

NOTICE OF RELEASE OF ARKOT 8606 GERMLASM LINE OF COTTON
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The Arkansas Agricultural Experiment Station announces the release of a noncommercial breeding line of cotton, *Gossypium hirsutum* L., designated Arkot 8606, which was derived from a cross of 'DES 119' (Bridge, 1986) and Miscot 7813 (Bourland, 1987). Arkot 8606 (tested as 8606-50) was an F₃ individual plant selection made in 1988 using procedures of Bird (1982) modified to permit selection for lateral root development. The line was evaluated in replicated field tests at four Arkansas Agricultural Research Station sites in the Mississippi River Delta from 1991 through 1996 and again in 2000.

In 21 field tests from 1991 through 1996, Arkot 8606 was consistently earlier maturing than the short-season cultivar DES 119 (Table 1). Lint yields, lint fraction, and fiber properties of Arkot 8606 were very similar to DES 119. Arkot 8606 yielded less and had a lower lint fraction than 'Stoneville 474' in four 2000 tests. Over all tests, Arkot 8606 yielded relatively better at northern Arkansas locations than at Rohwer (southeast Arkansas). In 2000, Arkot 8606 was 19% shorter in height than Stoneville 474 and had less lint weight per seed (Table 2). Arkot 8606 is characterized as hairy leaf, but its leaves are less pubescent than DES 119.

During selection, Arkot 8606 was screened for resistance to races 1, 2, 7, and 18 of *Xanthomonas campestris* pv. *malvacearum* (Smith) Dye, the causal agent of bacterial blight. Resistance to these races conveys resistance to all known U.S. races of this pathogen. In subsequent tests, Arkot 8606 has not exhibited symptoms of bacterial blight even after field inoculations with the pathogen. In the Regional Cotton Fusarium Wilt Test at Tallassee, AL, resistance of Arkot 8606 to fusarium wilt [caused by *Fusarium oxysporum* Schlecht. f. sp. *vasinfectum* (Atk.) Snyder & Hans.] was equal to the resistant check (Table 3). In the presence of intense thrips, *Frankliniella* spp., pressure in 2000, Arkot 8606 yielded more and had less relative injury than Stoneville 474.

The good fiber properties and specific adaptation of Arkot 8606 are unusual in such an early maturing genotype. This combination of traits makes the line valuable as a breeding line. Small quantities of Arkot 8606 seed may be obtained for breeding purposes from F.M. Bourland, P.O. Box 48, Northeast Research and Extension Center, Keiser, AR 72351.

References

- Bird, L.S. 1982. The MAR (Multi-Adversity Resistance) system for genetic improvement of cotton. *Plant Dis.* 66:172-176.
- Bourland, F.M. 1987. Registration of Miscot 7813 and Miscot 7841 germplasm lines of cotton. *Crop Sci.* 27:367.
- Bridge, R. R. 1986. Registration of 'DES 119' cotton. *Crop Sci.* 26:646-647.

Table 1. Performance of Arkot 8606 in University of Arkansas tests.

