

# Illinois Soybean Planting Date Management

## 2023 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 planting date.

## 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 the 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 12 April, 4 May, 23 May, and 14 June at Champaign, IL (40°03'05.0"N 88°14'12.5"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 11 April. In-season weed control was applied 7 June 2023 to all plots with Zidua SC (BASF) (3.25 oz per acre), Liberty (BASF) (36 oz per acre), FusiladeDX (Syngenta) (8 oz per acre), and Roundup PowerMAX 3 (Bayer) (30 oz per acre). Weed escapes were removed by hand to prevent the 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 31 July (planting dates 1 and 2), 10 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 2023 precipitation and temperature data are listed in Table 4.

## Data Collection and Analysis

Plant stand was assessed by counting all plants in one meter from a uniform section of a single row in each plot. Four individual plants of each planting date were sampled for node count on 31 July from the border (AG35XF1). Plots were harvested on 10 October (planting date 1), 22 October (planting date 2), 24 October (planting date 3), and 2 November (planting date 4). Grain yield is reported as bushels per acre at 13% moisture. 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 was abnormally dry, with April, May, June, and July all experiencing substantially less precipitation than normal (Table 4). Monthly precipitation was only 38% of normal for April, May, and June, and 66% of normal for July. Conversely, August received slightly above-average rainfall (+ 0.3 inches) which may have helped facilitate final pod set, resulting in higher than expected yields given the weather conditions of 2023.



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

Brand	MG	Variety	Seed Treatment
Asgrow	2.7	AG27XF3	Acceleron + Ileva
Asgrow	3.0	AG30XF4	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	AG39XF3	Acceleron + Ileva
Asgrow	4.0	AG40XF4	Acceleron + Ileva
Golden Harvest	2.8	GH2884XF	CruiserMaxx + Vibrance + Saltro
Golden Harvest	3.1	GH3132E3	CruiserMaxx + Vibrance + Saltro
Golden Harvest	3.3	GH3373E3	CruiserMaxx + Vibrance + Saltro
Golden Harvest	3.7	GH3724XF	CruiserMaxx + Vibrance + Saltro
Golden Harvest	3.7	GH3774E3	CruiserMaxx + Vibrance + Saltro
Golden Harvest	3.9	GH3994E3	CruiserMaxx + Vibrance + Saltro
Golden Harvest	4.0	GH4093E3	CruiserMaxx + Vibrance + Saltro
Golden Harvest	4.2	GH4214E3	CruiserMaxx + Vibrance + Saltro

**Table 2.** Agronomic treatments applied as a complete factorial for evaluation of commercial soybean varieties planted at Champaign, IL in 2023.

Planting Date	Row Spacing	Fertility <sup>1</sup>	Foliar Protection <sup>2</sup>
12 April	30-inch	None	None
4 May			
23 May	20-inch	N, P, and S	Fungicide and Insecticide
14 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.

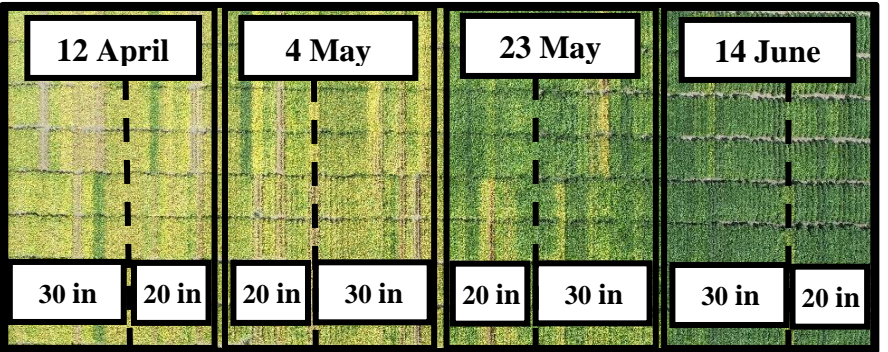
OM	CEC	pH	P	K	Ca	Mg	S	Zn
%	meq/100g							
4.0	18.3	6.8	28	173	2719	446	10	2

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

**Table 4.** Temperature and precipitation data for the trial site at Champaign, IL in 2023.

Month	Precipitation		Temperature	
	2023	Average <sup>1</sup>	2023	Average <sup>1</sup>
	inches		°F	
April	1.5	4.0	53	53
May	1.9	5.0	66	63
June	1.8	4.7	72	72
July	2.9	4.4	76	75
August	3.8	3.5	73	74
September	3.1	3.3	68	67
Total	15.0	24.9	-	-

<sup>1</sup> Average climate data from Champaign, IL from 1989-2020. Data was 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.



