REGISTRATION OF VFSTP-1 SAFFLOWER GERMLASM
(Reg. No. GP 12)

'VFstp-1' safflower (Carthamus tinctorius L.) germplasm was released jointly by the ARS-USDA and the California Agric. Exp. Stn. in 1974. It is resistant to verticillium wilt (Verticillium dahliae Kelb) and fusarium wilt (Fusarium oxysporum f. carthami) and has a striped hull seed.

VFstp-1 arose from crosses of the breeding lines Nebraska 4051 (N4051), VR14154 and VFR-1. N4051 has high yielding ability, a vigorous growth habit, and verticillium and fusarium wilt resistance. Its seed has normal hull and low oil percentage. VR14154, a line from the USDA safflower breeding program at Mesa, Ariz., originated from the same row as 'Royal'. It has verticillium wilt resistance, purple striped hull recessive to the normal hull of N4051, and high oil percentage of the seed. VFR-1 is a selection out of N4051 with resistance to verticillium wilt, fusarium wilt, and rhizoctonia blight incited by Thalassiphora cucumeris. VFR-1 also has normal hull and low oil content.

N4051 was crossed with VR14154, and N4051 was used as the recurrent parent in two backcrosses. After the second backcross, VFR-1 was then crossed to the BC2F1.

An F2 population of 5034 plants from the BC2F1 × VFR-1 cross was grown in a verticillium wilt nursery at Shafter, California in 1971. Seventy plants were selected for resistance to verticillium wilt, striped hull, and high oil. The F2 generation sown in plant progeny rows averaged 35% verticillium wilt infection, whereas the susceptible cultivar 'Gila' averaged 99% (visual estimate of foliar infection of plants at full bloom). In fusarium wilt tests near Davis, Calif., a representative sampling of the population was 6% infected, whereas Gila was 90% infected. In the F2 generation, the progenies of 27 plants selected for high oil and disease resistance were entered in a yield test on land infected with verticillium wilt at Shafter, Calif. Gila was 95% infected, and the 27 selections were 5 to 10% infected. The selections averaged 2810 kg/ha seed yield, compared with 805 kg/ha for Gila. The selections also averaged 2.3 percentage genera yield. We have not tested Flex for yield. Flex is a selection for higher grain protein content compared with 15.8%, respectively, when averaged over 2 years at Brookings. A higher yielding commercial cultivar 'Centurk' averaged 15% protein in the same tests.

SD69103 exhibited a normal lysine value expressed as a percent of protein or adjusted to a constant level and at a characteristic high level of protein content.

Hand and Flex are immune from leaf and stem rust, high in grain protein, and have brown chaffed. Hand has duplicate rust resistance to leaf and stem rust, high yield, large seed, and short straw. We believe that Hand and Flex will be valuable parents. Seeds of SD69103, Hand, and Flex were released to breeders in 1973 and 1974. A notice to breeders of germplasm release was distributed in November, 1973, by the South Dakota Agric. Exp. Stn. Seeds of SD69103, Flex, and Hand are available from the senior author, Plant Science Dept., South Dakota State Univ., Brookings, SD 57006.

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