Crop Physiology

2017 Soybean Management Yield Potential

Part 2: Variety Summaries

Alison Vogel and Fred E. Below
Crop Physiology Laboratory, Department of Crop Sciences, University of Illinois

RESEARCH APPROACH:

Understanding soybean yield responses to foliar protection and increased fertility may help producers better position soybean varieties to their anticipated crop management situation. The objective of this study is to identify 'Offensive' soybean varieties, or varieties with adaptability to high yield environments (i.e., responsive to crop management), and 'Defensive' soybean varieties, or varieties with acceptable yields in low yield environments (i.e., resilience to pests and diseases, and tolerance to nutrient deficiency). In our approach, 'Offensive' varieties are the genotypes that combine above-average yield increases from: (i) foliar protection [foliar protection (insecticide and fungicide) versus no-foliar protection], (ii) fertility [187 lbs acre^{-1} of MicroEssentials S10 (N, P, & S) versus no added fertility], and/or (iii) the combination of both treatments (additional fertility and foliar protection). Conversely, varieties with high yield performance under no additional fertilizer or foliar protection (i.e., the control treatment) and low yield increases from foliar protection were considered 'Defensive' varieties.

The 2017 trial evaluated 66 soybean varieties from six different brands comprising maturity groups ranging from 2.5 to 4.8 (Table 1). Thirty-six varieties were evaluated at each of the three locations. The trial was planted using a precision plot planter (SeedPro 360, ALMACO, Nevada, IA) at Harrisburg, IL (10 May 2017), Yorkville, IL (15 May 2017), and Champaign, IL (29 May 2017). Plots were 16 feet in length with 30-inch row spacing and two rows in width to achieve a final population of approximately 160,000 plants acre^{-1}. The foliar protection treatment was applied by tractor and consisted of an insecticide (Endigo® ZC; Lambda-cyhalothrin + Thiamethoxam) and fungicide (Trivapro™; Benzovindiflupyr + Azoxystrobin + Propiconazole) application at the R3 stage at rates of 3.8 and 13.7 oz per acre, respectively. Application dates for foliar protection were 18 July 2017 (Harrisburg), 27 July 2017 (Yorkville), and 31 July 2017 (Champaign). The fertility treatment consisted of a premium MAP-based phosphorus fertilizer that also contained S, namely, MicroEssentials S10 (MES10, 12-40-0-10S; The Mosaic Company, Plymouth, MN), applied at 187 lbs acre^{-1} in a subsurface band 4 to 6 inches deep immediately prior to planting using a research-scale fertilizer toolbar to provide 22 lbs N, 75 lbs P_2O_5, and 18 lbs S per acre.

Plots were arranged in a split-plot RCB design with four blocks. The main plot was fertility (n=2) and the split-plot was foliar protection (n= 2) and variety (n=36) randomly assigned within each treatment block. Data were analyzed using analysis of variance with the PROC MIXED procedure of SAS (Version 8, SAS Institute, Cary, NC) and means were separated using Fisher's protected LSD test at the 0.10 level of significance. Variety, fertility, and foliar protection were considered fixed effects, while block and interactions with blocks were considered random effects. At maturity, yield (bu acre^{-1}) was measured with a plot combine and adjusted to constant moisture (i.e., 13% grain moisture concentration).

Table 1. The evaluation distribution of 66 soybean varieties at Yorkville, Champaign, and Harrisburg, IL in 2017. Varieties are arranged by brand name and maturity group.

Variety	Brand	Maturity Group	Yorkville	Champaign	Harrisburg
AG2636	Asgrow	2.6	X		
AG26X8	Asgrow	2.6	X		
AG27X7	Asgrow	2.7	X		
AG29X8	Asgrow	2.9	X		
AG30X8	Asgrow	3.0	X		
AG32X8	Asgrow	3.2	X	X	
AG33X8	Asgrow	3.3	X	X	
AG34X6	Asgrow	3.4	X	X	
AG36X6	Asgrow	3.6	X	X	X
AG37X8	Asgrow	3.7		X	
AG38X6	Asgrow	3.8		X	
AG38X8	Asgrow	3.8		X	
AG39X7	Asgrow	3.9		X	X
AG4135	Asgrow	4.1		X	X
AG42X6	Asgrow	4.2			X
AG43X7	Asgrow	4.3			X
AG43X8	Asgrow	4.3			X
AG44X6	Asgrow	4.4			X
AG46X8	Asgrow	4.6			X
AG46X6	Asgrow	4.6			X
AG48X7	Asgrow	4.8			X
R2C2674	Croplan	2.6	X		
R2C3113	Croplan	3.1	X	X	
RX3556	Croplan	3.5	X	X	X
RX3896	Croplan	3.8	X	X	X
R2C4000	Croplan	4.1		X	X
RX4316s	Croplan	4.3		X	X
S26XT88	Dyna-Gro	2.6	X		
S28XT58	Dyna-Gro	2.8	X		
SX17829XT	Dyna-Gro	2.9	X		
S30XT68	Dyna-Gro	3.0	X	X	
S30XT96	Dyna-Gro	3.0	X	X	
S31XT48	Dyna-Gro	3.1	X	X	
S33XT07	Dyna-Gro	3.3	X	X	
S34XT78	Dyna-Gro	3.4	X	X	
S35XT97	Dyna-Gro	3.5	X	X	
S37XT28	Dyna-Gro	3.7	X	X	X
S39XT08	Dyna-Gro	3.9		X	X
S39XT68	Dyna-Gro	3.9		X	X
S41XS98	Dyna-Gro	4.1			X
S43XS27	Dyna-Gro	4.3			X
S44XS57	Dyna-Gro	4.4			X
SX17844XS	Dyna-Gro	4.4			X
S45XS37	Dyna-Gro	4.5			X
S46XS87	Dyna-Gro	4.6			X
S48XS78	Dyna-Gro	4.8			X
GH2537X	Golden Harvest	2.5	X		
GH2788X	Golden Harvest	2.7	X		
GH2981X	Golden Harvest	2.9	X		
GH3195X	Golden Harvest	3.1	X	X	
GH3324X	Golden Harvest	3.3	X		
GH3546X	Golden Harvest	3.5	X	X	X
GH3761X	Golden Harvest	3.7	X	X	X
GH3982X	Golden Harvest	3.9	X	X	X
GH3985X	Golden Harvest	3.9		X	X
GH4142X	Golden Harvest	4.1		X	X
GH4307X	Golden Harvest	4.3			X
GH4542X	Golden Harvest	4.5			X
NK S30-V6	NK	3	X	X	
NK S37-Z8	NK	3.7	X	X	X
NK S39-C4	NK	3.9	X	X	X
NK S42-P6	NK	4.2		X	X
P33T19X	Pioneer	3.3	X	X	
P36T36X	Pioneer	3.6	X	X	
P40T26X	Pioneer	4.0		X	X
P46T30X	Pioneer	4.6			X

Table 2. Precipitation and temperature during the production season at Yorkville, Champaign, and Harrisburg, IL in 2017 compared to the 30-year average (Ave.). Values were obtained from Illinois State Water Survey.

	Yorkville, IL				Champaign, IL				Harrisburg, IL			
	Precip. (in)		Temp. (°F)		Precip. (in)		Temp. (°F)		Precip. (in)		Temp. (°F)	
Month	**2017**	**Ave.**	**2017**	**Ave.**	**2017**	**Ave.**	**2017**	**Ave.**	**2017**	**Ave.**	**2017**	**Ave.**
May	4.7	4.3	58	61	5.9	4.9	61	63	4.8	5.1	66	66
June	1.8	4.3	72	70	2.1	4.3	73	72	2.3	4.5	74	75
July	7.0	4.7	74	74	2.8	4.7	76	75	1.2	3.8	79	78
August	2.8	4.1	70	72	2.2	3.9	71	73	4.2	3.0	73	77
Sept.	0.1	3.1	68	65	0.8	3.1	69	66	1.5	3.1	70	69

Table 3. Pre-plant soil properties and Mehlich 3-extraction-based mineral test results obtained from 0 to 6 inches depth for the Soybean Management Yield Potential trial conducted at Yorkville, Champaign, and Harrisburg IL in 2017.

Location	OM†	pH	CEC	P	K	Ca	Mg	S
	%		Meq/100g			ppm		
Yorkville	5.2	5.8	22.3	43	201	2621	460	9.0
Champaign	2.8	6.3	16.7	33	120	2101	415	7.0
Harrisburg	2.1	6.6	13.2	20	140	2053	166	7.0

† OM, Organic Matter; CEC, Cation Exchange Capacity

Table 4. Significance (*p*-value) and F-value for genotype, fertility, and foliar protection and their interaction effects at Yorkville, Champaign, and Harrisburg, IL in 2017.

	Yorkville		Champaign		Harrisburg	
Source	**F Value**	***p*-value**	**F Value**	***p*-value**	**F Value**	***p*-value**
Genotype	7.0	<.001	4.3	<.001	11.0	<.001
Fertility	0.4	0.561	5.2	0.091	0.8	0.446
Geno. x Fert	1.0	0.411	0.6	0.945	0.9	0.570
Foliar Protection	68.5	<.001	0.9	0.334	27.4	0.002
Geno. x Foliar	1.6	0.021	0.5	0.995	1.3	0.130
Fert. x Foliar	3.6	0.060	0.2	0.666	0.1	0.725
Geno. x Fert. x Foliar	0.5	0.997	0.2	1.000	0.9	0.573

YIELD RESULTS:

The 2017 crop growing season experienced excessive rainfall in May at Champaign and Yorkville (Table 2). During the remainder of the growing season (June through September) rainfall was below normal at all three locations, with the exceptions of July in Yorkville (2.3 inches more than the 30-year average) and August in Harrisburg (1.2 inches more than the 30-year average). Throughout the growing season temperatures at all sites were similar to the 30-year average, but August was cooler than normal while September was warmer than normal. Additionally, soil pH, organic matter, and fertility levels were relatively adequate, allowing for growing conditions generally conducive to favorable grain yields (Table 3). Across all three locations genotypes significantly differed in their final grain yield (Table 4).

Location significantly affected grain yields, with average yields of 81.8, 62.0, and 90.5 bu acre^{-1} for Yorkville, Champaign, and Harrisburg, respectively (Tables 5 to 19). Foliar protection tended to increase soybean yields at Yorkville and Harrisburg, but did not increase yield at Champaign due to dry conditions and low disease and insect pressure. On average, foliar protection alone increased yield by +2.5, 0, and +3.5 bu acre^{-1} at Yorkville, Champaign, and Harrisburg, respectively, while fertility additions alone altered yield by -1.2, +1.4, and +0.8 bu acre^{-1} at these same sites (Figures 1 to 3). Additional fertility in combination with foliar protection promoted the greatest yield responses in Yorkville (+2.8 bu acre^{-1}) and Harrisburg (+3.8 bu acre^{-1}) compared to fertility or foliar protection alone.

Across all three locations, varieties exhibited significantly different grain yields. At standard management (no fertility additions or foliar protection), the highest to lowest yielding varieties differed by 15, 13, and 19 bu acre^{-1} at Yorkville, Champaign, and Harrisburg, respectively. The largest varietal yield range was produced by additional fertility at Harrisburg (23 bu acre^{-1}).

The highest yields recorded were 91.0, 70.3, and 103.8 bu acre^{-1} at Yorkville, Champaign, and Harrisburg, respectively (varieties R2C2674, AG36X6, and NK S39-C4, respectively) observed when the plants were grown under increased fertility plus foliar protection conditions. In Yorkville, the top five yields were from the following varieties: R2C2674 (91.0 bu acre^{-1}), GH3195X (90.4 bu acre^{-1}), GH2981X (89.4 bu acre^{-1}), S28XT58 (89.3 bu acre^{-1}), and GH2788X (89.0 bu acre^{-1}), all achieved with foliar protection plus fertility. Moving down the state of Illinois, the top five yields at Champaign were achieved with the following varieties: AG36X6 (70.3 bu acre^{-1}), AG34X6 (68.6 bu acre^{-1}), AG4135 (68.5 bu acre^{-1}), P40T26X (68.2 bu acre^{-1}), and AG32X8 (67.3 bu acre^{-1}). At Harrisburg, the highest overall yields were achieved by: NK S39-C4 (103.8 bu acre^{-1}), NK S42-P6 (103.2 bu acre^{-1}), S41XS98 (100.3 bu acre^{-1}), AG39X7 (98.2 bu acre^{-1}), RX3556 (97.9 bu acre^{-1}), and S37XT28 (97.9 bu acre^{-1}).

Yield responses of individual varieties to additional fertility compared to the untreated control at all locations ranged from -7.6 to +8.4 bu acre^{-1}, indicating different genetic sensitivity to soil nutrient availability. Foliar protection changed yield by -5.8 to +11.4 bu acre^{-1}, and when applied in combination with fertility, yields changed by -7.1 to +12.3 bu acre^{-1}.

