REGISTRATION OF SIX AMERICAN PIMA COTTON GERMPLASM LINES

Six germplasm lines of American Pima cotton (Gossypium barbadense L.) designated P45 (Reg. no. GP-479, PI 542770), P51 (Reg. no. GP-480, PI 542771), P53 (Reg. no. GP-481, PI 542772), P62 (Reg. no. GP-482, PI 542773), P66 (Reg. no. GP-483, PI 542774), and E15 (Reg. no. GP-484, PI 542775) were released by the USDA-ARS and the Arizona Agricultural Experiment Station in 1989. These germplasm lines represent a range of yield potential, plant height, earliness, tolerance to heat stress, boll and fiber properties, and spinning performance.

P45 is an F1 selection from a cross between Pima experimental strains 6503-33-3-1 and 6614-91-11. P45 averaged 6% higher yield than 'Pima S-6', the current American Pima cotton cultivar (2), in 25 replicated tests grown over the Pima belt from 1980 through 1982. P45, compared with Pima S-6, has similar plant height and maturity, lower lint percentage, and longer, stronger, and whiter fiber with similar fineness. P45 has greater yarn strength and fewer yarn imperfections (neps) than Pima S-6.

P51 is an F1 selection from a cross between Pima experimental strains 6503-33-3-1 and 6612-62-5. The lint yield from P51 averaged 14% less than Pima S-6 in 15 replicated tests below 750 m elevation, and 9% less in 17 replicated tests above 750 m elevation, grown from 1981 through 1985. P51, compared with Pima S-6, has shorter plant stature, earlier maturity, greater heat tolerance (1,3), and lower lint percentage. P51 has longer and finer fiber than Pima S-6 and similar fiber strength. It has greater yarn strengths but more neps than Pima S-6. The earliness and short stature of P51 may allow it to be grown effectively in 76 cm rows, especially under shorter growing seasons above 750 m elevation.

P62 is an F1 selection from a cross between Pima experimental strains 6112-4-1-5-1 SB and 6404-68-2-9. P53, compared with Pima S-6, has earlier maturity, greater heat tolerance, shorter plant stature, and lower lint percentage. P53 has longer, stronger, finer, and slightly whiter fiber than Pima S-6. It has similar yarn strength with more neps. P53 performs relatively better at elevations below 750 m.

P66 is an F1 selection from a cross between Pima experimental strains 6614-91-11 and 6910-20-1-5. P66, compared with Pima S-6, has earlier maturity, greater heat tolerance, shorter plant stature, and lower lint percentage. The lint yield from P66 averaged 13% less than Pima S-6 in six replicated tests below 750 m elevation, and 10% less in 11 replicated tests above 750 m elevation, grown from 1983 through 1985. P62 has longer, finer, and whiter fiber with similar strength, compared with Pima S-6. It has stronger yarns but appreciably more neps. P62 was developed primarily for planting in situations where early maturity would be beneficial, such as planting in 76-cm rows, late planting, and in environments with relatively short growing seasons.

P66 is an F1 selection from a cross between Pima experimental strains 6614-91-9-3 and 6910-10-6×L62-1251. R68-106 X L62-1251. R68-106 is a breeding line similar to 'Lee' (11) that has resistance to phytophthora rot (caused by

perimental strain 1-71, 'Tanguis', 'Ashmouni', 'Giza 12', 'Pima 32', various Coastland strains, and an upland strain, Cl. Compared with Pima S-6, E15 has taller plants, later maturity, less heat tolerance, lower lint percentage, and finer and whiter fiber of similar length and strength, and similar yarn strength and neps. It is adapted primarily at elevations above 750 m.

Seed (25 g) of these germplasm lines may be obtained from E.L. Turcotte, USDA-ARS, 37860 W. Smith-Enke Rd., Maricopa, AZ 85239.

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References and Notes


REGISTRATION OF SOYBEAN GERMPLASM LINES R85-395 AND R88-1259, WITH QUINTAFOLIOLATE LEAVES

Soybean [Glycine max (L.) Merr.] germplasm lines R85-395 (Reg. no. GP-122, PI 542969) and R88-1259 (Reg. no. GP-123, PI 542970), which have predominantly quintafoliolate leaves, were developed by the Arkansas Agricultural Experiment Station. R85-395 has ovate leaflets and R88-1259 has lanceolate leaflets and primarily four-seeded pods. These lines were released to provide germplasm for study of leaflet traits and for use in breeding programs to modify canopy architecture.

Takahashi and Fukuyama (13) described soybean genotypes with a high frequency of leaves with quintafoliolate leaves. Fehr (7) apparently studied the same trait and reported that a single dominant gene, Lf, controls this trait. Studies by Caviness and Threlkeld (4) also showed that the multifoliolate trait is dominant to the trifoliate leaf character, with a single major gene controlling this trait. A single recessive gene designated In by Bernard and Weiss (1) controls the inheritance of the lanceolate trait. Johnson and Bernard (12) reported that the association of large number of seeds per pod with the lanceolate trait in most genotypes is a pleiotropic effect of the In gene.

R85-395 and R88-1259 resulted from a series of crosses and backcrossovers to develop productive agronomic lines that have variant leaflet characteristics. The genetic source of the quintafoliolate trait is T-143 from the Genetic Type Collection and the lanceolate trait is from PI 181537.

R85-395 is an F1 selection from the cross (R74-334 × 'Centennial') × (R74-1438 × 'Braxton') (8,10). R74-1438 is an F1 selection from the cross ('Dare' × T-143) × 'Mack' (2.5). R74-334 is an Arkansas breeding line selected from R68-106 × L62-1251. R68-106 is a breeding line similar to 'Lee' (11) that has resistance to phytophthora rot (caused by

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