Registration of Germplasms

REGISTRATION OF WASHINGTON SNI ALFALFA GERMPLASM[1]

(Reg. No. GP 96)

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WASHINGTON SNI alfalfa (*Medicago sativa* L.) germplasm was developed cooperatively by AR-SEA-USDA, and the Nevada and Washington Agricultural Experiment Stations. The Syn 2 generation was released as germplasm to scientists in July 1978.

Washington SNI was developed from a composite of 10 alfalfa lines resistant to stem nematode [*Ditylenchus dipsaci* (Kuhn) Filipjev], two lines resistant to anthracnose caused by *Colletotrichum trifolii* Bain and two lines resistant to Phytophthora root rot caused by *Phytophthora megasperma* Drechs. Origins of the 14 parental lines included: Saranac An_4 and Vernal An_4, both resistant to anthracnose (1); $MnPC_3$ ('Lahontan') and $MnPA_3$ ('Agate'), both resistant to Phytopththora root rot (4); and WFS3 ('Williamsburg'), WDS3 ('Vernal'), WAS3 ('Team'), WGS3 ('Talent'), WRS1 (Nematol 1), WCS3 (Nevada Syn Y), WNS1 (P.I. 279958 from Turkey), WES3 (Nevada Syn WW), WHS3 (P.I. 141462 from Iran), and WIS3 (Lahontan), all resistant to stem nematode (2, 3).

Parent lines were seeded in replicated 30-cm rows in a cage and were maintained in equal maternal proportion for two additional cycles of recombination. About 1,500 plants were screened for resistance to stem nematode after the second cycle of recombination. About 200 selections with resistance to stem nematode were intercrossed by honeybees in a cage to produce Syn 1 seed. Syn 2 seed was produced by intercrossing 200 Syn 1 plants by honeybees (*Apis mellifera*) in an isolation cage.

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REGISTRATION OF NMP-8 AND NMP-10 NONDORMANT ALFALFA GERMPLASMS[1]

(Reg. No. GP 97 and 98)

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NMP-8 and NMP-10 alfalfa (*Medicago sativa* L.) were developed cooperatively by AR-SEA-USDA, and the Nevada and Minnesota Agricultural Experiment Stations. The Syn 2 generations of both sources were released as germplasm in July 1978.

NMP-8 (GP 97) was developed from SW32, a modified 'Moapa' alfalfa, and Arizona Ron PX germplasm. About 3,000 plants were screened in each of three cycles of selection at Beltsville, Md. for resistance to anthracnose caused by *Colletotrichum trifolii* Bain. About 250 to 300 plants were recombined after each cycle of selection. This was followed by two cycles of selection at St. Paul, Minn. for resistance to Phytophthora root rot caused by *Phytophthora megasperma* Drechs. About 2,500 plants were screened per cycle of selection, with about 150 plants recombined after each cycle.

NMP-10 (GP 98) was developed from a population of 153 plants selected from six nondormant sources: 10 anthracnose resistant plants from SW17 ('African' and 'Sirsa'), 58 from SW29 (African), 31 from UC47 (1) (African, 'Arabian', and 'Turkistan'), 10 from N14120P (African), and 44 from 'El Unico' (2) (African and Sirsa). NMP-10 was improved by a selection program parallel to that described for NMP-8.

NMP-8 and NMP-10 were evaluated for anthracnose resistance at Beltsville. The percentage of resistant plants in NMP-8, NMP-10, 'Arc' (resistant check), and 'Saranac' (susceptible check) was 47, 51, 83, and 2, respectively. In tests for resistance to Phytophthora root rot conducted at St. Paul the percentage of resistant plants in NMP-8, NMP-10, 'Agate' (resistant check), and Saranac (susceptible check) was 33, 74, 42, and 2, respectively. In tests for bacterial wilt caused by *Corynebacterium insidiosum* (McCull.) H. L. Jens., also conducted at St. Paul, the percentage of resistant plants in NMP-8, NMP-10, 'Vernal' (resistant check), and 'Narragansett' (susceptible check) was 2, 4, 46, and 2, respectively.

