unincorporated) at planting for each respective planting date. Foliar protection (fungicide and insecticide) was achieved by applying Miravis Top (13.7 oz per acre) and Endigo ZC (4 oz per acre) (Syngenta) with Petrichor (4 oz per acre) (CHS Inc.) as the adjuvant at the R3 growth stage (beginning pod development) on 27 July (planting dates 1 and 2), 11 August (planting date 3), and 18 August (planting date 4). Each variety was planted at 140,000 seeds per acre. The inherent soil fertility levels (Table 3) are representative of central Illinois, and the 2022 precipitation and temperature data are listed in Table 4 .

## Data Collection and Analysis

Plant stand was assessed by counting all plants in a meter from a uniform section of a single row in each plot. Plots were harvested on 9 October (planting date 1), 16 October (planting date 2), 22 October (planting date 3), and 23 October (planting date 4). Grain yield is reported as bushels per acre at 13% moisture across all planting dates and managements. Treatments were arranged in a split-split-split-plot experimental design, with planting date as the main plot (n=4), row spacing (n=2) as the sub plot, variety (n=16) as sub-sub plot, and fertility (n=2) and/or foliar protection (n=2) applications randomized within variety. This design optimizes the inference of variety response to the agronomic management factors by blocking managements within each respective variety (Figure 1). Statistical analysis was performed using a linear mixed model approach with PROC MIXED in SAS (version 9.4; SAS Institute, Cary, NC), and means were separated using Fisher's protected LSD test at the 0.10 level of significance. The normality of residuals was assessed using PROC UNIVARIATE, and the assumption of homoscedasticity was tested using the Brown-Forsythe modification of the Levene Test in PROC GLM.

## Growing Conditions

The growing season started wet with frequent precipitation events during April and early May, resulting in saturated soils and delayed planting for the county. The month of May ended with near-normal precipitation while June and July were dry (3.9 and 2.0 inches below average, respectively), resulting in a moderate drought during the vegetative and early reproductive growth stages (Table 4). August, however, received adequate rainfall, and cool nights during the second half of the month resulting in extended plant health during grain fill.



**Table 1.** Variety entries in evaluation of soybean yield response to management and planting date.

Brand	MG	Variety	Seed Treatment
Asgrow	2.7	AG27XF2	Acceleron + Ileva
Asgrow	3.1	AG31XF2	Acceleron + Ileva
Asgrow	3.3	AG33XF3	Acceleron + Ileva
Asgrow	3.5	AG35XF1	Untreated
Asgrow	3.5	AG35XF1	Acceleron
Asgrow	3.8	AG38XF3	Acceleron + Ileva
Asgrow	3.9	AG39XF1	Acceleron + Ileva
Asgrow	4.0	AG40XF1	Acceleron + Ileva
Golden Harvest	3.0	GH3023XF	CruiserMaxx + Vibrance + Salstro
Golden Harvest	3.1	GH3192XF	CruiserMaxx + Vibrance + Salstro
Golden Harvest	3.1	GH3132E3	CruiserMaxx + Vibrance + Salstro
Golden Harvest	3.4	GH3442XF	CruiserMaxx + Vibrance + Salstro
Golden Harvest	3.7	GH3762E3	CruiserMaxx + Vibrance + Salstro
Golden Harvest	3.7	GH3732XF	CruiserMaxx + Vibrance + Salstro
Golden Harvest	3.9	GH3913XF	CruiserMaxx + Vibrance + Salstro
Golden Harvest	4.2	GH4222XF	CruiserMaxx + Vibrance + Salstro

**Table 2.** Agronomic treatments applied as a complete factorial for evaluation of commercial soybean varieties planted at Champaign, IL in 2022.

Planting Date	Row Spacing	Fertility <sup>1</sup>	Foliar Protection <sup>2</sup>
23 April	30-inch	None	None
9 May			
31 May	20-inch	N, P, and S	Fungicide and Insecticide
15 June			

<sup>1</sup> Fertility supplied as 150 lbs per acre MicroEssentials S10 (12-40-0-10S) to supply 60 lbs P<sub>2</sub>O<sub>5</sub> and 15 lbs S per acre.

<sup>2</sup> Foliar protection supplied as fungicide (Miravis Top) and insecticide (Endigo ZC) at 13.7 and 4 oz per acre, respectively.

**Table 3.** Preplant soil test levels for trial site at Champaign, IL.

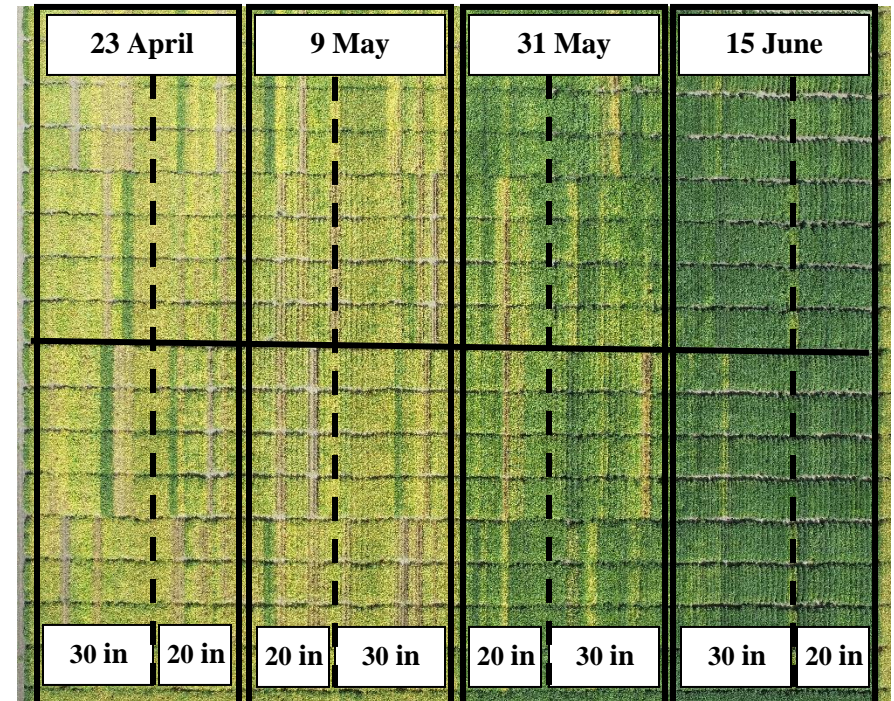
OM	CEC	pH	P	K	Ca	Mg	S	Zn
%	meq/100g		ppm					
3.4	17.7	6.5	20	75	2424	448	8	1

Soil samples were taken from the 0-6 inch depth before planting and extracted using Mehlich III.