**Figure 2.** Soybean nodes count, and depiction of plant height as a result of planting date. Sampled on 31 July 2023 from the border (AG35XF1) of each planting date.

## Early Planting Every Time?

Although greater opportunity for increased soybean grain yield by planting early has been previously documented, certain factors may limit yield gains and the planting date that maximizes yield will change year to year. In 2023, the second planting date in early May had the highest yield average per acre (79 bushels per acre), followed by late May (75 bushels), then April (73 bushels), and with the June planting date resulting in the lowest average yield (65 bushels) (Tables 5 and 6). By July, the first two planting dates averaged 18 nodes, the third averaged 16, and the June planting date had just 12 nodes (Figure 2). These differences demonstrate that the first three planting dates had greater yield potential due to greater seasonal development of nodes, both before and during flowering and pod development. Although mid-April planting had the same number of nodes as early May, it yielded 6 bushels less (Table 6). This difference, however, was not due to a reduction in plant stand, that one may expect with early planted soybean (Table 7). Rather, field observations noted that the April-planted soybean were shorter in height (Figure 2) and failed to dry-down resulting in green stems, petioles, and leaves with mature seed (at or below 15% moisture). Nevertheless, the trend of planting early is still beneficial, with a 14-bushel difference from the highest-yielding planting date in early May to the lowest-yielding planting in June (Figure 3).

## Need For Fertility and/or Foliar Protection, or Narrow Rows Depended on Planting Date

In 2023, should you have applied both fertility and foliar protection? Was there more benefit in applying one over the other? Yes, and yes, but which practice was the most important depended upon whether it was early or late planted. Averaged over planting date and foliar protection, applying fertility resulted in only a one-bushel per acre yield increase (Table 5), likely because the site had adequate soil test levels (Table 3), and because early season drought conditions slowed vegetative growth. The dry season also led to low incidence of plant disease, which minimized the average yield response to foliar protection to a four-bushels per acre (Table 5). Overall, there was a five-bushel per acre increase when applying both fertility and foliar protection, resulting in an additive response averaged across all planting dates. However, it tended to be planting date specific as there was no benefit of pairing fertility with foliar protection for the first and second planting dates, while for the third and fourth planting dates, the

highest yields were achieved from applying both fertility and foliar protection together (Table 5). When planting soybean in April, narrow rows were not needed as the early planting likely allowed ample time for canopy closure before the summer solstice. Alternatively, cooler and wetter soils associated with the April planting may have resulted in row pinching in the narrow rows, and the observed three-bushel yield reduction (Table 5). However, for the other three planting dates, yield in narrow rows trended slightly higher (one to two-bushels), than the wide rows, and overall, there was not much difference in the response to management as a function of row spacing in 2023.

## Where It All Begins

Variety selection is one of the most important yearly management decisions a grower makes, and it was the factor that resulted in the greatest variation in yield across all planting dates in 2023 (Table 6). The variety range in yield was 19 bushels for the April planted soybean, 12 bushels for early May, 11 bushels for late May, and 15 bushels for the June 9 planting (Table 6). Averaged across all planting dates, GH4214E3 and AG39XF3 were the highest yielding at 77 bushels per acre. (Table 6). Each variety tells its own story, especially with the preference of management. For example, earlier MG (2.7-3.3) preferred 20-inch rows when planted in April, while the later MGs thrived in a 30-inch row (Table 8). As we have observed in previous years, later MG cultivars tended to yield higher than earlier MGs again in 2023, with the notable exception of the early cultivar AG27XF3, which yielded above the mean at each planting date (Figure 4).

## The Final Team

Finding a good team of players can be challenging at times but can also be very rewarding, and early planting of soybean was again a key team player in 2023. While we discovered that planting too early did not result in the highest yields, it did still yield higher than late planting, and in a more normal weather year, we feel it would have been even better. Applying foliar protection always resulted in higher yields and adding fertility further increased yields in certain varieties and for later planting dates. Planting in narrow rows was advantageous for the May and June planting dates but was not needed for the April planting. Variety selection made the biggest difference with full MGs generally having the highest yield. We trust that this report will assist growers in building their yield team by selecting the proper variety and adopting the management practices that align to optimize that variety's performance.

