REGISTRATION OF GERMPLASMS

REGISTRATION OF THREE SOYBEAN GERMPLASM LINES POSSESSING A DENSE PUBESCENCE (PdlPdl) PHENOTYPE

Three soybean [Glycine max (L.) Merr.] lines (Reg. no. GP-131, PI 548774; GP-132, PI 548775; and GP-133, PI 548780) were released in August 1991 by the Agricultural Research Division, University of Nebraska-Lincoln. All three lines are homozygous for a gene (Pdl) that quadruples the number of trichomes per unit of epidermal surface (2,6).

Dense pubescence amplifies leaf reflectivity to incoming solar radiation (3), especially if the pubescence color is gray (tt), as opposed to tawny (TT). The increased reflectivity lessens leaf temperature, thereby reducing transpiration. Greater scattering of the incoming radiation to the lower parts of the canopy leads to an increased canopy photosynthesis (4). The decrease in water use and increase in dry matter production results in an improved water-use-efficiency (5). A seed yield advantage of dense over normal pubescence was documented, but it was not consistent over years (7).

Each germplasm release traces to the bulk progeny of an F3 plant, which was selected from each of three crosses. These crosses involved the recently released cultivars ‘Century’, ‘Hobbit’, or ‘Will’ (1) mated as the female parent to a backcross-derived, near-isogenic Pdl line of the ‘Clark’ (L62-1686) or ‘Harosoy’ (L62-801) cultivar (1,2,6). Table 1 describes the parentage of each germplasm line, and includes some agronomic data from reference (7). The three germplasm lines were selected (for release) from a set of 160 lines (four dense and four normal lines from each of 20 crosses) on the basis of: (i) a dense pubescence phenotype (grey pubescence color too, if possible), (ii) a seed yield greater than that of the male parent dense pubescence checks, and (iii) genetic diversity in stem growth habit and maturity.

These three germplasm lines will provide some diversity in Pdl-donor parent choice for those breeders desiring to utilize dense pubescence in a cultivar development program. Fifty seed of each released line will be available for distribution. Direct all seed requests to the authors (8).

J. E. Specht* and G. L. Graef

References and Notes
8. J.E. Specht and G.L. Graef, Dep. of Agronomy, University of Nebraska, Lincoln, NE 68583-0915. Published as Paper no. 9539. Research supported by grants from the Nebraska Soybean Development and Marketing Board. Registration by CSSA. Form 501

Published in Crop Sci. 32:501 (1992).

Table 1. Line designations, pedigrees, and selected agronomic data for the soybean germplasm lines. The agronomic data were from 1988-1989 field trials conducted at Mead, NE. See reference (7).

<table>
<thead>
<tr>
<th>Line Designation</th>
<th>Parental Cross:</th>
<th>Seed yield</th>
<th>Days from planting to Maturity</th>
<th>Lodging score (1-erect 5-prone)</th>
<th>Plant height cm</th>
<th>Seed quality score (1-good 5-poor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEB02-2DG†</td>
<td>Century × Harosoy-Pdl</td>
<td>3438</td>
<td>125</td>
<td>2.25</td>
<td>108</td>
<td>2.00</td>
</tr>
<tr>
<td>NEB03-4DG</td>
<td>Hobbit × Harosoy-Pdl</td>
<td>3385</td>
<td>137</td>
<td>1.00</td>
<td>69†</td>
<td>1.75</td>
</tr>
</tbody>
</table>