**Table 4.** Temperature and precipitation data for trial site at Champaign, IL in 2022.

Month	Precipitation		Temperature	
	2022	Average <sup>1</sup>	2022	Average <sup>1</sup>
	inches		°F	
April	3.2	4.0	50	53
May	3.2	5.0	66	63
June	0.8	4.7	75	72
July	2.4	4.4	76	75
August	4.9	3.5	73	74
September	4.6	3.3	67	67
Total	19.1	24.9	-	-

<sup>1</sup>Refers to the average climate data from Champaign IL from 1989-2020. Data obtained from the Illinois State Water Survey.

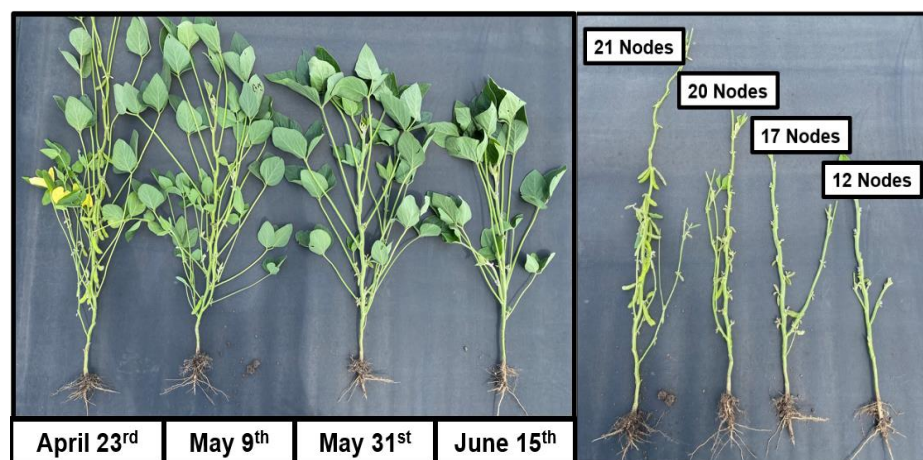


**Figure 1.** Split-split-split block design to evaluate an individual variety's response to management and planting date. Two replications are shown here.

## Planting Date Improves Soybean Yield Potential

When averaged across all varieties and managements the April planted soybeans had the highest yield per acre (76 bushels), followed by early May planting (70 bushels), late May (64 bushels), and mid-June (54 bushels) (Table 5 and Figure 3). Fourteen of the varieties achieved their highest average yield when planted in April, and it was only the two earliest maturity varieties (AG27XF2 and GH3023XF) that achieved highest yields when planted in May (Table 6). The AG27XF2 variety when planted early matured much more rapidly than the others, and as a result suffered from pod shattering and seed loss prior to harvest of the first two planting dates, but not for planting dates three and four.

Increases in yield as a result of planting date were predominately driven by earlier development of a greater number of nodes prior to flowering and pod development, providing greater opportunity for higher pod and seed number for the earlier planting dates when compared to those soybeans planted later (Figure 2).



**Figure 2.** Soybean node development as a result of planting date. Individual plants were sampled from the border (GH3732XF) of each planting date on 31 July.

## Soybean Response to Management was Limited in 2022

The low June rainfall slowed vegetative development and delayed crop canopy closure, and likely decreased the rate of nutrient uptake so that the soil could keep up with crop demand and as such the need for

additional fertility was limited. There was no response to fertility for soybean planted in April and a 1 to 3 bushel response for the later planting dates, which was not a large enough increase to pay for cost of application. The dry weather in combination with open canopy also reduced disease pressure and minimized response to foliar protection to an average response of 3 or 4 bushels per acre depending on the date planted (Table 5 and Figure 3). However, there was a synergy to the preplant application of fertility followed by the R3 foliar protection spray, with a range of 3 to 6 bushels per acre across the planting dates. This data implies that these management factors can be additive in response, but the 2022 growing season limited overall response to management practices of preplant fertility and/or R3 foliar protection.

Response to row spacing was positive for 3 of the 4 planting dates (+1 to 3 bushels), but the only significant effect was an 8 bushel decrease to narrow rows compared to wide rows when planted on 9 May (Table 5 and Figure 3). While the positive responses were small, the trends of higher yields with narrow row spacing is commonly observed in our research. The planting conditions on 9 May were less than optimal due to early May precipitation events leaving saturated subsoils. While the surface soils were dry, the wetter subsoils led to compaction of individual rows when equipment was in the narrow row configuration, resulting in the observed yield loss for narrow rows in that planting date.

## Maturity Group Interacts with Planting Date

The average yield range across varieties was greatest for the 23 April planting date (32 bushels) and decreased as planting date increased (28, 14, and 11 bushels for 9 May, 31 May, and 15 June, respectively). In general, the higher the maturity the greater the yield, and this relationship diminishes with later planting dates (Figure 5). The GH4222XF variety was the highest yielding for 23 April, but lowest yielding for 31 May with a middle-range yield compared to other varieties for 15 June. This was the result of September frost terminating this higher maturity variety prior to physiological maturity, showing that planting too long of a maturity later in the season can reduce yield potential. Individual variety responses to managements are listed in Tables 7-10.

**Table 5.** Planting date and management interaction effects on soybean grain yield at Champaign, Illinois. Yield values are the average of sixteen soybean varieties planted on four different dates and across eight different management combinations of row spacing, fertility, and foliar protection.

