



2016 PhytoGen Enlist Germplasm Performance

Large and small plot PhytoGen germplasm evaluation trials were initiated at 4 sites. Data were provided to the industry sponsor and all of these trials will assist in evaluating performance of their cotton genetics in Oklahoma.

Trial type	PhytoGen Innovation Trial			PhytoGen AST Nursery
	Custer - Hydro	Jackson - Duke	Jackson - Altus	Caddo - Fort Cobb
County - location	Custer - Hydro	Jackson - Duke	Jackson - Altus	Caddo - Fort Cobb
Cooperator	Merlin Schantz	Drew Darby	OSU SWREC	OSU CRS
Tillage system	terminated cover/strip till	conventional	conventional	terminated wheat/no-till
Herbicide System	RRF and LL	RRF and LL	RRF	RRF
Planter width/plot width (rows)	16/8	8/4	4/4	4/2
Planting date	26-May	31-May	31-May	26-May
Seeding rate (seeds/acre)	50,000	45,000	45,000	58,080
Row spacing (inches)	36	40	40	36
Replicates	3	3	3	4
Harvested plot width (rows)	8	4	4	2
Comments	pivot irrigation	furrow irrigation	furrow irrigation	pivot irrigation
Harvester type	picker	stripper	stripper	stripper
Entries	PHY 490 W3FE PHY 220 W3FE PHY 300 W3FE PHY 222 WRF PHY 243 WRF PHY 312 WRF PHY 333 WRF ST 4946GLB2	PHY 490 W3FE PHY 220 W3FE PHY 300 W3FE PHY 222 WRF PHY 243 WRF PHY 312 WRF PHY 333 WRF ST 4946GLB2	PHY 490 W3FE PHY 220 W3FE PHY 300 W3FE PHY 222 WRF PHY 243 WRF PHY 312 WRF PHY 333 WRF ST 4946GLB2	29 total entries

Three irrigated Dow AgroSciences Innovation Trials in Custer and Jackson Counties (2 sites) were planted and harvested. Results for these projects are provided below beginning with Table 1. This provides a summary of yield across all sites where the same 8 PhytoGen variety entries were located. This table includes data from the Altus irrigated and Fort Cobb irrigated OVT projects, as well as the three large-plot PhytoGen Innovation Trials. Tables 2, 3, and 4 provide the individual site results for the Custer, Jackson (Duke) and Jackson (SWREC) Innovation Trials. In addition, a small-plot Dow AgroSciences AST (Enlist) nursery project with 29 entries replicated four times was planted under center pivot irrigation at the OSU Caddo Research Station in Caddo County. Table 5 includes performance data from 13 named entries in the AST Nursery.



Table 1. Lint yield results from PhytoGen entries and competitor entry across multiple OSU testing sites in 2016.

County ==>	Custer	Jackson	Jackson	Jackson	Caddo	Multi-Site
Irrigation Type ==>	Pivot	Furrow	Furrow	Furrow	Pivot	Mean
Trial Type ==>	Innovation	Innovation	Innovation	OVT	OVT	
Location ==>	Hydro	Duke	SWREC	SWREC	CRS	
Cooperator ==>	Schantz	Darby	OSU	OSU	OSU	
Planting Date ==>	26-May	31-May	31-May	27-May	26-May	
Harvest Date ==>	12-Nov	16-Nov	21-Nov	21-Nov	30-Nov	
Bacterial Blight Infection Level ==>	Light	Light	Severe	Severe	Light	
Entry	----- Lint yield (lb/acre) -----					
PhytoGen PHY 300W3FE (BB-R**)	1808	1594	2070	2246	1424	1829
PhytoGen PHY 490W3FE (BB-R**)	1814	1496	1959	2127	1399	1759
PhytoGen PHY 312WRF (BB-MS*)	1747	1484	1941	2161	1425	1752
Stoneville ST 4946GLB2 (BB-S*)	1830	1450	1777	2036	1391	1697
PhytoGen PHY 220 W3FE (BB-R**)	1750	1494	1838	1925	1184	1638
PhytoGen PHY 243WRF (BB-PR*)	1547	1428	1773	2027	1312	1617
PhytoGen PHY 333WRF (BB-S*)	1420	1218	1819	1937	1352	1549
PhytoGen PHY 222WRF (BB-S*)	1597	1299	1753	1752	1340	1548
Test average	1689	1433	1866	2026	1353	1674
CV, %	4.4	5.4	5.5	4.3	11.9	
OSL	<0.0001	0.0009	0.0210	<0.0001	0.4704	
LSD	130	135	181	128	NS	

* Texas A&M AgriLife Research Bacterial blight ratings are courtesy of Dr. Terry Wheeler's "Response of cotton varieties to Bacterial blight Race 18 in 2016."

