

**SURE-GROW 747, A NEW EARLY-MATURING
PICKER VARIETY
K.E. Lege'
Sure-Grow Seed, Inc.
Centre, AL**

Abstract

Sure-Grow Seed, Inc. has developed a new very early-maturing conventional variety to be introduced in the 1999 season. Sure-Grow 747 was developed by Dr. Bob Bridge at Leland, MS, as a conventional variety widely-adapted to all regions of the cotton belt. Sure-Grow 747 has demonstrated yield and agronomic performance superior to leading conventional and transgenic varieties in all regions of the cotton belt.

Introduction

Research throughout the 1980s and 1990s has illustrated the benefits for early maturity and managing the cotton crop for short-season production. Achieving earliness is key to the short-season production concept, and choosing an early-maturing variety is a fundamental factor in harvesting the crop at an earlier date.

Sure-Grow Seed has developed some of the first widely-adapted early-maturing varieties, such as Sure-Grow 125 and Sure-Grow 501. While the development of early-maturing transgenic varieties offering genetic means of insect control and herbicide tolerance has become paramount for growers across the cotton belt, a significant demand still exists for a high-yielding, early-maturing conventional variety that exhibits good agronomic and fiber qualities.

Methods

Yield trials were conducted in 1997 and 1998 by Sure-Grow Research at Leland, MS, and at Maricopa, AZ, by Sure-Grow Agronomic Services at on-farm locations throughout Texas and the southeast, and by university official variety testers across the cotton belt. Most trials were small-plot, replicated at least four times, and machine-picked. Some large-plot trials are tabulated in which three replicates were used, and picked with spindle pickers. Laboratory-scale gins were used on hand-picked boll samples, and fiber samples were analyzed by High Volume Instrumentation (HVI).

Results and Discussion

Sure-Grow 747 was developed by Dr. Bob Bridge at Leland, MS, as a very early-maturing conventional variety

with wide adaptability and high yield potential. Sure-Grow 747 originated from plant selections from a population of Sure-Grow 125 (DES119 x DP50) grown at Leland, MS, in 1993. In 1994, the seed of the selected plants were grown in progeny rows and designated as SGX125-074. SGX125-074 was tested in replicated trials in 1995 at Leland and Tribbett, MS. In 1996, SGX125-074 was placed in replicated trials in AR, AZ, GA, MS, TN, and TX. That year 500 lbs of seed were saved and designated Sure-Grow 747. In 1997 and 1998, Sure-Grow 747 was entered in the university official variety trials across the cotton belt.

Sure-Grow 747 has smooth leaves, large seed (4,600 - 4,900 seed/lb.), a semi-bush fruiting habit, with sparse foliage. Plants are medium in height, and have good *Fusarium* resistance, excellent *Verticillium* resistance, and exhibit excellent heat tolerance. Seedlings of Sure-Grow 747 have excellent vigor. Fiber length ranges from 1.13 to 1.17 inches; fiber strength (HVI) is 26 to 27 g/tex; and micronaire ranges from 4.3 to 4.8.

Southeast Performance

Yield performance of Sure-Grow 747 in the southeast region (AL, FL, GA, NC, VA) indicates excellent adaptation. Sure-Grow 747 outyielded ST474 by 3%, DP51 by 11.5%, DP33B by 2.5%, DP5415RR by 4.5%, and PM1220RR by 14.1% (Table 1). Lint percent for Sure-Grow 747 is nearly one percentage point less than that for ST474, but nearly two percentage points above that for DP51 and DP33B in the southeast region. Fiber length averaged 1.13 inches, strength was 26.6 g/tex, while micronaire was measured as 4.8 over a two-year period (Table 2).

Mid-South Performance

Sure-Grow 747, having been developed in the mid-south (AR, LA, MS, MO, TN), has the best fit in the this region. Sure-Grow 747 outyielded ST474 by an average of 16 lbs. lint/acre in 60% of the trials in which the two varieties were compared (Table 3). Similarly, in 1997 and 1998, Sure-Grow 747 has outyielded STBXN47 by 32 lbs./acre in 59% of the comparisons, STBG4740 by 141 lbs./acre in 70% of the comparisons, DP51 by 98 lbs./acre in 93% of the comparisons, DP33B by 93 lbs./acre in 75% of the comparisons, and PM1220RR by 121 lbs/acre in 78% (Table 3). Lint percent in the mid-south for Sure-Grow 747 was similar to that for STBG4740 and PM1220RR, and fiber quality parameters averaged as follows: fiber length ,1.17 inches; fiber strength, 28.2 g/tex; micronaire, 4.7 (Table 4).

Southwest Performance

In the southwest region (TX, OK), Sure-Grow 747 significantly outperformed every leading variety. In 1998 trials, Sure-Grow 747 outyielded ST474 by 6%, DP50 by 16.4%, DP5409 by 13.3%, DP33B by 10.7%, and Tamcot Sphinx by 28.9% (Table 5). Lint percent for Sure-Grow 747 in the southwest region was similar to that for ST474,

but nearly 5 percentage points higher than that for DP50 (Table 6). Fiber length, strength, and micronaire were similar to values for ST474 (Table 6).