**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.

Row Spacing	Fertility <sup>2</sup>	Foliar Protection <sup>3</sup>	Management Average	Treatment Yields (bushels per acre) <sup>1</sup>			
				Planting Date			
				April 12†	May 4	May 23	June 14
30-inch	None	None	69.4	71.7	75.5	68.0	62.1
	+ Fertility	None	70.7	72.7	77.3	72.8	59.9
	None	+ Foliar Protection	75.0	76.5	78.9	78.4	66.2
	+ Fertility	+ Foliar Protection	75.0	75.3	78.7	78.4	67.0
20-inch	None	None	70.4	68.2	76.9	73.4	62.7
	+ Fertility	None	71.5	69.5	81.4	72.9	64.8
	None	+ Foliar Protection	74.4	73.2	80.5	76.4	67.4
	+ Fertility	+ Foliar Protection	75.4	72.0	80.6	79.6	69.7
<b>Mean</b>			72.7	72.5 <sup>C</sup>	78.5 <sup>A</sup>	75.0 <sup>B</sup>	64.9 <sup>D</sup>

Management Main Effects							
Row Spacing	30-inch		72.5	74.0	77.6	74.4	63.8
	20-inch		72.9	70.7	79.8	75.6	66.1
	<b>LSD (<math>P \leq 0.10</math>)</b>		NS	NS	NS	NS	NS
Fertility	None		72.3	72.4	77.9	74.1	64.6
	+ Fertility		73.2	72.4	79.5	76.0	65.3
	<b>LSD (<math>P \leq 0.10</math>)</b>		0.5	NS	0.7	0.7	0.5
Foliar Protection	None		70.5	70.5	77.8	71.8	62.4
	+ Foliar Protection		75.0	74.2	79.7	78.2	67.5
	<b>LSD (<math>P \leq 0.10</math>)</b>		0.5	0.9	0.7	0.7	0.5
Fertility × Foliar Protection							
None	None		69.9	69.9	76.2	70.7	62.4
	+Fertility		71.1	71.1	79.4	72.9	62.3
+Fertility	None		74.7	74.8	79.7	77.4	66.8
	+Foliar Protection		75.2	73.7	79.7	79.0	68.3
<b>LSD (<math>P \leq 0.10</math>)</b>			NS	1.3	1.0	NS	NS

<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.

† Row Spacing × Fertility × Foliar Protection LSD ( $P \leq 0.10$ ) = NS (April 12), NS (May 4), 1.7 (May 23), -2.7 (June 14).

\*Letters indicate significant differences between treatments at  $p = 0.10$ .

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

Brand	MG	Variety	Variety Average	Planting Date Yields ( bushels per acre ) <sup>1</sup>			
				April 12	May 4	May 23	June 14
Asgrow	2.7	AG27XF3	75.2	75.7	82.9	75.9	66.6
Asgrow	3.0	AG30XF4	72.1	72.9	77.6	73.2	64.5
Asgrow	3.3	AG33XF3	71.9	68.2	75.6	78.0	65.4
Asgrow	3.5	AG35XF1	71.4	68.1	76.8	77.2	64.2
Asgrow	3.5	AG35XF1‡	72.8	70.6	81.1	72.2	67.2
Asgrow	3.8	AG38XF3	75.0	75.0	79.1	74.7	71.4
Asgrow	3.9	AG39XF3	77.2	77.8	83.5	78.4	68.8
Asgrow	4.0	AG40XF4	74.3	78.1	80.0	74.2	64.0
Golden Harvest	2.8	GH2884XF	69.7	66.3	75.2	74.9	63.4
Golden Harvest	3.1	GH3132E3	64.9	61.6	71.9	69.6	57.3
Golden Harvest	3.3	GH3373E3	69.4	68.1	73.4	74.2	62.3
Golden Harvest	3.7	GH3724XF	73.8	74.7	83.5	71.2	64.9
Golden Harvest	3.7	GH3774E3	69.7	69.9	74.7	70.0	64.1
Golden Harvest	3.9	GH3994E3	76.8	79.0	82.1	80.7	66.2
Golden Harvest	4.0	GH4093E3	72.5	71.4	78.3	76.6	63.6
Golden Harvest	4.2	GH4214E3	77.3	80.5	84.0	79.2	65.3
<b>LSD (P ≤ 0.10)</b>			3.0	6.0	4.3	3.3	2.5
<b>Mean</b>			72.7	72.5 <sup>C</sup>	78.5 <sup>A</sup>	75.0 <sup>B</sup>	64.9 <sup>D</sup>
<b>Range</b>			65-77	62- 81	72-84	70-81	57-72

<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.

