Registation of Annual O-Type and CMS Sugarbeet Germplasm Lines FC404 and FC404CMS

Sugarbeet (Beta vulgaris L.) germplasm lines FC404 (Reg. no. GP-164, PI 584987) and FC404CMS (Reg. no. GP-165, PI 584988) were developed by the USDA-ARS, Fort Collins, CO, in cooperation with the Beet Sugar Development Foundation, Denver, CO, and released in 1991. These germplasm were released to provide a monogerm annual O-type maintainer and cytoplasmic-genetic male sterile (CMS) equivalent pair. They may be useful to expedite generation advancement of specific hybridizations, in genetic studies, for other research purposes, and for O-type testing.

FC404 is the O-type maintainer for FC404CMS. It is a monogerm (mm) easy-bolting annual (B—), with green hypocotyledons (rr) and self-fertile (S/S). FC404 CMS has the common Owen cytoplasmic factor of CMS, but FC404 has not been specifically O-type selected. However, the CMS equivalent, FC404CMS, has shown no partial restoration. FC404 has not been assessed for disease reactions, but the original pollinator (FC606) was moderately resistant to cercospora leaf spot (caused by Cercospora beticola Sacc.) and curly top virus. The original population of FC404 consisted of F1 plants, identified by the red hypocotyledon marker, produced from 41 plants of SLC 03 pollinated by 48 plants of FC606 (1). FC404 was released in 1991 as seed production 891048HO.

FC404CMS is the CMS BC3 equivalent of FC404. It was developed from SLC 03CMS × FC606 (1), followed by five generations of backcrosses between selected monogerm annual CMS segregants and monogerm annual segregants from selections within SLC 03 × FC606 (1). FC404CMS has the common Owen cytoplasmic factor for CMS from SLC 03CMS. FC404CMS was released in 1991 as seed production 891048H01. The released seed lots were produced from 17 pair crosses.

Breeder seed of FC404 and FC404CMS is maintained by the USDA-ARS and will be provided in quantities sufficient for reproduction upon written request to the corresponding author. We request that appropriate recognition be made of the source when this germplasm contributes to a new cultivar.

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References and Notes
2. USDA-ARS, Crops Research Lab., 1701 Center Ave., Fort Collins, CO 80526-2081. A joint contribution of USDA-ARS and the Beet Sugar Development Foundation. Registration by CSSA. Accepted 30 Apr. 1995. *Corresponding author (Email: lpanella@lamar.colostate.edu).
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Registation of 19-L38-1472, a Powdery Mildew and Virus Resistant Red Clover Germplasm

19-L38-1472 red clover (Trifolium pratense L.) germplasm (Reg. no. GP-22, PI 586963) was released by the Kentucky Agriculture Experiment Station in 1995. It was the result of five cycles of phenotypic recurrent selection for resistance to peanut stunt (PSV) and bean yellow mosaic virus (BYMV) strains 204-1 and RC (1), and four cycles of selection for resistance to powdery mildew (caused by Erysiphe polygoni DC. emend. Salm.)

Selection was begun in 1983 with 35 red clover plants that had survived 3 yr of screening for PSV and PSV resistance (1). Seeds from crosses of these plants were sown in a greenhouse and established on 1-m centers in a field in 1984 with "Williams' soybean [Glycine max (L.) Merr.] sown in a 6.1-m width around the experiment. Soybean plants artificially inoculated with the RC strain of BYMV were transplanted between ranges to provide a source of inoculum. In 1985, 144 plants with no obvious virus symptoms were dug and transplanted to cages for seed increase. No plants were infected with PSV and BYMV as shown by ELISA (2). Phenotypic recurrent selection for resistance continued for four more cycles and was completed in 1991. Selection intensity varied from 3.5 to 11.3% during the five cycles.

Beginning in 1986, plants were screened in the greenhouse as seedlings (prior to field planting) for resistance to powdery mildew. This was continued for three more cycles. Selection intensity was 13.8% in 1988; only a few plants were removed in succeeding cycles. The fourth cycle, with no selection constitutes 19-L38-1472.

Field plot testing in broadcast sown plots began in 1989 at two locations comparing 19-L38-1472 with the cultivars Kenland and Kenstar. Results over a 3-yr period indicated no superiority in yield and persistence compared with check cultivars (3,4). However, the germplasm possesses a unique combination of disease resistance genes that may be useful for further breeding efforts, particularly if PSV and BYMV become more of a factor in the future or at other locations. Up to 10 g of seeds of 19-L38-1472 may be obtained from the corresponding author.

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References and Notes
5. Dep. of Agronomy and Plant Pathology, Univ. of Kentucky, Lexington, KY 40546-0091. Journal Article no. 94-3-225 of the Kentucky Agric. Exp. Stn., Lexington. Published with approval of the director. Registration by CSSA. Accepted 31 May 1995. *Corresponding author (agrl790@uky.edu).
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