2016 Evaluation of Soybean Varieties, Jay, Florida

Jennifer Bearden and Barry Brecke

This report includes the summary of the 2016 soybean replicated variety trial (OVT) and large plot demonstration trial at West Florida Research and Education Center, Jay, Florida. It shows the performance of 11 soybean varieties in both the OVT and Demonstration Trials. This data represents only one year, results should be considered over several locations and years before conclusions are valid. In addition to the single year report, a multi-year summary is provided for varieties that were evaluated for two or more years.

OVT Entries that were evaluated: (Brand/Variety/Maturity)

	Brand	Variety	Maturity Index
1	Asgrow	AG 53X6	5.3
2	Asgrow	AG 54X6	5.4
3	Asgrow	AG 69X6	6.9
4	Asgrow	AG 6931	6.9
5	Asgrow	AG 75X6	7.5
6	Bayer	CZ 6060 RY	6.0
7	Bayer	HBK RY7523	7.5
8	Pioneer	P54T94R	5.4
9	Pioneer	P55T81R	5.5
10	Pioneer	P67T25R2	6.7
11	Pioneer	P76T54R2	7.6

2016 OVT Growing Conditions and Experimental Design:

The soil type was a Red Bay sandy loam and the study area was planted to cotton in 2015. Fertilizer was applied according to soil test results (300 lb/A 3-7-28 applied 5 July). Soybean varieties were planted on 2 June under conventional tillage. Plots were 4 rows wide by 25 feet long with 36-in. row spacing. Standard practices for soybean production were followed throughout the season. Roundup herbicide at 1 qt/A plus Leadoff at 4 oz/A were applied on 23 March to control any vegetation present prior to tillage. Roundup at 26 oz/A was applied 22 June, 5 July and 20 July for postemergence weed control. Quadris fungicide was applied at 8 oz/A on 11 August for disease management. Sniper insecticide was applied at 6

oz/A 20 July, Diamond insecticide was applied at 6 oz/A on 10 August and Belay insecticide at 6 oz/A was applied on 26 August for insect control. Soybeans were harvested on 25 October with a plot combine, percent moisture determined and plot weights converted to bu/A yield at 13% moisture.

Rainfall was below average for all months except September. However, even with the below average rainfall, moisture was adequate for crop growth. Weather data was obtained from Florida Automated Weather Network (FAWN) station located on Jay research farm and normal represents the mean for the past 54 years of records (Table 1).

Table 1. Weather conditions during 2016 soybean trial.

Month	Total Rainfall (in)	Average minimum air temperature (°F)	Average maximum air temperature (°F)
June	5.47 (1.93 inches below average)	68.2	90.1
July	7.56 (0.49 inches below average	73.1	91.0
August	3.83 (2.69 inches below average)	73.2	90.0
September	6.69 (0.45 inches above average)	69.9	88.9
October	0.00 (3.79 inches below average)	57.5	84.0
November	0.78 (3.42 inches below average)	48.0	75.4

OVT Summary

Stand count for all varieties ranged from 5.4 to 7.4 plants per foot of row (78,348 to 106,783 plants/A) (Table 2). AG 53X6, AG 54X6, AG 69X6, P54T94R and P55T81R had populations in excess of 100,000 plants/A while HBK RY7523 and P67T25R2 had populations less than 85,000 plants/A.

Soybean plant height ranged from 32 to 51 inches on October 24 (Table 3). AG 54X6, AG 6931, AG 75X6, P67T25R2 and P76T54R2 were 40 inches or taller while CZ 6060 RY and HBK RY7523 were less than 35 inches tall. Soybean yield ranged from 42.9 to 58.5 bu/A (Table 3). AG 69X6, AG 75X6, P54T94R and P76T54R2 all yielded over 55 bu/A while AG 53X6 and AG 54X6 produced less than 45 bu/A. Soybean test weight ranged from 48.1 to 56.2 lb/bu with most cultivars above 52 lb/bu.

Table 2: Soybean variety emergence, Jay, FL 2016.

	Variety	Plants/ft* 7/5/16	Plants/A* 7/5/16
1	AG 53X6	7.1	102850
2	AG 54X6	7.0	101943
3	AG 69X6	6.9	100128
4	AG 6931	6.8	98918
5	AG 75X6	6.4	92263
6	CZ 6060 RY	6.1	88633
7	HBK RY7523	5.4	78348
8	P54T94R	6.9	100128
9	P55T81R	7.4	106783
10	P67T25R2	5.8	83793
11	P76T54R2	6.3	91053
	LSD	*0.8*	*10868*
	CV	*7.9%*	*7.9%*

*Determined from counts of two, 6-ft rows sections per plot. Planted 8.5 seed/ft (123,400 seed/A).
LSD = Fisher's Protected LSD (P=0.05)

Table 3: Soybean variety height, test weight and yield, Jay, FL 2016.

