Registration of KS221 Multiple Pest-Resistant Alfalfa Germplasm

KS 221 ALFALFA (Medicago sativa L.) germplasm (Reg. no. GP-261, PI564166) was released by the USDA-ARS and the Kansas and Washington Agricultural Experiment Stations in July 1992. It provides resistance to anthracnose [caused by Colletotrichum trifolii Bain & Essary, Race 1]; bacterial wilt [caused by Clavibacter michiganense subsp. insidiosum (McCull.) Davis et al.]; downy mildew (caused by Peronospora trifoliorum deBary); fusarium wilt [caused by Fusarium oxysporum Schlechtend.]; alfalfa weevil (Hypera postica (Gyllenhal)).

Table 1. Percentages of symptomless alfalfa plants challenged by three downy mildew isolates at Manhattan, KS.

<table>
<thead>
<tr>
<th>Downy mildew isolates</th>
<th>15</th>
<th>17</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>KS 221</td>
<td>93</td>
<td>91</td>
<td>83</td>
</tr>
<tr>
<td>Saranac (R)</td>
<td>30</td>
<td>18</td>
<td>55</td>
</tr>
<tr>
<td>‘Kanza’ (S)</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Percentages of seedlings surviving after infection with alfalfa biotypes in Kansas were: blue alfalfa aphid (A. kondoi Shinji) - KS 221 = 28, ‘CUF 101’ (R) = 39, ‘Ranger’ (S) = 4; pea aphid - KS 221 = 76, ‘Kanza’ (R) = 72, Ranger (S) = 5; spotted alfalfa aphid - KS 221 = 60; ‘Riley’ (R) = 62, Ranger (S) = 0.

The authors gratefully acknowledge D. K. Barnes (USDA-ARS, St. Paul, MN) for the evaluations conducted at that location.

References and Notes


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Registration of KS222 Multiple Pest-Resistant Alfalfa Germplasm Derived from ‘Anchor’ Alfalfa

KS 222 ALFALFA (Medicago sativa L.) germplasm (Reg. no. GP-262, PI564167) was released by the USDA-ARS and Kansas Agricultural Experiment Station in July 1992. The germplasm provides resistance to anthracnose [caused by Colletotrichum trifolii Bain & Essary, Race 1]; bacterial wilt [caused by Clavibacter michiganense subsp. insidiosum (McCull.) Davis et al.]; downy mildew (caused by Peronospora trifoliorum deBary); fusarium wilt [caused by Fusarium oxysporum Schlechtend.:Fr. f. sp. medicaginis (L. Weiimer) C. Snyder & H. N. Hans.]; the pea aphid [Acyrthosiphon pisum (Harris)]; and the spotted alfalfa aphid [Theroaphis maculata (Buckton)].

KS 222 was derived from ‘Anchor’ alfalfa, a Flemish-type cultivar derived from ‘Alfa’, ‘Apex’ and ‘DuPuits’ and ‘Saranac’ (1). In field trials, we identified Anchor as possessing tolerance to the alfalfa weevil [Hypera postica (Gyllenhal)]. KS 222 was derived from recurrent phenotypic selection for resistance to bacterial wilt (1 cycle), fusarium wilt (1 cycle), downy mildew (5 cycles), anthracnose (3 cycles), pea aphid (3 cycles), and spotted alfalfa aphid (4 cycles). Independent culling was practiced, but all pests were not included in each cycle. Over 75 plants were intercrossed by hand pollination in a greenhouse, but all pests were not included in each cycle. Over 75 plants were intercrossed by hand pollination in a greenhouse to initiate each cycle of selection. Syn 2 seed was produced by intercrossing approximately 250 Syn 1 plants in a field cage. Honeybees (Apis mellifera L.) were used for pollination.

At St. Paul, MN, the percentages of resistant plants were: bacterial wilt - KS 222 = 46, ‘Vernal’ (R) = 42, ‘Narragansett’ (S) = 3; fusarium wilt - KS 222 = 71, ‘Agate’ (R) = 54, MNGN 1 (S) = 7; phytophthora root rot - KS 222 = 63, Agate (R) = 43, ‘Saranac’ (S) = 6. In a seedling test at Prosser, WA, the percentages of plants resistant to fusarium wilt (two cycles), downy mildew (eight cycles), fusarium wilt (two cycles), anthracnose (six cycles), bacterial wilt (five cycles), phytophthora root rot (five cycles), and spotted alfalfa aphid (five cycles). Independent culling was practiced, but all pests were not included in each cycle. Seedling tests to evaluate resistance to anthracnose, downy mildew, pea aphid, and spotted alfalfa aphid were conducted at Manhattan, KS. The percentages of plants resistant to anthracnose (Race 1) were: KS 222 = 36, ‘Saranac AR’ (R) = 44, and ‘Saranac’ (S) = 1.

The authors gratefully acknowledge D. K. Barnes (USDA-ARS, St. Paul, MN) for the evaluations conducted at that location.

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