‡ No seed treatment applied.

\*Letters indicate significant differences between treatments at  $p = 0.10$ .

**Table 7.** Stand count averages of 16 soybean varieties in response to four different planting dates at Champaign, Illinois.

Brand	MG	Variety	Planting Date Stands ( plants per acre ) <sup>1</sup>			
			April 12	May 4	May 23	June 14
Asgrow	2.7	AG27XF3	125,332	130,979	116,089	126,829
Asgrow	3.0	AG30XF4	127,972	127,825	123,011	119,109
Asgrow	3.3	AG33XF3	131,643	124,366	125,584	119,062
Asgrow	3.5	AG35XF1	123,011	127,410	116,434	122,022
Asgrow	3.5	AG35XF1‡	129,495	132,224	120,686	127,493
Asgrow	3.8	AG38XF3	130,149	131,892	123,177	130,066
Asgrow	3.9	AG39XF3	125,498	128,498	124,671	118,777
Asgrow	4.0	AG40XF4	124,241	126,735	126,414	125,312
Golden Harvest	2.8	GH2884XF	124,130	124,969	117,249	124,173
Golden Harvest	3.1	GH3132E3	122,928	124,366	119,084	117,449
Golden Harvest	3.3	GH3373E3	126,663	128,622	124,597	125,916
Golden Harvest	3.7	GH3724XF	132,924	129,195	118,113	123,509
Golden Harvest	3.7	GH3774E3	120,105	123,260	111,165	119,358
Golden Harvest	3.9	GH3994E3	126,497	130,030	125,500	129,070
Golden Harvest	4.0	GH4093E3	131,394	131,892	122,124	125,375
Golden Harvest	4.2	GH4214E3	133,467	128,435	122,662	125,676
<b>LSD (<math>P \leq 0.10</math>)</b>			4300	4541	4766	4114
<b>Mean</b>			127,321 <sup>A</sup>	128,249 <sup>A</sup>	121,132 <sup>C</sup>	123,730 <sup>B</sup>

<sup>1</sup> Values are the average of eight row spacing x fertility x foliar protection treatments across four replications and were assessed by counting all plants in a meter of yield row of each plot.

‡ No seed treatment applied.

\*Letters indicate significant differences between treatments at  $p = 0.10$ .

**Table 8.** Yield averages of 16 soybean varieties in response to differing levels of management when planted at Champaign, IL, on April 12<sup>th</sup>, 2023.

Brand	MG	Variety	Variety Average	Treatment Yields (bushels per acre) <sup>1</sup>							
				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	AG27XF3	75.7	70.3	69.8	84.0	78.1	73.9	76.6	78.7	74.1
Asgrow	3.0	AG30XF4	72.9	69.2	64.7	75.0	73.7	71.3	74.2	82.6	72.5
Asgrow	3.3	AG33XF3	68.2	66.6	60.7	75.5	72.6	64.8	62.6	72.3	70.8
Asgrow	3.5	AG35XF1	68.1	65.5	72.7	65.5	71.9	66.0	66.9	68.5	67.9
Asgrow	3.5	AG35XF1‡	70.6	70.2	68.9	77.1	70.6	61.9	69.8	72.6	73.8
Asgrow	3.8	AG38XF3	75.0	74.0	75.4	80.5	78.8	68.9	69.6	78.2	74.8
Asgrow	3.9	AG39XF3	77.8	78.9	76.3	83.1	84.7	70.4	71.8	79.4	78.0
Asgrow	4.0	AG40XF4	78.1	81.7	84.5	85.0	87.8	68.7	71.7	76.4	68.8
Golden Harvest	2.8	GH2884XF	66.3	67.0	69.4	71.2	67.2	62.6	63.8	61.7	67.4
Golden Harvest	3.1	GH3132E3	61.6	56.8	59.8	63.1	64.2	62.7	61.1	60.2	65.4
Golden Harvest	3.3	GH3373E3	68.1	63.6	68.1	68.1	68.5	68.9	68.4	69.8	68.9
Golden Harvest	3.7	GH3724XF	74.7	76.3	70.1	80.1	75.0	67.9	74.6	76.5	76.8
Golden Harvest	3.7	GH3774E3	69.9	72.4	76.6	75.6	74.4	63.6	64.8	65.8	66.5
Golden Harvest	3.9	GH3994E3	79.0	81.2	83.2	78.0	80.2	81.4	74.8	77.4	76.1
Golden Harvest	4.0	GH4093E3	71.4	71.7	71.9	74.6	72.3	65.6	67.8	75.6	71.5
Golden Harvest	4.2	GH4214E3	80.5	81.7	90.7	87.2	85.5	72.9	72.9	75.3	77.9
<b>LSD (<math>P \leq 0.10</math>)</b>			6.0	11.4	8.5	13.0	16.0	9.8	6.6	7.0	7.9
<b>Mean</b>			72.3	71.7	72.7	76.5	75.3	68.2	69.5	73.2	72.0
<b>Range</b>			62-81	57-82	60-91	63-87	64-88	62-81	61-77	60-83	65-78