			Treatment Yields (bushels per acre) <sup>1</sup>				
Row Spacing	Fertility <sup>2</sup>	Foliar Protection <sup>3</sup>	Planting Date				Average
			April 23	May 9	May 31	June 15	
30-inch	None	None	73.1	72.2	60.6	54.1	65.0
	+ Fertility	None	72.4	75.2	62.6	55.2	66.4
	None	+ Foliar Protection	75.1	75.6	64.5	55.1	67.6
	+ Fertility	+ Foliar Protection	79.3	74.4	64.7	55.6	68.5
20-inch	None	None	76.8	63.4	60.3	55.3	64.0
	+ Fertility	None	74.1	64.7	63.9	55.0	64.4
	None	+ Foliar Protection	79.0	68.0	64.2	58.9	67.5
	+ Fertility	+ Foliar Protection	78.4	68.5	67.0	61.5	68.8
<b>Mean</b>			76.0 <sup>A</sup>	70.3 <sup>B</sup>	63.5 <sup>C</sup>	56.3 <sup>D</sup>	66.5
<b>Management Main Effects</b>							
Row Spacing	30-inch		75.0	74.3	63.1	55.0	66.9
	20-inch		77.1	66.2*	63.8	57.7	66.2
	<b>LSD (<math>P \leq 0.10</math>)</b>		NS	5.5	NS	NS	NS
Fertility	None		76.0	69.8	62.4	55.9	66.0
	+ Fertility		76.0	70.7	64.5	56.8	67.0
	<b>LSD (<math>P \leq 0.10</math>)</b>		NS	0.8	NS	NS	0.6
Foliar Protection	None		74.1	68.9	61.9	54.9	64.9
	+ Foliar Protection		77.9	71.6	65.1	57.8	68.1
	<b>LSD (<math>P \leq 0.10</math>)</b>		0.7	0.8	0.7	0.6	0.6

<sup>1</sup> Values are the average of sixteen varieties and four replications and are presented at 13% moisture.

<sup>2</sup> Fertility supplied as 150 lbs per acre MicroEssentials S10 (12-40-0-10S) to supply 60 lbs P<sub>2</sub>O<sub>5</sub> and 15 lbs S per acre.

<sup>3</sup> Foliar protection supplied as fungicide (Miravis Top) and insecticide (Endigo ZC) at 13.7 and 4 oz per acre, respectively.

\* 20-inch rows at the second planting date were lower yielding as a result of row compaction due to wetter soil conditions at planting compared to planting dates one, three, and four.

**Table 6.** Yield averages of 16 soybean varieties in response to four different planting dates at Champaign, Illinois.

Brand	MG	Variety	Planting Date Yields ( bushels per acre ) <sup>1</sup>				Average
			April 23	May 9	May 31	June 15	
Asgrow	2.7	AG27XF2 †	54.9	50.8	59.8	50.8	54.1
Asgrow	3.1	AG31XF2	76.7	73.6	60.1	51.5	65.5
Asgrow	3.3	AG33XF3	75.0	67.7	59.9	53.2	64.0
Asgrow	3.5	AG35XF1 ‡	71.3	70.3	64.9	58.6	66.4
Asgrow	3.5	AG35XF1	80.1	69.5	67.8	55.9	68.3
Asgrow	3.8	AG38XF3	81.9	76.3	62.9	58.2	69.8
Asgrow	3.9	AG39XF1	78.7	73.3	66.0	57.3	69.0
Asgrow	4.0	AG40XF1	78.8	73.1	61.0	58.2	67.8
Golden Harvest	3.0	GH3023XF	72.7	77.1	63.0	59.6	68.2
Golden Harvest	3.1	GH3192XF	73.4	71.4	60.9	55.5	65.4
Golden Harvest	3.1	GH3132E3	70.1	63.0	60.9	52.3	61.7
Golden Harvest	3.4	GH3442XF	74.6	62.1	66.2	60.5	65.9
Golden Harvest	3.7	GH3762E3	70.9	70.6	60.4	50.9	63.2
Golden Harvest	3.7	GH3732XF	84.2	71.5	72.6	62.1	72.6
Golden Harvest	3.9	GH3913XF	85.6	79.0	70.3	58.4	73.3
Golden Harvest	4.2	GH4222XF	87.2	74.8	58.7	58.6	70.1
<b>LSD (P ≤ 0.05)</b>			6.0	7.7	5.1	3.9	3.1
<b>Mean</b>			76.0	70.3	63.5	56.4	66.6
<b>Range</b>			55 – 87	51 – 79	59 – 73	51 – 62	54 – 73

<sup>1</sup> Values are the average of eight row spacing x fertility x foliar protection treatments across four replications and are presented at 13% moisture; values in bold are highest yield variety for the respective planting date.

† Variety matured early and resulted in pod shattering and yield loss prior to harvest for the first two planting dates.

‡ No seed treatment applied.



**Table 7.** Yield averages of 16 soybean varieties in response to differing levels of management when planted at Champaign, Illinois, on April 23<sup>rd</sup>, 2022.

