GERMPLASM LINES OF UPLAND COTTON WITH RESISTANCE TO BOLL WORM, TOBACCO BUDWORM, AND BOLL WEEVIL

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REGISTRATION OF TWELVE NONCOMMERCIAL GERMPLASM LINES OF UPLAND COTTON WITH RESISTANCE TO BOLL WORM, TOBACCO BUDWORM, AND BOLL WEEVIL

Twelve noncommercial cotton, Gossypium hirsutum L., germplasm lines (Regn. no. GP-530 through GP-640) (PI 533634 through PI 533645) with resistance to tobacco budworm, Heliothis virescens (Fabricius), bollworm, H. zea (Boddie), and boll weevil, Anthonomus grandis (Bohemian), were released by USDA-ARS and the South Carolina Agricultural Experiment Station in 1988. These 12 germplasm lines differ in fiber length and micronaire but have fiber and yarn strengths equal to that of PD 695. Fiber and yarn strength of PD 695 is intermediate between that of Coker 201 and SC-1.

These germplasm lines with resistance to Heliothis spp., boll weevil, and adverse growing conditions should be useful germplasm in cotton improvement programs particularly if insects develop resistance to insecticides or if effective insecticides are disallowed in cotton production.

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


REGISTRATION OF SEVEN GERMLASM LINES OF UPLAND COTTON WITH RESISTANCE TO BOLL WORM, TOBACCO BUDWORM, AND BOLL WEEVIL

Seven noncommercial germplasm lines of cotton, Gossypium hirsutum L., of diverse ancestry with resistance to bollworm, Heliothis zea (Boddie), tobacco budworm, H. virescens (Fabricius), and boll weevil, Anthonomus grandis (Bohemian), were released by USDA-ARS and the South Car-

Published in Crop Sci. 30:236 (1990).

References and Notes

3. Culp, T.W., C.C. Green, USDA-ARS, P.O. Box 2131, Florence, SC 29503; and B.U. Kittrell, Pee Dee Res. and Education Ctr., Route no. 1, Florence, SC 29501-9603. Registration by CSSA. Accepted 30 June 1989. *Corresponding author.

Published in Crop Sci. 30:236 (1990).

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yields equal to or superior to those of the check cultivars, SC-1, Coker 310, and Coker 201. Lint yields of all germplasm lines were usually superior to those of PD 695, PD 8619, and PD-2, which usually cut out during dry, hot weather.

Most of these germplasm lines produced significantly more lint than the normal bract cultivars, Coker 201 and Coker 310, when boll weevils were controlled with azinphosmethyl and Heliothis spp. were controlled with fenvalanate after damaged squares reached 10% or when two live larvae were found per 100 terminals on PD 695. Most of these germplasm lines also produced more lint than the Heliothis spp. resistant cottons, SC-1, PD 695, and PD 875. Progenies were selected for resistance to Heliothis spp. under natural infestations of these insects that developed under this insecticide regime. Some natural outcrossing also occurred under this spray program, which accounts for some off-type plants.

When Heliothis spp. were controlled with adequate applications of fenvalanate and boll weevil were allowed to cause 10% damaged squares on Coker 310 before being controlled with azinphosmethyl, eight of the germplasm lines, PD 0741, PD 0756, PD 0761, PD 0762, PD 0776, PD 0781, PD 0785, and PD 0804, which have predominantly frigo bract plants, produced significantly higher yields than PD 695 and PD 875. These data suggest that these eight germplasm lines have higher levels of resistance than the parental lines and have greater environmental stability. PD 0738, PD 0747, PD 0753, and PD 0771, which have predominantly normal bract plants, produced yields equivalent or superior to that of PD 695, suggesting that their high prolificness and early maturity provides escape from the boll weevil. Progenies were selected for boll weevil resistance under natural infestations of this insect that developed under this insecticide regime.

These 12 germplasm lines differ in fiber length and micronaire but have fiber and yarn strengths equal to that of PD 695. Fiber and yarn strength of PD 695 is intermediate between that of Coker 201 and SC-1.

These germplasm lines with resistance to Heliothis spp., boll weevil, and adverse growing conditions should be useful germplasm in cotton improvement programs particularly if insects develop resistance to insecticides or if effective insecticides are disallowed in cotton production.

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