SCN-resistant Soybean Varieties for Iowa - By the Numbers

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Abstract
The soybean cyst nematode (SCN) is one of the most damaging pathogens of soybeans in Iowa and throughout the United States. Fortunately, there are soybean varieties bred to be resistant to the pathogen, and farmers can help manage for SCN by growing an SCN-resistant soybean variety. These varieties tend to yield well as a result of keeping the SCN feeding and reproduction in check.

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November 23, 2020

The soybean cyst nematode (SCN) is one of the most damaging pathogens of soybeans in Iowa and throughout the United States. Fortunately, there are soybean varieties bred to be resistant to the pathogen, and farmers can help manage for SCN by growing an SCN-resistant soybean variety. These varieties tend to yield well as a result of keeping the SCN feeding and reproduction in check.

Each year Iowa State University (ISU) gathers information about SCN-resistant soybean varieties available in Iowa and creates an extension publication to inform farmers of their choices. In addition to variety name and brand, the publication provides details about each variety such as relative maturity, herbicide resistance, and iron chlorosis tolerance. The genetic source of SCN resistance also is listed for each variety. Common sources of resistance are the breeding lines PI 88788 and Peking, and there are a few varieties with other sources of resistance. Compilation of the variety list is funded by the Iowa Soybean Association, and the publication also is supported by the ISU Integrated Pest Management Program. This year’s list is available online here. And following are numbers that capture the range of varieties in the publication.

Lots of Choices

- There are 849 named varieties; 222 in maturity groups (MG) in 0-1, 337 in MG 2, and 290 in MG 3.
- The varieties are from 22 brands and ISU.
- Among all brands, 786 varieties have herbicide resistance.
There are 63 varieties with no herbicide resistance from 7 brands and ISU.

Not Much Diversity of Resistance Genetics

- Almost all varieties - 810 or 95% - have SCN resistance from PI 88788.
- There are 35 varieties with the Peking source of resistance from 14 brands.
- Golden Harvest and Northrup King brand each have a variety with resistance from breeding line PI 89772. These are the first with this resistance ever sold in Iowa.

Diversity in Resistance is Critical

For nearly 30 years, almost all SCN-resistant soybean varieties have had the PI 8878 source of resistance (see graph below). Prolonged use of these resistance genes has resulted in SCN populations throughout Iowa and the Midwest developing increased reproduction on varieties with PI 88788 SCN resistance. In the early 1990s, SCN reproduction on soybean varieties with PI 88788 resistance was below 10%. Currently, some SCN populations in Iowa have >70% reproduction on PI 88788 (relative to 100% reproduction on SCN-susceptible varieties). The increased SCN reproduction leads to reduced yields and also results in increases in SCN population densities in the soil, which will affect future soybean yields.

Availability of SCN-resistant soybean varieties in Iowa from 1991 to 2020. The number of varieties with resistance from the PI 88788 breeding line are shown in blue; varieties with resistance from all other genetic sources are shown in red.

To maximize yield and SCN control, farmers must seek out and grow varieties with SCN resistance from Peking, PI 89772, and other genetic sources. These varieties should be
grown in rotation with varieties that have PI 88788 resistance. There is a critical need for more soybean varieties with SCN resistance from other genetic sources.

**Category:** Plant Diseases

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**Crop:**
Soybean

**Tags:** SCN management

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