Table 5. Ranked grain yield of 36 commercial soybean varieties when grown with no fertilizer and no foliar protection application (Control) at **Yorkville**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	GH2788X	86.8	19	GH3761X	80.8
2	GH3195X	86.3	20	NK S37-Z8	80.7
3	AG2636	85.5	21	R2C3113	80.5
4	S30XT68	85.5	22	AG33X8	80.2
5	AG26X8	84.8	23	GH3324X	79.7
6	P33T19X	84.7	24	NK S30-V6	79.7
7	S34XT78	84.5	25	S37XT28	79.6
8	R2C2674	84.5	26	AG36X6	79.5
9	GH3546X	84.2	27	AG27X7	78.7
10	S28XT58	83.4	28	GH2981X	78.7
11	AG32X8	82.4	29	S26XT88	78.0
12	GH2537X	82.2	30	AG34X6	77.8
13	S33XT07	81.7	31	AG30X8	77.3
14	S30XT96	81.5	32	AG29X8	77.1
15	NK S39-C4	81.4	33	P36T36X	76.3
16	S35XT97	81.1	34	GH3982X	75.4
17	SX17829XT	81.0	35	S31XT48	75.0
18	RX3556	80.8	36	RX3896	71.6
	Overall Mean	80.8		LSD ($P \leq 0.10$)	4.8

Table 6. Ranked grain yield of 36 commercial soybean varieties when grown with 187 lbs acre^{-1} of MicroEssentials S10 and no foliar protection application at **Yorkville**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	AG26X8	86.0	19	AG29X8	80.1
2	GH3195X	85.8	20	AG33X8	79.5
3	GH2788X	85.6	21	AG27X7	79.4
4	R2C2674	85.5	22	AG36X6	79.1
5	S28XT58	84.5	23	R2C3113	78.7
6	P33T19X	83.7	24	S26XT88	78.5
7	S37XT28	83.4	25	S30XT68	78.5
8	S30XT96	83.1	26	S35XT97	78.0
9	GH3324X	82.5	27	S33XT07	77.0
10	S34XT78	82.3	28	NK S37-Z8	76.4
11	AG32X8	82.0	29	AG30X8	76.2
12	S31XT48	81.3	30	NK S39-C4	76.0
13	GH2537X	81.1	31	AG34X6	75.6
14	SX17829XT	81.1	32	GH3761X	74.9
15	AG2636	81.0	33	NK S30-V6	74.8
16	GH3546X	80.8	34	P36T36X	73.5
17	GH2981X	80.6	35	RX3896	70.9
18	RX3556	80.6	36	GH3982X	67.7
	Overall Mean	79.6		LSD ($P \leq 0.10$)	5.9

Table 7. Ranked grain yield of 36 commercial soybean varieties when grown with no fertilizer and one foliar protection application (fungicide and insecticide) at the R3 growth stage at **Yorkville**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	GH2788X	89.0	19	S37XT28	83.8
2	S30XT68	87.6	20	S31XT48	83.7
3	GH3761X	87.2	21	NK S30-V6	83.3
4	R2C2674	87.2	22	R2C3113	83.0
5	AG32X8	87.1	23	S35XT97	82.5
6	S30XT96	87.0	24	RX3556	82.2
7	S28XT58	86.8	25	P33T19X	81.6
8	GH2537X	86.3	26	P36T36X	81.6
9	AG2636	86.2	27	S33XT07	81.4
10	GH3982X	86.2	28	AG33X8	80.9
11	GH2981X	86.1	29	AG27X7	79.5
12	SX17829XT	85.4	30	GH3324X	79.4
13	AG26X8	85.3	31	AG36X6	79.3
14	GH3195X	85.2	32	S26XT88	78.3
15	GH3546X	84.7	33	AG30X8	78.2
16	S34XT78	84.6	34	RX3896	77.4
17	AG34X6	84.2	35	AG29X8	77.4
18	NK S37-Z8	84.0	36	NK S39-C4	75.6
	Overall Mean	83.3		LSD ($P \leq 0.10$)	5.6

Table 8. Ranked grain yield of 36 commercial soybean varieties when grown at 187 lbs acre^{-1} of MicroEssentials S10 and one foliar protection application (fungicide and insecticide) at the R3 growth stage at **Yorkville**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	R2C2674	91.0	19	AG2636	83.7
2	GH3195X	90.4	20	S37XT28	83.2
3	GH2981X	89.4	21	GH3761X	82.9
4	S28XT58	89.3	22	AG30X8	82.8
5	GH2788X	89.0	23	S31XT48	82.8
6	GH3546X	88.8	24	AG34X6	82.0
7	AG32X8	87.2	25	AG36X6	81.4
8	S30XT68	86.5	26	P36T36X	81.4
9	S34XT78	85.6	27	GH3324X	81.3
10	S30XT96	85.3	28	AG29X8	81.2
11	AG26X8	85.2	29	S35XT97	80.8
12	AG27X7	85.2	30	P33T19X	80.5
13	RX3556	85.0	31	GH3982X	79.7
14	R2C3113	85.0	32	AG33X8	78.9
15	NK S30-V6	84.8	33	S26XT88	78.6
16	NK S37-Z8	84.7	34	S33XT07	78.2
17	SX17829XT	84.2	35	RX3896	75.7
18	GH2537X	83.8	36	NK S39-C4	74.2
	Overall Mean	83.6		LSD ($P \leq 0.10$)	5.9

Table 9. Grain yield of 36 commercial soybean varieties in response to fertilizer and foliar protection at **Yorkville**, IL in 2017. Within a seed brand, varieties are sorted by maturity group.

	Foliar Protection			
	Without		With	
	Fertilizer (lbs acre^{-1})			
Variety	**0**	**187**	**0**	**187**
Asgrow		bu acre^{-1}		
AG2636	85.5	81.0	86.2	83.7
AG26X8	84.8	86.0	85.3	85.2
AG27X7	78.7	79.4	79.5	85.2
AG29X8	77.1	80.1	77.4	81.2
AG30X8	77.3	76.2	78.2	82.8
AG32X8	82.4	82.0	87.1	87.2
AG33X8	80.2	79.5	80.9	78.9
AG34X6	77.8	75.6	84.2	82.0
AG36X6	79.5	79.1	79.3	81.4
Croplan				
R2C2674	84.5	85.5	87.2	91.0
R2C3113	80.5	78.7	83.0	85.0
RX3556	80.8	80.6	82.2	85.0
RX3896	71.6	70.9	77.4	75.7
Dyna-Gro				
S26XT88	78.0	78.5	78.3	78.6
S28XT58	83.4	84.5	86.8	89.3
SX17829XT	81.0	81.1	85.4	84.2
S30XT68	85.5	78.5	87.6	86.5
S30XT96	81.5	83.1	87.0	85.3
S31XT48	75.0	81.3	83.7	82.8
S33XT07	81.7	77.0	81.4	78.2
S34XT78	84.5	82.3	84.6	85.6
S35XT97	81.1	78.0	82.5	80.8
S37XT28	79.6	83.4	83.8	83.2
Golden Harvest				
GH2537X	82.2	81.1	86.3	83.8
GH2788X	86.8	85.6	89.0	89.0
GH2981X	78.7	80.6	86.1	89.4
GH3195X	86.3	85.8	85.2	90.4
GH3324X	79.7	82.5	79.4	81.3
GH3546X	84.2	80.8	84.7	88.8
GH3761X	80.8	74.9	87.2	82.9
GH3982X	75.4	67.7	86.2	79.7
NK				
NK S30-V6	79.7	74.8	83.3	84.8
NK S37-Z8	80.7	76.4	84.0	84.7
NK S39-C4	81.4	76.0	75.6	74.2
Pioneer				
P33T19X	84.7	83.7	81.6	80.5
P36T36X	76.3	73.5	81.6	81.4
Overall Mean	**80.8**	**79.6**	**83.3**	**83.6**
Range	72-87	68-86	76-89	74-91
LSD ($P \leq 0.10$)	4.8	5.9	5.6	5.9

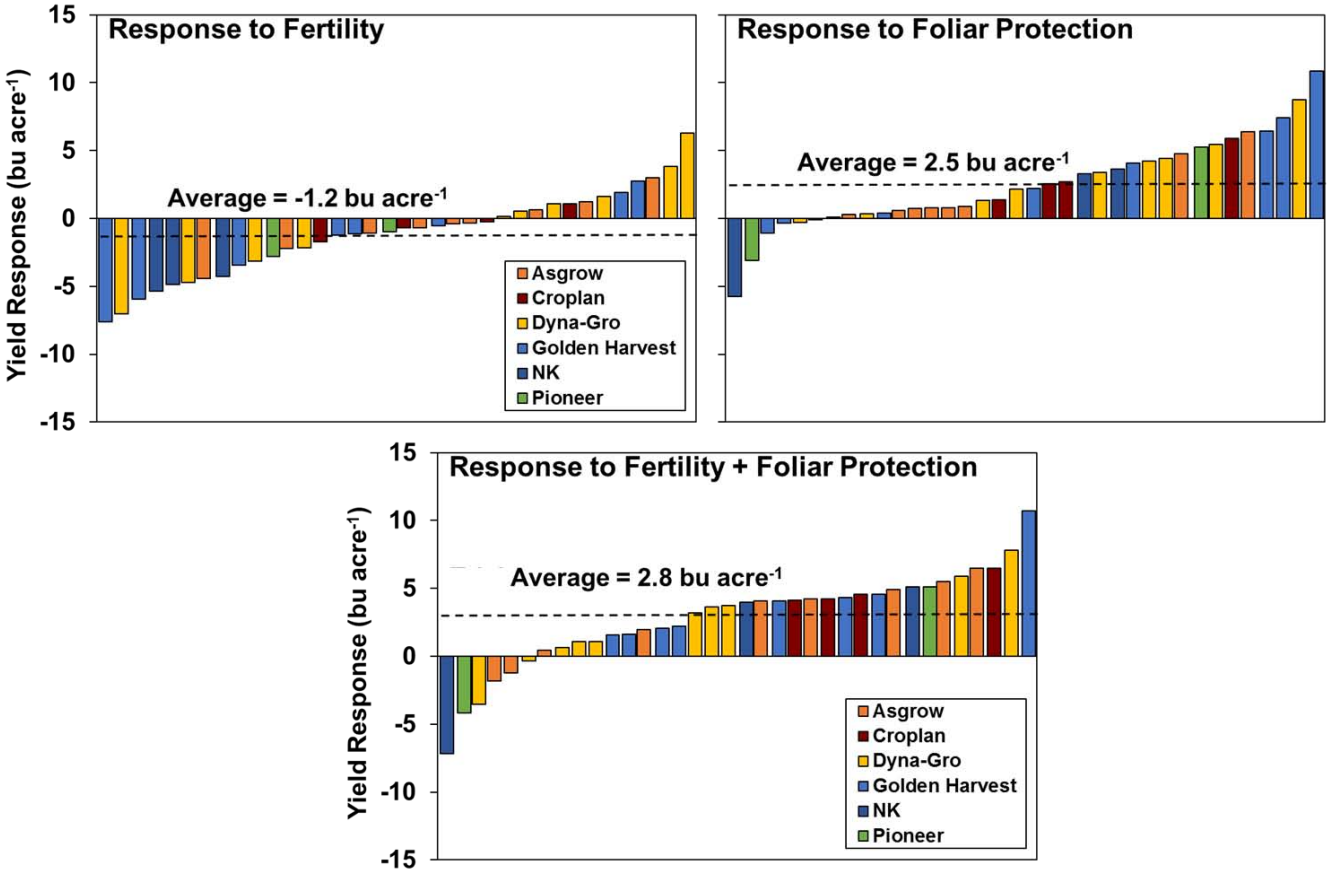


Figure 1. Yield response to fertility (yield difference between 0 and 187 lbs acre^{-1} of MES10), foliar protection [yield difference between foliar protection (insecticide and fungicide) and no foliar protection], and the combination of fertility and foliar protection (yield difference between control and 187 lbs acre^{-1} of MES10 with foliar protection) for 36 soybean varieties grown at **Yorkville**, IL in 2017.

