Registration of Arkot 8303 Germplasm Line of Cotton

Arkot 8303 cotton (*Gossypium hirsutum* L.) germplasm line (Reg. no. GP-664, PI 595851) was jointly released by the Arkansas Agricultural Exp. Stn. and the Mississippi Agricultural and Forestry Exp. Stn. in 1995 (2). Arkot 8303 possesses superior fiber quality and host-plant resistance, and is particularly well-adapted to silty loam soils in the northern Mississippi River Delta.

Arkot 8303 originated from a 1983 cross between Miscot 7801 (3) and Miscot 7824 (3). Individual plant selections were made from the F2 and F3 populations in 1984 and 1985, respectively. Procedures of Bird (1), modified to permit selection for lateral root development, were used to select the line designated (and tested) as 8304-54 from the bulked F3 seeds.

Agronomic traits of Arkot 8303 were compared with those of ‘DES 119’ (4) in 14 tests from 1987 through 1993 at several experiment stations in Arkansas and Mississippi. Across all tests, Arkot 8303 yielded significantly less lint than DES 119, but yields of the two genotypes were equal in nine tests on silty loam soils at the Delta Branch Exp. Stn. near Clarkedale, AR, and the Cotton Branch Exp. Stn. near Marianna, AR. Arkot 8303 averaged 16% less yield than DES 119 at two other Arkansas sites and two central Mississippi sites. Compared with DES 119, Arkot 8303 matured significantly earlier (83 vs. 80% first harvest) and had significantly longer (30 vs. 28 mm) and stronger (278 vs. 263 k Nm kg⁻¹) fibers. Micronaire, elongation, and lint percentage values for Arkot 8303 were not significantly different from those of DES 119. Leaves of Arkot 8303 are less pubescent than those of DES 119 and are similar to those of ‘Stoneville 132’.

The level of resistance to tarnished plant bug (*Lygus lineolaris* (Palisot de Beauvois)) displayed by Arkot 8303 was similar to that of DES 119. During its selection, Arkot 8303 was resistant to Races 1, 2, 7, and 18 of *Xanthomonas malvacearum* (Smith) Dye, the causal agent of bacterial wilt of cotton. Resistance to those races conveys resistance to all known U.S. races of this pathogen. In the Regional Cotton Fusarium Wilt Test at Tallassee, AL, resistance of Arkot 8303 to fusarium wilt was not significantly different from the resistant check in each of 4 yr. Averaged across years, plants for Arkot 8303, the resistant check, and the susceptible check were 24, 31, and 83%, respectively.

Small quantities of seed for breeding purposes may be obtained from the corresponding author.

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References and Notes


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Registration of Fifty Converted Sorghums from the Sorghum Conversion Program

Fifty sources of sorghum [*Sorghum bicolor* (L.) Moench] germplasm (Reg. no. GP-405 to GP-454, PI 595699 to PI 595748) (Table 1) were converted to early-maturing, combine-height lines and released by the Texas Agricultural Exp. Stn. (TAES) and the USDA-ARS in 1995. The converted sorghum lines were developed through a backcross procedure in which tall, late-maturing tropical sorghum varieties or cultivars were converted to early-maturing, combine-height enhanced germplasm resources (1).

Conversion was accomplished by a crossing and backcrossing program during the winter in Puerto Rico using favorable short-day photoperiods with selection for early, short genotypes within segregating populations under long-day, summer conditions at Chillicothe, TX. All converted lines received four backcrosses to the original exotic variety. With one exception, the nonrecurrent parent was BTx406, an early-maturing, 4-dwarf ‘Martin’ B-line of U.S. origin; in IS 12595 (SC86-14), Tx412 was used instead. Exotic varieties were used as male parents in all crosses and backcrosses.

These 50 converted lines are nonsensitive to photoperiod and mature normally in the USA, and are short statured, 1 or 4-dwarf in height, but occasionally 2-dwarf. The sources of germplasm from the World Sorghum Collection were used to develop a height and maturity to make them readily usable in the USA and other temperate-zone areas of the world. They should contain new sources of desirable traits such as insect resistance, drought resistance, and improved grain quality, and should be useful germplasm to breeders and other researchers in developing improved lines and hybrids with disease resistance, midge resistance, and other traits as indicated in Table 1.

Recognition of origin of this germplasm should be indicated whenever it is used for research or breeding purposes. Requests for conversion lines should be directed to the Texas Agricultural Experiment Station, Texas A&M University, Research and Extension Center, Lubbock, TX 79410-1065.