Registration of PD 93001, PD 93002, PD 93003, and PD 93004 Germplasm Lines of Upland Cotton with Brown Lint and High Fiber Quality

Four breeding lines of upland cotton (Gossypium hirsutum L.), PD 93001, PD 93002, PD 93003, and PD 93004 (Reg. no. GP-595 through GP-598, PI 573281 through PI 573284, respectively), that combine brown lint and improved fiber quality were developed at the Pee Dee Research and Education Center, Florence, SC. These lines were released in 1993 by the USDA-ARS and the South Carolina Agricultural Experiment Station.

PD 93001, PD 93002, PD 93003, and PD 93004 were derived from the cross of a brown-lint cotton accession (collected in Mexico by M.J. Lukefahr) and ‘PD-3’. PD-3 (2) originated from the cross PD 9363/9240. PD 9240 is a sister selection of ‘SC-1’ (3), while PD 9363 resulted from a complex composite cross including ‘Carolina Queen’, Triple Hybrids 108 and 171, AHA 6-1-4, Earlstaple, Sealand 542, and C 6-5 (4). PD-3 is a southeastern cultivar combining high lint yield and superior fiber strength and length. The brown-lint accession has short, weak fiber.

The four germplasm lines originated from single-plant selections in the F₂ generation. The two parents were used as standards for the comparison of fiber properties. The 50 and 2.5% span lengths of the four germplasm lines are greater than those of the brown-lint parent and equal to or slightly less than PD-3. Fiber strength is equivalent to PD-3 and is a major improvement over the brown-lint parent. Fiber elongation of PD 93001 and PD 93002 is less than the brown-lint parent and equal to PD-3. Fiber elongation of PD 93003 is intermediate between the parents, while that of PD 93004 is equal to the brown-lint parent and greater than PD-3. Micronaire reading of PD 93001, PD 93002, and PD 93003 is greater than the brown-lint parent and equivalent to PD-3, while that of PD 93004 is equivalent to the brown-lint parent and less than PD-3.

These four germplasm lines represent a major improvement in fiber strength and length over the brown-lint parent. These lines should be useful to cotton breeders and geneticists as a source of brown lint with improved fiber properties.

Seed (25 g) of these germplasm lines may be obtained from the corresponding author. Recipients of seed are asked to appropriately acknowledge the source of the germplasm if it is used in the development of new germplasm, cultivars, or hybrids.

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References and Notes

Registration of Brazil-R3 Bermudagrass Germplasm

Brazil-R3 bermudagrass (Cynodon dactylon [L.] Pers.) is a somaclone developed from the B cultivar Brazil (1). Brazil-R3 was released by the Louisiana Agricultural Experiment Station due to its increased resistance to fall armyworm [Spodoptera frugiperda (J.E. Smith)] and the active metabolite of the fungus Bipolaris (Marignoni) Shoemaker, and its high forage value. Brazil-R3 was produced through tissue culture of stolon tissue (2).

Brazil-R3 was more resistant to the fall armyworm in laboratory experiments (3). Fall armyworm pupal weights and developed significantly slower when fed leaves from Brazil-R3 than when fed leaves from Brazil. Brazil-R3 contained very low concentrations of feeding phagostimulant, a secondary plant metabolite important in insect host plant preference and suitability (4). (Note that in Reference 4, Brazil-R3 was incorrectly referred to as Brazil-R2.)

Dry matter forage yields, nutritive quality, and mineral element concentrations of Brazil-R3 were not different (P > 0.05) from Brazil on a typical deep-phase sandy Coastal Plain soil (fine-loamy, siliceous, thermic Typic Fragiudult) when fertilized (112-12-112-28 kg N-P-K-S ha⁻¹ harvest⁻¹) and managed for 2 yr for hay production. The increased levels of resistance to S. frugiperda and to the active metabolite exhibited by somaclone Brazil-R3 compared with Brazil-R3 had no effect on hay production.

Small quantities of breeder stock of Brazil-R3 will be maintained by the Louisiana Agricultural Experiment Station at the Rice Research Station, Crowley, LA 70527.

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References and Notes
5. S.S. Coughenour, Rice Res. Stn., Louisiana Agric. Exp. Univ. Agric. Ctr., Crowley, LA 70527; S.S. Quisenberry, Louisiana Agric. Exp. Stn., Louisiana State Univ. Agric. Exp. Stn., Baton Rouge, LA 70803. Recipients of seed are asked to appropriately acknowledge the source of the germplasm if it is used in the development of new germplasm, cultivars, or hybrids.

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