Table 10. Ranked grain yield of 36 commercial soybean varieties when grown with no fertilizer and no foliar protection application (Control) at **Champaign**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	AG34X6	68.6	19	S33XT07	61.3
2	AG4135	68.5	20	P33T19X	61.2
3	AG37X8	66.6	21	S37XT28	61.1
4	AG32X8	66.1	22	NK S37-Z8	61.0
5	RX3556	65.5	23	AG33X8	60.7
6	S34XT78	65.1	24	S35XT97	60.5
7	RX4316s	65.0	25	P40T26X	59.7
8	GH3982X	64.9	26	S30XT96	59.6
9	S39XT68	64.7	27	Rx3896	59.3
10	R2C3113	64.3	28	AG38X6	59.2
11	AG39X7	63.8	29	NK S30-V6	58.1
12	GH3546X	63.2	30	NK S42-P6	57.8
13	S31XT48	62.9	31	GH4142X	57.7
14	AG36X6	62.6	32	AG38X8	57.5
15	S30XT68	62.1	33	P36T36X	55.9
16	GH3195X	61.9	34	NK S39-C4	54.9
17	GH3761X	61.8	35	S39XT08	54.4
18	R2C4000	61.7	36	GH3985X	54.4
	Overall Mean	61.5		LSD ($P \leq 0.10$)	6.0

Table 11. Ranked grain yield of 36 commercial soybean varieties when grown with 187 lbs acre^{-1} of MicroEssentials S10 and no foliar protection application at **Champaign**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	AG4135	68.5	19	RX3896	63.9
2	S33XT07	67.0	20	S30XT96	63.3
3	AG34X6	66.9	21	AG32X8	63.2
4	RX4316s	66.1	22	RX3556	62.9
5	NK S37-Z8	66.0	23	AG38X6	62.7
6	AG37X8	66.0	24	GH4142X	62.7
7	S31XT48	65.4	25	S37XT28	62.6
8	AG39X7	65.4	26	S34XT78	62.4
9	S39XT68	65.3	27	AG33X8	61.9
10	GH3982X	65.2	28	P36T36X	60.6
11	R2C4000	65.0	29	NK S30-V6	59.7
12	P40T26X	64.9	30	GH3546X	59.6
13	S30XT68	64.7	31	NK S42-P6	59.2
14	GH3195X	64.5	32	GH3761X	59.1
15	P33T19X	64.5	33	NK S39-C4	57.4
16	S35XT97	64.5	34	AG38X8	55.9
17	AG36X6	64.3	35	GH3985X	55.6
18	R2C3113	64.1	36	S39XT08	53.7
	Overall Mean	62.9		LSD ($P \leq 0.10$)	7.5

Table 12. Ranked grain yield of 36 commercial soybean varieties when grown with no fertilizer and one foliar protection application (fungicide and insecticide) at the R3 growth stage at **Champaign**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	AG36X6	68.7	19	R2C3113	61.0
2	AG4135	68.5	20	S31XT48	61.0
3	AG32X8	67.3	21	NK S37-Z8	60.9
4	AG34X6	66.4	22	RX3896	60.5
5	GH3982X	65.3	23	AG39X7	59.8
6	R2C4000	64.1	24	S35XT97	59.6
7	RX4316s	64.0	25	S37XT28	59.4
8	S39XT68	63.1	26	NK S30-V6	59.4
9	RX3556	63.1	27	NK S42-P6	59.2
10	S34XT78	62.9	28	P33T19X	59.1
11	GH3761X	62.6	29	AG38X6	58.5
12	GH3195X	62.6	30	GH4142X	57.7
13	AG37X8	62.4	31	P36T36X	57.6
14	GH3546X	62.4	32	NK S39-C4	57.5
15	S30XT68	61.9	33	AG38X8	57.3
16	P40T26X	61.2	34	S30XT96	56.9
17	S33XT07	61.2	35	GH3985X	56.2
18	AG33X8	61.1	36	S39XT08	53.9
	Overall Mean	61.2		LSD ($P \leq 0.10$)	6.9

Table 13. Ranked grain yield of 36 commercial soybean varieties when grown at 187 lbs acre^{-1} of MicroEssentials S10 and one foliar protection application (fungicide and insecticide) at the R3 growth stage at **Champaign**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	AG36X6	70.3	19	AG38X6	62.1
2	P40T26X	68.2	20	AG32X8	61.9
3	AG4135	67.6	21	GH3546X	61.7
4	S35XT97	66.1	22	S33XT07	61.4
5	GH3982X	66.1	23	S37XT28	61.0
6	S30XT68	65.8	24	AG33X8	60.7
7	GH3195X	65.6	25	P33T19X	60.5
8	AG34X6	65.3	26	NK S39-C4	60.2
9	RX3896	65.0	27	NK S30-V6	60.2
10	S34XT78	64.3	28	GH4142X	60.0
11	S31XT48	64.0	29	NK S37-Z8	59.6
12	R2C4000	63.6	30	GH3761X	59.3
13	AG37X8	63.4	31	NK S42-P6	58.7
14	AG39X7	63.2	32	P36T36X	58.7
15	R2C3113	63.1	33	S30XT96	57.9
16	RX4316s	62.8	34	GH3985X	57.7
17	RX3556	62.7	35	AG38X8	54.5
18	S39XT68	62.3	36	S39XT08	54.5
	Overall Mean	62.2		LSD ($P \leq 0.10$)	7.4

Table 14. Grain yield of 36 commercial soybean varieties in response to fertilizer and foliar protection at **Champaign**, IL in 2017. Within a seed brand, varieties are sorted by maturity group.

	Foliar Protection			
	Without		With	
	Fertilizer (lbs acre^{-1})			
Variety	**0**	**187**	**0**	**187**
Asgrow	bu acre^{-1}			
AG32X8	66.1	63.2	67.3	61.9
AG33X8	60.7	61.9	61.1	60.7
AG34X6	68.6	66.9	66.4	65.3
AG36X6	62.6	64.3	68.7	70.3
AG37X8	66.6	66.0	62.4	63.4
AG38X6	59.2	62.7	58.5	62.1
AG38X8	57.5	55.9	57.3	54.5
AG39X7	63.8	65.4	59.8	63.2
AG4135	68.5	68.5	68.5	67.6
Croplan				
R2C3113	64.3	64.1	61.0	63.1
R2C4000	61.7	65.0	64.1	63.6
RX3556	65.5	62.9	63.1	62.7
RX3896	59.3	63.9	60.5	65.0
RX4316s	65.0	66.1	64.0	62.8
Dyna-Gro				
S30XT68	62.1	64.7	61.9	65.8
S30XT96	59.6	63.3	56.9	57.9
S31XT48	62.9	65.4	61.0	64.0
S33XT07	61.3	67.0	61.2	61.4
S34XT78	65.1	62.4	62.9	64.3
S35XT97	60.5	64.5	59.6	66.1
S37XT28	61.1	62.6	59.4	61.0
S39XT08	54.4	53.7	53.9	54.5
S39XT68	64.7	65.3	63.1	62.3
Golden Harvest				
GH3195X	61.9	64.5	62.6	65.6
GH3546X	63.2	59.6	62.4	61.7
GH3761X	61.8	59.1	62.6	59.3
GH3982X	64.9	65.2	65.3	66.1
GH3985X	54.4	55.6	56.2	57.7
GH4142X	57.7	62.7	57.7	60.0
NK				
NK S30-V6	58.1	59.7	59.4	60.2
NK S37-Z8	61.0	66.0	60.9	59.6
NK S39-C4	54.9	57.4	57.5	60.2
NK S42-P6	57.8	59.2	59.2	58.7
Pioneer				
P33T19X	61.2	64.5	59.1	60.5
P36T36X	55.9	60.6	57.6	58.7
P40T26X	59.7	64.9	61.2	68.2
Overall Mean	**61.5**	**62.9**	**61.2**	**62.2**
Range	54-67	54-69	54-69	55-70
LSD ($P \leq 0.10$)	6.0	7.5	6.9	7.4

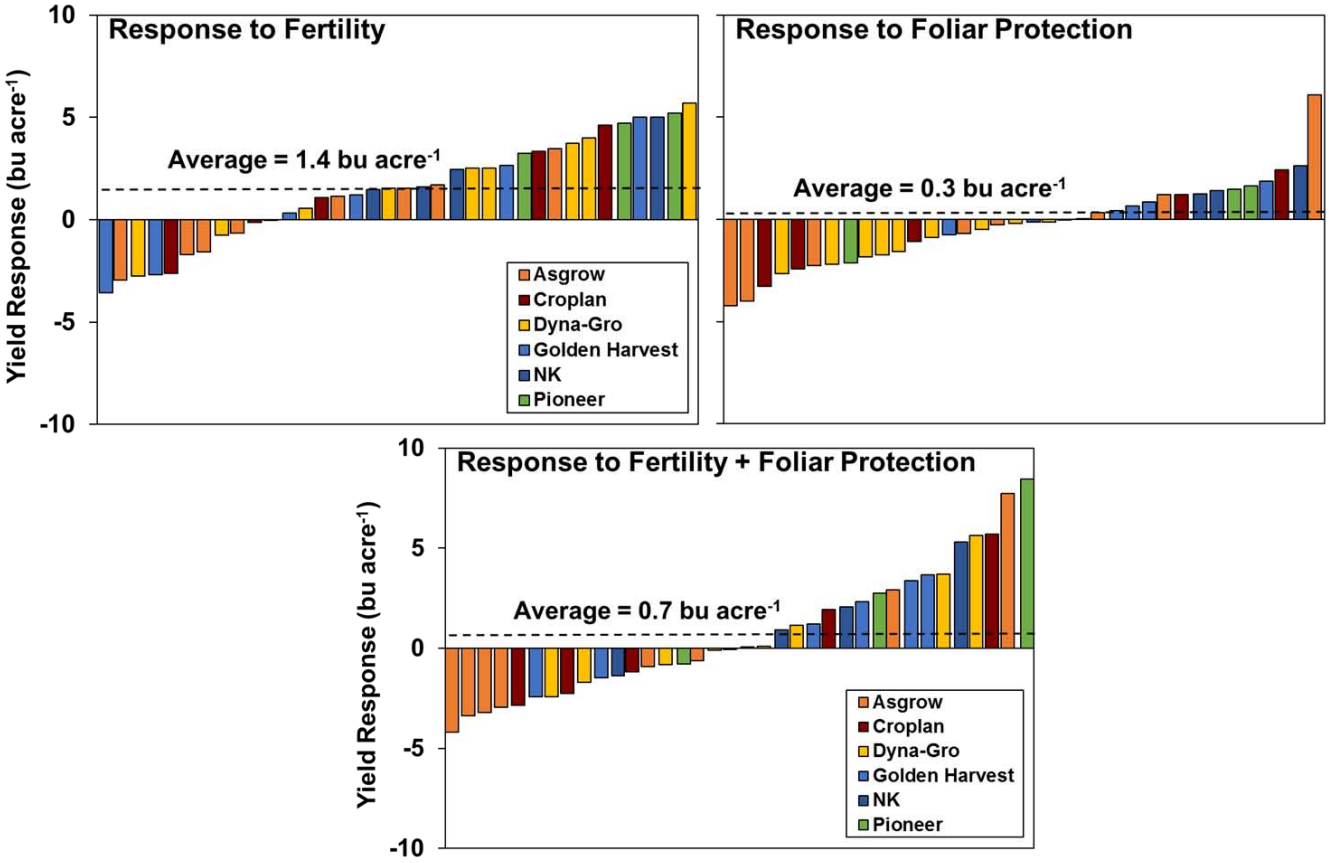


Figure 2. Yield response to fertility (yield difference between 0 and 187 lbs acre^{-1} of MES10), foliar protection [yield difference between foliar protection (insecticide and fungicide) and no foliar protection], and the combination of fertility and foliar protection (yield difference between control and 187 lbs acre^{-1} of MES10 with foliar protection) for 36 varieties of soybean grown at **Champaign**, IL in 2017.

Table 15. Ranked grain yield of 36 commercial soybean varieties when grown with no fertilizer and no foliar protection application (Control) at **Harrisburg**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	NK S42-P6	98.1	19	SX17844XS	88.3
2	S37XT28	96.4	20	GH4542X	88.3
3	NK S39-C4	95.3	21	AG43X8	87.8
4	RX3556	94.6	22	S48XS78	87.7
5	NK S37-Z8	94.5	23	AG42X6	87.6
6	S45XS37	93.2	24	S39XT08	87.3
7	GH4307X	92.9	25	RX4316s	86.8
8	R2C4000	90.7	26	AG43X7	86.8
9	P46T30X	90.7	27	AG36X6	86.7
10	S41XS98	90.7	28	AG46X8	86.0
11	GH3546X	90.6	29	P40T26X	85.7
12	AG4135	90.2	30	RX3896	85.4
13	GH3761X	89.9	31	S39XT68	84.3
14	GH3982X	89.8	32	S46XS87	82.9
15	AG39X7	88.8	33	GH3985X	82.6
16	S44XS57	88.5	34	AG44X6	81.0
17	AG46X6	88.5	35	AG48X7	79.8
18	S43XS27	88.4	36	GH4142X	78.6
	Overall Mean	88.5		LSD ($P \leq 0.10$)	5.9

Table 16. Ranked grain yield of 36 commercial soybean varieties when grown with 187 lbs acre^{-1} of MicroEssentials S10 and no foliar protection application at **Harrisburg**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	NK S42-P6	103.2	19	AG46X6	88.7
2	S37XT28	96.9	20	AG43X7	88.3
3	NK S39-C4	95.6	21	R2C4000	88.1
4	GH3761X	95.0	22	RX4316s	88.1
5	S41XS98	94.6	23	GH4542X	87.9
6	RX3556	94.4	24	S43XS27	87.6
7	GH4307X	93.1	25	AG36X6	87.5
8	P46T30X	92.9	26	S46XS87	86.5
9	AG39X7	92.4	27	GH3985X	86.3
10	GH3546X	92.1	28	P40T26X	86.1
11	GH3982X	91.9	29	SX17844XS	86.0
12	S45XS37	90.9	30	RX3896	85.6
13	NK S37-Z8	90.7	31	AG46X8	84.6
14	AG42X6	90.3	32	S48XS78	83.9
15	AG4135	90.1	33	AG43X8	83.6
16	S39XT68	89.9	34	S39XT08	82.1
17	AG44X6	89.5	35	GH4142X	81.9
18	S44XS57	89.4	36	AG48X7	79.9
	Overall Mean	89.3		LSD ($P \leq 0.10$)	7.5

Table 17. Ranked grain yield of 36 commercial soybean varieties when grown with no fertilizer and one foliar protection application (fungicide and insecticide) at the R3 growth stage at **Harrisburg**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	NK S42-P6	98.6	19	AG46X6	92.9
2	NK S39-C4	98.3	20	AG42X6	92.6
3	AG39X7	98.2	21	S43XS27	92.2
4	S37XT28	97.9	22	NK S37-Z8	91.8
5	S41XS98	97.4	23	RX3896	91.3
6	AG4135	97.0	24	SX17844XS	91.0
7	RX3556	97.0	25	S39XT08	90.5
8	GH3546X	96.5	26	RX4316s	89.6
9	S39XT68	95.7	27	GH4542X	89.1
10	P46T30X	95.2	28	AG44X6	89.0
11	GH3761X	95.1	29	S48XS78	88.4
12	S45XS37	94.2	30	P40T26X	87.7
13	GH4307X	94.0	31	GH3985X	87.3
14	AG36X6	93.8	32	AG43X7	86.8
15	GH3982X	93.7	33	GH4142X	84.2
16	R2C4000	93.1	34	S46XS87	84.0
17	AG43X8	93.1	35	AG46X8	80.7
18	S44XS57	92.9	36	AG48X7	78.9
	Overall Mean	91.9		LSD ($P \leq 0.10$)	5.1

Table 18. Ranked grain yield of 36 commercial soybean varieties when grown at 187 lbs acre^{-1} of MicroEssentials S10Z and one foliar protection application (fungicide and insecticide) at the R3 growth stage at **Harrisburg**, IL in 2017.