Seed stocks of NMP-8 Syn 2 and NMP-10 Syn 2 are maintained by AR-SEA-USDA, College of Agriculture, Rm. 323A, University of Nevada, Reno, NV 89557. A 5-g seed sample of each population will be supplied to each applicant upon written request and agreement to make appropriate recognition of the source if the germplasm contributes to a new cultivar or hybrid.

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REGISTRATION OF NEVADA SYNTHETIC YY NONDORMANT ALFALFA GERMPLASM[1]

(Reg. No. GP 99)

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Nevada Synthetic YY alfalfa (*Medicago sativa* L.) germplasm was developed cooperatively by AR-SEA-USDA, and the Nevada, Oregon, Washington, and Utah Agricultural Experiment Stations. The Syn 2 generation was released as germplasm to scientists in July 1978.

This experimental germplasm was released as source material for developing multiple pest-resistant cultivars, for studying

the effects of root-knot nematodes on alfalfa production, and for testing the feasibility of using a completely resistant crop in a rotation to reduce root-knot nematode populations.

Nevada Synthetic YY alfalfa was developed by crossing two winter-hardy clones, M-7 (selected from 'Vernal' (1) and 1-167 (selected from Vernal), both with resistance to root-knot nematode (*Meloidogyne hapla* Chitwood) to five nonhardy clones. The nonhardy clones were C-904, C-906, and C-937 (parents of 'Moapa 69') and two selections from 'Moapa', N1368, and N1548, with resistance to spotted alfalfa aphid [*Therioaphis maculata* (Buckton)] and pea aphid [*Acyrthosiphon pisum* (Harris)]. Three backcrosses to the nonhardy clones followed the initial crosses to maintain characteristics of the nonhardy types, including inherent resistance to *Meloidogyne incognita* (Kofoid and White) Chitwood and *M. javanica* (Treub) Chitwood (2). At the end of the three backcross generations, simplex plants resistant to *M. hapla* were self-pollinated to produce simplex and duplex individuals. Selected duplex plants were sib-pollinated to produce simplex, duplex, triplex, and quadruplex resistant progenies. Resistant plants from the sib generation were test-crossed to a susceptible (nulliplex) clone. Parents with nonsegregating progeny were considered triplex or quadruplex resistant. Forty triplex or quadruplex plants with resistance to *M. hapla* (determined by one test cross) were selected and intercrossed by honeybees (*Apis mellifera*) in an isolation cage. Seed produced from each plant was kept separate and tested for segregation for resistance to *M. hapla* in a greenhouse. Nineteen plants with nonsegregating intercross progeny were intercrossed by honeybees in a replicated, isolation, field cage. One cycle of phenotypic recurrent selection for resistance to *M. incognita* was conducted at Reno, Nev. Syn 1 seed was produced by intercrossing 100 plants selected for resistance to *M. incognita*. Syn 2 seed was produced by intercrossing 100 Syn 1 progeny.

Forage yield tests in California indicate that Nevada Syn YY is similar to Moapa 69 in yield and dormancy. It should be of special value in soils heavily infested with root-knot nematodes. Tests for resistance to *M. incognita* and *M. hapla* indicated that at least 95% of the plants in Nevada Synthetic YY were resistant to both nematodes.

Seed stocks of Nevada Synthetic YY Syn 2 are maintained by AR-SEA-USDA, College of Agriculture, Rm. 323A, University of Nevada, Reno, NV 89557. Up to 5 g of seed will be supplied to each applicant upon written request and agreement to make appropriate recognition of its source if the germplasm contributes to a new cultivar or hybrid.

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REGISTRATION OF MSE_6 SN_3 W_3 AND MSF_6 SN_3 W_3 ALFALFA GERMPLASMS[1]

(Reg. Nos. GP 100 and GP 101)

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MSE_6 SN_3 W_3 and MSF_6 SN_3 W_3 alfalfa (*Medicago sativa* L.) germplasms were developed cooperatively by AR-SEA-USDA, and the Nevada and Minnesota Agricultural Experiment Stations. The Syn 2 generations of both sources were released as germplasm in July 1978.