Years	Location	Line	Lint Yield lb/a	Open bolls %	Lint fract. %	Fiber properties				
						Mic.	Len.	Unif. %	Stren. g/tex	Elong. %
93-96	Keiser	Arkot 8606	917	63	37.6	4.82	1.16	83.7	27.8	6.5
93-96	Keiser	DES 119	915	49	39.1	5.03	1.16	84.2	28.8	7.8
93-96	Keiser	Years signif. ¹	1,3,0	2,1,0	0,2,2	0,3,1	0,4,0	0,4,0	0,4,0	0,0,4
92-96	Clarkedale	Arkot 8606	889	71	36.7	4.25	1.19	83.5	29.1	6.5
92-96	Clarkedale	DES 119	871	61	36.4	4.39	1.19	83.8	29.0	7.4
92-96	Clarkedale	Years signif. ¹	1,4,0	2,0,1	1,5,0	1,3,1	0,5,0	0,5,0	0,4,1	0,2,3
91-96	Marianna	Arkot 8606	1085	78	38.4	4.63	1.15	83.6	27.0	6.8
91-96	Marianna	DES 119	976	55	37.6	4.42	1.18	85.2	27.2	7.9
91-96	Marianna	Years signif. ¹	2,4,0	2,1,0	3,2,1	1,5,0	0,4,2	0,3,2	0,6,0	0,2,4
91-96	Rohwer	Arkot 8606	1062	58	37.2	4.67	1.17	84.4	26.2	6.8
91-96	Rohwer	DES 119	1135	53	38.2	4.80	1.17	85.0	27.4	7.6
91-96	Rohwer	Years signif. ¹	1,3,2	1,2,0	0,4,2	0,6,0	0,6,0	0,5,0	0,4,2	0,3,3
91-96	All ²	Arkot 8606 ²	1003	67	37.5	4.6	1.16	83.8	27.4	6.7
91-96	All	DES 119	985	55	37.8	4.6	1.18	84.6	28.0	7.7
2000	Keiser	Arkot 8606 ²	1092	.	38.4	4.7	1.14	84.3	29.2	8.4
2000	Keiser	Stoneville 474	993	.	40.8	4.9	1.13	84.4	30.1	8.9
2000	Clarkedale	Arkot 8606 ²	974	.	37.1	4.5	1.11	84.0	25.9	8.5
2000	Clarkedale	Stoneville 474	955	.	38.9	4.4	1.10	84.4	26.1	8.5
2000	Marianna	Arkot 8606 ²	979	.	34.3	4.7	1.11	82.7	25.7	8.3
2000	Marianna	Stoneville 474	1416	.	40.0	5.2	1.09	83.2	27.5	8.5
2000	Rohwer	Arkot 8606 ²	1081	.	34.5	4.7	1.10	83.4	29.1	8.3
2000	Rohwer	Stoneville 474	1478	.	41.0	5.1	1.07	83.8	26.7	8.3
2000	All ³	Arkot 8606	1032	.	36.1	4.7	1.12	83.6	27.5	8.4
2000	All	Stoneville 474	1211	.	40.2	4.9	1.10	84.0	27.6	8.6

1/ Number years Arkot 8606 was significantly higher, not different, and significantly lower than DES 119, respectively.

2/ Within tests, values in bold differ significantly (pr = 0.10) from respective values for St 474

3/ Means only across all tests, not statistically analyzed.

Table 2. Leaf pubescence rating (1996), plant height (2000), and lint weight per seed (2000) for Arkot 8606 at four locations.

Line	Keiser	Clarkedale	Marianna	Rohwer	All loc.
Leaf pubescence, Arkot 8606	4	5.1	4.5	3.6	4.4
Leaf pubescence, DES 119	5.1	6.9	4.7	6.2	5.7
Plant height (cm), Arkot 8606	99	.	100	.	100
Plant height (cm), Stoneville 474	110	.	127	.	119
Lint wt. per seed (mg), Arkot 8606	66.6	67.7	60.6	53.1	61.2
Lint wt. per seed (mg), Stoneville 474	69.3	66.1	69.3	67.4	68.0

1/ Within tests, values in bold different significantly from respective values.

Table 3. Response of Arkot 8606 to Fusarium wilt (1994 Regional Wilt Nursery) and to thrips (2000 Keiser).

Line	Fusarium wilt % wilted plants	Line	Lint yield¹	
			Treated lb/a	Untrt/trt %
Arkot 8606	29	Arkot 8606	901	82
M-315, resistant check	5	Stoneville 474	538	54
Rowden, susceptible check	72	Sure-Grow 747	979	74
LSD 0.05	29	LSD 0.10	158	15

1/ Yields in untreated plots were compared to yields with in-furrow treatment of aldicarb to control thrips.

NOTICE OF RELEASE OF ARKOT 8727 GERMPLASM LINE OF COTTON

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The Arkansas Agricultural Experiment Station announces the release of a noncommercial breeding line of cotton, *Gossypium hirsutum* L., designated Arkot 8727, which was derived from crossing La. HG-063 (Jones et al., 1988) with the F₁ of 'DES 119' (Bridge, 1986) and Miscot 7803-52 (Bourland and White, 1989). The cultivar 'H1330' was subsequently derived from the second parent (Bourland, 1996). Arkot 8727 possesses the high glanding (HG) characteristic, which is identified by the presence of gossypol glands on the calyx lobes. Calhoun (1997) indicated that a special GL₃ allele was responsible for this HG phenotype. Gossypol glands on the calyx lobes are a strong deterrent and antibiotic factor against tobacco budworm (*Heliothis virescens* F.) (Parrott et al., 1989; Hedin et al., 1992).