Rank	Variety	Grain yield	Rank	Variety	Grain yield
		bu acre^{-1}			bu acre^{-1}
1	NK S39-C4	103.8	19	AG48X7	92.1
2	S41XS98	100.3	20	AG43X8	91.7
3	RX3556	97.9	21	S39XT08	91.6
4	S37XT28	96.9	22	AG43X7	91.6
5	AG36X6	96.7	23	GH3982X	91.0
6	AG42X6	95.9	24	P40T26X	90.7
7	AG39X7	95.6	25	SX17844XS	90.2
8	S39XT68	95.6	26	GH4542X	90.1
9	NK S37-Z8	95.5	27	S44XS57	90.1
10	AG4135	95.3	28	RX3896	90.0
11	GH4307X	94.8	29	GH3985X	89.6
12	NK S42-P6	94.6	30	RX4316s	88.9
13	AG44X6	93.2	31	P46T30X	88.4
14	GH3546X	93.1	32	S43XS27	87.7
15	GH3761X	92.8	33	S46XS87	85.9
16	R2C4000	92.6	34	S48XS78	85.7
17	AG46X6	92.5	35	AG46X8	85.2
18	S45XS37	92.2	36	GH4142X	83.8
	Overall Mean	92.3		LSD ($P \leq 0.10$)	5.7

Table 19. Grain yield of 36 commercial soybean varieties in response to fertilizer and foliar protection at **Harrisburg,** IL in 2017. Within a seed brand, varieties are sorted by maturity group.

	Foliar Protection			
	Without		With	
	Fertilizer (lbs acre^{-1})			
Variety	**0**	**187**	**0**	**187**
Asgrow	bu acre^{-1}			
AG36X6	86.7	87.5	93.8	96.7
AG39X7	88.8	92.4	98.2	95.6
AG4135	90.2	90.1	97.0	95.3
AG42X6	87.6	90.3	92.6	95.9
AG43X7	86.8	88.3	86.8	91.6
AG43X8	87.8	83.6	93.1	91.7
AG44X6	81.0	89.5	89.0	93.2
AG46X8	88.5	88.7	92.9	92.5
AG46X6	86.0	84.6	80.7	85.2
AG48X7	79.8	79.9	78.9	92.1
Croplan				
RX3556	94.6	94.4	97.0	97.9
RX3896	85.4	85.6	91.3	90.0
R2C4000	90.7	88.1	93.1	92.6
RX4316s	86.8	88.1	89.6	88.9
Dyna-Gro				
S37XT28	96.4	96.9	97.9	96.9
S39XT08	87.3	82.1	90.5	91.6
S39XT68	84.3	89.9	95.7	95.6
S41XS98	90.7	94.6	97.4	100.3
S43XS27	88.4	87.6	92.2	87.7
S44XS57	88.5	89.4	92.9	90.1
SX17844XS	88.3	86.0	91.0	90.2
S45XS37	93.2	90.9	94.2	92.2
S46XS87	82.9	86.5	84.0	85.9
S48XS78	87.7	83.9	88.4	85.7
Golden Harvest				
GH3546X	90.6	92.1	96.5	93.1
GH3761X	89.9	95.0	95.1	92.8
GH3982X	89.8	91.9	93.7	91.0
GH3985X	82.6	86.3	87.3	89.6
GH4142X	78.6	81.9	84.2	83.8
GH4307X	92.9	93.1	94.0	94.8
GH4542X	88.3	87.9	89.1	90.1
NK				
NK S37-Z8	94.5	90.7	91.8	95.5
NK S39-C4	95.3	95.6	98.3	103.8
NK S42-P6	98.1	103.2	98.6	94.6
Pioneer				
P40T26X	85.7	86.1	87.7	90.7
P46T30X	90.7	92.9	95.2	88.4
Overall Mean	**88.5**	**89.3**	**91.9**	**92.3**
Range	79-98	80-103	79-99	88-104
LSD ($P \leq 0.10$)	5.9	6.2	5.1	5.7

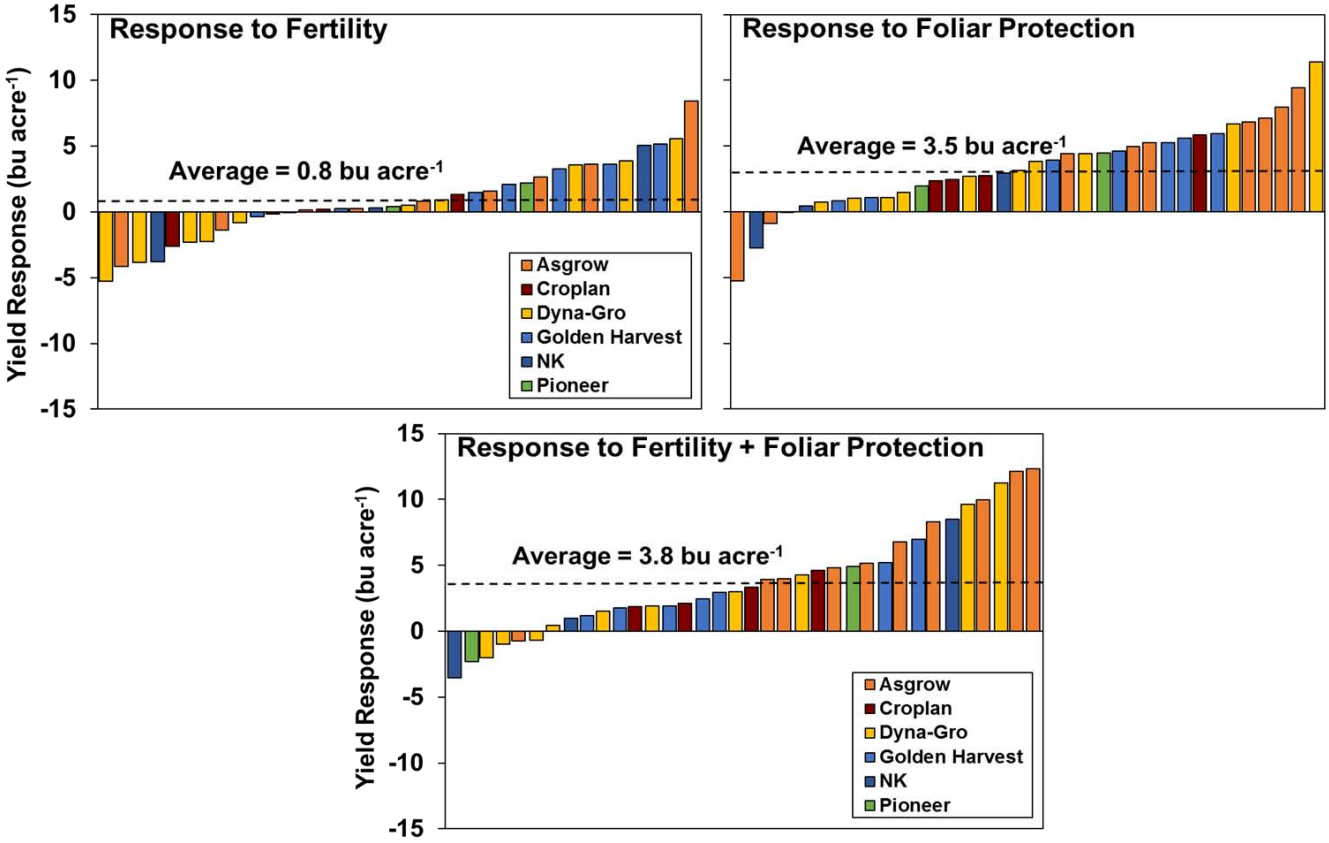


Figure 3. Yield response to fertility (yield difference between 0 and 187 lbs acre^{-1} of MES10), foliar protection [yield difference between foliar protection (insecticide and fungicide) and no-foliar protection], and the combination of fertility and foliar protection (yield difference between control and 187 lbs acre^{-1} of MES10 with foliar protection) for 36 varieties of soybean grown at **Harrisburg**, IL in 2017.

CHARACTERIZATION OF VARITIES IN RESPONSE TO MANAGEMENT:

The differences observed in yield performance among varieties and their interaction with agronomic management across environments highlights the opportunity of soybean genetic characterization in response to different agronomic factors.

The objective of the Soybean MYP trial is to characterize elite soybean cultivars for their response to different agronomic management conditions. Variety decile ranks for yield performance under low agronomic management input (Yield Control), yield response to increased fertility (FERT), yield response to foliar protection (PROT), yield response to foliar protection and increased fertility (PROT + FERT), and yield performance resulting from the combination of both treatments (Yield BOTH) across locations are presented in Table 20. Agronomists and farmers may use the score from each parameter to better position their soybean variety based on the agronomic performance and response to agronomic management at different locations. 'Defensive' varieties can be considered as ones having a high ranking for Yield Control and a low ranking for yield response to foliar protection (low PROT), while 'Offensive' varieties can be considered ones having a high ranking for Yield Both and high rankings for yield response to foliar protection (high PROT) and increased fertility (high FERT).

Table 20. Decile scores for yield with no additional fertilizer or foliar protection (Control), and yield with additional fertilizer and foliar protection (BOTH), and the yield responses to increased fertility (FERT), foliar protection (PROT), and the combination of both treatments (PROT+FERT). Varieties are sorted by brand and maturity group. Scores range from 1 indicating the lowest yield (or yield increase) and 10 indicating the greatest yield (or yield increase).

	Yorkville					Champaign					Harrisburg				
	Yield Control	PROT	FERT	PROT +FERT	Yield BOTH	Yield Control	PROT	FERT	PROT +FERT	Yield BOTH	Yield Control	PROT	FERT	PROT +FERT	Yield BOTH
Asgrow															
AG2636	10	4	3	2	6	-	-	-	-	-	-	-	-	-	-
AG26X8	9	3	9	3	8	-	-	-	-	-	-	-	-	-	-
AG27X7	4	4	8	10	8	-	-	-	-	-	-	-	-	-	-
AG29X8	2	2	10	6	3	-	-	-	-	-	-	-	-	-	-
AG30X8	2	4	6	9	5	-	-	-	-	-	-	-	-	-	-
AG32X8	8	8	7	8	9	10	7	1	1	6	-	-	-	-	-
AG33X8	5	3	6	2	2	5	6	5	6	5	-	-	-	-	-
AG34X6	3	9	4	7	5	10	2	2	1	9	-	-	-	-	-
AG36X6	4	2	7	5	4	7	10	7	10	10	4	9	6	10	9
AG37X8	-	-	-	-	-	10	1	3	1	7	-	-	-	-	-
AG38X6	-	-	-	-	-	3	4	8	8	6	-	-	-	-	-
AG38X8	-	-	-	-	-	2	5	3	2	1	-	-	-	-	-
AG39X7	-	-	-	-	-	8	1	6	5	7	7	10	9	8	9
AG4135	-	-	-	-	-	10	6	4	5	10	8	9	4	8	8
AG42X6	-	-	-	-	-	-	-	-	-	-	5	7	8	9	9
AG43X7	-	-	-	-	-	-	-	-	-	-	4	1	7	7	5
AG43X8	-	-	-	-	-	-	-	-	-	-	5	7	1	6	6
AG44X6	-	-	-	-	-	-	-	-	-	-	1	10	10	10	7
AG46X6	-	-	-	-	-	-	-	-	-	-	6	6	5	7	6
AG46X8	-	-	-	-	-	-	-	-	-	-	3	1	3	2	1
AG48X7	-	-	-	-	-	-	-	-	-	-	1	1	5	10	6
Croplan															
R2C2674	9	6	9	10	10	-	-	-	-	-	-	-	-	-	-
R2C3113	5	5	5	8	7	8	1	4	4	7	-	-	-	-	-
RX3556	6	5	7	7	7	9	2	2	2	6	10	4	4	6	10
RX3896	1	9	6	7	1	4	8	9	10	8	3	8	5	7	3
R2C4000	-	-	-	-	-	6	10	8	7	8	9	4	2	4	7
RX4316s	-	-	-	-	-	9	3	5	3	7	4	4	7	5	3

Table 20 (cont.). Decile scores for yield with no additional fertilizer or foliar protection (Control), and yield with additional fertilizer and foliar protection (BOTH), and the yield responses to increased fertility (FERT), foliar protection (PROT), and the combination of both treatments (PROT+FERT). Varieties are sorted by brand and maturity group. Scores range from 1 indicating the lowest yield (or yield increase) and 10 indicating the greatest yield (or yield increase).

