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And

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION
NORTH DAKOTA STATE UNIVERSITY
FARGO, ND

NOTICE OF RELEASE OF 15 INTERSPECIFIC BULK SUNFLOWER POPULATIONS DERIVED FROM PERENNIAL SUNFLOWER

Wild *Helianthus* species have played an important role in establishing sunflower as a valuable oilseed crop of the world. However, the present sunflower germplasm is still represented by a relatively narrow genetic base, which greatly limits its future success as a competitive major global oilseed crop. Of the 53 sunflower species, 13 of the 14 annuals can be crossed with cultivated sunflower and used for sunflower breeding. The remaining 39 wild *Helianthus* species, however, are perennial, including diploids, tetraploids, and hexaploids, and are much more difficult to hybridize with cultivated sunflower. Thus, they are rarely utilized for sunflower improvement representing unexploited sources of genetic variation for sunflower improvement. The new bulk releases based on the perennial crop wild relatives offers the opportunity to utilize previously unavailable genetic resources. A significant number of the wild perennial *Helianthus* species have been identified as highly resistant to diseases and parasites of global concern including broomrape, a parasitic weed, *Sclerotinia* white mold, *Phomopsis* stem canker, downy mildew, lead rust, *Verticillium* wilt, and *Rhizopus* head rot. Progeny populations of the perennial species crossed and backcrossed with cultivated sunflower provide unique genetic materials allowing breeders to incorporate previously unavailable genetic diversity into their programs.

Fifteen diverse interspecific sunflower backcross bulk populations, SFB-CAL, SFB-DIV, SFB-DIV/GRO, SFB-GIG, SFB-GRO1, SFB-GRO2, SFB-HIR, SFB-MAX1, SFB-MAX2, SFB-MAX3, SFB-NUT1, SFB-NUT2, SFB-OCC, SFB-SAL and SFB-STR originated from 11 wild perennial *Helianthus* species, including five interspecific amphiploids, with each bulk composed of 30 random backcross families. The pedigrees and data are as follows:

1. SFB-CAL (*H. californicus* PI 649941/5*HA 410, BC4F4,5); [SFB-CAL is 86 percent single headed (SH), plant height (PH) 97±14.5 cm, days to flower (DF) 77±1.9 days, days to maturity (DM) 115±3.4 days, head diameter (HD) 14±2.1cm, 1000-seed weight (SW) 60±11.7 grams, and seed black with gray stripes (BGS)]