Brand	MG	Variety	Treatment Yields (bushels per acre) <sup>1</sup>								
			Variety Average	30-inch row spacing				20-inch row spacing			
				Control	+ Fertility <sup>2</sup>	+ FP <sup>3</sup>	+ Fert & FP	Control	+ Fertility	+ FP	+ Fert & FP
Asgrow	2.7	AG27XF2 †	54.9	51.6	52.6	54.8	59.5	52.8	53.4	55.1	59.6
Asgrow	3.1	AG31XF2	76.7	71.1	75.0	78.0	76.2	75.4	76.5	80.8	80.6
Asgrow	3.3	AG33XF3	75.0	72.5	72.9	74.5	74.8	76.3	74.9	78.9	75.4
Asgrow	3.5	AG35XF1 ‡	71.3	70.7	70.9	74.0	79.3	66.3	66.5	70.7	72.2
Asgrow	3.5	AG35XF1	80.1	75.0	79.3	76.6	81.2	78.9	78.8	85.9	84.7
Asgrow	3.8	AG38XF3	81.9	81.8	77.1	81.1	89.6	84.4	78.0	80.1	83.4
Asgrow	3.9	AG39XF1	78.7	77.2	75.5	79.4	83.8	81.0	73.3	81.2	78.5
Asgrow	4.0	AG40XF1	78.8	76.1	73.3	76.6	80.0	79.8	78.1	85.7	80.9
Golden Harvest	3.0	GH3023XF	72.7	69.8	69.2	70.9	78.5	71.5	73.6	71.5	76.3
Golden Harvest	3.1	GH3192XF	73.4	72.5	69.1	76.3	81.3	72.3	66.6	74.4	74.9
Golden Harvest	3.1	GH3132E3	70.1	67.0	65.5	67.2	70.6	72.7	69.5	75.2	73.3
Golden Harvest	3.4	GH3442XF	74.6	68.7	69.6	70.3	76.2	79.9	74.4	81.5	76.0
Golden Harvest	3.7	GH3762E3	70.9	69.2	66.8	67.4	73.5	74.6	72.1	74.2	69.6
Golden Harvest	3.7	GH3732XF	84.2	80.4	76.3	82.6	86.1	87.2	81.6	91.4	88.5
Golden Harvest	3.9	GH3913XF	85.6	82.5	83.1	90.7	90.0	81.9	81.8	85.0	90.0
Golden Harvest	4.2	GH4222XF	87.2	82.8	82.4	81.7	88.1	94.1	85.7	92.2	90.6
<b>LSD (<math>P \leq 0.05</math>)</b>			6.0	7.9	7.3	9.6	7.0	12.7	9.6	14.2	10.3
<b>Mean</b>			76.0	73.1	72.4	75.1	79.3	76.8	74.1	79.0	78.4
<b>Range</b>			55-87	52-83	53-83	55-91	60-90	53-94	53-86	55-92	60-91

<sup>1</sup> Values presented at 13% moisture.

<sup>2</sup> Fertility supplied as 150 lbs per acre MicroEssentials S10 (12-40-0-10S) to supply 60 lbs P<sub>2</sub>O<sub>5</sub> and 15 lbs S per acre.

<sup>3</sup> FP, Foliar protection: supplied as fungicide (Miravis Top) and insecticide (Endigo ZC) at 13.7 and 4 oz per acre, respectively.

† Variety matured early and resulted in pod shattering and yield loss prior to harvest for this planting date.

‡ No seed treatment applied.

**Table 8.** Yield averages of 16 soybean varieties in response to differing levels of management when planted at Champaign, Illinois, on May 9<sup>th</sup>, 2022.

Brand	MG	Variety	Treatment Yields (bushels per acre) <sup>1</sup>								
			Variety Average	30-inch row spacing				20-inch row spacing			
				Control	+ Fertility <sup>2</sup>	+ FP <sup>3</sup>	+ Fert & FP	Control	+ Fertility	+ FP	+ Fert & FP
Asgrow	2.7	AG27XF2 †	50.8	58.3	61.4	64.5	65.4	38.6	36.7	44.0	37.6
Asgrow	3.1	AG31XF2	73.6	76.0	77.5	78.7	77.1	69.7	65.4	74.2	70.0
Asgrow	3.3	AG33XF3	67.7	64.9	74.9	69.1	69.4	61.2	67.3	65.5	69.3
Asgrow	3.5	AG35XF1 ‡	70.3	76.5	78.2	77.2	79.0	60.2	65.2	67.5	58.9
Asgrow	3.5	AG35XF1	69.5	74.3	73.7	76.3	69.4	63.2	61.8	68.6	68.3
Asgrow	3.8	AG38XF3	76.3	76.7	75.7	81.3	78.1	69.3	73.5	75.5	80.5
Asgrow	3.9	AG39XF1	73.3	80.8	82.0	82.1	82.9	62.0	64.4	66.8	65.9
Asgrow	4.0	AG40XF1	73.1	66.2	81.1	73.5	72.5	72.9	67.5	74.8	76.3
Golden Harvest	3.0	GH3023XF	77.1	76.4	85.8	78.8	85.8	69.0	70.4	74.5	75.9
Golden Harvest	3.1	GH3192XF	71.4	66.3	71.4	73.5	73.7	66.5	69.0	74.4	74.6
Golden Harvest	3.1	GH3132E3	63.0	57.3	67.9	66.9	66.7	59.3	59.1	64.1	62.7
Golden Harvest	3.4	GH3442XF	62.1	68.5	71.5	69.6	63.6	52.4	56.8	56.7	57.8
Golden Harvest	3.7	GH3762E3	70.6	74.7	68.4	76.5	68.7	66.5	69.7	67.1	73.2
Golden Harvest	3.7	GH3732XF	71.5	77.3	78.8	78.3	80.6	61.9	64.6	65.1	65.6
Golden Harvest	3.9	GH3913XF	79.0	78.2	74.7	82.6	77.6	76.6	77.3	81.1	84.1
Golden Harvest	4.2	GH4222XF	74.8	82.8	80.8	78.7	80.5	65.1	68.7	66.2	75.7
<b>LSD (<math>P \leq 0.05</math>)</b>			7.7	14.0	11.7	9.6	15.5	12.2	9.5	12.8	14.0
<b>Mean</b>			70.3	72.2	75.2	75.6	74.4	63.4	64.7	68.0	68.5
<b>Range</b>			51 – 79	57-83	61-86	65-83	64-86	39-77	37-77	44-81	38-84

<sup>1</sup> Values are presented at 13% moisture.

<sup>2</sup> Fertility supplied as 150 lbs per acre MicroEssentials S10 (12-40-0-10S) to supply 60 lbs P<sub>2</sub>O<sub>5</sub> and 15 lbs S per acre.

<sup>3</sup> FP, Foliar protection: supplied as fungicide (Miravis Top) and insecticide (Endigo ZC) at 13.7 and 4 oz per acre, respectively.

† Variety matured early and resulted in pod shattering and yield loss prior to harvest for this planting date.

‡ No seed treatment applied.



**Table 9.** Yield averages of 16 soybean varieties in response to differing levels of management when planted at Champaign, Illinois, on May 31<sup>st</sup>, 2022.