West Performance

Lint yield data recorded during 1996 and 1997 indicate that Sure-Grow 747 can produce high yields in the arid areas of the west, partially because of its excellent heat tolerance. Sure-Grow 747 has outyielded ST474 in the west by 152 lbs./acre, DP33B by 36 lbs./acre, and DP5415 by 269 lbs./acre (Table 7). Data taken in 1997 indicate that Sure-Grow 747 has similar lint percent to that of ST474, but has five percentage points higher lint percent than DP33B (Table 8). Fiber length of Sure-Grow 747 is similar to that of ST474; fiber strength is 1.4 g/tex lower than ST474; but micronaire values for Sure-Grow 747 is 0.1 lower than that for ST474 (Table 8).

Summary

Sure-Grow 747 is a new very early-maturing, conventional variety being introduced by Sure-Grow Seed, Inc. in the 1999 season. Sure-Grow 747 has been demonstrated to have wide adaptability in all regions of the cotton belt. Lint yield performance has been superior to all the leading varieties, conventional or transgenic, in each respective region of the cotton belt. Lint percent and fiber characteristics are similar or better than other leading varieties. Data indicate that Sure-Grow 747 will have a fit in nearly any production scenario, including doublecropping, dryland, and irrigated schemes.

Table 1. Head-to-head lint yield comparisons of Sure-Grow 747 with the leading varieties in the southeast region, 1997-98.

Varieties Compared	lbs. lint/acre	Year(s)	# trials SG747>competition	Total # trials
SG747	1075	1997-	27	41
ST474	1043	98		
SG747	967	1998	15	17
DP51	867			
SG747	1054	1998	4	8
DP33B	1028			
SG747	1126	1998	2	4
DP5415RR	1078			
SG747	1033	1998	13	15
PM1220R	905			
R				

Table 2. Lint percent and fiber characteristics (HVI) in the southeast region, 1997-98.

Variety	Lint %	Length (in.)	Strength (g/tex)	Micronaire	# trials
SG747	40.8	1.13	26.6	4.8	28
ST474	41.6	1.10	27.6	4.8	28
DP51	38.6	1.10	26.4	4.5	11
DP33B	38.7	1.12	28.0	4.4	13
DP5415RR	39.3	1.14	28.9	4.8	3
PM1220RR	40.8	1.10	29.0	4.8	5

Table 3. Head-to-head lint yield comparisons of Sure-Grow 747 with the leading varieties in the mid-south region, 1997-98.

Varieties Compared	lbs. lint/acre	Year(s)	# trials SG747>competition	Total # trials
SG747	1182	1997-98	31	52
ST474	1166			
SG747	1181	1997-98	20	34
STBXN47	1149			
SG747	1165	1997-98	21	30
STBG4740	1024			
SG747	1141	1997-98	14	15
DP51	1043			
SG747	1144	1997-98	21	28
DP33B	1051			
SG747	1188	1997-98	21	27
PM1220RR	1067			

Table 4. Lint percent and fiber characteristics (HVI) in the mid-south region, 1997-98.

Variety	Lint %	Length (in.)	Strength (g/tex)	Micronaire	# trials
SG747	38.6	1.17	28.2	4.7	18
ST474	40.3	1.13	28.5	4.6	24
STBXN47	40.2	1.14	28.8	4.5	23
STBG4740	38.7	1.14	28.9	4.4	23
DP51	36.7	1.15	28.0	4.6	10
DP33B	38.0	1.17	28.6	4.5	18
PM1220RR	38.8	1.14	30.0	4.7	23

Table 5. Head-to-head lint yield comparisons of Sure-Grow 747 with the leading varieties in the southwest region, 1998.

Varieties Compared	lbs. lint/acre	Year	# trials SG747>competition	Total # trials
SG747	776	1998	5	10
ST474	732			
SG747	618	1998	9	12
DP50	531			
SG747	774	1998	10	12
DP5409	683			
SG747	610	1998	4	5
DP33B	551			
SG747	446	1998	6	7
Sphinx	346			

Table 6. Lint percent and fiber characteristics (HVI) in the southwest region, 1998.

Variety	Lint %	Length (in.)	Strength (g/tex)	Micronaire	# trials
SG747	40.2	1.06	27.4	5.0	11
ST474	40.7	1.07	27.8	5.0	9
DP50	35.4	1.08	27.2	4.8	9
DP5409	38.5	1.07	28.3	4.7	9
DP33B	37.1	1.11	28.0	4.8	3

Table 7. Head-to-head lint yield comparisons of Sure-Grow 747 with the leading varieties in the west region, 1996-97.

Varieties Compared	lbs. lint/acre	Year(s)	# trials SG747>competition	# trials
SG747	1648	1997	5	6
ST474	1496			
SG747	1962	1997	1	1
DP33B	1926			
SG747	1673	1996-	7	7
DP5415	1404	97		

Table 8. Lint percent and fiber characteristics (HVI) in the west region, 1997.

Variety	Lint %	Length (in.)	Strength (g/tex)	Micronaire	# trials
SG747	42.6	1.13	25.3	5.4	6
ST474	42.9	1.13	26.7	5.5	6
DP33B	36.6	1.14	29.0	5.3	4
DP5415	40.6	1.17	27.8	5.3	6