REGISTRATION OF FOUR GERMPLASM LINES OF UPLAND COTTON WITH EARLY MATURITY AND HIGH FIBER QUALITY

Four breeding lines of upland cotton (Gossypium hirsutum L.), PD 5286, PD 5529, PD 5576, and PD 5582, combining high yield potential and superior fiber quality, were released by the USDA-ARS and the South Carolina Agricultural Experiment Station in 1990. These lines were selected specifically for their performance in a short-season production system.

PD 5286 (Reg. no. GP-487, PI 543860) was developed from the cross ‘DES 422’ × PD 6044. DES 422 was developed at the Delta Branch Mississippi Agricultural and Forestry Experiment Station (1). PD 6044 originated from a cross of ‘Delcot 277’ × PD 9223. Delcot 277 was developed by the Missouri Agricultural Experiment Station (6). PD 9223 originated from the cross of ‘Coker 421’ × PD 2164 (3).

PD 5529 (Reg. no. GP-488, PI 543861) was developed from the cross ‘Deltapine 41’ × PD 6133. PD 6133 originated from a cross of PD 9232 × ‘SC-1’. PD 9232 was developed from the cross of ‘Coker 421’ × PD 2164 (3). SC-1, released in 1977, was the first cultivar with extra fiber strength genes from Beasley’s Triple Hybrid that produced yields equal to other adapted southeastern cultivars (2).

PD 5576 (Reg. no. GP-489, PI 543862) was developed from the cross Deltapine 41 × PD 3246. PD 3246 originated from the cross of AC 239 × FTA 266 (5).

PD 5582 (Reg. no. GP-490, PI 543863) was developed from the cross Deltapine 41 × PD 4461. PD 4461 was developed from a complex back-crossing and composite-crossing program that included an experimental strain of Gossypium barbadense L., ‘Earlistaple’, ‘Auburn 36’, and ‘Coker 100 Wilt’ (4).

These four cotton lines originated from single plant selections in the F2 generation. Advanced generations were evaluated in replicated yield trials averaging 150 d (short-season production) from planting to harvest date from 1987 to 1989. All four lines are equal to or superior in lint yield to the high quality, southeastern cultivar ‘PD-3’. PD 5582 showed the greatest improvement over PD-3, with a 86 kg ha⁻¹ lint yield advantage across 3 yr. The four lines tend to be earlier maturing than PD-3 and thus suited to a shorter production period. In general, the germplasm lines are equal to PD-3 in lint percentage, fiber length, strength, elongation, micronaire value, and yarn tenacity.

These four germplasm lines of diverse genetic background represent some of the first successes in the Pee Dee breeding program of simultaneously improving lint yield and fiber properties in crosses between Pee Dee lines and Delta-type cottons. They should have wider adaptability and greater general combining ability than that of PD-3 and thus should be useful in other cotton improvement programs for the simultaneous improvement of yield and fiber quality.

Seed (25 g) of these germplasm lines may be obtained from C.C. Green, USDA-ARS, P.O. Box 2131, Florence, SC 29503. Recipients of seed are asked to make appropriate acknowledgment of the source of the germplasm if it is used in the development of new germplasm, cultivars, or hybrids.

C.C. Green,* T.W. Culp, and B.U. Kittrell (7)

References and Notes
7. C.C. Green,* Delta and Pine Land Co., P.O. Box 1529, Hartsville, SC 29550; T.W. Culp, USDA-ARS, P.O. Box 2131, Florence, SC 29503; and B.U. Kittrell, Pee Dee Res. and Educ. Ctr., Route 1, Box 351, Florence, SC 29501-9603. Registration by CSSA. Accepted 30 Sept. 1990. *Corresponding author.

REGISTRATION OF FIVE GERMPLASM LINES OF UPLAND COTTON WITH HIGH YIELD POTENTIAL AND FIBER QUALITY

Five breeding lines of upland cotton (Gossypium hirsutum L.), PD 5246, PD 5256, PD 5358, PD 5377, and PD 5380, combining high yield potential and superior fiber quality, were released by the USDA-ARS and the South Carolina Agricultural Experiment Station in 1990. These lines were selected specifically for their performance in a full-season production system.

PD 5246 (Reg. no. GP-491, PI 543864) was developed from the cross ‘McNair 220’ × PD 6171. PD 6171 originated from a cross of ‘SC-1’ × PD 9257. SC-1, released in 1977, was the first cultivar with extra fiber strength genes from Beasley’s Triple Hybrid that produced yields equal to other adapted southeastern cultivars (1). PD 9257 was developed from the cross of TH 149 × PD 3249.

PD 5256 (Reg. no. GP-492, PI 543865) was developed from the cross McNair 220 × AC 241. AC 241 originated from an F2 selection from the cross Hybrid 313 × C-6-5 (2).

PD 5358 (Reg. no. GP-493, PI 543866) was developed from the cross ‘Delcot 311’ × PD 5657. Delcot 311 was released by the Missouri Agricultural Experiment Station in 1980 (3). PD 5657 was developed from a complex cross of [(PD 4461 × ‘MO-DEL’) × ‘Coker 201’] × [(PD 4461 × PD 2165) × ‘Coker 310’].

PD 5377 (Reg. no. GP-494, PI 543867) and PD 5380 (Reg. no. GP-495, PI 543868) were developed from the cross Delcot 311 × PD 6171. These five cotton lines originated from single-plant selections in the F3 generation. Advanced generations were evaluated in replicated yield trials averaging 167 d from planting date to harvest date (full-season production) from 1987 to 1989. All five lines are equal or superior in lint yield to the high-quality, southeastern cultivar ‘PD-3’. PD 5246 showed the greatest improvement over PD-3, with a 63 kg ha⁻¹ lint yield advantage across 3 yr.

In general, the germplasm lines are equal to PD-3 in lint percentage, fiber length, strength, elongation, micronaire values, and yarn tenacity, with the exceptions that PD 5358, PD 5377, and PD 5380 have greater elongation, PD 5377 and PD 5380 have slightly lower micronaire values, and PD 5256 and PD 5377 have greater yarn tenacity.

These five germplasm lines of diverse genetic background represent some of the first successes in the Pee Dee breeding program of simultaneously improving lint yield and fiber properties in crosses between Pee Dee lines and Delta-type cottons. They should have wider adaptability and greater general combining ability than that of PD-3 and thus should be useful in other cotton improvement programs for the simultaneous improvement of yield and fiber quality.

Seed (25 g) of these germplasm lines may be obtained from C.C. Green, USDA-ARS, P.O. Box 2131, Florence, SC 29503.