

PHYTOGEN PSC 355 - 2000 UPDATE
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Abstract

PhytoGen PSC355 was developed by Phytogen Seed Company, LLC from germplasm licensed from Mississippi State University. This conventional, picker variety is sold and supported by Dow AgroSciences. Based on two previous years of outstanding performance in university and on-farm trials across the Southern cotton belt, this variety was planted on approximately 100,000 acres in the 2000 growing season. Compared to other varieties, PSC 355 continued to yield extremely well in both dryland and irrigated fields and again topped multiple university and on-farm trials throughout the Southern cotton belt. This vigorous, hairy leaf variety continued to demonstrate broad adaptation, high yield potential, early maturity, and excellent fiber quality.

Introduction

Background information on Phytogen Seed Co., LLC was presented previously (McPherson et. al., 2000). PSC355 was developed from the H10-35-05 germplasm that was developed at MSU-DREC by Drs. Bob Bridge and Steve Calhoun from the cross DES 949/ Acala 1517-88 (Creech et al., 1999). PSC355 inherited early maturity, broad adaptation, high yield, and yield stability from DES 949 and excellent fiber quality from Acala 1517-88.

All comparative data presented herein are summaries of available university picker variety trials (as of December 10, 2000) from Texas to North Carolina in 1998, 1999 and 2000 (except for 3 trials in 1998 that had high lep insect pressure to unfairly favor Bt varieties). Fiber quality data were available for Prattville, AL, Weslaco, TX, and all locations in GA, LA, and MO.

As a follow-up to data presented at the 2000 Beltwide meetings (McPherson et. al., 2000), The Head-to-Head procedure in Agrobases (Agronomix Software, Inc.) was used once again to summarize these data. Whenever they occurred in the same trial as PSC 355, the data of competitive varieties were converted to percentages of PSC 355 as the control variety and the statistical significance of each comparison was determined by T tests. The overall percent of control for each variety was then transformed back to a mean equivalent basis of the overall control variety mean.

Discussion

Yield

For 3 year averages beginning in 1998 across the southern cotton belt (SCB), 31 varieties were compared to PSC355 in head-to-head comparisons (data not shown) and 15 were chosen for more extensive analysis. These varieties included the top 8 yielding varieties and the number of comparisons ranged from 88 to 155. Yield data are presented in Table 1 to 5.

PSC355 was the highest yielding variety when averaged over all of the available university trials from Texas to Virginia in 1998, 1999, and 2000 (Table 1). The 3 next highest yielding varieties (SG747, SG 105, and PM1218B/R) were significantly lower than PSC355 with number of comparisons ranging from 135 to 155.

When the subset of trials conducted in the Delta from 1998 – 2000 were averaged, PSC 355 was numerically higher than but not significantly different from PM 1218 B/R, SG 747, SG 105 and SG 501 (Table 2). Similarly, PSC 355 was the highest yielding variety in the 1998 – 2000 averages in the Southeast and Texas (Table 3 and 4). The only varieties not significantly lower than PSC 355 in these trials were SG 125, SG 747 and SG 501 in the Southeast and FM 819 and PM 1218 B/R in Texas.

Yields for trials conducted in 2000 are presented in order that the newer competitive varieties could be included (Table 5). The number of comparisons ranged from 36 to 58. FM 958, ST 4691 B and SG747 were the next highest yielding varieties. Of these only FM 958 and ST 4691 B were not significantly lower than PSC 355.

Maturity and Lint Quality

Percent first pick, micronaire, length, and strength data are presented in Table 6. The lint % for PSC 355 which was 38.7, was above the average of 36.0 % (data not shown). Maturity was measured at different universities either as percent first harvest from sequential harvests or as percent open bolls from boll counts. These 2 measures were treated as the same in head-to-head comparisons.

DP388 was the only variety significantly earlier maturing than PSC355 at 79.1% first pick. PSC 355 (75.7%) was significantly earlier than ST 474 (73.8). Though not significant, PSC355 was slightly later than PM1218 B/R and SG 125. It was most similar in maturity to SG 105 and SG 747.