	Yorkville					Champaign					Harrisburg				
	Yield Control	PROT	FERT	PROT+ FERT	Yield BOTH	Yield Control	PROT	FERT	PROT+ FERT	Yield BOTH	Yield Control	PROT	FERT	PROT+ FERT	Yield BOTH
Dyna-Gro															
S26XT88	3	3	8	3	2	-	-	-	-	-	-	-	-	-	-
S28XT58	8	6	8	9	10	-	-	-	-	-	-	-	-	-	-
SX17829XT	6	7	8	5	6	-	-	-	-	-	-	-	-	-	-
S30XT68	10	5	1	3	9	7	5	7	9	9	-	-	-	-	-
S30XT96	7	8	9	6	8	4	1	9	3	2	-	-	-	-	-
S31XT48	1	10	10	10	5	7	3	7	7	8	-	-	-	-	-
S33XT07	7	2	2	1	1	6	5	10	6	5	-	-	-	-	-
S34XT78	9	2	5	4	8	9	2	1	5	8	-	-	-	-	-
S35XT97	7	4	4	2	3	5	4	9	10	10	-	-	-	-	-
S37XT28	4	7	10	6	6	5	3	6	6	5	10	3	6	3	10
S39XT08	-	-	-	-	-	1	4	3	6	1	5	5	1	7	5
S39XT68	-	-	-	-	-	8	3	5	3	6	2	10	10	10	9
S41XS98	-	-	-	-	-	-	-	-	-	-	8	9	9	9	10
S43XS27	-	-	-	-	-	-	-	-	-	-	6	5	3	2	2
S44XS57	-	-	-	-	-	-	-	-	-	-	7	6	7	4	4
SX17844XS	-	-	-	-	-	-	-	-	-	-	6	4	2	5	4
S45XS37	-	-	-	-	-	-	-	-	-	-	9	2	3	2	6
S46XS87	-	-	-	-	-	-	-	-	-	-	2	3	9	6	2
S48XS78	-	-	-	-	-	-	-	-	-	-	5	2	1	1	1
Golden Harvest															
GH2537X	8	7	5	4	6	-	-	-	-	-	-	-	-	-	-
GH2788X	10	5	5	5	9	-	-	-	-	-	-	-	-	-	-
GH2981X	3	10	9	10	10	-	-	-	-	-	-	-	-	-	-
GH3195X	10	1	7	7	10	7	7	8	9	9	-	-	-	-	-
GH3324X	5	1	10	4	4	-	-	-	-	-	-	-	-	-	-
GH3546X	8	3	3	8	9	8	4	1	4	5	8	8	7	5	7
GH3761X	6	9	1	5	5	6	7	2	2	3	7	7	10	6	7
GH3982X	1	10	1	8	2	9	6	4	7	9	7	5	8	3	5
GH3985X	-	-	-	-	-	1	9	5	9	1	2	6	9	9	3
GH4142X	-	-	-	-	-	2	6	10	8	3	1	8	8	8	1
GH4307X	-	-	-	-	-	-	-	-	-	-	9	3	5	5	8
GH4542X	-	-	-	-	-	-	-	-	-	-	6	2	4	4	4
NK															
NK S30-V6	5	6	2	9	7	3	8	6	8	4	-	-	-	-	-
NK S37-Z8	6	6	3	6	7	5	5	10	4	3	9	1	2	3	8
NK S39-C4	7	1	2	1	1	1	10	7	9	4	10	5	6	9	10
NK S42-P6	-	-	-	-	-	3	8	6	7	2	10	2	10	1	8
Pioneer															
P33T19X	9	1	6	1	3	6	2	8	5	4	-	-	-	-	-
P36T36X	2	8	4	9	4	2	9	9	8	2	-	-	-	-	-
P40T26X	-	-	-	-	-	4	9	10	10	10	3	3	6	8	5
P46T30X	-	-	-	-	-	-	-	-	-	-	8	6	8	1	2

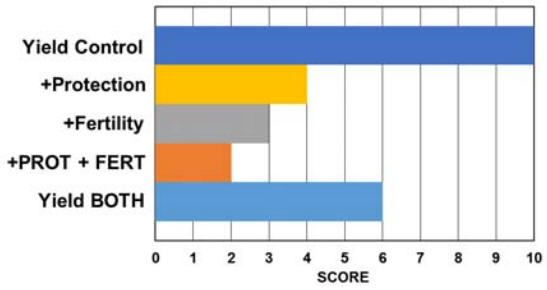
VARIETY CHARACTERIZATIONS:

This section presents a brief summary for each variety performance in response to foliar protection and/ or added fertility. Decile yield response scores for each variety (bar-graph figures) were averaged across locations when applicable.

Asgrow

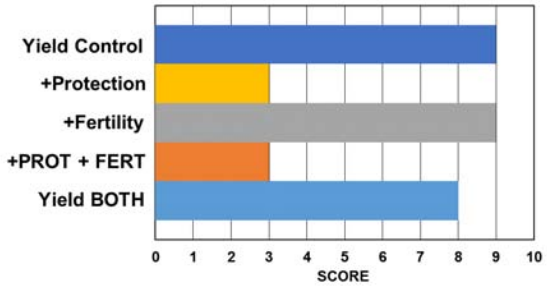
AG2632

High yield performance under Control treatment. Below average yield responsive to management. Would be considered a "Defensive" variety.



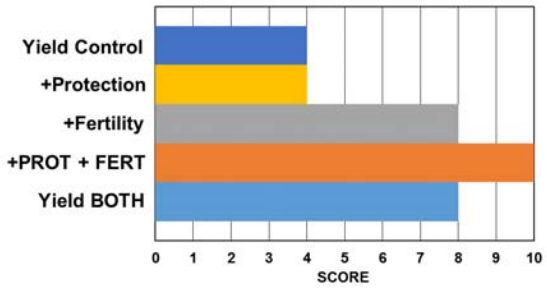
AG26X8

High yield under Control and BOTH conditions. High yield response to additional fertility.



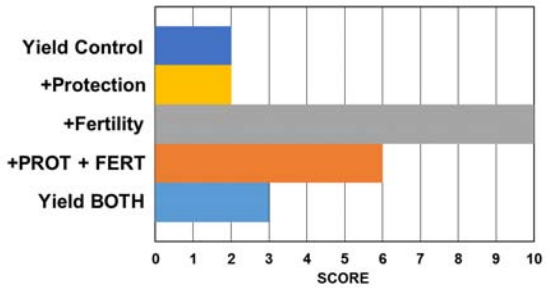
AG27X7

High yield response to additional fertility with or without foliar protection. Would be considered a good 'Offensive' variety.



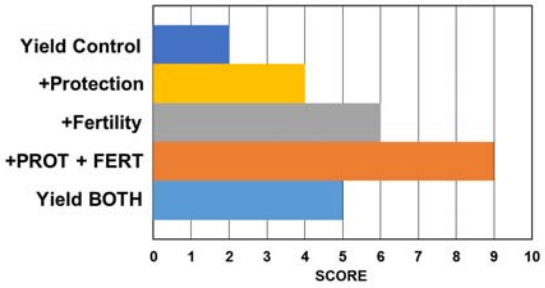
AG29X8

High yield response to additional fertility. Above average response to foliar protection with fertility.



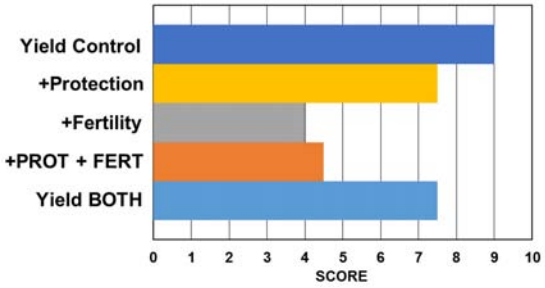
AG30X8

Average yield performance under BOTH conditions. High yield response to foliar protection in combination with additional fertility.



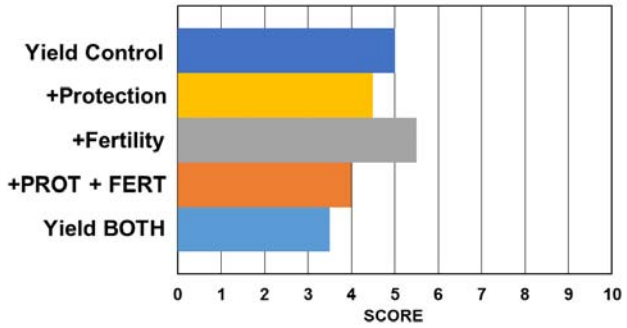
AG32X8

High yield performance under Control and BOTH conditions. Consistently yield responsive to foliar protection across locations.



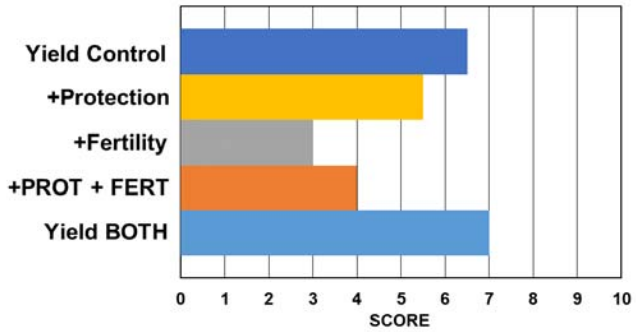
AG33X8

Average yield performance under Control conditions. Average response to additional fertility.



AG34X6

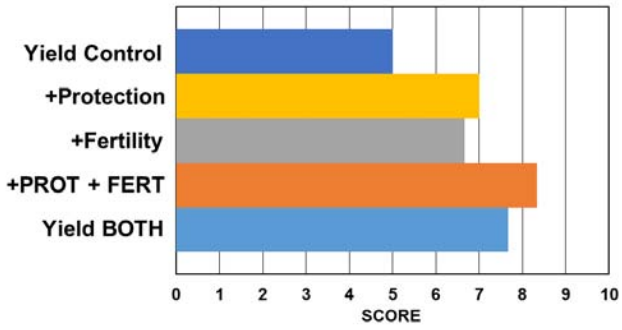
Above average yield under Control and BOTH conditions. Average response to foliar protection.



Crop Physiology

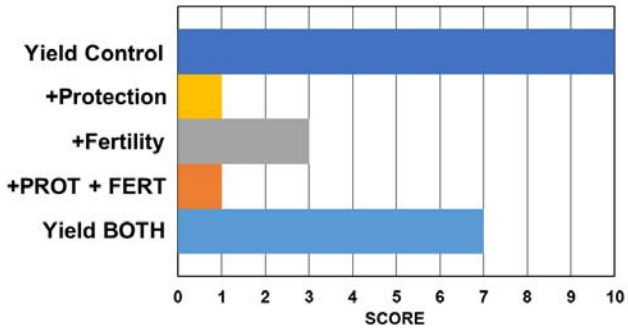
AG36X6

Average yield performance under Control conditions. Above average yield response to foliar protection with or without additional fertility. Would be considered an 'Offensive' variety.



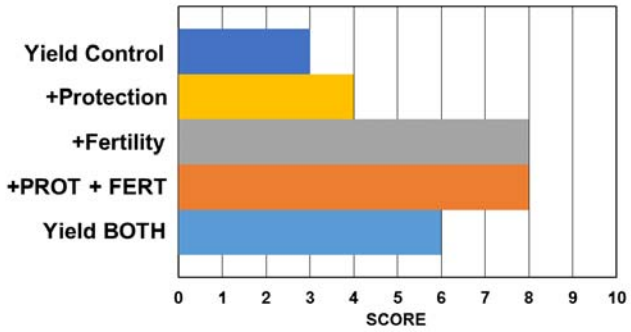
AG37X8

High yield performance under Control conditions. Below average yield response to management. Would be considered a 'Defensive' variety.



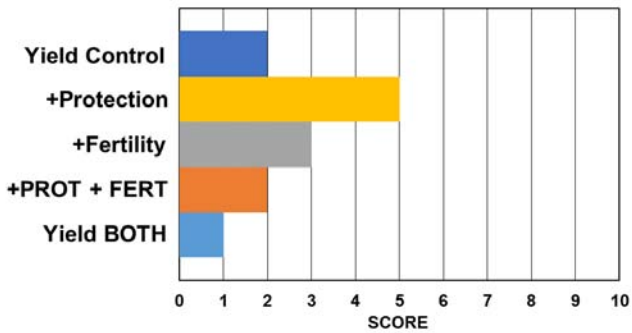
AG38X6

Above average yield performance under BOTH conditions. Yield responsive to fertility with or without foliar protection.



