REGISTRATION OF CROSBY DURUM WHEAT
(Reg. No. 559)

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'Crosby' (Triticum turgidum L. var. durum, CI 17282, is a spring durum wheat developed cooperatively by the North Dakota Agric. Exp. Sta. and ARS, USDA. It was selected from the cross 'Langdon'/St464//Leeds'. Langdon and Leeds were important North Dakota durum cultivars and St 464 (CI 18160) is a source of stem rust resistance from Ethiopia. The final cross was made in 1963 to combine stem rust resistance with early maturity, reduced height, and excellent spaghetti quality. Crosby was bulked in the F5 generation as a single F1 derived line and first entered in preliminary yield trials in 1968 as selection D6715. It has been tested in the Uniform Regional Durum Nursery (URDN) since 1970, and in North Dakota drill trips since 1971.

Crosby has midtall, strong, white culms that may show purplish coloration under some conditions. The spike is awned (dehisce at maturity), oblong, dense, and erect. The glumes are glabrous, yellow, midlong to long, and midwide; the glume shoulders are narrow and elevated; and the beaks wide, acuminate and 3 to 4 mm long. The awns are yellow and 6 to 16 cm long. The kernels are amber, hard, midlong, and elliptical; the germ midsized; the crease midwide and shallow; the cheek angular to rounded; and the brush very short (essentially none).

In 40 URDN tests during 1970-73 in North Dakota, Minnesota, Montana, and Manitoba, Crosby had 14% higher grain yield than Leeds and 3% higher protein. Crosby was similar to Leeds in height, maturity, and disease reactions. Crosby had slightly higher kernel weight and slightly lower test weight than Leeds. Crosby was better adapted than Ward to the fringe of the durum area in North Dakota and adjacent states. The characteristics of Crosby were satisfactory in strip tests in North Dakota. Spaghetti color was similar to that of Leeds and 'Rolette' and equal to that ofAragonesa; processing, and cooking properties of Crosby were satisfactory.

Crosby was named and released by the North Dakota Agric. Exp. Sta. and the ARS, USDA, December 27, 1973. Breeder seed will be maintained by the Seedstocks Project, North Dakota Agric. Exp. Sta., Fargo, ND 58102. The National Variety Review Board has approved Crosby for registration.

Crosby is described further in North Dakota Farm Research 31:10-13.

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REGISTRATION OF A MULTIPLE-PEST RESISTANT ALFALFA GERMPLASM
(Reg. No. GP 51)

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'Nevada Synthetic XX' alfalfa (Medicago sativa L.) was developed cooperatively by the ARS, USDA, and the Nevada Agriculture Experiment Station, Reno, NV 89507. It was selected from the crosses 'Saranac'/C952, C949, C951, C954, C953 (all parents of 'Washoe') and 'Ranger'/Co89 for resistance to three regional disease complexes: bacterial wilt,Phytophthora root-rot, and Meloidogyne infestation. The Syn XX generation was released as germplasm to scientists in January 1975.

This experimental germplasm was released for source material for development of multiple pest-resistant cultivars, for materials useful in studies of effects of root-knot nematodes on alfalfa production, and for use in testing the feasibility of using a completely resistant crop in a rotation to reduce root-knot nematode populations.

Nevada Synthetic XX was developed by backcrossing North Dakota root-knot nematode (Meloidogyne hapla, Chitwood) resistant clones M-7 and 1-167 (selected from Vernal) to clones C952, C949, C951, C954, C953 (all parents of 'Washoe'), C89 (a parent of 'Lahontan'), Nevada 759, and a pea aphid (Acrithosiphon pisum, (Harris)) resistant clone, (PRf). Both donor parent and backcross were screened for resistance to the bacterial wilt complex (Corynebacterium insidiosum (McCull) H. L. Jens) and Phytophthora root-rot (Phytophthora megasperma Drechs.) were highly resistant to the aphid (PRf) resistant parent and susceptible to resistant clones. Aphid clones that were either triplex or quadruplex for the single tetrasomic gene that confers M. hapla resistance1 were grown under strict isolation at Reno, NV 89507.

Nevada Synthetic XX (Syn XX) was highly resistant to the bacterial wilts complex (Corynebacterium insidiosum, (McCull) Filipjev) in the infestation trials near Reno, NV 89507, showing 76% and 68% of Nevada Synthetic XX as resistant on To-Ent A and Ent B, respectively, compared to 84% of Washoe plants. Survival of Nevada Synthetic XX was high in Nevada Synthetic XX, with an average severity index of 2.70 (1 = no symptoms; 5 = plant dead), compared to 4.30, 2.71, and 2.14, respectively, for 'Narragansett', 'Ranger', and Vernal. Phytophthora root-rot resistance of Nevada Synthetic XX plants showed no galling with any of the regional nematode collections, whereas plants in the susceptible cultivar Nevada Syn XX had the highest stand density after 2 years of production. Stands of many entries were virtually eliminated.

A test for plant survival under severe spotted wilt (Theriocephalus maculatus (Buckton)) infestations in Arizona, showed 76% and 68% of Nevada Synthetic XX as resistant on To-Ent A and Ent B, respectively, compared to 84% of Washoe plants. Survival of Nevada Synthetic XX aphid infestation was 87% compared to 65% of variety Washoe. Resistance to stem nematode (Meloidogyne hapla, Chitwood) infestation was 74% in the resistant clone 'Ranger' to 74% in the resistant Nevada Synthetic XX. Tests for resistance to bacterial wilt (Corynebacterium insidiosum (McCull) H. L. Jens) and Phytophthora root-rot (Phytophthora megasperma Drechs.) were completed at the beginning of the study.