REGISTRATION OF THREE CYTOPLASMIC MALE-Sterile AND THREE RESTORER SUNFLOWER GERMPLASM LINES

THREE SUNFLOWER (Helianthus annuus L.) cytoplasmic male-sterile lines, cmsHA 89(PET2) (Reg. no. GP-129, PI 543742), cmsHA 89(GIG1) (Reg. no. GP-130, PI 543743), and cmsHA 89(MAX1) (Reg. no. GP-131, PI 543744), and their restorer lines RPET2 (Reg. no. GP-132, PI 543745), RGIG1 (Reg. no. GP-133, PI 543746), and RMAX1 (Reg. no. GP-134, PI 543747) were developed cooperatively by the USDA-ARS and the North Dakota Agricultural Experiment Station, Fargo, ND, and released in May 1989. These lines were used to provide cytoplasmic diversity to decrease genetic vulnerability, as only one source of male-sterile cytoplasm is currently utilized in hybrid sunflower production in the world. The lines are available for use in sunflower research and development programs.

Three open-pollinated sunflower composites, CMG-1, CMG-2, and CMG-3, were obtained from Dr. E.D.P. Wheeler, Morden, MB, Canada, in the spring of 1981. These composites are partial interspecific substitutions of the nucleus of cultivated 'Saturn' sunflower into the cytoplasm of the annual species H. petiolaris (Nutt.) and the two perennial species H. maximiliani Schrad., respectively. One hundred seeds each of CMG-1, CMG-2, and CMG-3 were planted; 15, 16, and 2 male-sterile plants were found in the respective composites. Pollen from HA 89 was used to pollinate the sterile plants. HA 89 was released by USDA-ARS and the Texas Agricultural Experiment Station, College Station, TX, in 1969. It is an F_{2}-derived F_{1} line selected from a population of j=1200 plants (Table 1). Based on S_j progeny rows, only 22 plants were selected from

References and Notes

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REGISTRATION OF A SUNFLOWER RESTORER GERMPLASM POPULATION

A SUNFLOWER (Helianthus annuus L.) composite, restorer germplasm population (Reg. no. GP-128, PI 543006) developed at the University of Idaho in cooperation with USDA-ARS Oilseed Research Group at North Dakota State University, Fargo, ND, was released in 1989. This early R-line yield composite (ID-ERLYC) was developed to provide early-maturing material adapted to the cool conditions of the Pacific Northwest.

The original population was identical to the base population used to develop ND-ERLYC (GP-65(2)). The base population of ND-ERLYC had nine parental lines selected for early maturity, as well as specific combining ability for yield and genetic diversity. From 1980 through 1983, the population was grown near Moscow, ID, in an isolation block containing ~2000 plants using a procedure similar to that used to develop ID-EBLYC (GP-108, PI 531502) and ID-LRLYC (GP-109, PI 531503(1)). At bloom, ~5% of the plants were selected for early flowering, vigorous plant growth, and short plant stature. Selected plants were intercrossed by placing small colonies of honey bees (Apis mellifica L.) within each isolation block. Seed was harvested in bulk from the isolation block and subsampled to generate four cycles of mass selection.

After the fourth cycle of mass selection, pedigree selection was used to develop S_{6}, S_{5}, and S_{4} generations. The basis of selection in each generation was the same as the mass selection phase of the program. In 1984, 28 S_{5} plants were selected from a population of ~1200 S_{4} plants (Table 1). Based on S_{4} progeny rows, only 22 plants were selected from...