REGISTRATION OF PHYTOPHTHORA RESISTANT ALFALFA GERMPLASM
(Reg. No. GP 41 and 42)

F. I. Frosheiser and D. K. Barnes

Two alfalfa (Medicago sativa L.) germplasm populations, MnP-B1 and MnP-D1, were released by the Agricultural Research Service, USDA, and the Minnesota Agricultural Experiment Station on April 4, 1972. Both populations trace to plants selected for resistance to Phytophthora root rot caused by the fungus Phytophthora megasperma Drechs.

GP 41 (MnP-B1). MnP-B1 is interpollinated seed produced on 160 plants selected for Phytophthora resistance. Initially about 25,000 seeds of winter-hardy and moderately winter-hardy cultivars were planted in an irrigated Phytophthora nursery at St. Paul. Plants with the least root damage in the field were taken to the greenhouse and retested for resistance. The most resistant plants were selected from 29 sources. These sources can be traced to the cultivars ‘Apache,’ ‘Beaver,’ ‘Buffalo,’ ‘Cayuga,’ ‘Cherokee,’ ‘Cody,’ ‘Cossack,’ ‘Culver,’ ‘Flamande,’ ‘La-dak,’ ‘Lamix,’ ‘Meeker,’ ‘Tarshis,’ ‘Team,’ ‘Narragansett,’ ‘Norseman,’ ‘Progress,’ ‘Ramsey,’ ‘Teton,’ ‘Terry,’ ‘Travois,’ ‘Vernal,’ ‘Weevilchee,’ ‘Williamsburg,’ WL303, ‘153,’ and ‘522,’ plus the sources of X100, MSA, and Medicago glutinosa. Seed was increased under isolation in California by the NC-83 regional project.

GP 42 (MnP-D1). MnP-D1 is interpollinated seed produced on about 90 plants selected for Phytophthora resistance. Initially about 7,000 seeds of alfalfa cultivars adapted to the southwestern United States were planted and selected in the same manner as described for MnP-B1. Resistant plants selected for intercrossing were from 14 sources. These included the cultivars ‘Indian,’ ‘Kasel,’ ‘Lahontan,’ ‘Mesa-Sirsra,’ ‘Moapa,’ ‘Peruvian,’ ‘San Isidro,’ ‘Sonora,’ ‘Turkestann,’ ‘Washoe,’ ‘Zia,’ UC Ext. 38, and UC Ext. 47. Seed was increased in Nevada by O. J. Hunt and R. N. Peaden, Research Agronomists, ARS, USDA.

The degree of Phytophthora root rot resistance of MnP-B1 and MnP-D1 is equal to that of ‘Agate,’ Lahontan, and Washoe and superior to that of all other cultivars tested. Phytophthora root rot resistance plus the broad genetic background of these two populations make them valuable breeding materials.

About 2,500 seeds of MnP-B1 and 2,000 seeds of MnP-D1 are available upon request to the Department of Agronomy and Plant Genetics, University of Minnesota, St. Paul, MN 55101.

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REGISTRATION OF TRIFOLIUM PRATENSE X T. DIFFUSUM HYBRID GERMPLASM
(Reg. No. GP 3)

Norman L. Taylor and Melvern K. Anderson

The interspecific allotetraploid hybrid Trifolium pratense L. x T. diffusum Ehrh. PI 204517 was developed at the Minnesota Agricultural Experiment Station and released in 1965 by crossing tetraploid red clover (2n=32) with tetraploid T. diffusum (2n=32), and selfing the hybrid. Chromosome numbers of root-tip cells were mostly 30 with occasional aneuploid numbers of 28, 29, and 31. Pollen fertility based on stainability was 79 to 85%. The hybrid is intermediate in color between the parental species and is very vigorous and considered to be of potential use in research and breeding programs.

Table 1. Pedigrees and agronomic data for M21 and M22 dwarf barleys in comparison with Larker.

<table>
<thead>
<tr>
<th>Reg. No.</th>
<th>Line</th>
<th>Pedigree</th>
<th>Height (cm)</th>
<th>Greenhead Strength</th>
<th>Rut</th>
<th>Straw Strength</th>
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<td>GP 13</td>
<td>M21</td>
<td>Jotun/Kindred/Vantage</td>
<td>84</td>
<td>V</td>
<td>57</td>
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<tr>
<td>GP 14</td>
<td>M22</td>
<td>Jotun/Kindred/Vantage</td>
<td>84</td>
<td>V</td>
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</table>

Larker

mutant stock (Table 1). ‘Vantage’ barley was developed for poor straw strength.

M21 and M22 were derived from single F2 plants from crosses among the first semidwarfs resulting from the hybridization. The F3 selection that are well adapted to Minnesota. Several cycles of selection were very late maturing, had spikes that emerge from the boot, and were highly susceptible to root rot diseases.

M21 and M22 are among the shortest and tallest dwarf barleys in the world. Both populations make them valuable breeding materials.

Seed of the two lines will be maintained by the Crop Science Society of America. Contribution from the Department of Agronomy and Plant Genetics, University of Minnesota, St. Paul, MN 55101, and the USDA Small Grains Collection, Beltsville, MD 20705. Seed in germplasm amounts of 5 g may be obtained from either source.