Brand	MG	Variety	Treatment Yields (bushels per acre) <sup>1</sup>								
			Variety Average	30-inch row spacing				20-inch row spacing			
				Control	+ Fertility <sup>2</sup>	+ FP <sup>3</sup>	+ Fert & FP	Control	+ Fertility	+ FP	+ Fert & FP
Asgrow	2.7	AG27XF2	59.8	52.4	58.0	61.0	57.5	62.8	59.6	64.0	63.5
Asgrow	3.1	AG31XF2	60.1	62.6	60.3	63.9	61.9	55.1	57.3	59.0	60.7
Asgrow	3.3	AG33XF3	59.9	58.0	63.7	61.0	61.0	53.9	58.9	59.7	63.0
Asgrow	3.5	AG35XF1 †	64.9	58.5	64.2	65.5	65.4	63.7	61.1	69.3	71.5
Asgrow	3.5	AG35XF1	67.8	62.1	63.8	66.8	68.3	65.8	70.2	70.3	75.2
Asgrow	3.8	AG38XF3	62.9	59.4	64.1	63.7	62.0	56.7	68.9	63.8	64.3
Asgrow	3.9	AG39XF1	66.0	67.5	61.8	65.5	70.4	59.7	67.5	65.5	69.9
Asgrow	4.0	AG40XF1	61.0	62.5	60.9	64.8	64.8	53.1	60.4	60.1	61.1
Golden Harvest	3.0	GH3023XF	63.0	61.0	59.9	63.3	61.5	62.9	65.4	63.0	67.2
Golden Harvest	3.1	GH3192XF	60.9	55.1	59.3	64.8	69.4	56.8	57.9	62.7	61.2
Golden Harvest	3.1	GH3132E3	60.9	62.2	62.7	62.9	63.3	56.6	58.5	61.8	58.9
Golden Harvest	3.4	GH3442XF	66.2	69.2	68.0	69.9	71.5	60.1	62.5	62.4	66.2
Golden Harvest	3.7	GH3762E3	60.4	54.4	56.5	55.9	59.7	61.1	65.5	63.4	66.7
Golden Harvest	3.7	GH3732XF	72.6	63.8	69.1	69.9	69.3	72.0	75.6	77.1	84.2
Golden Harvest	3.9	GH3913XF	70.3	68.8	68.2	71.1	68.3	70.9	73.9	66.1	74.8
Golden Harvest	4.2	GH4222XF**	58.7	52.3	60.6	61.5	60.4	53.2	59.4	59.4	62.9
<b>LSD (<math>P \leq 0.05</math>)</b>			5.1	9.2	7.2	6.0	7.7	9.3	11.7	6.6	10.6
<b>Mean</b>			63.5	60.6	62.6	64.5	64.7	60.3	63.9	64.2	67.0
<b>Range</b>			59-73	52-69	57-69	56-71	58-72	53-72	57-76	59-77	59-84

<sup>1</sup> Values are presented at 13% moisture.

<sup>2</sup> Fertility supplied as 150 lbs per acre MicroEssentials S10 (12-40-0-10S) to supply 60 lbs P<sub>2</sub>O<sub>5</sub> and 15 lbs S per acre.

<sup>3</sup> FP, Foliar protection: supplied as fungicide (Miravis Top) and insecticide (Endigo ZC) at 13.7 and 4 oz per acre, respectively.

† No seed treatment applied.

**Table 10.** Yield averages of 16 soybean varieties in response to differing levels of management when planted at Champaign, Illinois, on June 15<sup>th</sup>, 2022.