Arkot 8727 (tested as 8727-21-10-02) was derived from an F₃ individual plant selection made in 1989 using procedures of Bird (1982) modified to permit selection for lateral root development. Subsequently, additional individual plant selections, based upon visual appearance, were made in the F₅ and the F₈ generations. The resulting line was evaluated in 14 replicated field tests at four Arkansas Agricultural Research Station sites in the Mississippi River Delta from 1996 through 2000. Lint yields and maturity of Arkot 8727 were similar to 'Stoneville 474' at all four locations, indicating that the line possesses high yielding ability and a wide adaptive range (Table 1). Fiber properties, particularly length and strength, of Arkot 8727 were consistently superior to fiber properties of Stoneville 474. Negatively, lint fraction and lint per seed of Arkot 8727 was inferior to Stoneville 474. Leaves of Arkot 8727 are slightly less pubescent than leaves of Stoneville 474.

During selection, Arkot 8727 was screened for resistance to races 1, 2, 7, and 18 of *Xanthomonas campestris* pv. *malvacearum* (Smith) Dye, the causal agent of bacterial blight. Resistance to these races conveys resistance to all known U.S. races of this pathogen. In subsequent tests, Arkot 8727 has not exhibited symptoms of bacterial blight even after field inoculations with the pathogen. In the presence of intense thrips, *Frankliniella* spp., pressure in 2000, Arkot 8727 yielded more and had less relative injury than Stoneville 474 (Table 2). Incidence of Verticillium wilt on Arkot 8727 was significantly less than Stoneville 474 but more than Sure-Grow 125 at Clarkedale in 1999.

The combination of superior fiber properties, specific adaptation, and the high glanding trait of Arkot 8727 makes the line valuable to cotton breeding programs. Small quantities of Arkot 8727 seed may be obtained for breeding purposes from F.M. Bourland, P.O. Box 48, Northeast Research and Extension Center, Keiser, AR 72351.

References

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Table 1. Performance of Arkot 8727 at Keiser (K), Clarkedale (C), Marianna (M), and Rohwer (R), Arkansas.

Years	Loc.	Line	Lint Yield lb/a	Lint fract. %	Fiber properties					Leaf Pub. rating	Open Bolls %	Plt. ht. cm	Lint/Seed mg	Seed index g
					Mic	Len in.	Unif. %	Stren. g/tex	Elong. %					
97-00	K	Arkot 8727	1173	37.9	4.5	1.19	84.2	31.2	7.4	4.2	53	111	67.2	10.6
97-00	K	St 474	1081	40.7	4.8	1.13	83.6	30.2	7.9	5.5	58	112	71.6	10.1
97-00	K	Yrs. signif. ¹	1,2,0	0,0,3	0,1,2	3,0,0	1,2,0	1,2,0	0,2,1	0,0,1	0,3,0	0,1,1	0,2,0	0,2,0
97-00	C	Arkot 8727	959	36.4	4.0	1.21	84.2	29.9	7.5	4.6	41	.	63.6	11.2
97-00	C	St 474	1035	39.4	4.3	1.13	84.1	28.4	7.5	4.9	48	.	66.9	10.3
97-00	C	Yrs. signif. ¹	0,2,1	0,1,2	0,1,2	3,0,0	0,3,0	1,2,0	0,3,0	0,1,0	0,2,0	.	0,1,1	1,1,0
96-00	M	Arkot 8727	1116	40.1	4.9	1.17	84.1	30.7	7.4	5.4	61	99	76.7	11.5
96-00	M	St 474	1314	42.6	5.4	1.10	83.1	28.5	7.7	6.2	66	127	74.2	10.1
96-00	M	Yrs. signif. ¹	0,1,3	0,1,3	0,0,4	4,0,0	2,2,0	2,2,0	0,3,1	0,3,0	0,2,1	0,0,1	0,2,0	0,2,0
96-00	R	Arkot 8727	1513	39.9	5.1	1.16	83.9	30.5	7.0	4.9	52	95	70.4	10.6
96-00	R	St 474	1579	42.4	5.3	1.10	83.3	27.8	7.5	5.7	66	92	74.3	10.1
96-00	R	Yrs. signif. ¹	0,4,0	0,0,4	0,3,1	4,0,0	0,4,0	3,1,0	0,1,2	0,2,1	0,1,2	0,1,0	0,1,1	1,1,0
All ²	All	Arkot 8727	1208	38.8	4.7	1.18	84.1	30.6	7.3	5.0	53	104	67.5	11.0
All	All	St 474	1280	41.4	5.0	1.11	83.5	28.6	7.7	5.8	61	111	72.1	10.1

