Registration of Germplasms

REGISTRATION OF KS167 ALFALFA GERMPLASM

KS167 ALFALFA germplasm (Medicago sativa L.) (Reg. no. GP133) was released by the Kansas Agricultural Experiment Station and the USDA-ARS in April 1983. It provides resistance to anthracnose caused by Colletotrichum trifolii Bain, bacterial wilt caused by Corynebacterium insidiosum (McCull.) H. L. Jens., downy mildew caused by Peronospora trifoliorum d'By., Fusarium wilt caused by Fusarium oxysporum Schlecht f. sp. medicaginis (Weimer) Snidy. and Hans, Phytophthora root rot caused by Phytophthora megasperma Drechs. f. sp. medicaginis Kuan and Erwin, pea aphid [Acrystosiphon pisum (Harris)], and spotted alfalfa aphid [Theroaphis maculata (Buckton)].

KS167 was derived from NC-83-2, a broad-based alfalfa population released by members of the NC-83 Regional Project (1). The population was subjected to recurrent phenotypic selection for resistance to anthracnose (4 cycles), bacterial wilt (2 cycles), downy mildew (7 cycles), Fusarium wilt (2 cycles), Phytophthora root rot (6 cycles), pea aphid (5 cycles), and spotted alfalfa aphid (5 cycles). Independent culling was practiced but all pests were not included in each cycle.

Approximately 102 plants from the last cycle were intercrossed by hand pollination in the greenhouse. Syn 2 seed was produced by intercrossing approximately 250 syn 1 plants in a field cage. Honeybees (Apis mellifera L.) were used for pollination.

In an anthracnose (race 1) seedling resistance test at Raleigh, NC, the percentage of resistant plants for KS167, the resistant control 'Arc', and the susceptible control 'Saranac' were 80, 76, 4, respectively. Resistance evaluation tests for bacterial wilt, Fusarium wilt and Phytophthora root rot were conducted at St. Paul, Minn. Percentages of plants resistant to bacterial wilt were 88, 35, 0.0 for KS167, 'Vernal' (resistant) and 'Naranganssett' (susceptible), respectively. Percentages of plants resistant to Fusarium wilt were 77, 68, 5 for KS167, 'Agate' (resistant), and MNGN-1 (susceptible), respectively. Percentages of plants resistant to Phytophthora root rot were 35, 33, 3.0 for KS167, Agate (resistant), and Saranac (susceptible), respectively.

Seedling tests to evaluate resistance to downy mildew, pea aphid and spotted alfalfa aphid were conducted at Manhattan, Kan. KS167 and resistant and susceptible controls showed the following percentages of resistant plants in tests with three downy mildew isolates: KS167 = 86, Saranac = 44, 'Kanza' = 2, for isolate 1-5; KS167 = 72, Saranac = 16, Kanza = 0, for isolate 1-7; KS167 = 69, Saranac = 55, Kanza = 0, for isolate 1-8. Percentages of seedlings surviving after infestation with pea aphid biotypes found in Kansas were 88, 72, 2 for KS167, Kanza (resistant control) and 'Ranger' (susceptible control), respectively. Percentages of seedlings resistant to spotted alfalfa aphid biotypes in Kansas were 86, 77, 5 for the same entries.

Fall dormancy of KS167 and 'DuPuits' were similar in a trial at St. Paul, Minn.

Five grams of KS167 are available to each applicant upon written request and agreement to appropriately recognize its source as a matter of open record when this germplasm contributes to the development of a new cultivar or hybrid.

Seed stocks of KS167 syn 2 are maintained by the Dep. of Agronomy, Kansas State Univ., Manhattan, KS 66506.

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References and Notes


REGISTRATION OF LEAF RUST RESISTANT BARLEY COMPOSITE CROSS XLI GERMPLASM

A SIX-ROWED spring barley (Hordeum vulgare L.) (Reg. no. GP65) male sterile-facilitated recurrent selection population, designated Composite Cross (CC) XLI, has been released by the Montana Agricultural Experiment Station. This population contains numerous sources of resistance to Puccinia hordei Oth., the causal organism of leaf rust, in a background of diverse agronomic types.

CC XLI contains the following germplasm: (1) 'Manchuria' (CI 2350) mg 10, a genetic male sterile line with good combining ability; (2) fifteen six-rowed cultivars, selected for their agronomic characteristics and adaptation in a range of environments ['Atsel' (CI 6250), 'Beecher' (CI 6566), 'Gem' (CI 7243), 'Unitan' (CI 10421), 'Galt' (CI 11770), 'CM 67' (CI 13782), 'Atlas 68' (CI 13824), 'Hull-less Glacier' (CI 13831), 'Nordic' (CI 15216), 'Stepto' (CI 15229), M21 (CI 15481), 'Armonit' (CI 15509), 'Athenais', 'Hull-less Vantage', and 'Waxy Titan']; and (3) thirty-seven lines selected for their resistance to isolates of P. hordei from the U.S. and the Mediterranean region (1) (CI nos. 877, 935, 1016, 1021, 1243, 1257, 2524, 3390, 3391, 3410, 3634, 3737, 4974, 4978, 5051, 6193, 6488, 6489, 7055, 7480, 10081, 11420, 11533, 11577, 11801, 11808, 13854, and 14048). P. I. 371630, Ford 1203, CCIM-13, 386-16-2, 'Mari/Athenais', RCB 9, RCB 10, and 'La Estanzuela'.

The resistant lines were added in several stages up to the third cycle of recurrent selection.

Four cycles of recurrent selection have been completed. Each cycle consisted of two generations: 1) selection for resistance and 2) recombination. Selection for resistance was conducted yearly at locations in Texas and the Mediterranean region. In 1982 the population was grown at Bozeman, Mont., for seed increase and selection for scald resistance. Selection was based on natural infection by P. hordei at all locations. Seed harvested from the various nurseries was bulked proportionally based on selection intensity for leaf rust resistance and number of plants harvested. This bulked seed was grown in isolation in recombinant nurseries at El Centro, Calif., and Scottsdale, Ariz. Seeds on male sterile plants were then harvested to continue the next cycle. Population sizes above 10,000 plants were maintained in each generation. CC XLI presently consists of components selected for resistance in Texas, Mexico, Morocco, Tunisia, Egypt, Syria, and Turkey. Miller. 1975. Registration of leaf rust resistant barley composite cross XLI germplasm.