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New Iowa Performance Information Available on SCN-Resistant Soybean Varieties

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Abstract

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New Iowa Performance Information Available on SCN-Resistant Soybean Varieties

By Greg Tylka, Department of Plant Pathology

The soybean cyst nematode (SCN) is a serious yield-limiting pest of soybeans in Iowa and the Midwest. SCN-resistant soybean varieties are critical for managing SCN. There are hundreds of soybean varieties available to Iowa soybean growers that are marketed as being resistant to SCN (see [Soybean cyst nematode-resistant soybean varieties for Iowa – PM 1649](#)).

The Iowa State University SCN-resistant Soybean Variety Trial program has been evaluating the yield and SCN control offered by SCN-resistant soybean varieties for 15 years. The work is supported by fees paid by seed companies entering varieties in the experiments and also by soybean checkoff funds from the Iowa Soybean Association. The program conducts field-plot testing of SCN-resistant varieties at numerous locations throughout Iowa. Every plot is tested for the presence of SCN in the spring, and SCN population densities are measured from soil samples collected from every plot in the fall to assess how SCN population densities were affected through the growing season by the different varieties. Both yield and SCN control must be considered when evaluating SCN-resistant varieties because high-yielding SCN-resistant varieties don't always control SCN population densities well and it is very difficult to reduce SCN numbers in a field once they develop to high levels (see ICM News article [So Many SCN-Resistant Varieties: Which Should You Use?](#)).

The ISU SCN-resistant Soybean Variety Trial program results for 2009 were finalized recently. The results currently are available online at www.isuscncntrials.info. A print copy of the report can be obtained at no charge by contacting Carla Harris, ISU Department of Plant Pathology, at (515) 294-1741.

Experiments were conducted at nine locations throughout Iowa in 2009 (see map). Thirty-eight Roundup Ready® SCN-resistant varieties were evaluated at each northern Iowa location, 24 Roundup Ready® SCN-resistant varieties were assessed at the three locations in central Iowa, and 23 Roundup Ready® SCN-resistant varieties were evaluated in the three southern Iowa locations. Also, at the central and southern Iowa locations, several SCN-resistant soybean varieties that are not Roundup Ready® were evaluated in experiments located adjacent to the experiments in which Roundup Ready® SCN-resistant varieties were evaluated. The non-Roundup Ready® soybean varieties included a few LibertyLink® varieties and a few soybean varieties not resistant to any herbicide.

Following is a summary of observations about results from the 2009 ISU SCN-resistant Soybean Variety Trial experiments. The summary statements pertain only to the Roundup Ready® SCN-resistant varieties, which comprise the bulk of the varieties evaluated.

- **Initial SCN population densities** or numbers at the various

experimental locations were relatively low (below 1,500 eggs per 100 cc soil) except at Sutherland (NW Iowa), which had 3,155 eggs per 100 cc soil at planting. It is ideal to have an average initial SCN population density of more than 3,000 eggs per 100 cc soil at each variety trial location.

- **The SCN populations** in the fields at five of the nine experimental locations had greater than 10 percent reproduction on the PI 88788 source of resistance; the SCN populations were found to be HG type 2 or 2.5.7 or 2.7 (the number “2” in the HG type designation indicates >10 percent reproduction on PI 88788, which is HG type indicator line #2). The SCN populations in the other four fields had less than 10 percent reproduction on PI 88788.

- **Yields of the SCN-resistant soybean varieties** were the best (above 60 bushels per acre for many of the top-yielding resistant varieties) at the three southern Iowa locations – Malvern, Oskaloosa, and Fruitland.

- **The top-yielding SCN-resistant varieties** yielded 55 to 59 bushels per acre in the three northern and three central Iowa district locations.

- **The central Iowa experiment at Nevada** had a fair bit of sudden death syndrome and the disease likely affected yields of the varieties. Also, SCN reproduction was relatively high on all SCN-resistant varieties at the Nevada location.

- **The Oskaloosa location** (south central Iowa location) had too many plots with initial SCN population densities of 0 to compare SCN reproduction on or yields of the different varieties. It is not known why the SCN population was particularly aggregated or patchy in this field.

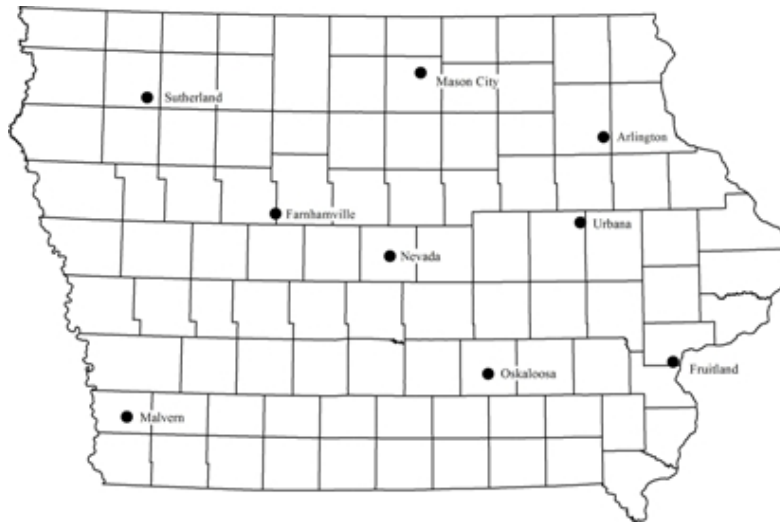
- **Despite relatively low initial SCN numbers** and a cool, wet growing season that doesn't typically lead to great damage from SCN:

- yields of SCN-resistant varieties were generally greater than yields of the widely-grown susceptible varieties at several of the locations, and

- yields of the highest-yielding SCN-resistant soybean varieties were greater (although often not significantly greater) than the yields of the top-yielding susceptible variety in all but two of the nine locations.

- **With the exception of the Nevada location**, the end-of-season SCN egg population densities on SCN-resistant varieties were nearly always less than the SCN numbers on susceptible varieties, even in locations where SCN-resistant varieties did not yield greater than susceptible varieties (like at Farnhamville, Urbana, and Malvern, for examples).

These results illustrate that there is wide variation in the yield and SCN control provided by SCN-resistant soybean varieties and that SCN-resistant varieties can provide good soybean yields and SCN control (relative to susceptible varieties, in particular) even when SCN is not very damaging due to low population densities, cool temperatures, and excess rainfall.



Locations of the 2009 ISU SCN-resistant Soybean Variety Trial Program experiments.

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