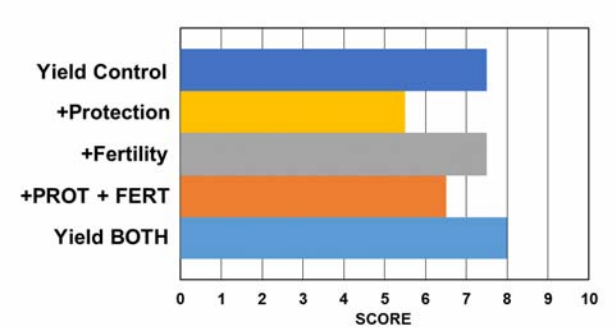
AG38X8

Below average yield performance under Control or BOTH conditions, and low yield response to management.



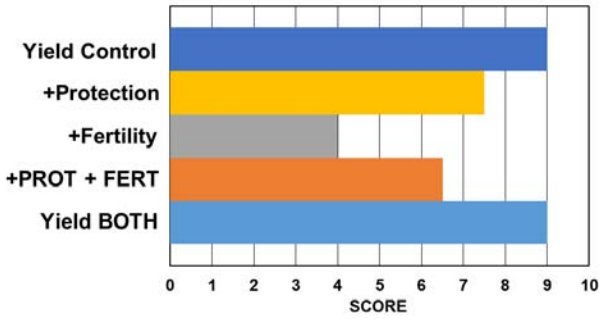
AG39X7

Above average yield performance under Control or BOTH conditions. High yield response to fertility with or without foliar protection.



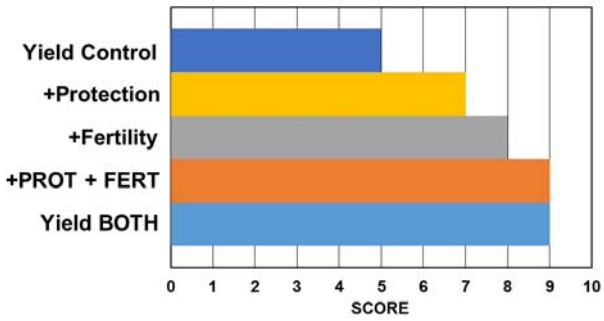
AG4135

High yield performance to Control and BOTH conditions. Above average yield response to foliar protection with or without fertility.



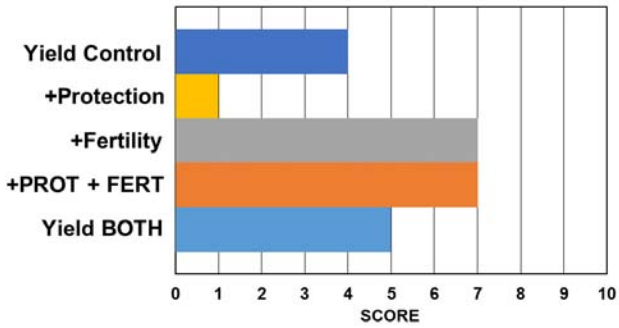
AG42X6

Average yield under Control conditions. Responsive to additional fertility with or without foliar protection. High yield performance under BOTH conditions. Would be considered an "Offensive" variety.



AG43X7

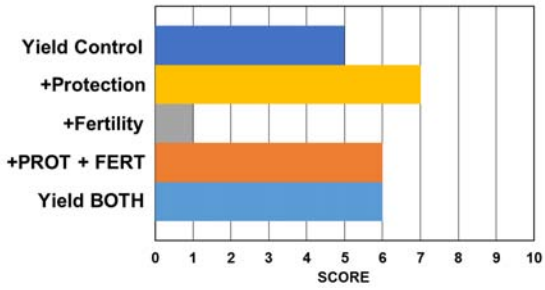
Average yield performance under BOTH conditions. Above average yield response to fertility with or without foliar protection.



Crop Physiology

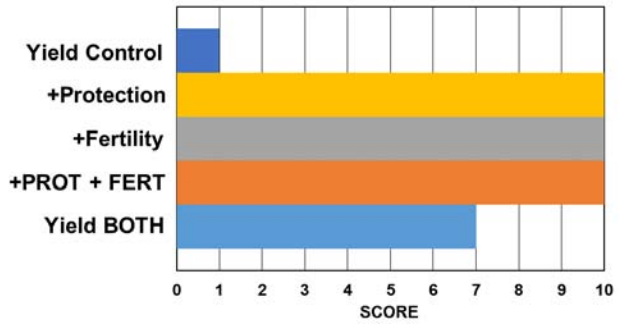
AG43X8

Average yield performance under Control conditions. Above average yield response to foliar protection with or without fertility.



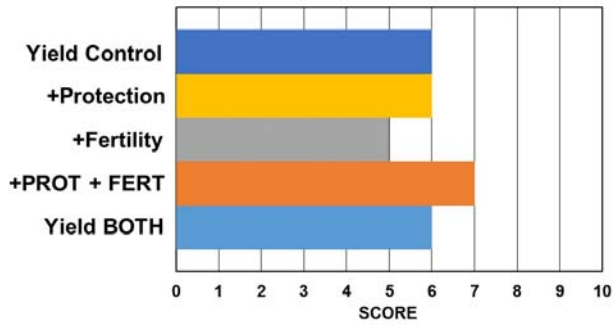
AG44X6

Above average yield performance under BOTH conditions. High yield response to additional fertility and foliar protection and the combination of both. This would be considered an 'Offensive' variety.



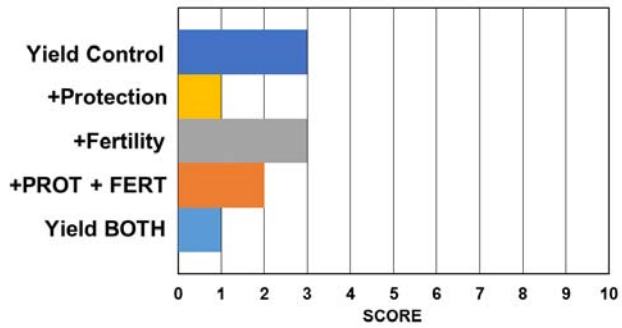
AG46X6

Average to slightly above average yield performance and yield response under all conditions.



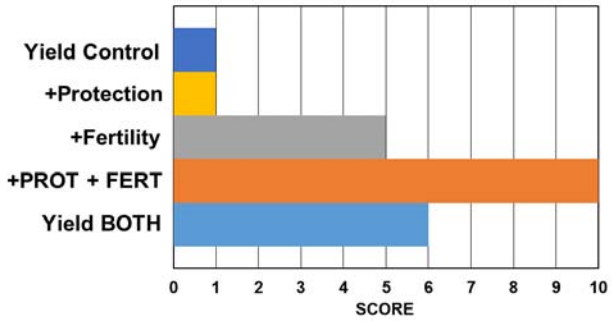
AG46X8

Below average yield performance under Control and BOTH conditions.



AG48X7

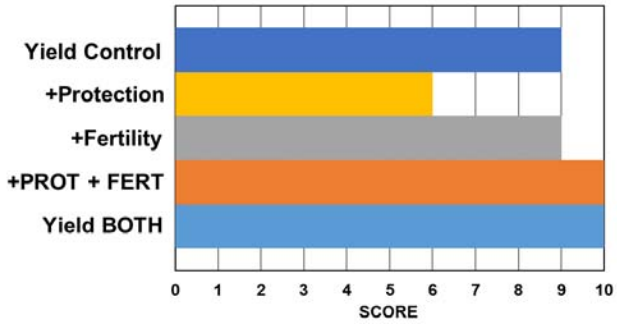
High yield response to foliar protection in combination with fertility. Above average yield performance under BOTH conditions.



Croplan

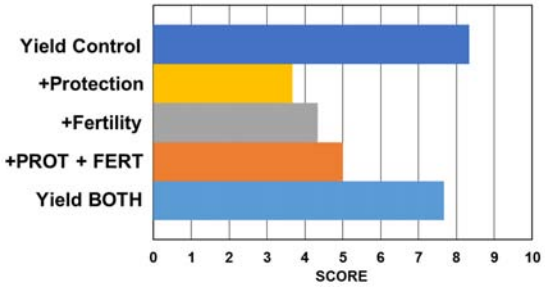
R2C2674

Above average yield performance under Control and BOTH conditions. Above average yield response to foliar protection and additional fertility.



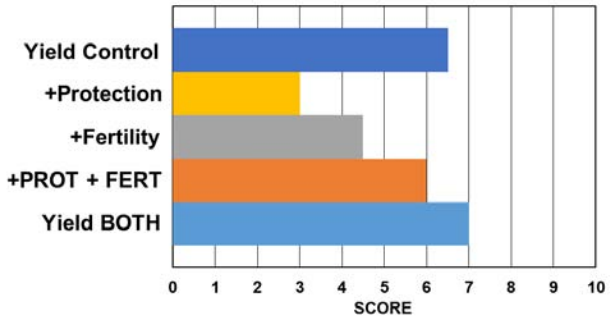
R2C3113

Above average yield response to additional fertility in combination with foliar protection.



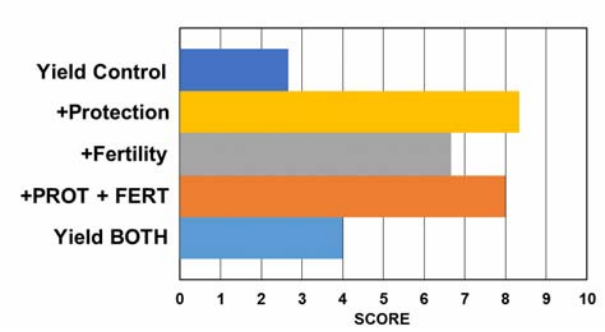
RX3556

Above average yield performance under Control and BOTH conditions. Average yield response to foliar protection in combination with fertility.



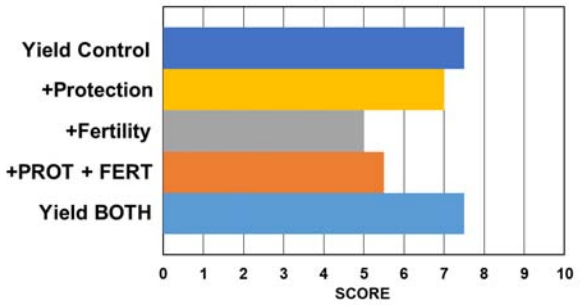
RX3896

Above average yield response to foliar protection, additional fertility, or the combination. Below average yield performance under Control conditions.



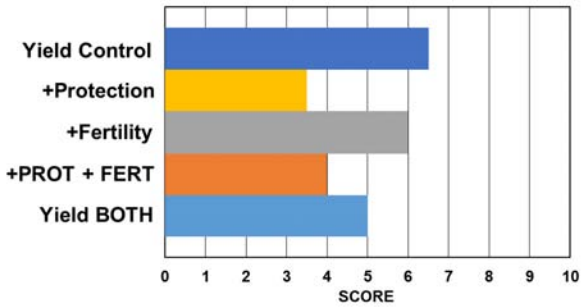
R2C4000

Above average yield performance under Control and BOTH conditions. Yield responsive to foliar protection with or without protection.



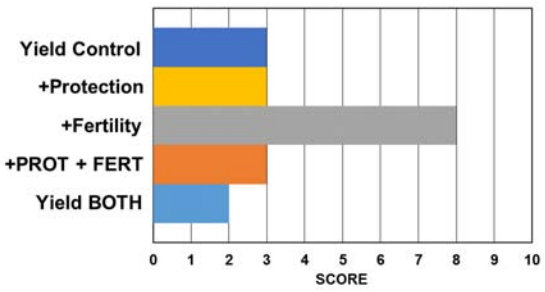
RX4316s

Above average yield performance under Control conditions and average yield performance under BOTH conditions.



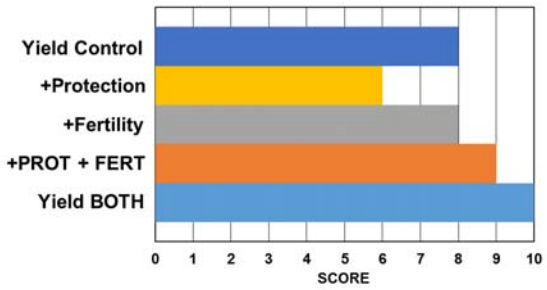
Dyna-Gro

S26XT88
Below average yield performance under Control and BOTH conditions. Responsive to fertility alone.



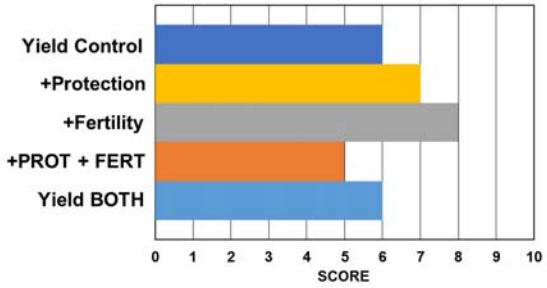
S28XT58

High yield response to additional fertility, foliar protection, and the combination of treatments. Would be considered an ‘Offensive’ variety.