The fiber quality mean equivalents reported were also from head-to-head comparisons with PSC355 as the control variety (Table 5). The average micronaire of PM1218B/R, SG747, and ST474 were slightly higher than that of PSC355 (4.81). The micronaire of PSC 355 was most similar to that of SG105. The fiber length of PSC 355, SG 105, SG 501 and SG 747 were the same (1.11”). The length of FM 819, which was the highest of any early maturity variety (1.16), was significantly longer than PSC 355. The fiber strength of PSC 355 averaged 30.3 g/tex. The strength of FM 819 and SG 501 (average 30.8 g/tex) were the only ones slightly greater than PSC355. Overall, the fiber package of PSC355 was most similar to that of SG501.

Summary

PSC355 was the highest yielding variety in head-to-head comparisons of available university data obtained from TX to NC from 1998 to 2000. This early maturing, vigorous, hairy leaf conventional variety is adaptive to most soil types in the southern cotton belt and continues to perform well in both dryland and irrigated fields. PSC 355 matures a little earlier than ST 474 and about the same time as SG 105 and SG 747.

Like most other high yielding varieties, the micronaire of PSC 355 was slightly higher than average. The length of PSC355 was above average while the strength of PSC355 was among the best. Cultural practices which promote picking of the crop as soon as possible should be adapted to help manage micronaire levels as well as minimize lint quality reductions.

References

- Creech, J.B., R.R. Bridge, and D.S. Calhoun. 1999. Release of DES 607 and licensing of H10-35-05. Proceedings Beltwide Cotton Conferences. Vol. 1, p 472.
- R. McPherson, E. Lubbers, F. Bordelon, and J. Schwer. 2000. Phytogen PSC 355 and PSC 952 conventional, early maturing picker varieties. Proceedings Beltwide Cotton Conferences. Vol.1, p 110

Table 1. Head-to-head comparisons with PSC 355 for lint yield over 1998-200 Beltwide university trials with calculated mean equivalents (ME).

Variety	Common	% of	Lint Yield	Signif @
	Trials (N)	Control (%)	ME (#/ acre)	
PSC 355	160	100.0	1043	control
SG 747	155	97.2	1014	---
SG 105	135	95.7	998	---
PM 1218 B/R	143	95.5	996	---
SG 501	81	94.5	986	---
ST 474	145	93.5	975	---
SG 125	105	92.8	968	---
DP 20 B	122	92.6	966	---
DP 388	113	91.8	958	---
SG 501 B/R	88	91.5	954	---
PSC 952	77	91.4	953	---
ST BXN47	148	90.7	946	---
SG 125 B/R	81	89.4	933	---
FM 819	113	87.2	910	---
DP 451 B/R	81	86.6	903	---
Competitor				
Mean	116	92.7	967	

@ -- / --- significantly lower than control at 0.05 and 0.01; ns not significant

Table 2. Head-to-head comparisons with PSC 355 for lint yield over 1998-200 university trials in the Delta (MS, AR, LA, MO and TN)with calculated mean equivalents (ME).

Variety	Common	% of	Lint Yield	Signif @
	Trials (N)	Control (%)	ME (#/ acre)	
PSC 355	85	100.0	1080	control
PM 1218 B/R	83	98.8	1067	ns
SG 747	84	98.4	1062	ns
SG 105	71	97.6	1054	ns
SG 501	40	95.4	1030	ns
ST 474	85	94.4	1019	---
DP 388	68	93.7	1012	---
DP 20 B	70	93.0	1004	---
PSC 952	38	93.0	1004	---
SG 125	51	92.2	995	---
ST BXN47	79	92.2	995	---
SG 125 B/R	36	91.2	985	---
SG 501 B/R	42	90.9	981	---
DP 451 B/R	42	88.2	952	---
FM 819	74	85.7	925	---
Competitor				
Mean	63	93.6	1011	

@ -- / --- significantly lower than control at 0.05 and 0.01; ns not significant

Table 3. Head-to-head comparisons with PSC 355 for lint yield over 1998-200 university trials in the Southeast (AL, GA, NC with SC) calculated mean equivalents (ME).