Ratings are classified as: S = highly susceptible; MS = mostly susceptible; PS = partially susceptible; PR = partially resistant; MR = mostly resistant; R = highly resistant.

**PhytoGen personnel indicate that all Enlist varieties (W3FE) are considered resistant to Bacterial blight Race 18.

CV - coefficient of variation.

OSL - observed significance level, or probability of a greater F value.

LSD - least significant difference at the 0.05 level, NS - not significant.

Table 2. Results from the Custer County irrigated PhytoGen Innovation trial, Merlin Schantz Farm, Hydro, OK, 2016.

Entry	Lint yield	Lint loan value*	Lint value	Final plant stand	Visual storm resistance rating	Micronaire	Staple	Strength	Uniformity
	lb/acre	\$/lb	\$/acre	plants/acre	1-9, 9 best	units	32nds inch	g/tex	%
Stoneville ST 4946GLB2	1830 a	0.5798	1061	46,948	5.3	4.3	38.9	31.9	83.9
PhytoGen PHY 490W3FE	1814 a	0.5803	1053	45,496	3.3	4.3	38.7	31.9	84.1
PhytoGen PHY 300W3FE	1808 a	0.5777	1044	50,336	5.0	4.4	38.1	30.6	83.4
PhytoGen PHY 220W3FE	1750 a	0.5755	1007	50,820	5.7	4.5	38.0	29.4	83.5
PhytoGen PHY 312WRF	1747 a	0.5715	998	44,528	3.7	3.8	39.1	30.4	82.6
PhytoGen PHY 222WRF	1597 b	0.5765	921	47,432	4.3	4.2	38.6	29.2	83.3
PhytoGen PHY 243WRF	1547 bc	0.5742	889	49,852	5.3	3.6	40.2	28.8	81.6
PhytoGen PHY 333WRF	1420 c	0.5765	819	51,304	4.0	3.9	39.5	29.2	82.9
Test average	1689	0.5765	974	48,340	4.6	4.1	38.9	30.2	83.2
CV, %	4.4	0.7	4.6	8.5	12.9	4.7	1.1	1.5	0.5
OSL	<0.0001	0.2059	<0.0001	0.3670	0.0016	0.0004	0.0003	<0.0001	0.0002
LSD	130	NS	78	NS	1.0	0.3	0.8	0.8	0.8

For lint yield, lb/acre, means within a column with the same letter are not significantly different.

CV - coefficient of variation.

OSL - observed significance level, or probability of a greater F value.

LSD - least significant difference at the 0.05 level, † indicates significance at the 0.10 level, NS - not significant.

* Assumes color grades set to 21, leaf grades set to 2 for entire trial.

Table 3. Results from the Jackson County irrigated PhytoGen Innovation trial, Drew Darby Farm, Duke, OK, 2016.

Entry	Lint yield	Lint loan value*	Lint value	Final plant stand	Visual storm resistance rating	Micronaire	Staple	Strength	Uniformity
	lb/acre	\$/lb	\$/acre	plants/acre	1-9, 9 best	units	32nds inch	g/tex	%
PhytoGen PHY 300W3FE	1594 a	0.5730	913	43,560	4.0	4.5	36.6	29.9	82.0
PhytoGen PHY 490W3FE	1496 ab	0.5768	863	43,560	3.7	4.4	37.2	31.7	82.8
PhytoGen PHY 220W3FE	1494 ab	0.5737	857	40,946	5.7	4.7	36.9	29.6	82.9
PhytoGen PHY 312WRF	1484 ab	0.5768	856	43,560	3.7	4.2	37.3	30.5	82.6
Stoneville ST 4946GLB2	1450 b	0.5757	835	40,946	5.7	4.4	37.0	30.7	82.7
PhytoGen PHY 243WRF	1428 bc	0.5728	818	41,818	4.7	3.9	38.5	28.9	80.4
PhytoGen PHY 222WRF	1299 cd	0.5747	747	40,946	4.3	4.5	37.0	30.3	82.3
PhytoGen PHY 333WRF	1218 d	0.5750	701	47,045	4.3	4.0	37.2	29.2	82.3
Test average	1433	0.5748	824	42,798	4.5	4.3	37.2	30.1	82.3
CV, %	5.4	0.4	5.2	11.8	16.2	1.8	1.0	3.6	0.6
OSL	0.0009	0.4021	0.0009	0.8027	0.0199	<0.0001	0.0016	0.1155	0.0006
LSD	135	NS	77	NS	1.3	0.1	0.7	NS	0.9

For lint yield, lb/acre, means within a column with the same letter are not significantly different.

CV - coefficient of variation.

OSL - observed significance level, or probability of a greater F value.

LSD - least significant difference at the 0.05 level, † indicates significance at the 0.10 level, NS - not significant.

* Assumes color grades set to 21, leaf grades set to 2 for entire trial.