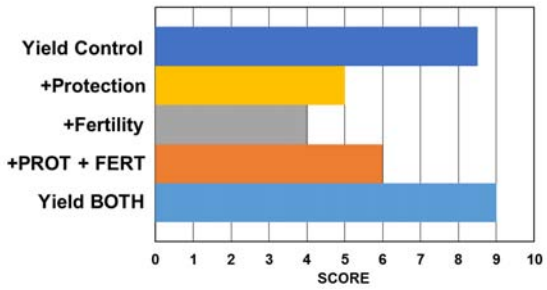
SX17829XT

Moderate yield performance under Control and BOTH conditions. Average to above average yield response to additional fertility or foliar protection.



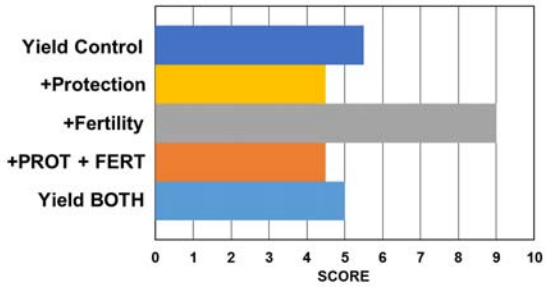
S30XT68

High yield performance under Control and BOTH conditions. Above average response to foliar protection in combination with additional fertility.



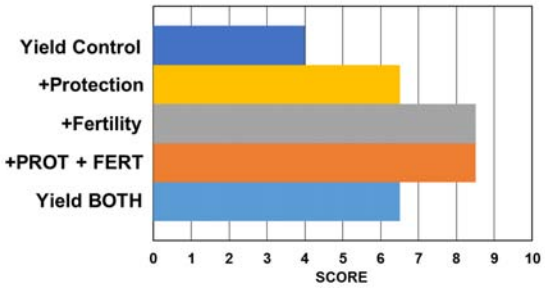
S30XT96

Average yield performance under Control and BOTH conditions. High yield response to fertility alone.



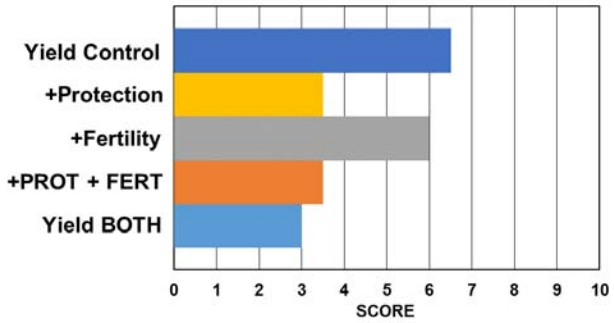
S31XT48

Above average yield performance under BOTH conditions. Above average response score to the treatments. Would be considered an 'Offensive' variety.



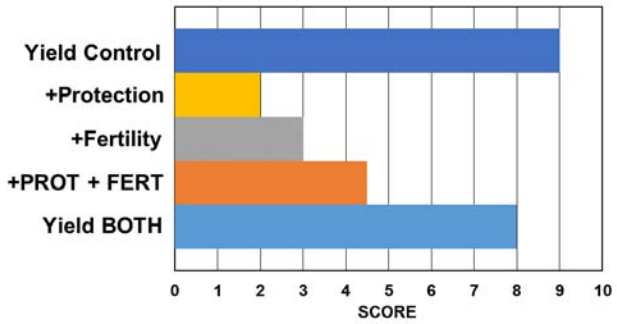
S34XT78

High yield performance under Control and BOTH conditions. Below average response score to management treatments. Would be considered a 'Defensive' variety.



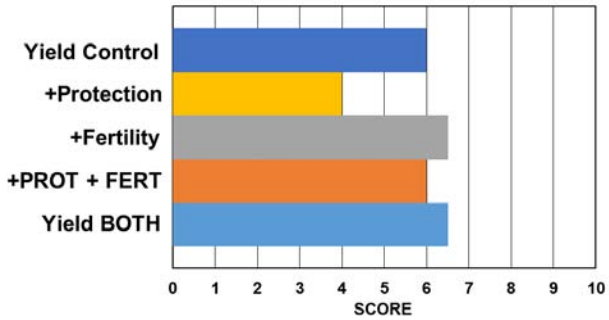
S33XT07

Above average yield performance under Control conditions. Below to- average yield response to additional fertility or foliar protection.



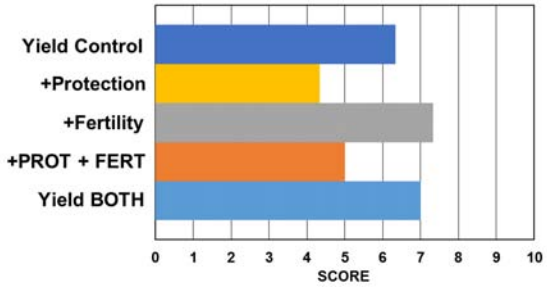
S35XT97

Moderate yield performance under Control and BOTH conditions. Below to- average yield response to additional fertility or foliar protection.



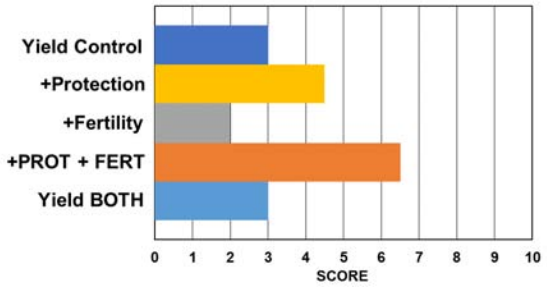
S37XT28

Moderate yield performance under Control and BOTH conditions. Above average response to additional fertility.



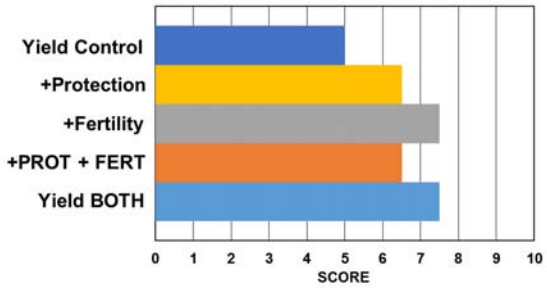
S39XT08

Below average yield performance under Control and BOTH conditions. Moderate yield response to additional fertility in combination with foliar protection.



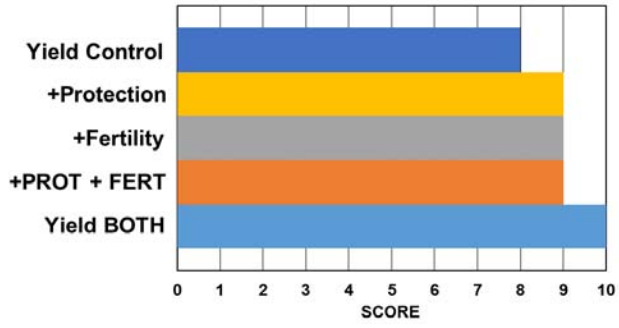
S39XT68

Average yield performance under Control conditions and above average yield performance under BOTH conditions. Above average response score to management treatments.



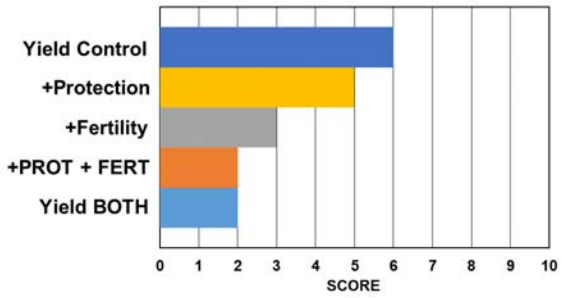
S41XS98

High yield performance under Control and BOTH conditions. Above average yield response to additional fertility, foliar protection, and both.



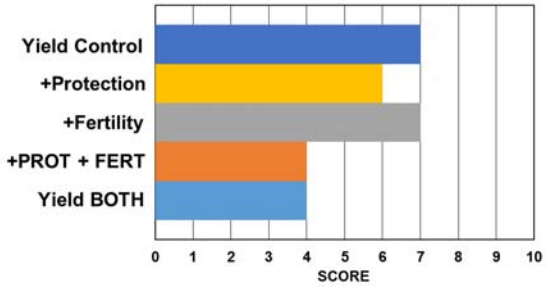
S43XS27

Above yield performance under Control conditions. Below average response score to the other treatments.



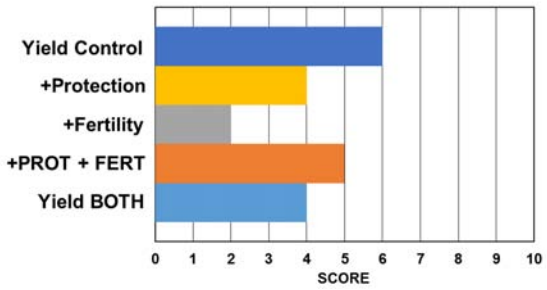
S44XS57

Above average yield performance under Control conditions. Above average yield response to additional fertility or foliar protection.



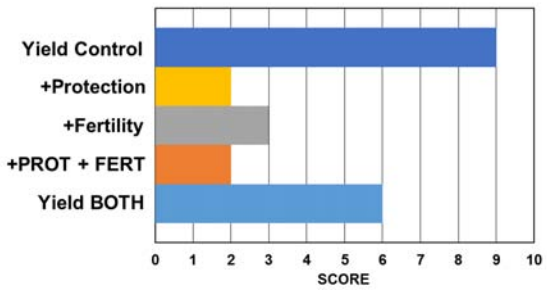
SX17844XS

Moderate yield performance under Control conditions. Below to- average response score to the other treatments.



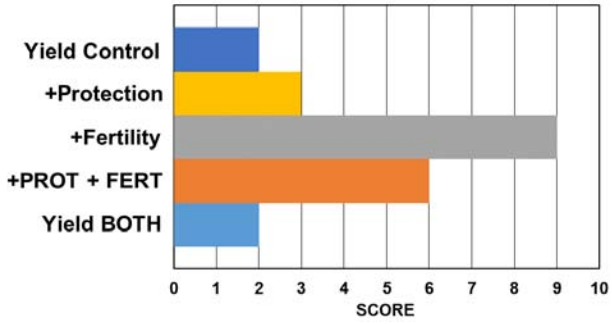
S45XS37

High yield performance under Control conditions and moderate yield performance under BOTH conditions. Below average yield response to additional fertility or foliar protection. Would be considered a ‘Defensive’ variety.



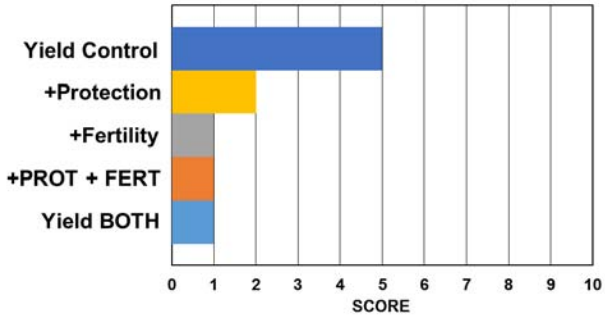
S46XS87

Below average yield performance under Control and BOTH conditions. High yield response to additional fertility alone and average yield response to additional fertility with foliar protection.



S48XS78

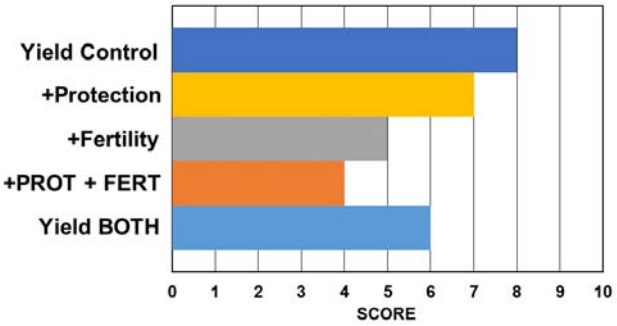
Average yield performance under Control conditions. Below average yield response to additional fertility or foliar protection.



Golden Harvest

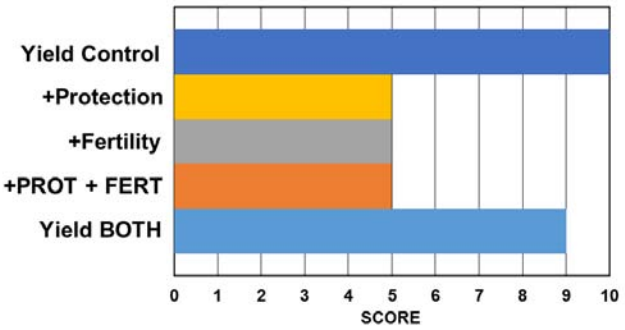
GH2537X

Above average yield performance under Control conditions. Above average yield response to foliar protection.



GH2788X

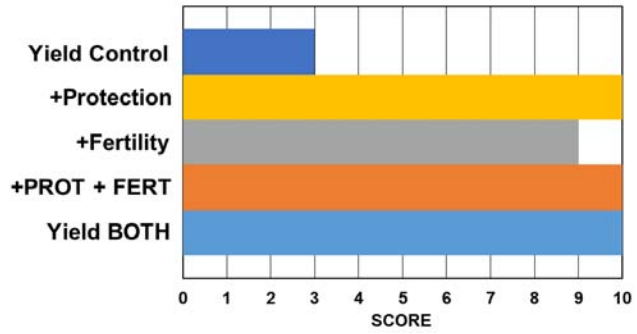
High yield performance under Control and BOTH conditions. Average response to management treatments.