1/ Number of years that Arkot 8727 was significantly higher, not different, and significantly lower than St 474, respectively.

2/ Data were not analyzed across test sites and years.

Table 2. Response of Arkot 8727 to thrips and to Verticillium wilt.

Line	1999 Lint yield at Keiser		2000 Lint yield at Keiser ¹		1999 wilt rating At Clarkedale
	Treated	Untreated/ treated	Treated	Untreated/ treated	
	lb/a	%	lb/a	%	
Arkot 8727	1068	74	736	72	2.3
Stoneville 474	1122	86	538	54	3.0
Sure-Grow 125/747	1014	79	979	74	1.8
LSD 0.10	ns	ns	158	15	0.5

1/ Yields in untreated plots were compared to yields with in-furrow treatment of aldicarb to control thrips. Thrips populations were much greater in 2000 than in 1999.

2/ Verticillium wilt in plots was rated from 0 (no symptoms) to 10 (all plants wilted) on September 10.

**NOTICE OF RELEASE OF ARKOT 8710 AND ARKOT
8717GERMPLASM LINES OF COTTON**
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The Arkansas Agricultural Experiment Station announces the release of two noncommercial breeding lines of cotton, *Gossypium hirsutum* L., designated Arkot 8710 and Arkot 8717. Both lines were developed from double crosses completed in 1987. Arkot 8710 originated from crossing the F₁ of 'Deltapine 50' / Miscot T8-27 (Bourland and Bridge, 1988) by the F₁ of DES 237-7 (Bridge, 1987) / Miscot 7824 (Bourland and White, 1992). Arkot 8717 originated from crossing the F₁ of 'DES 119' (Bridge, 1986) / Miscot 7803-52 (Bourland and White, 1989) by the F₁ of Miscot T8-27 (Bourland and Bridge, 1988) / 8007-6, a sister line of Miscot 8006 (Bourland et al., 1993).

Arkot 8710 (tested as 8710-45-17) was derived from an F₃ individual plant selection (8710-45) made in 1990, with a second cycle of selection made from the F₈ generation in 1995. The second cycle selection was evaluated as a progeny row in 1996, and was evaluated as a line in replicated tests from 1997 through 2000. Arkot 8717 (tested as 8717-17-12) was derived from an F₃ individual plant selection (8717-17) made in 1990, with a second cycle of selection made in 1993. The second cycle selection was evaluated as a progeny row in 1994, then as a line in replicated tests from 1995 through 2000. Procedures of Bird (1982), modified to permit selection for lateral root development, were used in the first cycle of selection for both lines. Second cycle selections were based on visual performance of individual plants.

In 10 tests at four Arkansas Agricultural Research Station sites in the Mississippi River Delta, lint yields and maturity of Arkot 8710 were similar to 'Stoneville 474' (Table 1). Arkot 8710 tended to have lower lint percentage, micronaire, and fiber strength, but longer fiber length than Stoneville 474. Lint yields of Arkot 8717 were similar to the check cultivars (either DES 119 or Stoneville 474) in 17 tests (Table 2). Fiber length, strength and elongation of Arkot 8717 tended to be superior to the check cultivars, but lint fraction was lower. The lines are morphologically similar to Stoneville 474 except that both tend to be shorter and their leaves are less pubescent. Leaves of Arkot 8710 are less pubescent than Arkot 8717.

