

References and Notes

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REGISTRATION OF FOUR DOUBLED HAPLOID COTTON GERMPLASMS

M-DH-118 (Reg. no. GP242), M-DH-121 (Reg. no. GP243), M-DH-126 (Reg. no. GP244), and M-DH-128 (Reg. no. GP245) were released as germplasm lines resistant to tobacco budworm, *Heliothis virescens* (F.), by the USDA-ARS and the Mississippi Agricultural and Forestry Experiment Station in 1983. They were produced as *Gossypium hirsutum* L. paternal haploids via semigamy in *G. barbadense* cytoplasm. Haploids were doubled with colchicine. The paternal parent was a heterozygous line MOHG obtained from W.P. Sappenfield (2) which has resistance to the tobacco budworm.

Lint yield of each of the four doubled haploids is 30 to 36% less than 'Stoneville 213' (ST 213) when protected from insects with insecticides. Resistance is measured as the ability to yield when artificially infested with 12 first instar tobacco budworm larvae per plant, on a weekly basis, for 6 weeks. Under these infestations, M-DH-118, M-DH-121, M-DH-126, and M-DH-128 yielded 57, 60, 66, and 39% of their respective yield when under insecticidal protection from insects. The MOHG parent yielded 43% and the two checks, ST 213 and ST 7A glandless, yielded 28 and 18% of their respective protected yield.

Each line lodges excessively as does MOHG. When compared with MOHG, the M-DH-118 has higher lint percent, greater fiber elongation, larger bolls, and stronger fiber; M-DH-121 has higher lint percent, larger bolls, and greater fiber elongation; M-DH-126 has smaller bolls with a shorter, coarser, stronger fiber; M-DH-128 has larger bolls with higher lint percent, stronger fiber with greater elongation. Each line is slightly earlier than MOHG, Mahill (1).

These doubled haploid lines, compared with MOHG, have equal or greater resistance to tobacco budworm, and generally have improved yield components and fiber properties. They are also genetically stable, true breeding sources of resistance to tobacco budworm.

Terminal leaf gossypol in each line is equivalent to MOHG and ST 213. Square gossypol of all lines except M-DH-126 is equivalent to ST 213 but lower than MOHG. Gossypol in blooms is higher in each than in ST 213 and equal to MOHG. Seed gossypol in each line, except M-DH-118, is lower than in ST 213 or MOHG. Thus, the resistance to the tobacco budworm in these lines may be due in part to increased gossypol levels from the MOHG parent.

Small amounts of seed of these lines are available for distribution to cotton breeders and other research workers until present supply is exhausted. Written requests should be addressed to J.N. Jenkins, Crop Science Res. Lab., P.O. Box 5367, Mississippi State, MS 39762.

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REGISTRATION OF MHR-1, TOBACCO BUDWORM RESISTANT COTTON GERMPLASM

MHR-1 is a germplasm line of cotton, *Gossypium hirsutum* L. (Reg. no. GP246), which has resistance to the tobacco budworm, *Heliothis virescens* (F.). It was released by USDA-ARS and the Mississippi Agricultural and Forestry Experiment Station in 1983. MHR-1 as released is a composite of nine lines in the F₇ from (DES-24 × MOHG) × MOHG. 'DES-24' was developed as a high yielding early strain by R.R. Bridge (1) and the MOHG strain was obtained as a *Heliothis* spp. resistant composite from W.P. Sappenfield (2) in 1976.

In 1982, MHR-1 was tested as a F₄ composite at nine locations in seven states. At three locations MHR-1 and 'Stoneville 213' (ST 213) were grown under *Heliothis* spp. infestation with average yields of 950 and 824 kg lint/ha for MHR-1 and ST 213, respectively. When *Heliothis* spp. were controlled, lint yields averaged over locations were 1275 and 1513 kg/ha for MHR-1 and ST 213, respectively. Thus MHR-1 yielded 15% more than ST 213 when *Heliothis* spp. were not controlled and 16% less than ST 213 when they were controlled. Lint percent of MHR-1 is 1.2% less than that of ST 213.

Resistance in MHR-1 was measured as the ability to yield when artificially infested with 12 first instar tobacco budworm larvae per plant for each of 6 weeks. MHR-1 and ST 213 were compared in 1982 at Mississippi State, Miss., when artificially inoculated for 6 weeks with tobacco budworm larvae and when protected with insecticides. MHR-1 under infestation attained 62% of its protected yield; whereas, ST 213 attained only 48% of its protected yield. Although significant yield losses occurred with both cottons the yield loss averaged 630 kg/ha with MHR-1 and 1107 with ST 213. The F₃ generation of the nine lines which became MHR-1 plus the parents and two checks were grown with an artificial infestation of tobacco budworm larvae and under protection with insecticides in 1980 at Mississippi State. In 1981 and 1982 the test was repeated except the F₄ and F₅ generations, respectively, were grown instead of the F₃. The nine lines averaged 23% yield loss; whereas, the parents DES-24 and MOHG averaged 47 and 17% yield loss, respectively. The two checks, ST 213 and Stoneville 7A glandless, averaged 46 and 51% yield loss, respectively. When protected from tobacco budworm the nine lines av-