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

Two breeding lines of upland cotton (*Gossypium hirsutum* L.), PD 5363 and PD 5472, 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 for their superior performance in both full- and short-season production systems.

PD 5363 (Reg. no. GP-485, PI 543858) was developed from a cross of 'Delcot 311' × PD 6131. Delcot 311 was released by the Missouri Agricultural Experiment Station in 1980 (4). PD 6131 originated from a cross of PD 9232 × 'SC-1'. PD 9232 was developed from a cross of Coker 421 × PD 2164 (2); 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 5472 (Reg. no. GP-486, PI 543859) was developed from a cross of 'McNair 235' × PD 6184. PD 6184 originated from a cross of PD 9241 × PD 8619 (3).

These two cotton lines originated from single-plant selections in the F₃ generation. Advanced generations were evaluated from 1987 to 1989 in replicated yield trials averaging 150 d (short-season production) and 167 d (full-season production) from planting date to harvest date. PD 5363 equaled the high-quality southeastern cultivar 'PD-3' in lint yield in a full-season production system and yielded 73 kg ha⁻¹ more lint than PD-3, over 3 yr, in a short-season production system. PD 5472 yielded 55 kg ha⁻¹ more lint than PD-3, over 3 yr, in a full-season production system and 141 kg ha⁻¹ more lint, over 3 yr, in a short-season production system.

Both germplasm lines are equal to PD-3 in lint percentage and fiber length. PD 5472 is equal to PD-3 in fiber strength, elongation and yarn tenacity; PD 5363 shows small improvements over PD-3 in these properties, particularly for yarn strength. Both lines have slightly lower micronaire values than PD-3.

These two lines have diverse genetic backgrounds and represent some of the first successes in the Pee Dee breeding program for simultaneous improvement of lint yield and fiber properties in crosses between Pee Dee lines and Mid-south 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 simultaneous improvement of yield and fiber quality.

Seed (25 g) of these germplasms 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 for the development of an improved cultivar or germplasm of which requests should be sent to the Agronomy Department, McCarty Hall, University of Florida, Gainesville, FL 32611. Recipients of seed are asked to make appropriate acknowledgment of the source of the germplasm if it is used for the development of an improved cultivar or germplasm of which requests should be sent to the Agronomy Department, McCarty Hall, University of Florida, Gainesville, FL 32611. Recipients of seed are asked to make appropriate acknowledgment of the source of the germplasm if it is used for the development of an improved cultivar or germplasm of which requests should be sent to the Agronomy Department, McCarty Hall, University of Florida, Gainesville, FL 32611.