<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.

‡ No seed treatment applied.



**Table 9.** Yield averages of 16 soybean varieties in response to differing levels of management when planted at Champaign, IL, on May 4<sup>th</sup>, 2023.

Brand	MG	Variety	Variety Average	Treatment Yields (bushels per acre) <sup>1</sup>							
				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	AG27XF3	82.9	77.7	80.6	82.6	83.3	82.5	87.0	85.4	83.9
Asgrow	3.0	AG30XF4	77.6	71.8	68.4	77.1	74.4	80.9	84.3	81.1	82.5
Asgrow	3.3	AG33XF3	75.6	76.7	76.7	78.7	80.8	69.0	76.4	71.9	74.8
Asgrow	3.5	AG35XF1	76.8	72.6	73.2	74.0	73.1	77.7	78.8	81.0	83.9
Asgrow	3.5	AG35XF1‡	81.1	79.3	82.5	82.4	85.5	76.4	84.7	78.8	78.8
Asgrow	3.8	AG38XF3	79.1	75.7	77.2	75.7	81.4	79.0	83.0	80.5	79.9
Asgrow	3.9	AG39XF3	83.5	83.0	84.6	82.9	93.5	77.7	81.6	80.5	84.4
Asgrow	4.0	AG40XF4	80.0	77.9	80.0	79.1	84.3	75.4	82.2	78.7	82.4
Golden Harvest	2.8	GH2884XF	75.2	71.5	69.4	76.7	72.9	75.0	79.9	80.8	75.7
Golden Harvest	3.1	GH3132E3	71.9	68.8	66.0	69.5	66.2	72.3	77.2	78.8	76.0
Golden Harvest	3.3	GH3373E3	73.4	70.6	72.6	77.3	72.1	71.9	77.8	73.4	71.4
Golden Harvest	3.7	GH3724XF	83.5	82.4	80.4	84.2	86.2	81.6	85.3	80.0	87.6
Golden Harvest	3.7	GH3774E3	74.7	71.8	76.3	78.5	75.0	70.7	72.1	78.6	74.4
Golden Harvest	3.9	GH3994E3	82.1	76.0	81.8	78.8	77.1	81.9	87.5	87.8	85.9
Golden Harvest	4.0	GH4093E3	78.3	75.6	83.5	84.1	76.0	72.9	75.8	80.4	77.7
Golden Harvest	4.2	GH4214E3	84.0	76.1	83.1	80.4	78.3	85.5	89.1	90.1	89.7
<b>LSD (<math>P \leq 0.10</math>)</b>			4.3	7.0	6.5	4.7	8.7	7.8	10.3	7.0	7.8
<b>Mean</b>			78.7	75.5	77.3	78.9	78.7	76.9	81.4	80.5	80.6
<b>Range</b>			72-84	69-83	66-85	70-84	66-94	69-86	72-89	72-90	71-90

<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, IL, on May 23<sup>rd</sup>, 2023.