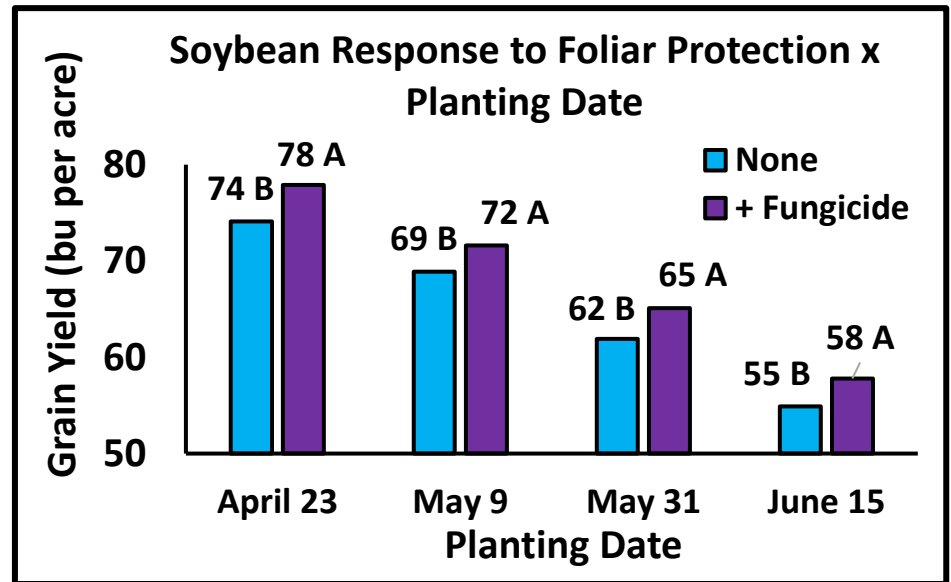
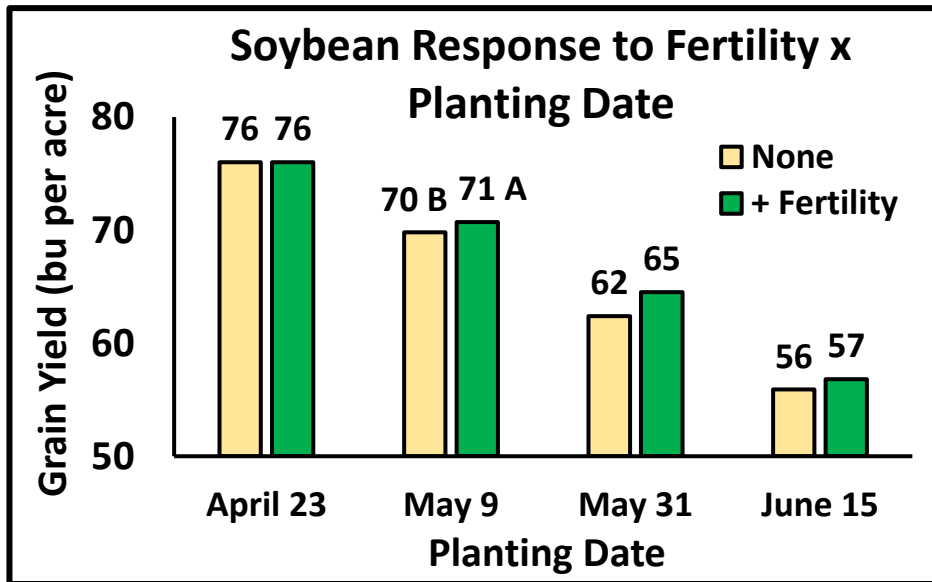
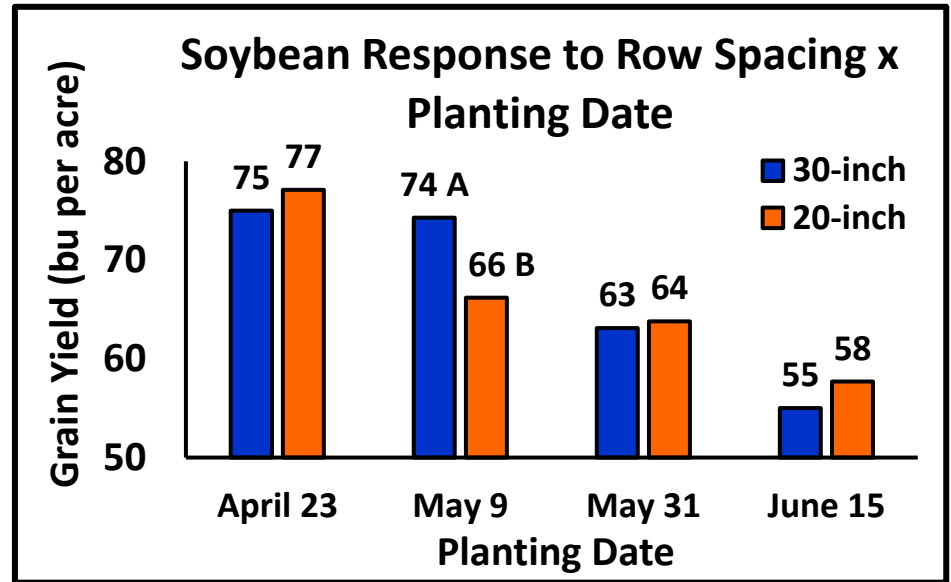
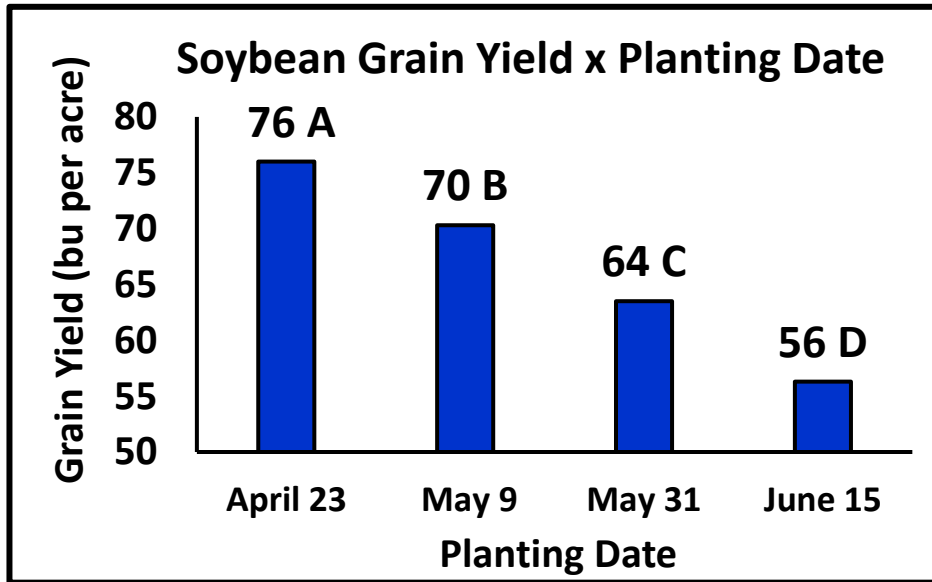
Brand	MG	Variety	Treatment Yields (bushels per acre) <sup>1</sup>								
			Variety Average	30-inch row spacing				20-inch row spacing			
				Control	+ Fertility <sup>2</sup>	+ FP <sup>3</sup>	+ Fert & FP	Control	+ Fertility	+ FP	+ Fert & FP
Asgrow	2.7	AG27XF2	50.8	50.1	51.1	49.8	49.0	48.8	51.6	53.2	52.4
Asgrow	3.1	AG31XF2	51.5	51.7	48.6	52.9	51.3	50.6	49.5	54.0	53.4
Asgrow	3.3	AG33XF3	53.2	51.4	52.9	51.1	52.4	50.1	49.7	56.7	61.7
Asgrow	3.5	AG35XF1 †	58.6	58.9	55.1	55.7	57.4	57.1	62.5	61.9	60.5
Asgrow	3.5	AG35XF1	55.9	56.2	57.6	56.9	57.7	52.3	53.3	55.8	57.6
Asgrow	3.8	AG38XF3	58.2	54.0	52.3	53.2	52.7	64.4	61.3	61.3	66.7
Asgrow	3.9	AG39XF1	57.3	55.5	58.9	56.2	56.4	56.8	54.4	59.6	60.8
Asgrow	4.0	AG40XF1	58.2	56.5	59.2	57.0	60.6	55.0	54.3	57.5	65.1
Golden Harvest	3.0	GH3023XF	59.6	55.6	56.3	59.1	57.7	61.1	59.9	62.4	64.7
Golden Harvest	3.1	GH3192XF	55.5	55.1	55.4	52.5	58.1	51.7	54.3	55.4	61.3
Golden Harvest	3.1	GH3132E3	52.3	49.4	53.5	55.0	53.3	47.2	47.9	53.6	58.8
Golden Harvest	3.4	GH3442XF	60.5	57.0	58.3	60.3	57.3	62.9	57.1	66.4	64.6
Golden Harvest	3.7	GH3762E3	50.9	50.3	49.9	50.2	51.7	50.1	49.1	53.8	52.2
Golden Harvest	3.7	GH3732XF	62.1	54.3	57.2	59.7	58.6	63.9	62.1	68.1	72.8
Golden Harvest	3.9	GH3913XF	58.4	54.7	56.8	56.4	55.6	55.4	57.8	64.8	65.3
Golden Harvest	4.2	GH4222XF**	58.6	54.9	60.5	56.1	60.3	57.8	55.2	57.5	66.4
<b>LSD (<math>P \leq 0.05</math>)</b>			3.9	5.8	5.9	3.7	5.4	10.1	9.0	7.5	7.6
<b>Mean</b>			56.4	54.1	55.2	55.1	55.6	55.3	55.0	58.9	61.5
<b>Range</b>			51 – 62	49-59	49-61	50-60	49-61	47-64	48-63	53-68	52-73