Crop Physiology

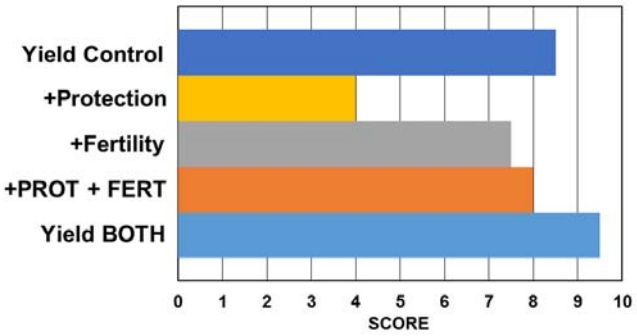
GH2981X

Below average yield performance under Control conditions. High yield response to additional fertility, foliar protection, and both. Would be considered an 'Offensive' variety.



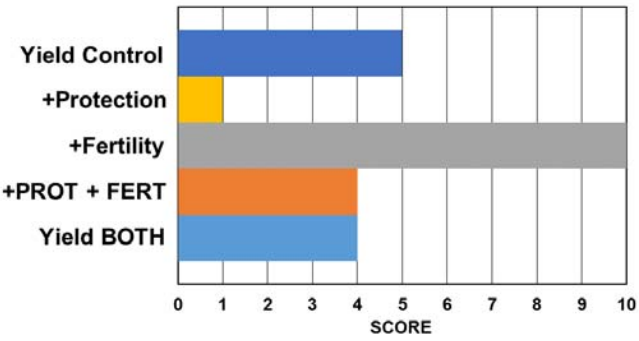
GH3195X

High yield performance under Control and BOTH conditions. Above average yield response to fertility with or without foliar protection.



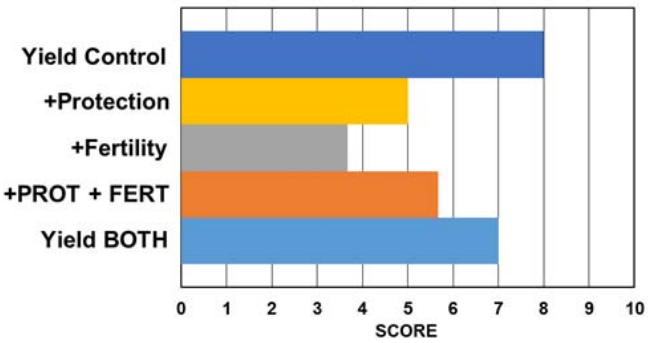
GH3324X

Average yield performance under Control conditions. High yield response to additional fertility alone.



GH3546X

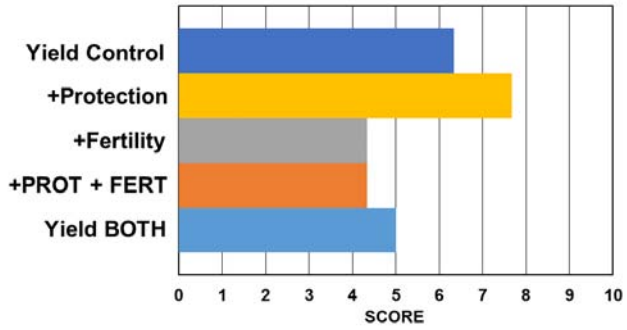
Above average yield performance under Control and BOTH conditions. Average to- above average response to foliar protection with or without fertility.



Crop Physiology

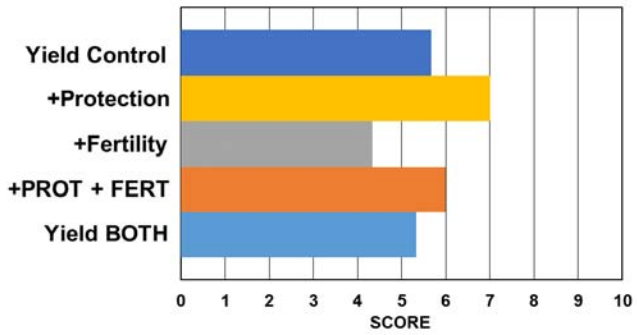
GH3761X

Above average yield performance under Control conditions. Above average yield response with foliar protection.



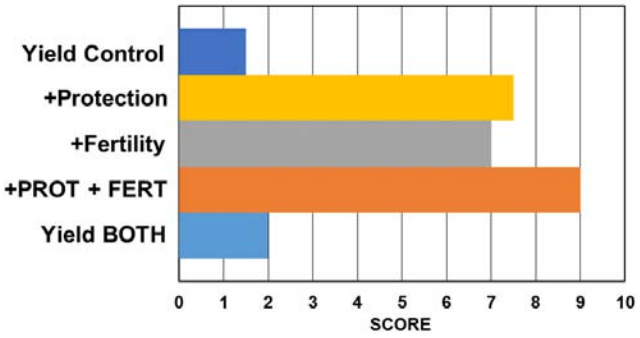
GH3982X

Average yield performance under Control and BOTH conditions. Above average response to foliar protection with or without fertility.



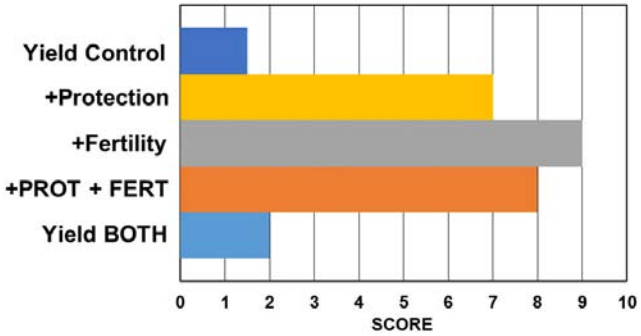
GH3985X

Above average yield response to additional fertility, foliar protection, and both. Below average yield performance under Control and BOTH conditions.



GH4142X

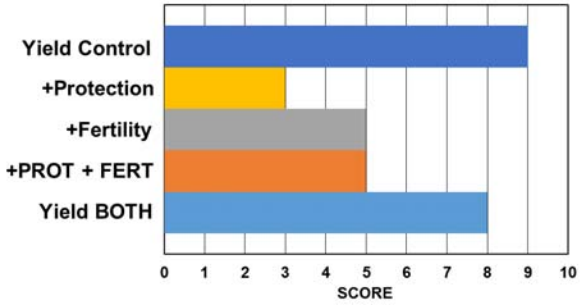
Above average yield response to additional fertility, foliar protection, and both. Below average yield performance under Control and BOTH conditions.



Crop Physiology

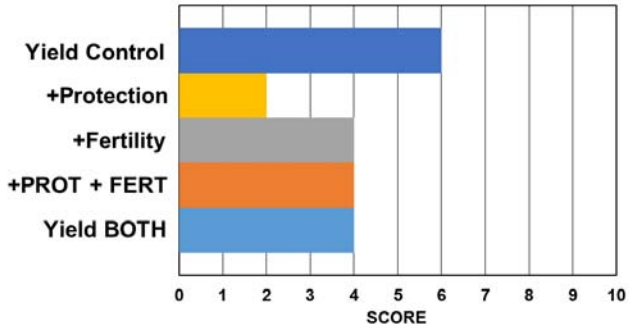
GH4307X

High yield performance under Control and BOTH conditions. Average yield response to fertility with or without foliar protection.



GH4542X

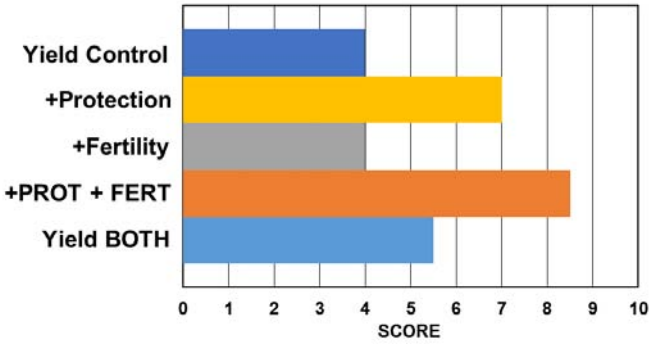
Above average yield performance under Control conditions. Low response to other treatments.



NK

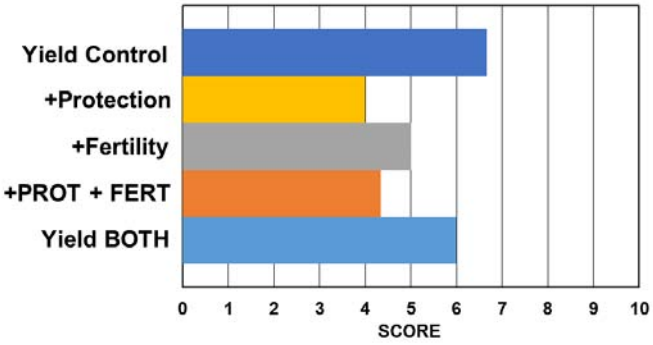
NK S30-V6

Average yield performance under BOTH conditions. High response to foliar protection with or without fertility.



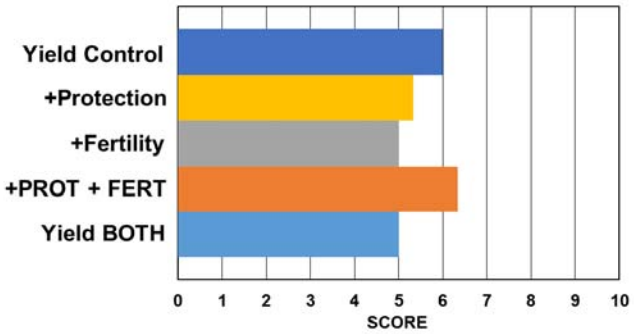
NK S37-Z8

Above average yield performance under Control and BOTH. Average response to fertility alone.



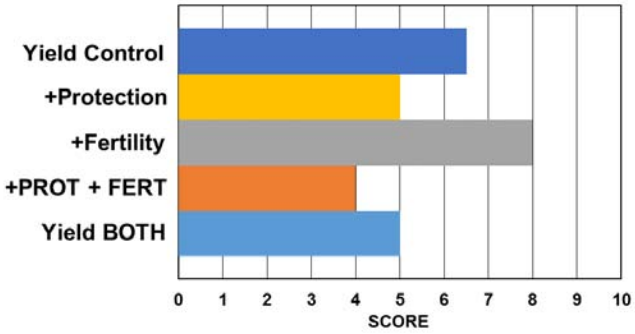
NK S39-C4

Average to- slightly above average yield performance and yield responses to all treatments.



NK S42-P6

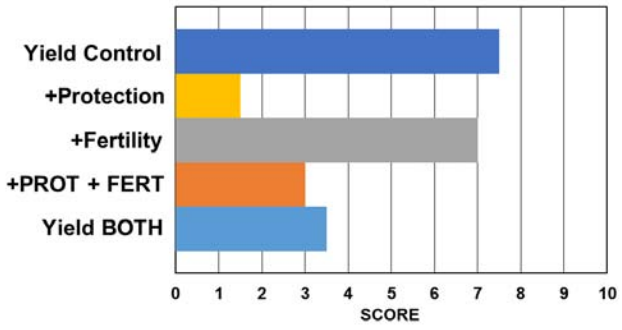
Average yield performance under BOTH and above average yield performance under Control conditions. High response to additional fertility alone.



Pioneer

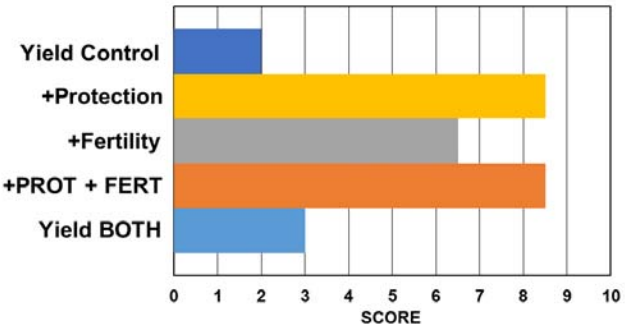
P33T19X

Above average yield performance under Control conditions. Responsive to additional fertility alone.



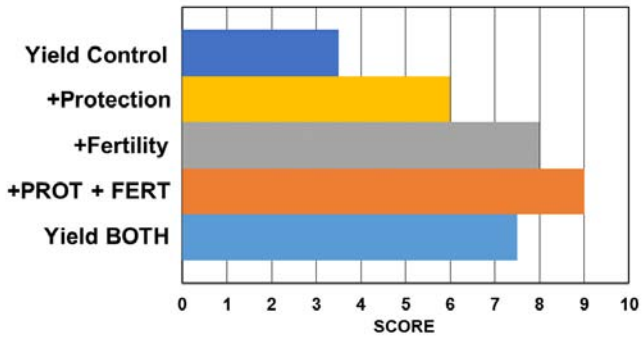
P36T36X

High yield response to additional fertility, foliar protection, and the combination of treatments. Would be considered an 'Offensive' variety.



P40T26X

High yield performance under BOTH conditions. High yield response to additional fertility, foliar protection, and the combination of treatments. Would be considered an 'Offensive' variety.



P46T30X

High yield performance under Control conditions. Above average response scores to foliar protection or fertility.