

request. Appropriate recognition of the source should be noted if these germplasms contribute to development of new breeding lines or cultivars.

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Registration of FC712 (4X) Tetraploid, Multigerm Sugarbeet Germplasm

Sugarbeet (*Beta vulgaris* subsp. *vulgaris*) germplasm FC712 (4X) (Reg. no. GP-217, PI 607379) was developed by the USDA-ARS, Sugar Beet Research Unit, Crops Research Laboratory, Fort Collins, CO, in cooperation with the Beet Sugar Development Foundation, Denver, CO. This line has excellent resistance to root-rotting strains (AG-2-2) of *Rhizoctonia solani* Kühn. It is also moderately resistant to leaf spot caused by *Cercospora beticola* Sacc. It is released as a tetraploid, multigerm pollinator, or population from which to select tetraploid, multigerm pollinators with resistance to rhizoctonia root rot and cercospora leaf spot.

FC712 (4X) is tetraploid ($2n = 4x = 36$), multigerm (MM), non-O-type, pseudo-self-fertile, and has 4% green hypocotyls. It is a colchicine doubled version of FC712 (Hecker and Ruppel, 1986). FC 712 (PI 590766) was developed by combining the most rhizoctonia resistant germplasm developed by the USDA-ARS, Sugar Beet Research Unit in Fort Collins. One hundred thirty-eight colchicine treated seedlings with thickened or distorted hypocotyls were selected, transplanted, vernalized, and induced to flower. Pollen from ≈ 100 plants was sized to determine ploidy (Hecker, 1988) and seed was harvested individually from 39 tetraploid C_0 plants. Five seeds of each mother plant were planted and induced to flower. Again, pollen was sized to confirm ploidy, and 121 tetraploid plants from 36 of the original C_0 mother roots harvested for seed to produce the C_1 . The C_1 seed was planted in the greenhouse and pollen sized to confirm ploidy level. The C_2 seed was harvested from 74 tetraploid plants. C_2 seed went through another cycle of seed production in the greenhouse, in which 100 plants were harvested to produce C_3 seed. This seed was tested in artificially created epiphytotic of rhizoctonia root rot and cercospora leaf spot (Panella, 1998), bulk increased in a field isolation plot in 1997 (234 plants), and the increased seed lot tested in 1998 and 1999. FC712 (4X) is released from seed production 971018.

FC712 (4X) exhibited excellent resistance to rhizoctonia root rot when tested under strong disease pressure (Ruppel et al., 1979). FC712 (4X) performance was equal or superior to rhizoctonia-resistant checks in disease index (DI) ratings in 1997 and 1999 (DI of 0 = no root rot and 7 = all plants dead). FC712 (4X) performed significantly better than the

susceptible check (FC901/C817). FC712 (4X) had mean DIs of 2.9 and 3.0 (1997 and 1999), whereas the highly resistant check (FC705/1) had DIs of 3.2 and 3.3, respectively. Percentages of resistant plants (those rated 0 or 1) were 29 and 26 for FC712 (4X); and 49 and 22 for the highly resistant check. When FC712 (4X) was compared with FC712 (Hecker, 1988) in the rhizoctonia nursery in 1999 and 2000, there were no significant differences in DI from each other or the highly resistant check.

FC712 (4X) also exhibited good resistance to cercospora leaf spot when tested in an artificial epiphytotic (Ruppel and Gaskill, 1971). In tests from 1998 and 1999, it was significantly better than the susceptible control, and not significantly different from the resistant control. The following DI ratings (DI of 0 = no leaf spot and 10 = all plants dead) represent the most severe rating (last of three or four ratings each season). In 1998 and 1999, DIs of FC712 (4X) were 3.3 and 3.5; DIs of the resistant control (FC504CMS/FC502-2//SP6322-0) were 2.8 and 2.7; DIs of the susceptible control (SP351069-0) were 5.8 and 6.3, respectively. In the moderate leaf spot epiphytotic of 1999 and the mild one of 2000, there were no significant differences in DI from each other or the highly resistant check when FC712 (4X) was compared with FC712 (Hecker, 1988). FC712 (4X) does not show tolerance to the curly top virus.

Breeder seed of FC712 (4X) is maintained by USDA-ARS, and for at least 5 yr, will be provided in quantities sufficient for reproduction upon written request to Sugar Beet Research, USDA-ARS, Crops Research Laboratory, 1701 Center Ave., Fort Collins, CO 80526-2083. Seed of this release has been deposited in the National Plant Germplasm System, where it is available for research purposes, including development and commercialization of new lines or cultivars. The developing organizations request appropriate recognition of the source when this germplasm contributes to a new cultivar. U.S. Plant Variety Protection will not be requested for FC712 (4X).

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Registration of Maize Germplasm Line Mp715

Maize (*Zea mays* L.) germplasm line Mp715 (Reg. no. GP-362, PI 614819) was released as a source of resistance to afla-