Brand	MG	Variety	Variety Average	Treatment Yields (bushels per acre) <sup>1</sup>							
				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	AG27XF3	75.9	66.3	69.3	79.4	81.6	74.7	79.2	75.0	81.8
Asgrow	3	AG30XF4	73.2	67.6	71.7	79.0	79.2	67.2	69.3	72.4	79.4
Asgrow	3.3	AG33XF3	78.0	70.5	74.9	82.8	85.0	77.1	77.8	74.1	81.7
Asgrow	3.5	AG35XF1	77.2	69.9	75.0	80.8	80.5	75.6	70.1	80.6	85.3
Asgrow	3.5	AG35XF1‡	72.2	68.3	73.3	77.5	75.1	65.0	73.9	69.2	75.5
Asgrow	3.8	AG38XF3	74.7	68.3	71.3	74.5	75.3	75.0	77.4	74.2	81.5
Asgrow	3.9	AG39XF1	78.4	71.4	75.6	78.1	81.6	78.9	78.6	79.5	83.8
Asgrow	4.0	AG40XF4	74.2	69.6	72.6	76.8	80.0	69.7	71.4	72.0	81.6
Golden Harvest	2.8	GH2884XF	74.9	68.5	75.1	78.8	75.7	75.2	72.1	76.4	77.0
Golden Harvest	3.1	GH3132E3	69.6	61.3	67.2	71.7	71.2	70.7	65.8	75.3	73.3
Golden Harvest	3.3	GH3373E3	74.2	67.5	73.3	78.3	78.3	73.4	68.7	77.5	76.7
Golden Harvest	3.7	GH3724XF	71.2	66.0	67.5	77.1	72.6	66.0	68.5	74.3	77.2
Golden Harvest	3.7	GH3774E3	70.0	68.1	69.9	77.0	76.7	65.7	62.6	71.7	68.6
Golden Harvest	3.9	GH3994E3	80.7	69.7	73.0	80.9	80.3	82.8	80.1	88.7	89.9
Golden Harvest	4	GH4093E3	76.6	67.0	77.1	79.3	79.9	78.6	73.0	79.3	78.7
Golden Harvest	4.2	GH4214E3	79.2	68.6	78.3	82.4	81.8	78.4	78.8	83.0	82.2
<b>LSD (<math>P \leq 0.10</math>)</b>			3.3	4.2	4.5	5.7	5.3	6.5	7.9	6.9	7.6
<b>Mean</b>			75.0	68.0	72.8	78.4	78.4	73.4	72.9	76.4	79.6
<b>Range</b>			70-81	61-71	67-78	72-83	71-85	65-83	63-80	72-89	69-90

<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 11.** Yield averages of 16 soybean varieties in response to differing levels of management when planted at Champaign, IL, on June 14<sup>th</sup>, 2023.