During selection, Arkot 8710 and Arkot 8717 were screened for resistance to races 1, 2, 7, and 18 of *Xanthomonas campestris* pv. *malvacearum* (Smith) Dye, the causal agent of bacterial blight. Resistance to these races conveys resistance to all known U.S. races of this pathogen. In subsequent tests, neither line has exhibited symptoms of bacterial blight even after field inoculations with the pathogen. In the presence of intense thrips, *Frankliniella* spp., pressure in 2000, both lines yielded more and had less relative injury than Stoneville 474 (Table 3). With less thrips pressure, differences were not significant in 1999. Both lines had lower incidence of Verticillium wilt (caused by *Verticillium dahliae* Klebahn) than Stoneville 474 at Clarkedale in 1999.

The specific adaptation, superior fiber properties and host plant resistance traits of Arkot 8710 and Arkot 8717 should make them valuable as breeding lines. Small quantities of Arkot 8710 and Arkot 8717 seed may be obtained for breeding purposes from F.M. Bourland, P.O. Box 48, Northeast Research and Extension Center, Keiser, AR 72351.

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Table 1. Performance of Arkot 8710 in University of Arkansas tests at Keiser (K), Clarkedale (C), Marianna (M) and Rohwer (R), 1997-2000.

Loc	Line	Lint yield lb/a	Lint fract. %	Fiber properties					Leaf pub. rating	Open bolls %	Lint/seed mg	Seed index g	Seed/boll No.
				Mic.	Len. in/	UI %	Str. g/tex	Elo. %					
K	Arkot 8710	1208	39.0	4.90	1.13	84.4	27.6	7.9	.	70	70.3	10.9	26.9
K	St 474	1157	40.8	5.05	1.12	84.4	30.3	8.4	.	68	71.6	4.6	26.5
K	Yrs. signif. ¹	1,1,0	0,2,0	0,1,1	0,2,0	0,2,0	0,0,2	1,1,0	.	0,1,0	0,2,0	0,2,0	0,2,0
C	Arkot 8710	1034	37.7	4.25	1.17	85.4	26.4	7.9	.	63	65.1	10.6	30.0
C	St 474	1021	39.1	4.45	1.13	85.1	27.1	8.1	.	60	65.8	10.2	29.8
C	Yrs. signif. ¹	0,2,0	0,1,1	0,0,0	2,0,0	0,2,0	0,2,0	0,2,0	.	0,1,0	0,1,1	0,2,0	0,2,0
M	Arkot 8710	1158	39.7	5.18	1.12	84.4	26.8	7.6	3.8	79	73.9	11.2	28.1
M	St 474	1405	43.0	5.43	1.10	83.5	28.2	7.5	5.6	73	74.2	10.1	29.9
M	Yrs. signif. ¹	0,1,3	0,1,2	0,2,1	1,2,0	0,2,1	0,1,2	0,3,0	0,1,1	0,1,0	0,2,0	0,2,0	0,2,0
R	Arkot 8710	1501	39.4	4.87	1.11	84.4	26.7	7.1	3.5	58	66.3	10.1	25.9
R	St 474	1467	43.0	5.17	1.09	83.3	27.9	7.2	5.5	53	74.3	10.1	27.3
R	Yrs. signif. ¹	0,3,0	0,0,3	0,1,2	1,2,0	2,1,0	0,2,1	0,3,0	0,0,2	0,2,0	0,0,2	0,2,0	0,2,0
All	Arkot 8710	1229	39.0	4.85	1.13	84.6	26.9	7.6	3.6	68	68.9	10.7	27.7
All	St. 474	1219	41.8	5.08	1.11	84.0	28.3	7.7	5.6	63	71.5	10.1	28.4

1/ Number of years Arkot 8710 was significantly higher, not different, and significantly lower than Stoneville 474, respectively.

Table 2. Performance of Arkot 8717 in University of Arkansas tests at Keiser (K), Clarkedale (C), Marianna (M) and Rohwer (R), 1995-2000.