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2. SFB-DIV (NMS HA 89/*H. divaricatus* PI 503209, 503216, 503218 //HA 410, BC2F4, BC3F3); [SFB-DIV is 74 percent SH, PH 116±22.2 cm, DF 76±4.6 days, DM 110±3.4 days, HD 19±6.0 cm, SW 56±15.5 grams, and seed BGS]
3. SFB-DIV/GRO (*H. divaricatus* PI 435675/P21//*H. grosseserratus*/P21, amphiploid//HA 410, BC3F4,5); [SFB-DIV/GRO is 82 percent SH, PH 90±32.2 cm, DF 77±3.8 days, DM 113±2.9 days, HD 14±7.3 cm, SW 58±24.8 grams, and seed BGS]
4. SFB-GIG (NMS HA 89/*H. giganteus* PI 547182//BC1F5, BC2F3,4,5); [SFB-GIG is 82 percent SH, PH 114±15.6 cm, DF 77± 3.2 days, DM 112±4.2 days, HD 19±5.1 cm, SW 62±15.1 grams, and seed BGS]
5. SFB-GRO1 (NMS HA 89/*H. grosseserratus* PI 613793//HA 410, BC2F5,6, BC3F2,3,4,5); [SFB-GRO1 is 70 percent SH, PH 107±17.8 cm, DF 77±3.3 days, DM 111±4.4 days, HD 16±4.2 cm, SW 50±16.8 grams, and seed BGS]
6. SFB-GRO2 (*H. grosseserratus*/P21, amphiploid//HA 410, BC4F2,3, BC5F2); [SFB-GRO2 is 86 percent SH, PH 122±13.8 cm, DF 75± 2.0 days, DM 110±5.2 days, HD 17±5.1 cm, SW 53±16.7 grams, and seed BGS]
7. SFB-HIR (NMS HA 89//*H. hirsutus* PI 547174//HA 410, BC1F3); [SFB-HIR is 96 percent SH, PH of 138±63.9 cm, DF 74±1.2 days, DM 108±1.1 days, HD 17±1.7 cm, SW 68±9.5 grams, and seed BGS]
8. SFB-MAX1 (NMS HA 89/*H. maximiliani* 1018,1314,1323//HA 441, BC1F4,5,6, BC2F5); [SFB-MAX1 is 87 percent SH, PH 124±17 cm, DF 78±3.0 days, DM 121±4.1 days, HD 16±2.0 cm, SW 39±14.9 grams, and seed BGS]
9. SFB-MAX2 (NMS HA 89/*H. maximiliani* PI 586892//HA 410, BC1F4,5, BC2F3,4,5); [SFB-MAX2 is 76 percent SH, PH 109±14.8 cm, DF 77±3.5 days, DM 110±5.1 days, HD 17±13.1 cm, SW 47±18.4 grams, and seed BGS]
10. SFB-MAX3 (*H. maximiliani*/P21, amphiploid//HA 410, BC2F4,5, BC3F2,3, BC4F2); [SFB-MAX3 is 89 percent SH, PH 102±10.8 cm, DF 75± 1.2 days, DM 116±3.2 days, HD 17±3.5cm, SW 47±14.1grams, and seed BGS]
11. SFB-NUT1 (NMS HA 89/*H. nuttallii* 1008, 1324//HA 441, BC1F4,5,6, BC2F5); [SFB-NUT1 is 87 percent SH, PH 135±19.5 cm, DF 79±2.2 days, DM 118±3.8 days, HD 18±4.0 cm, SW 42±12.4 grams, and seed BGS]
12. SFB-NUT2 (*H. nuttallii* PI 435779/P21, amphiploid//HA 410, BC3F4,5,6); [SFB-NUT2 is 78 percent SH, PH 86±24.5 cm, DF 73±2.5 days, DM 113±3.9 days, HD 15±5.8 cm, SW 68±22.8grams, and seed BGS]
13. SFB-OCC (NMS HA 89//*H. occidentalis* PI 494594//HA 410, BC1F3); [SFB-OCC is 93 percent SH, PH 136±8.7 cm, DF 75±1.6 days, DM 110±3.4 days, HD 17±2.0 cm, SW 69±7.3 grams, and seed BGS]
14. SFB-SAL (NMS HA 89//*H. salicifolius* Ames 30348//HA 410, BC1F3); [SFB-SAL is 96 percent SH, PH 147±10.8 cm, DF 75±1.4 days, DM 112±4.0 days, HD 18±1.8 cm, SW 66±9.8 grams, and seed BGS]
15. SFB-STR (*H. strumosus* 30-002-1/P21, amphiploid//HA 410, BC3F3,4,5); [SFB-STR is 90 percent SH, PH 84±17.4 cm, DF 77±2.5 days, DM 115±3.9 days, HD 12±5.8 cm, SW 58±18.8 grams, and seed BGS]

Check hybrid 894 is 100 percent SH, PH 131±7.7 cm, DF 71±1 days, DM 123±2 days, HD 24±1.7 cm, SW 75±3.2 grams, and seed BGS.

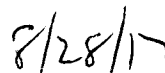
These 15 backcross bulk populations will be maintained by the USDA-ARS, Fargo, North Dakota with small quantities of seed of each germplasm available from the North Dakota Foundation Seed Stocks Project, NDSU Dept. 7670, P.O. 6050, Fargo, ND 58108-6050. Seed of these releases will be deposited in the National Plant Germplasm System, where it will be available for research purposes. U.S. Plant Variety Protection will not be requested for these populations.

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Signatures:



Vice President for Agricultural Affairs
North Dakota State University



Date



Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture



Date