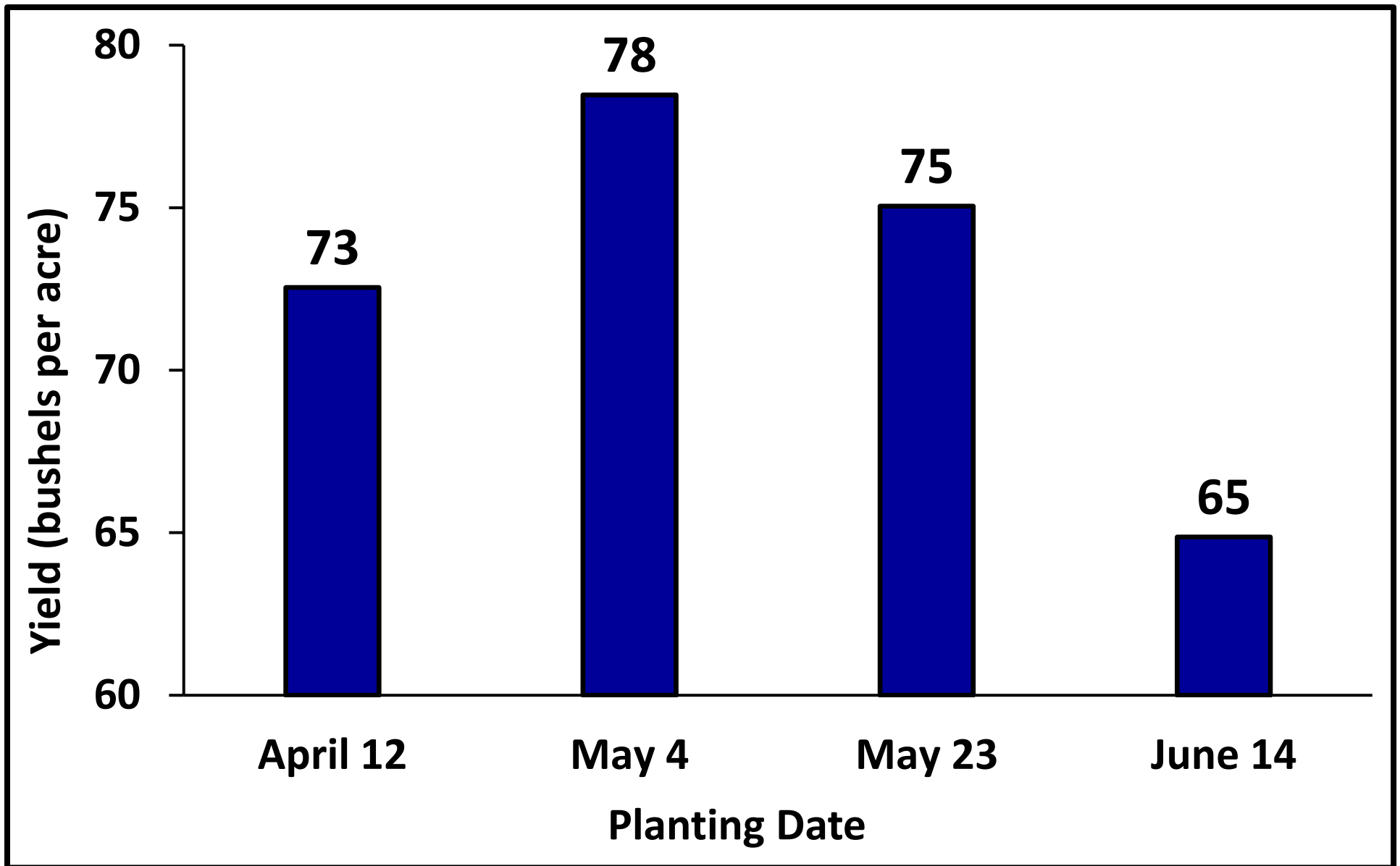
Brand	MG	Variety	Variety Average	Treatment Yields (bushels per acre) <sup>1</sup>							
				30-inch row spacing				20-inch row spacing			
				Control	+ Fertility <sup>2</sup>	+ FP <sup>3</sup>	+ Fert & FP	Control	+ Fertility	+ FP	+ Fert & FP
Asgrow	2.7	AG27XF3	66.6	66.6	60.4	68.9	68.7	64.8	66.7	65.4	71.6
Asgrow	3	AG30XF4	64.5	65.0	57.3	65.6	64.0	64.8	65.8	67.0	66.7
Asgrow	3.3	AG33XF3	65.4	67.1	61.2	72.2	66.7	62.8	62.0	63.2	68.2
Asgrow	3.5	AG35XF1	64.2	61.1	61.8	65.4	69.0	59.5	61.5	67.7	67.7
Asgrow	3.5	AG35XF1‡	67.2	65.7	64.0	70.7	72.9	65.2	63.2	67.0	69.0
Asgrow	3.8	AG38XF3	71.4	74.0	66.2	72.4	74.4	69.2	68.6	71.7	74.9
Asgrow	3.9	AG39XF1	68.8	68.4	66.0	69.9	70.6	67.4	66.1	70.1	72.2
Asgrow	4.0	AG40XF4	64.0	60.7	59.3	61.3	63.4	65.9	65.0	65.2	71.3
Golden Harvest	2.8	GH2884XF	63.4	56.1	58.8	65.2	65.5	58.8	66.9	68.3	67.6
Golden Harvest	3.1	GH3132E3	57.3	52.0	53.8	58.2	59.5	52.8	58.0	60.3	64.0
Golden Harvest	3.3	GH3373E3	62.3	56.8	58.3	62.0	64.5	58.5	64.4	65.0	69.4
Golden Harvest	3.7	GH3724XF	64.9	59.4	54.9	66.4	64.2	68.8	65.7	67.5	72.5
Golden Harvest	3.7	GH3774E3	64.1	55.4	56.6	62.7	63.2	64.6	69.1	70.4	70.4
Golden Harvest	3.9	GH3994E3	66.2	64.4	62.6	66.8	70.3	60.8	64.4	69.9	70.0
Golden Harvest	4	GH4093E3	63.6	61.0	57.8	64.2	66.3	59.2	63.0	68.4	68.9
Golden Harvest	4.2	GH4214E3	65.3	60.3	58.7	67.1	68.5	59.7	66.6	70.7	70.5
<b>LSD (<math>P \leq 0.10</math>)</b>			2.5	5.9	6.3	4.4	3.9	3.8	5.1	3.8	5.3
<b>Mean</b>			65.0	62.1	59.9	66.2	67.0	62.7	64.8	67.4	69.7
<b>Range</b>			57-71	52-74	54-66	58-72	60-74	53-69	58-69	60-72	64-75

<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.