<sup>1</sup> Values are presented at 13% moisture.

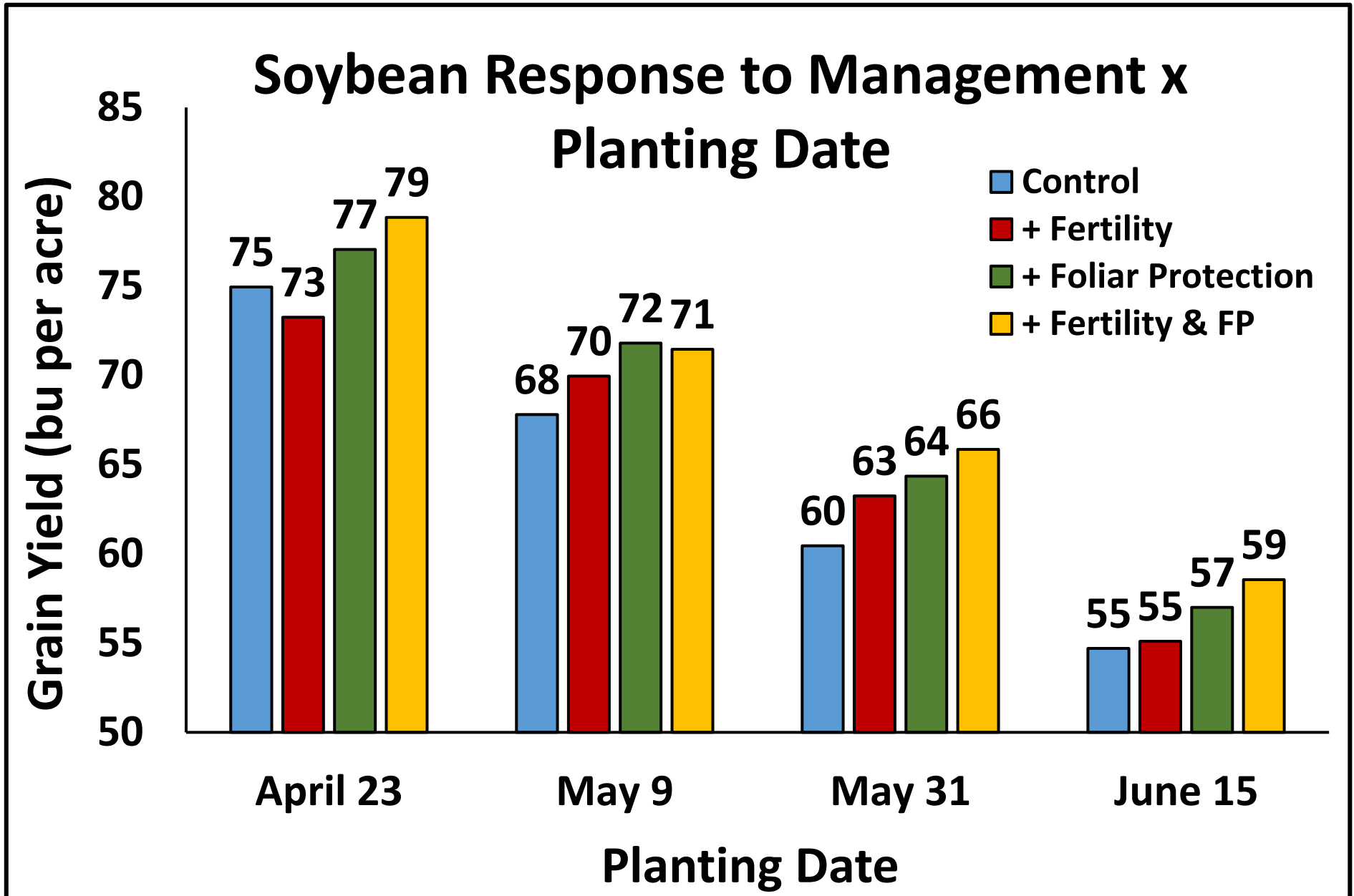
<sup>2</sup> Fertility supplied as 150 lbs per acre MicroEssentials S10 (12-40-0-10S) to supply 60 lbs P<sub>2</sub>O<sub>5</sub> and 15 lbs S per acre.

<sup>3</sup> FP, Foliar protection: supplied as fungicide (Miravis Top) and insecticide (Endigo ZC) at 13.7 and 4 oz per acre, respectively.

† No seed treatment applied.