MSE_6 SN_3 W_3 (GP 100) and MSF_6 SN_3 W_3 (GP 101) were developed from two cycles of phenotypic recurrent selection for resistance to stem nematode [*Ditylenchus dipsaci* (Kühn) Filipjev], followed by two cycles of selection for resistance to bacterial wilt caused by *Corynebacterium insidiosum* (McCull.) H. L. Jens. The parental populations, MSE_6 and MSF_6, were previously released as sources of resistance to pea aphid [*Acyrthosiphon pisum* (Harris)] and spotted alfalfa aphid [*Therioaphis maculata* (Buckton)][3]. About 2,700 plants were screened for stem nematode resistance in the first cycle of selection and 1,000 in the second cycle. The number of plants recombined from the first and second cycles of selection were 482 and 174 for MSE_6 and 252 and 153 for MSF_6, respectively. About 2,000 plants were screened for bacterial wilt resistance per cycle of selection. The number of plants recombined from the first and second cycles of selection were 160 and 182 for MSE_6 SN_3 and 150 and 162 for MSF_6 SN_3, respectively.

In stem-nematode tests conducted at Reno, Nev., the percentages of resistant plants in MSE_6, MSE_6 SN_3 W_3, MSF_6, MSF_6 SN_3 W_3, 'Washoe' (resistant check), and 'Ranger' (susceptible check) were 19, 65, 19, 73, 68, and 2, respectively. In bacterial wilt tests conducted at St. Paul, Minn., the percentages of resistant plants in MSE_6, MSE_6 SN_3 W_3, MSF_6, MSF_6 SN_3 W_3, 'Vernal' (resistant check), and 'Narragansett' (susceptible check) were 4, 36, 7, 57, 27, and 1, respectively. This germplasm has resistance to the pea aphid and spotted alfalfa aphid as described in the original MSE_6 and MSF_6 populations. The percentages of plants resistant to Phytophthora root rot caused by *Phytophthora megasperma* Drechs. in MSE_6 SN_3 W_3, MSF_6 SN_3 W_3, 'Lahontan' (moderately resistant check), and 'DuPuits' (susceptible check) were 7, 13, 18, and 0, respectively.

Seed stocks of MSE_6 SN_3 W_3 and MSF_6 SN_3 W_3 Syn 2 are maintained by the AR-SEA-USDA, College of Agriculture, Rm. 323A, University of Nevada, Reno, NV 89557. A 10-g seed sample of each population will be supplied each applicant upon written request and agreement to make appropriate recognition of its source if the germplasm contributes to a new cultivar or hybrid.

[1] Registered by the Crop Sci. Soc. Am. Cooperative investigations between the Nevada and Minnesota Agric. Exp. Stn. and AR-SEA-USDA. Paper No. 10,301, Scientific Journal Series, Minnesota Agric. Exp. Stn., and Paper No. 419, Journal Series, Nevada Agric. Exp. Stn. Accepted 5 Feb. 1979.

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REGISTRATION OF N-2 RED CLOVER GERMPLASM[1]

(Reg. No. GP 11)

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N-2 red clover (*Trifolium pratense* L.), carrying high levels of resistance to the yellow clover aphid (*Therioaphis trifolii* (Monell)) and the pea aphid (*Acyrthosiphon pisum* (Harris)), was released to researchers and commercial breeders in July 1978. It was developed by five cycles of phenotypic recurrent selection for yellow clover aphid (YCA) resistance and three such cycles for pea aphid (PA) resistance. Thirty-five diverse sources of germplasm, used in the initial evaluations for aphid resistance, were listed previously.[3]

In the initial screening for YCA resistance, 27 plants derived from 13 sources, were selected from an original population of 10,885 plants. After two cycles of recurrent selection for YCA resistance, the YCA-resistant plants selected were cut back,