Loc	Line	Lint Yield lb/a	Lint fract %	Fiber Properties					Leaf pub. Rating	Open Bolls %	Lint/seed mg	Seed index g	Seed/boll no.
				Mic	Len. in	UI %	Str. g/tex	Elo %					
K	Arkot 8717	1114	38.2	4.97	1.19	85.8	31.6	8.3	3.1	58	67.8	10.7	27.5
K	Standard	1014	39.5	5.02	1.15	84.5	30.9	8.1	4.7	64	71.6	10.1	26.5
K	Yrs. signif. ¹	1,3,0	0,2,2	0,4,0	3,1,0	2,2,0	3,1,0	1,3,0	0,0,1	0,3,0	0,2,0	0,2,0	0,2,0
C	Arkot 8717	953	37.1	4.55	1.19	85.1	30.1	8.4	5.1	40	62.9	10.9	25.4
C	Standard	888	38.1	4.24	1.16	84.9	28.8	8.0	6.7	43.3	65.8	10.2	29.8
C	Yrs. signif. ¹	0,2,2	1,1,2	3,1,0	3,1,0	1,3,0	1,3,0	2,2,0	0,0,1	1,2,0	0,1,1	0,2,0	0,2,0
M	Arkot 8717	1137	39.1	5.18	1.16	85.1	30.1	8.2	4.0	70	73.6	11.4	28.3
M	Standard	1230	41.4	5.25	1.11	83.9	28.1	8.1	5.2	63.3	74.2	10.1	29.9
M	Yrs. signif. ¹	0,3,2	0,2,3	1,4,0	3,2,0	1,4,0	3,2,0	1,3,1	0,1,2	1,3,0	0,2,0	0,2,0	0,2,0
R	Arkot 8717	1454	39.3	5.15	1.16	84.4	30.1	7.7	3.4	61	70.7	11.0	28.9
R	Standard	1473	40.7	4.92	1.11	84.2	28.6	7.4	5.4	61	74.3	10.1	27.3
R	Yrs. signif. ¹	0,3,1	0,2,2	0,3,2	3,2,0	2,3,0	3,2,0	2,3,0	0,0,2	0,3,0	0,1,1	0,2,0	0,2,0
All	Arkot 8717	1160	38.5	4.98	1.17	85.1	30.4	8.1	3.9	58	68.7	11.0	27.5
All	Standard	1121	40.0	4.88	1.13	84.4	29.0	7.9	5.4	59	71.5	10.1	28.4

1/ Number of years Arkot 8717 was significantly higher, not different, and significantly lower than standard cultivar, respectively. Standard cultivar was DES 119 in 1996-1997 and Stoneville 474 in other years.

Table 3. Response of Arkot 8710 and Arkot 8717 to thrips¹ and Verticillium wilt².

Line	1999 Thrips test at Keiser		2000 Thrips test at Keiser		1999 Clarkedale
	Lint yield, treated	Untreated/ Treated	Lint yield, treated	Untreated/ treated	Verticillium wilt
	lb/a	%	lb/a	%	rating
Arkot 8710	1125	90	1159	99	1.8
Arkot 8717	1170	85	1135	90	1.3
Stoneville 474	1122	86	538	54	3.0
Sure-Grow 125/747 ³	1014	79	979	74	1.8
LSD 0.10	172	Ns	148	15	0.5

1/ Yields in untreated plots were compared to plots with in-furrow treatment of aldicarb to control thrips. Thrips populations and injury were much greater in 2000 than in 1999.

2/ Incidence of wilt rated on 10 September using scale of 0 (none) to 10 (very high).

3/ Sure-Grow 125 in 1999 tests; Sure-Grow 747 in 2000 test.

NOTICE OF RELEASE OF ARKOT 8919 AND ARKOT 9103
GERMPLASM LINES OF COTTON
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The Arkansas Agricultural Experiment Station announces the release of two noncommercial breeding lines of cotton, *Gossypium hirsutum* L., designated Arkot 8918 and Arkot 9103. Both lines were derived from crosses with one common parent, 'H1330' (Bourland, 1996). The second parent of Arkot 8918 was Mo F86-28, an advanced strain developed by W. P. Sappenfield, University of Missouri. Mo F86-28 was derived from the cross of 'Delcot 311' (Sappenfield, 1980) by Auburn 623 RNR (Shepherd, 1974) then backcrossed to Delcot 311. The second parent of Arkot 9103 was 8517-18, an advanced strain from the cross of DES 237-7 (Bridge, 1987) and Miscot 7824 (Bourland and White, 1992).