	Variety	Height (in.) 10/24/16	Test Weight (lb./bu)	Yield (bu/A) 10/25/16
1	AG 53X6	38	48.1	42.9
2	AG 54X6	51	49.9	43.1
3	AG 69X6	37	55.3	**57.4**
4	AG 6931	41	54.0	53.5
5	AG 75X6	40	56.2	**58.5**
6	CZ 6060 RY	32	54.0	47.4
7	HBK RY7523	33	55.4	50.9
8	P54T94R	39	52.7	**55.9**
9	P55T81R	38	52.4	51.4
10	P67T25R2	40	52.8	54.4
11	P76T54R2	40	55.0	**58.4**
	LSD	*4*	*2.8*	*4.7*
	CV	*6.9%*	*3.7%*	*6.3%*

LSD = Fisher's Protected LSD (P=0.05)
Soybean yield greater than 55 bu/A are shown in **bold**.

Large Plot Demonstration

Demonstration Entries that were evaluated: (Brand/Variety/Maturity)

	Brand	Variety	Maturity Index
1	Asgrow	AG 53X6	5.3
2	Asgrow	AG 54X6	5.4
3	Asgrow	AG 69X6	6.9
4	Asgrow	AG 6931	6.9
5	Asgrow	AG 7X6	7.5
6	Bayer	CZ 6060 RY	6.0
7	Bayer	HBK RY7523	7.5
8	Pioneer	P54T94R	5.4
9	Pioneer	P55T81R	5.5
10	Pioneer	P67T25R2	6.7
11	Pioneer	P76T54R2	7.6

2016 Demonstration Growing Conditions and Experimental Design:

Growing conditions were identical to those for the OVT Trial listed above except the non-replicated plots were 8 rows wide by 1000 ft long and no fungicide was applied to the Demonstration Trial. Planting date, fertilization and herbicide applications were the same for both OVT and Demonstration plots. Demonstration plots were harvested 28 October.

Demonstration Summary

Soybean yield in the Demonstration plots ranged from 51.5 to 59.8 bu/A (Table 4). Yields from the Demonstration were sometimes slightly lower and sometimes higher than those from the same varieties in the OVT trial (Table 3 vs. Table 4). However, two varieties (AG 53X6 and AG 54X6) yielded 13.5 and 9.6 bu/A more in the Demonstration than in the OVT trial. The average difference between the OVT and Demonstration trials for the 11 varieties that were in both trials was 3.3 bu/A more for the Demonstration compared to the OVT.

Table 4: Soybean Large Plot Demonstration trial yield, Jay, FL 2016.

	Variety	Yield (bu/A) 10/28/16
1	AG 53X6	59.8
2	AG 54X6	54.3
3	AG 69X6	56.6
4	AG 6931	56.6
5	AG 7X6	53.7
6	CZ 6060 RY	51.5
7	HBK RY7523	56.4
8	P54T94R	52.7
9	P55T81R	56.0
10	P67T25R2	57.7
11	P76T54R2	54.0

Multi-Year Summary

Several varieties were evaluated in both 2015 and 2016 with a few in 2013, 2014, 2015 and 2016 (Table 5).

Table 5. Multi-Year Soybean Variety Performance, WFREC, Jay, FL (2013-2016).

Brand	Variety	2016	2-Year Average	3-Year Average	4-Year Average
Pioneer	P54T94R	52.7	50.8		
Pioneer	P67T25R2	52.8	55.0		
Pioneer	P76T54R2	55.0	56.8		
Bayer	CZ 6060 RY	54.0	54.9		
Asgrow	AG 6931	54.0	54.6	**63.6**	**63.5**
Bayer	HBK RY7523	55.4	56.3	**61.9**	**61.0**
			2015	**2-year Average**	**3-year Average**
Bayer	CZ 7070 RY		57.8	**68.2**	
Asgrow	AG 7231		59.1	**70.8**	**69.9**
Asgrow	AG 7535		**61.0**	**72.2**	
Asgrow	AG 7934		57.2	**68.6**	
Croplan	R2C6764		49.9	**61.9**	
Croplan	R2C7094		55.7	**72.4**	
Croplan	R2C7622		54.7	**64.9**	**66.8**

Yields in excess of 60 bu/A are in **bold**.