Registration of Gaucho Greenbug-Resistant Triticale Germplasm

Gaucho (Reg. no. GP-14, PI 572235) is an octoploid triticale \( \times (Triticosecale Wittmack) \) resistant to greenbug \( [Schizaphis graminum \text{ (Rondani)]} \), developed by the USDA-ARS in cooperation with the Oklahoma Agricultural Experiment Station. It was formally released in November 1971. Gaucho is resistant to Biotype C of the greenbug \( (1) \) and was the first greenbug-resistant triticale made available to growers.

In 1966, a greenbug-resistant strain of 'Insave F.A.' rye \( (Secale cereale \text{ L.}) \) was crossed with susceptible 'Chinese Spring' wheat \( (Triticum aestivum \text{ L.}) \). The chromosomes were doubled using colchicine to produce the amphiploid (octoploid triticale, \( 2n=8x=56 \)). The first generation of these primary wheat–rye hybrids were tested for resistance to Biotype C. The second generation was also tested to verify resistance. Gaucho was formed by bulking seed from several of the first-generation primary triticale plants.

Under greenhouse conditions, Gaucho is moderately tall; spikes are long and lax, and have irregular awnlets that are variable in length, position, and degree of recurving. Peduncles are highly pubescent. Seeds are large, moderately wrinkled, with an average seed set of \( \approx 70\% \). Gaucho was developed as a source of resistance to greenbug Biotype C and has not been extensively evaluated or utilized for other pest resistance or agronomic traits.


Written requests for small quantities of Gaucho seed should be sent to the corresponding author. Recognition of origin of this germplasm should be indicated whenever it is used for research or breeding purposes. Seed will be maintained at the USDA Plant Science Research Laboratory, Stillwater, OK.

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References and Notes

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Registration of Soybean Cyst Nematode Resistant Germplasm: S88-1608 and S89-2122

Two germplasm lines of soybean \( [Glycine max \text{ (L.) Merr.}] \), S88-1608 (Reg. no. GP-167, PI 578003) and S89-2122 (Reg. no. GP-168, PI 578002), resistant to soybean cyst nematode (SCN) \( (Heterodera glycines \text{ Ichinohe}) \) were released by the Missouri Agricultural Experiment Station and Southern Illinois University, College of Agriculture. S88-1608 and S89-2122 were derived from the crosses 'Essex' \( \times \) PI 89772 and Essex \( \times \) PI 90763, respectively. Both PI 89772 and PI 90763 are resistant to SCN Races 3 and 5 (1) as are the germplasm lines.

The breeding work in the development of these lines was conducted at the Delta Center of the University of Missouri, Portageville, MO. Crosses were made between Essex (4), an early Maturity Group V soybean cultivar, and PI 89772 or PI 90763. The F1 generation was grown in the winter nursery at Isabela, PR, and the F1 was grown in the SCN screening nursery at the Rhodes Farm of the University near Clarkton, MO. Single F1 plants were harvested, and their progenies were evaluated in the greenhouse for reaction to SCN Races 3 and 5. Resistant progenies were backcrossed to Essex in the following year. The crosses were advanced to the BC, FS generation and were again evaluated in the greenhouse. Selected progenies were advanced to F2; and yield tested at Portageville, MO. The promising lines were tested in the SCN-infested and noninfested fields in Missouri, Virginia, and Illinois during 1991 and 1992, and compared with Essex and 'Forrest' (2).

The two germplasm lines, S88-1608 and S89-2122 yielded as good or better than the check cultivars at all locations. In the field at Clarkson, MO, which is heavily infested with SCN Races 3 and 5, both lines significantly outyielded the check cultivars. At other test sites where the fields were not heavily infested with SCN, the margin of difference in yield between these germplasm lines and check cultivars was reduced. Mean grain yield and other relevant information on S88-1608 and S89-2122 relative to check cultivars are given in Table 1. Both these lines have yellow seedcoat although the SCN donor parents, PI 89772 and PI 90763 are black seeded. S88-1608 and S89-2122 should provide useful sources of germplasm for resistance to SCN Races 3 and 5.

Seed of both lines will be maintained by the Missouri Agricultural Experiment Station for 5 yr. A small quantity of

Table 1. Seed yield and ancillary data for cyst nematodes resistant soybean germplasm lines.

<table>
<thead>
<tr>
<th>Seed yield</th>
<th>Flower color</th>
<th>Maturity index†</th>
<th>Plant height</th>
<th>Lodging†</th>
<th>100-seed wt.</th>
<th>Reaction to SCN race§</th>
<th>SDS index†</th>
<th>Plant type</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg ha⁻¹</td>
<td>d</td>
<td>cm</td>
<td>g</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>S88-1608</td>
<td>2946</td>
<td>white</td>
<td>+5</td>
<td>85</td>
<td>1.2</td>
<td>12.3</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>S89-2122</td>
<td>2892</td>
<td>purple</td>
<td>+6</td>
<td>86</td>
<td>1.6</td>
<td>12.0</td>
<td>R</td>
<td>MR</td>
</tr>
<tr>
<td>Essex (check)</td>
<td>2708</td>
<td>purple</td>
<td>0</td>
<td>73</td>
<td>1.2</td>
<td>11.8</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Forrest (check)</td>
<td>2717</td>
<td>white</td>
<td>+8</td>
<td>90</td>
<td>1.6</td>
<td>12.1</td>
<td>R</td>
<td>S</td>
</tr>
</tbody>
</table>

† Maturity index: no. of days later than Essex.
‡ Lodging: 1 = erect; 5 = prostrate.
§ SCN reaction: R = resistant; MR = moderately resistant; S = susceptible, based on ratings described by Schmitt and Shannon, 1992 (Ref. 3).
¶ Sudden death syndrome (SDS) index is calculated as disease incidence (% plants with visible leaf symptoms) × disease severity (1 to 5, where 1 = mild necrosis; 5 = severe necrosis). SDS data taken at Cora, IL, in 1992.

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