Arkot 8918 (tested as 8918-01-08) was derived from an F₃ individual plant selection (8918-01) made in 1991, with a second cycle of selection made from the F₇ generation in 1995. The second cycle selection was evaluated as a progeny row in 1996, and then as a line in replicated tests from 1997 through 2000. Arkot 9103 (tested as 9103-38-01) was derived from an F₃ individual plant selection (9103-38) made in 1993, with a second cycle of selection made in 1996. The second cycle selection was evaluated as a progeny row in 1997, and then as a line in replicated tests from 1998 through 2000. Procedures of Bird (2), modified to permit selection for lateral root development, were used in the first cycle of selection for both lines. Second cycle selections were based on visual performance of individual plants.

In tests at four Arkansas Agricultural Research Station sites in the Mississippi River Delta, lint yields of Arkot 9103 were similar to 'Stoneville 474', but Arkot 8918 tended to have lower yields (Tables 1 and 2). In comparison of Stoneville 474, both lines yielded relatively higher at the north Arkansas locations (Keiser and Clarkedale) than at the south Arkansas locations (particularly Rohwer). Fiber properties of both lines were superior (longer, stronger, higher elongation and lower micronaire) to Stoneville 474. Lint fraction and lint weight per seed of each line were inferior to Stoneville 474. The lines are morphologically similar to Stoneville 474 except that both tend to be shorter and leaves of Arkot 9103 are less pubescent.

During selection, Arkot 8918 and Arkot 9103 were screened for resistance to races 1, 2, 7, and 18 of *Xanthomonas campestris* pv. *malvacearum* (Smith) Dye, the causal agent of bacterial blight. Resistance to these races conveys resistance to all known U.S. races of this pathogen. In subsequent tests, Arkot 8918 and Arkot 9103 have not exhibited symptoms of bacterial blight even after field inoculations with the pathogen. In the presence of intense thrips, *Frankliniella* spp., pressure in 2000, both lines yielded more and had less relative injury than Stoneville 474 (Table 3). With less thrips pressure, differences were not significant in 1999.

The superior fiber properties and specific adaptation of Arkot 8918 and Arkot 9103 should make them valuable as breeding lines. Small quantities of Arkot 8918 and Arkot 9103 seed may be obtained for breeding purposes from F.M. Bourland, P.O. Box 48, Northeast Research and Extension Center, Keiser, AR 72351.

References

- Bird, L.S. 1982. The MAR (Multi-Adversity Resistance) system for genetic improvement of cotton. Plant Dis. 66:172-176.
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Table 1. Performance of Arkot 8918 in University of Arkansas tests at Keiser (K), Clarkedale (C), Marianna (M) and Rohwer (R), 1997-2000.

Loc	Line	Lint Yield lb/a	Lint fract %	Fiber Properties					Leaf pub. Rating	Open Bolls %	Plant Height cm	Lint/ seed mg	Seed/ Boll no.
				Mic	Len. in	UI %	Str. g/tex	Elo %					
K	Arkot 8918	1223	37.6	5.1	1.14	85.0	31.8	8.9	.	68	100	67.2	27.6
K	St 474	1157	40.8	5.1	1.12	84.4	30.3	8.4	.	68	112	71.6	26.5
K	Yrs. signif. ¹	0,2,0	0,0,2	0,2,0	0,2,0	0,2,0	2,0,0	1,1,0	.	0,1,0	0,1,1	0,1,1	0,2,0
C	Arkot 8918	919	35.7	4.5	1.15	85.5	31.2	8.7	.	58	.	63.4	31.1
C	St 474	1021	39.1	4.5	1.13	85.1	27.1	8.1	.	60	.	71.5	30.4
C	Yrs. signif. ¹	0,1,1	0,0,2	0,2,0	1,1,0	0,2,0	2,0,0	2,0,0	.	0,1,0	.	0,1,1	0,2,0
M	Arkot 8918	1207	38.4	5.3	1.13	84.7	31.1	8.5	5.6	75	88	71.5	29.1
M	St 474	1408	42.1	5.4	1.10	83.2	28.0	7.7	5.6	68	127	72.1	29.9
M	Yrs. signif. ¹	0,1,2	0,0,3	0,2,1	2,1,0	1,2,0	3,0,0	2,1,0	0,2,0	0,2,0	0,0,1	0,2,0	0,2,0
R	Arkot 8918	1336	38.9	5.1	1.14	84.9	32.0	8.0	5.3	53	83	63.8	29.5
R	St 474	1508	42.7	5.2	1.09	83.2	28.8	7.3	5.7	59	92	73.2	27.3
R	Yrs. signif. ¹	0,1,2	0,0,3	0,2,1	3,0,0	2,1,0	3,0,0	2,1,0	0,2,0	0,2,0	0,2,0	0,0,2	0,2,0
All	Arkot 8918	1192	37.8	5.0	1.14	85.0	31.5	8.5	5.5	64	93	66.5	29.3
All	St 474	1310	41.4	5.1	1.11	83.8	28.5	7.8	5.7	64	111	72.1	28.5

1/ Number of years Arkot 8918 was significantly higher, not different, and significantly lower than Stoneville 474, respectively.

