REGISTRATION OF FC 708 AND FC 708 CMS SUGAR BEET GERMPLASM
(Reg. Nos. GP63 and GP64)

R. J. Hecker and E. G. Ruppel

'SUGAR BEET' (Beta vulgaris L.) breeding lines FC 708 and its cytoplasmic male-sterile (CMS) equivalent, FC 708 CMS, were developed and released by ARS-USDA, in cooperation with the Beet Sugar Development Foundation and the Colorado State University Experiment Station.

FC 708 (Reg. No. GP63) is the pollen-sterile maintainer line (Type 0) of FC 708 CMS. FC 708 is monogerm, self-sterile, highly resistant to root rot caused by Rhizoctonia solani Kuhn, and moderately resistant to leaf spot caused by Cercospora beticola Sacc. It originated from hybridization of a pool of monogerm Type 0 leaf spot and curvy top resistant lines with FC 701 (GP No. 1), a multigerm rhizoctonia resistant breeding line. FC 708 resulted from two cycles of mass selection for rhizoctonia root-rot resistance in the segregating generations, followed by one cycle of recurrent selection for resistance from which 80 S's of eight superior maternal plants were recombined, followed by selection of monogerm and Type 0 segregants which were mass selected for root-rot resistance for two more cycles.

FC 708 CMS (Reg. No. GP64) is the CMS BC₅ equivalent of FC 708. The nonrecurrent parent was a heterogeneous CMS line resistant to cercospora leaf spot and the curvy top virus.

FC 708 and FC 708 CMS are moderately bolting resistant, have low vigor, and have a tendency toward above ground root growth. These are the first monogerm CMS and Type 0 germplasms to be developed which have resistance to rhizoctonia root rot. In inoculated field trials in 2 years, FC 708 and FC 708 CMS have exhibited high resistance to a virulent root-rotting strain of R. solani. These resistant germplasms averaged 51% symptomless roots and 91% harvestable roots compared to commercial varieties with 4% and 15%, respectively. The general combining ability of FC 708 CMS has not been well investigated. These germplasms are intended primarily for breeders as root-rot resistant monogerm Type 0 and CMS source parents for back crossing or as a source of genes for rhizoctonia resistance. These germplasms have no potential for direct use by sugar beet growers.

Breeder seed is maintained by ARS-USDA, and is provided to sugar beet breeders in quantities adequate for reproduction upon written request. Requests for seed should be made to Sugar Beet Research, ARS-USDA, Crops Research Laboratory, Colorado State Univ., Fort Collins, CO 80523.

REGISTRATION OF 1-35 TOBACCO GERMPLASM
(Reg. No. GP19)

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1-35 is a tobacco hornworm (Manduca sexta L.) resistant tobacco (Nicotiana tabacum L.) developed and released cooperatively by AR-SEA-USDA, the Georgia Agricultural Experiment Station, and the North Carolina Agricultural Research Service. The tobacco hornworm is one of the most serious insect pests of tobacco in the USA and is presently controlled by insecticides.

1-35 is a doubled haploid derived from the F₁ of Tobacco Introduction (T.I.) 1112 × 'Speight G-33' (Sp G-33). T.I. 1112 is a Tobacco Introduction from Venezuela and has the common name 'Blanco'. The plant has pink blooms and is classified as primitive. T.I. 1112 has shown resistance to the tobacco budworm (Heliothis virescens F.). Its budworm resistance has been attributed in part to glandless leaf trichomes. Sp G-33 is a multiple disease resistant flue-cured tobacco cultivar. Neither of the parents have resistance to the hornworm. The haploid from the F₁ cross obtained by another culture and the chromosome number was doubled with colchicine. The doubled haploid was in the S₁ generation when released, in 1980, to plant breeders, experiment stations, and other organizations, for research purposes.

The new breeding line was evaluated for hornworm resistance in the field at Tifton, Ga. in 1977, 1978, and 1979. The hornworm damage was evaluated on a rating scale of 0 = no damage to 4 = severe damage. The line averaged 1.0 (very slight damage) for the 3 years and T.I. 1112 and Sp G-33 both averaged 4 (severe damage). Since neither parent has resistance to the hornworm the origin of the resistance is unknown. 1-35 was compared with standard flue-cured tobacco cvs., 'NC 95' and 'NC 2956' at Tifton in 1979 for certain agronomic characteristics and chemical constituents. The results showed that 1-35 yielded about one-half as much as the checks, had a grade index of about one-half, produced fewer leaves, and flowered about 10 days earlier. The total alkaloids and nicotine did not differ significantly from NC 2526, but total N was significantly higher than in either of the check cultivars. In field appearance, 1-35 resembles T.I. 1112 more than its flue-cured tobacco parent Sp G-33. Both T.I. 1112 and 1-35 have glandless leaf trichomes. The line has not been evaluated for resistance to common diseases of flue-cured tobacco.

Seed stock will be maintained and distributed by the Tobacco Research laboratory, AR-SEA, USDA, Oxford, NC 27565.

REGISTRATION OF BENNI COMMON WHEAT GERMPLASM
(Reg. No. GP 156)

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Soft red winter wheat, Triticum aestivum L. em Thell., germplasm line Benni (Purdue 64B12CZ-5-15-1-1-1) was developed at Purdue University and was released jointly in 1980 by Purdue University Agricultural Experiment Station and AR-SEA-USDA. It has been assigned CI 17888.

Benni develops four to six seeds/spikelet (multiflor) compared to commercial soft wheats which normally develop two or three, but occasionally four seeds/spikelet at Lafayette, Ind.

1 Registered by the Crop Sci. Soc. of Am. Cooperative investigations of the Oxford Tobacco Research Laboratory, AR-SEA-USDA, Georgia Coastal Plains Exp. Stn. and the Dep. of Crop Science, Genetics and Entomology, North Carolina State University, Raleigh, NC 27650. Accepted 16 Apr. 1981.


7 Registered by the Crop Sci. Soc. of Am. Cooperative investigation of the Purdue Univ. Agric. Exp. Stn. and AR-SEA-USDA. Approved for publication as Purdue Univ. Agric. Exp. Stn. journal paper 8283. Accepted 15 Apr. 1981.

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