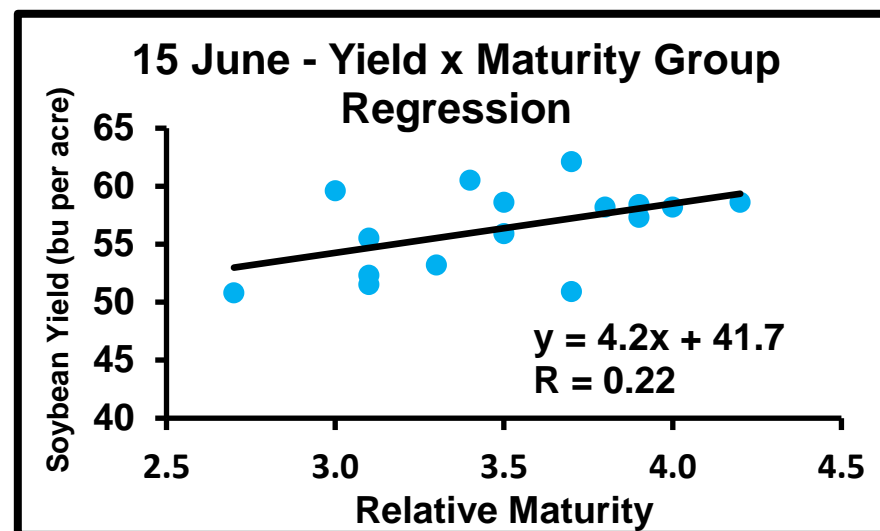
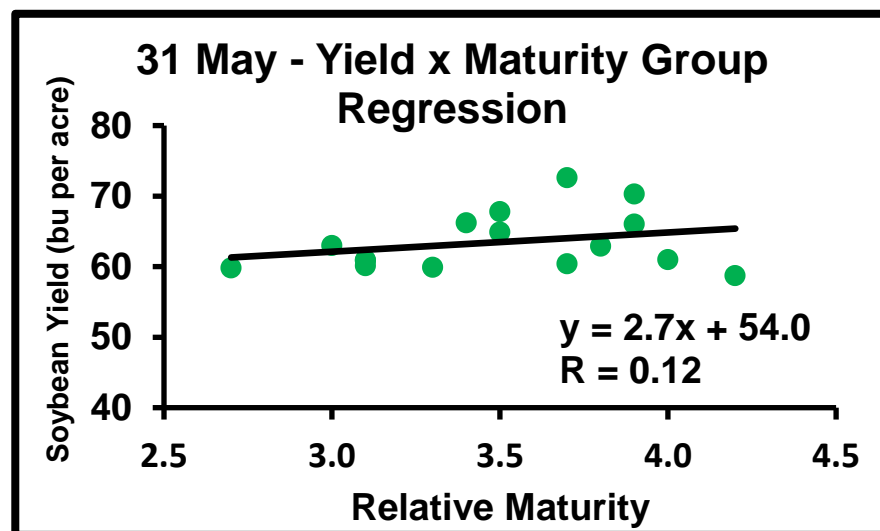
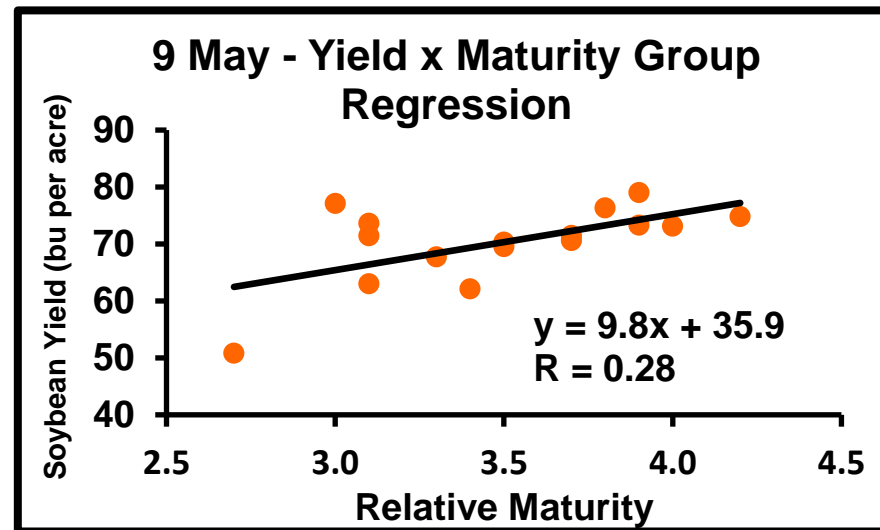
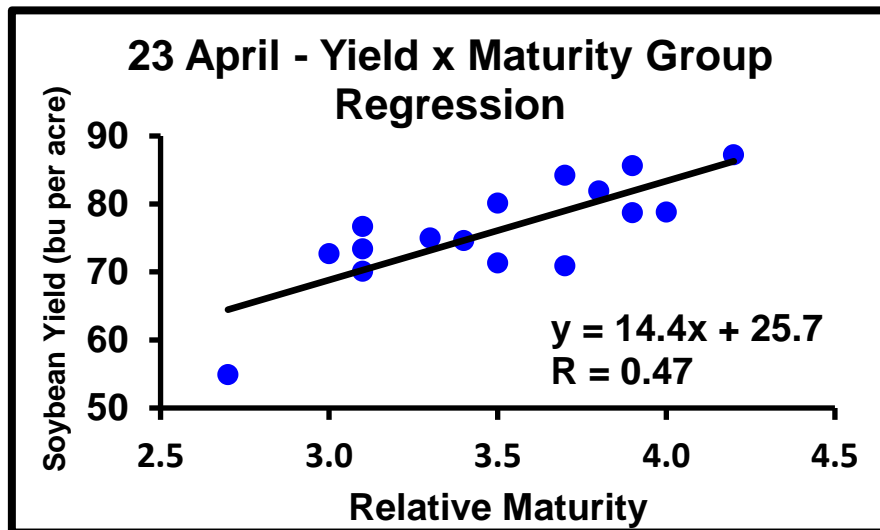


**Figure 3.** Soybean yield averages as a result of differences in planting date (top left) and its interactions with row spacing (top right), fertility (bottom left), and foliar protection (bottom right). Yields are presented at 13% moisture and are the average of sixteen varieties.



**Figure 4.** Soybean yield averages as a result of differences in planting date and its interactions with fertility and foliar protection. Yields are presented at 13% moisture and are the average of sixteen varieties and two row spacings.





**Figure 5.** Soybean grain yields regressed against relative maturity of soybean within respective planting dates. Each individual observation is the average yield of a variety across all managements (n=32 per data point, n=512 per planting date regression). The value preceding the “x” represents the bushels gained per each full step increase in relative maturity (from a 2.0 to a 3.0, or a 3.0 to a 4.0, etc.).