Table 2. Performance of Arkot 9103 in University of Arkansas tests at Keiser (K), Clarkedale (C), Marianna (M) and Rohwer (R), 1998-2000.

Loc	Line	Lint yield lb/a	Lint fract. %	Fiber Properties					Leaf pub. rating	Open bolls %	Plant height cm	Lint/ seed mg	Seed/ Boll no.
				Mic	Len. in.	UI %	Str. g/tex	Elo. %					
K	Arkot 9103	1245	35.5	4.6	1.14	85.5	31.4	8.8	.	70	107	58.9	27.9
K	St 474	1128	39.8	4.9	1.14	85.3	29.7	8.6	.	58	119	67.6	24.7
K	Yrs. signif. ¹	1,1,0	0,0,2	0,1,1	0,2,0	0,2,0	1,1,0	0,2,0	.	0,1,0	0,1,1	0,0,2	1,1,0
C	Arkot 9103	1120	37.5	4.3	1.12	85.2	30.8	8.6	.	78	.	57.1	29.4
C	St 474	1079	38.9	4.8	1.10	84.4	27.2	7.9	.	70	.	66.1	31.3
C	Yrs. signif. ¹	0,2,0	0,1,1	0,1,1	0,2,0	0,2,0	2,0,0	1,1,0	.	0,1,0	.	0,0,1	0,1,0
M	Arkot 9103	1213	36.3	4.8	1.14	85.4	31.1	8.6	4.0	65	88	62.9	44.3
M	St 474	1228	39.9	5.1	1.11	83.8	29.2	8.0	6.4	69	95	69.3	34.9
M	Yrs. signif. ¹	0,3,0	0,1,2	0,2,1	1,2,0	2,1,0	2,1,0	2,1,0	0,0,2	0,2,0	0,1,1	0,0,1	0,1,0
R	Arkot 9103	1101	35.1	4.8	1.13	84.4	31.3	7.7	5.6	70	89	52.1	32.7
R	St 474	1282	41.9	5.4	1.08	82.7	27.9	7.3	6.7	60	95	67.4	30.8
R	Yrs. signif. ¹	0,1,2	0,0,3	0,0,3	2,1,0	1,2,0	3,0,0	2,1,0	0,1,1	0,2,0	0,2,0	0,0,1	0,1,0
All	Arkot 9103	1167	36.0	4.7	1.13	85.1	31.1	8.4	4.8	70	95	58.0	32.4
All	St. 474	1194	40.4	5.1	1.10	83.9	28.5	7.9	6.5	64	103	67.6	29.3

1/ Number of years Arkot 9103 was significantly higher, not different, and significantly lower than Stoneville 474, respectively.

Table 3. Response of Arkot 8918 and Arkot 9103 to thrips¹ at Keiser in 1999 and 2000.

Line	1999 Thrips test #1		1999 Thrips Test #2		2000 Thrips test	
	Lint yield, lb/a	Untreated/ treated	Lint yield, lb/a	Untreated/ treated	Lint yield, lb/a	Untreated/ Treated
	lb/a	%	lb/a	%	lb/a	%
Arkot 8918	1148	85	.	.	1148	95
Arkot 9103	.	.	1103	84	1074	98
Stoneville 474	1122	86	1010	81	538	54
Sure-Grow 125/747 ²	1014	79	973	77	979	74
LSD 0.10	172	ns	172	13	148	15

1/ Yields in untreated plots were compared to plots with in-furrow treatment of aldicarb to control thrips. Thrips populations and injury were much greater in 2000 than in 1999.

2/ Sure-Grow 125 in 1999 tests; Sure-Grow 747 in 2000 test.