Table 4. Results from the Jackson County irrigated PhytoGen Innovation trial, Southwest Research and Extension Center, Altus, OK, 2016.

Entry	Lint yield	Lint loan value*	Lint value	Final plant stand	Visual storm resistance rating	Micronaire	Staple	Strength	Uniformity
	lb/acre	\$/lb	\$/acre	plants/acre	1-9, 9 best	units	32nds inch	g/tex	%
PhytoGen PHY 300W3FE	2070 a	0.5765	1194	46,609	6.0	4.4	38.1	30.5	82.3
PhytoGen PHY 490W3FE	1959 ab	0.5792	1135	48,787	5.0	4.3	38.4	32.8	83.1
PhytoGen PHY 312WRF	1941 abc	0.5787	1123	33,977	3.3	4.4	39.3	31.4	83.0
PhytoGen PHY 220W3FE	1838 bcd	0.5682	1043	36,591	7.0	4.8	37.5	30.0	83.0
PhytoGen PHY 333WRF	1819 bcd	0.5768	1049	40,511	4.3	3.9	38.4	29.7	82.5
Stoneville ST 4946GLB2	1777 cd	0.5795	1030	34,412	6.0	4.3	38.7	32.2	83.4
PhytoGen PHY 243WRF	1773 cd	0.5750	1019	43,125	6.7	3.7	39.7	29.4	81.3
PhytoGen PHY 222WRF	1753 d	0.5785	1014	33,977	4.7	4.7	38.0	31.2	83.4
Test average	1866	0.5765	1076	39,749	5.4	4.3	38.5	30.9	82.7
CV, %	5.5	0.9	5.3	10.7	6.9	4.0	0.8	1.8	0.7
OSL	0.0210	0.2204	0.0137	0.0026	<0.0001	<0.0001	<0.0001	<0.0001	0.0118
LSD	181	NS	101	7464	0.6	0.3	0.5	1.0	1.0

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* Assumes color grades set to 21, leaf grades set to 2 for entire trial.

Table 5. Results from the PhytoGen AST Nursery, Caddo Research Station, Fort Cobb, OK, 2016.

Entry	Lint yield	Lint loan value*	Lint value	Micronaire	Length	Staple	Strength	Uniformity	Elongation	Reflectance	Yellowness
	lb/acre	\$/lb	\$/acre	units	100ths inch	32nds inch	g/tex	%	%	rd %	+b %
PhytoGen PHY 450W3FE	1611 a	0.5649	910	4.9	1.13	36.3	34.5	83.2	8.8	78.4	7.4
PhytoGen PHY 444WRF	1601 a	0.5788	926	3.9	1.25	40.1	31.9	82.5	6.8	79.3	7.4
PhytoGen PHY 470W3FE	1565 ab	0.5711	895	4.8	1.13	36.3	33.9	84.0	8.8	78.7	7.0
PhytoGen PHY 490W3FE	1545 ab	0.5763	890	4.6	1.14	36.6	32.5	82.2	8.2	78.5	7.4
PhytoGen PHY 300W3FE	1510 ab	0.5768	871	4.4	1.16	37.0	30.9	82.0	7.2	78.3	7.5
PhytoGen PHY 499WRF	1484 abc	0.5741	852	4.6	1.14	36.3	31.8	82.5	8.5	77.6	7.5
PhytoGen PHY 340W3FE	1479 abc	0.5771	853	4.6	1.15	36.9	31.7	82.9	7.3	77.4	7.8
PhytoGen PHY 333WRF	1467 abc	0.5770	846	4.3	1.17	37.5	30.8	82.1	7.0	77.3	7.8
PhytoGen PHY 460W3FE	1412 bc	0.5760	813	4.5	1.17	37.3	31.8	82.0	7.8	78.1	7.1
Stoneville ST 4946GLB2	1402 bc	0.5801	814	4.4	1.19	38.1	32.8	83.1	7.5	78.9	7.3
PhytoGen PHY 243WRF	1331 cd	0.5756	767	4.2	1.18	37.7	30.2	80.9	7.7	78.1	7.2
PhytoGen PHY 330W3FE	1329 cd	0.5716	760	4.6	1.17	37.4	31.5	82.8	7.4	78.2	7.6
PhytoGen PHY 220W3FE	1176 d	0.5591	659	5.0	1.14	36.6	31.2	82.7	7.9	78.1	8.0
Test average	1455	0.5737	835	4.5	1.16	37.2	32.0	82.5	7.8	78.2	7.4
CV, %	9.4	1.3	9.4	5.4	1.9	1.9	3.5	1.0	7.3	1.1	6.1
OSL	0.0030	0.0149	0.0018	<0.0001	<0.0001	<0.0001	0.0001	0.0016	<0.0001	0.0707	0.0923
LSD	197	0.0106	113	0.3	0.03	1.0	1.6	1.1	0.8	1.0†	0.5†

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