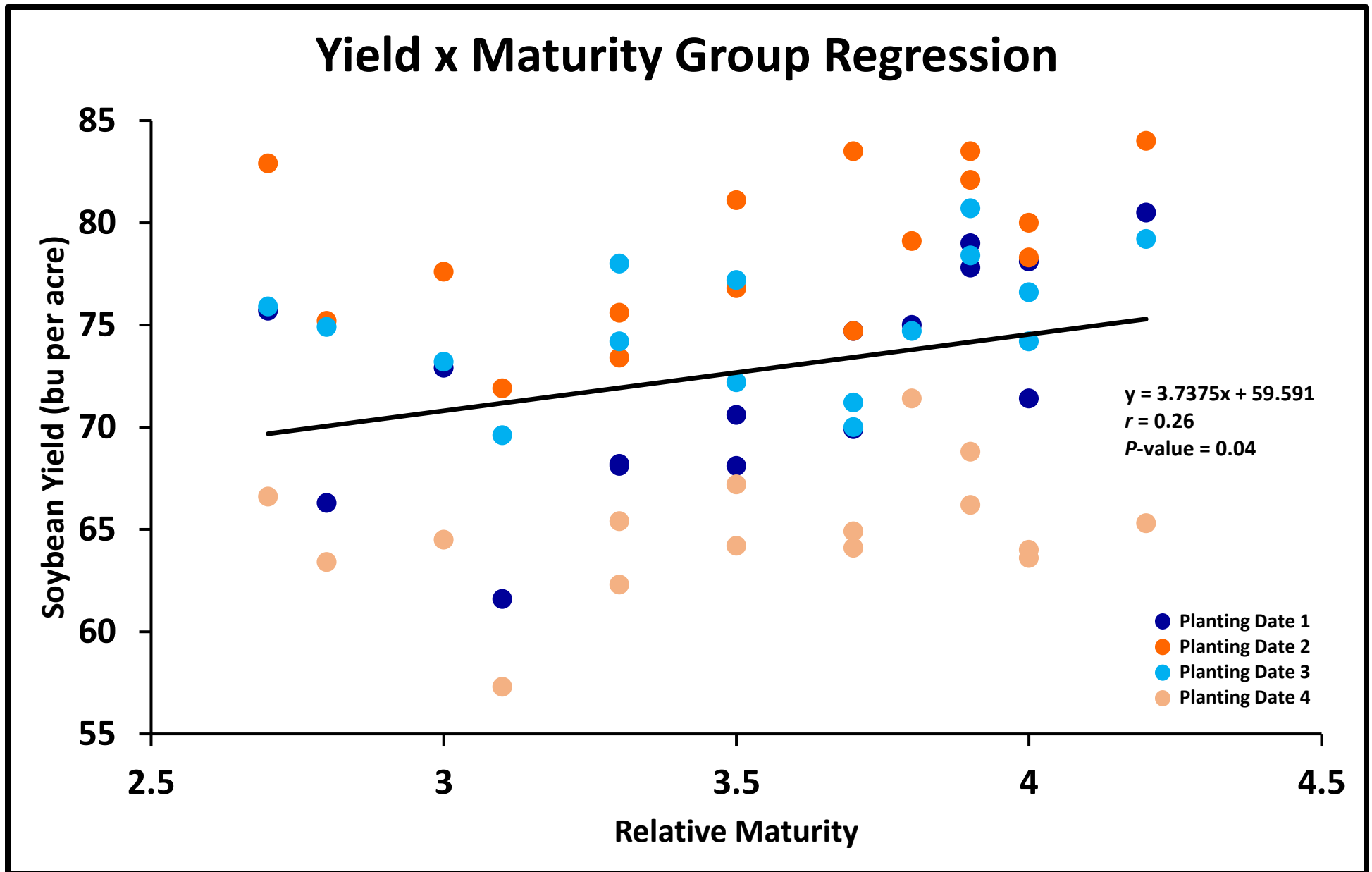
<sup>3</sup> FP, Foliar protection: supplied as fungicide (Miravis Top) and insecticide (Endigo ZC) at 13.7 and 4 oz per acre, respectively.

‡No seed treatment applied.



**Figure 3.** Soybean grain yields expressed by planting date, averaged across all planting dates.





**Figure 4.** Soybean grain yields regressed against relative maturity of soybean across four planting dates in 2023. Each individual observation is the average yield of a variety across all managements (n=32 per data point, n=2048 for regression).