Variety	Common	% of	Lint Yield	Signif @
	Trials (N)	Control (%)	ME (#/ acre)	
PSC 355	48	100.0	1004	control
SG 125	35	97.0	974	ns
SG 747	46	96.6	970	ns
SG 501	29	95.0	954	ns
SG 105	45	94.4	948	---
SG 501 B/R	28	93.5	939	--
ST 474	48	92.5	929	---
ST BXN47	44	91.5	919	---
DP 20	27	90.5	909	---
PM 1218 B/R	39	89.9	903	---
PSC 952	17	89.7	901	---
SG 125 B/R	27	88.7	891	---
PM 1218 B/R	24	88.4	888	---
FM 819	22	86.6	870	---
DP 451 B/R	28	85.5	859	---
Competitor				
Mean	34	92.0	924	

@ -- / --- significantly lower than control at 0.05 and 0.01; ns not significant

Table 4. Head-to-head comparisons with PSC 355 for lint yield over 1998-200 Texas A&M trials in the central and Southern areas with calculated mean equivalents (ME).

Variety	Common	% of	Lint Yield	Signif @
	Trials (N)	Control (%)	ME (#/ acre)	
PSC 355	27	100.0	997	control
DP 20 B	25	94.1	938	--
SG 747	25	93.9	936	--
FM 819	17	93.7	934	ns
PM 1218 B/R	21	92.8	925	ns
SG 105	19	91.6	913	--
ST 474	12	90.9	906	---
SG 501	12	90.6	903	--
PSC 952	22	89.5	893	---
SG 501 B/R	18	89.5	893	---
DP 388	21	89.4	892	---
SG 125	19	87.2	870	---
SG 125 B/R	18	87.1	869	---
ST BXN47	25	84.3	841	---
DP 451 B/R	11	83.1	829	---
Competitor				
Mean	19	90	896	

@ -- / --- significantly lower than control at 0.05 and 0.01; ns not significant

Table 5. Head-to-head comparisons with PSC 355 for lint yield over 2000 Beltwide university trials with calculated mean equivalents (ME).

Variety	Common % of		Lint Yield (#/ acre)	Signif @
	Trials (N)	Control (%)		
PSC 355	58	100	1054	control
FM 958	51	98.3	1036	ns
ST 4691 B	51	96.2	1013	ns
SG 747	56	95.3	1004	---
DP 20 B	36	95	1001	--
ST 4892 B/R	51	94.8	999	---
SG 105	46	94	990	---
ST 474	52	94	990	---
PM 1218 B/R	58	91.7	966	---
DP 388	48	91.6	965	---
ST BXN47	51	90.9	958	---
SG 501 B/R	52	90.4	952	---
DP 428 B	41	90.2	950	---
FM 819	36	88.4	931	---
SG 125 B/R	45	88.3	930	---
DP 436 R	52	86.8	914	---
DP 451 B/R	52	86.2	908	---
Competitor Mean	49	92	969	

@ -- / --- significantly lower than control at 0.05 and 0.01; ns not significant

Table 6. Head-to-head comparisons with PSC355 for % 1st pick, lint %, and fiber quality over 1998-2000 university trials with calculated mean equivalents (ME).

Variety	1st Pick (%)	Mic (units)	Length (inches)	Strength (g/tex)
DP 388	79.1	4.6	1.09	29.1
PM 1218 B/R	77.3	4.8	1.08	27.0
SG 125	76.5	4.7	1.12	27.3
PSC 355	75.7	4.8	1.11	30.3
SG 747	75.3	4.9	1.11	27.4
SG 105	75.1	4.8	1.11	28.6
ST 474	73.8	4.9	1.09	27.9
ST BXN47	73.6	4.7	1.09	28.0
DP 20 B	73.5	4.5	1.09	26.7
DP 451 B/R	71.8	4.6	1.12	26.9
FM 819	71.7	4.5	1.16	30.8
SG 125 B/R	71.6	4.6	1.09	27.3
PSC 952	71.2	4.8	1.09	28.9
SG 501 B/R	70.9	4.8	1.08	29.4
SG 501	70.5	4.7	1.11	30.8
DP 33 B	69.7	4.6	1.11	27.8
Average	73.6	4.70	1.10	28.4