

2-26-2007

SCN-resistant soybean varieties: Not all are created equal

Gregory L. Tylka

Iowa State University, gltylka@iastate.edu

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Tylka, Gregory L., "SCN-resistant soybean varieties: Not all are created equal" (2007). *Integrated Crop Management News*. 1133.
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SCN-resistant soybean varieties: Not all are created equal

Abstract

The soybean cyst nematode (SCN) continues to be a serious threat to soybean production in Iowa. SCN reproduces quickly and prolifically and can survive in the soil for many years. SCN not only causes direct damage, but it also makes some other soybean diseases, like brown stem rot and soybean sudden death syndrome, worse. SCN-resistant soybean varieties are an important SCN management tool. There are hundreds of resistant varieties available for Iowa growers. The Iowa State University SCN-resistant Soybean Variety Trial Program evaluates many of these varieties for agronomic performance and for nematode control at numerous locations throughout Iowa each year. The results of the 2006 evaluations were released recently.

Keywords

Plant Pathology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

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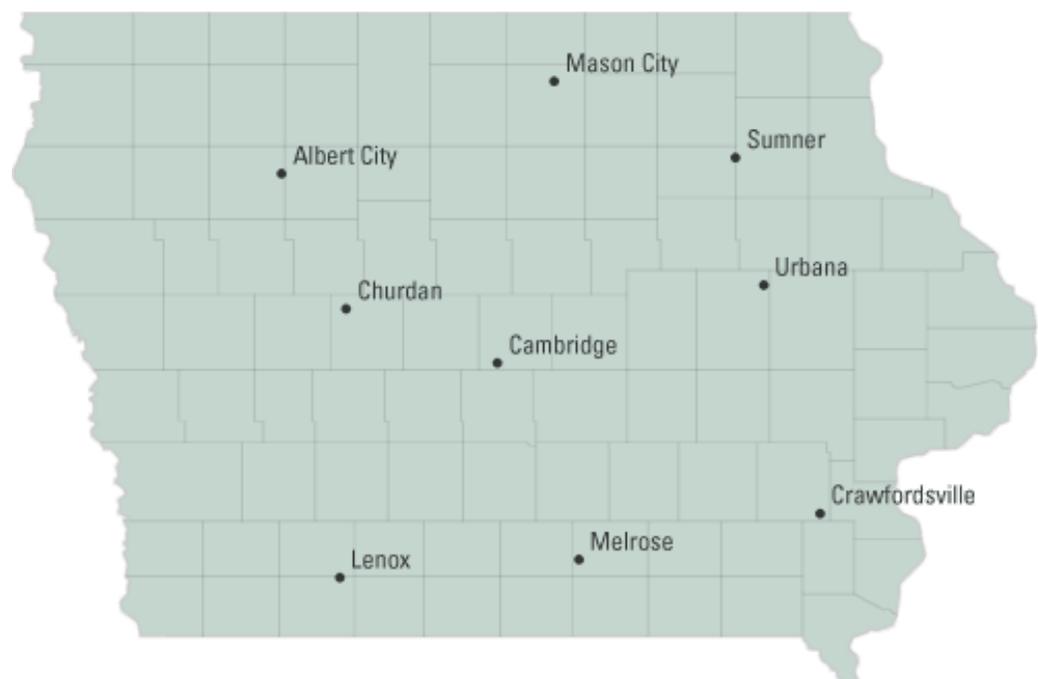
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SCN-resistant soybean varieties: Not all are created equal

by Greg Tylka, Department of Plant Pathology

The soybean cyst nematode (SCN) continues to be a serious threat to soybean production in Iowa. SCN reproduces quickly and prolifically and can survive in the soil for many years. SCN not only causes direct damage, but it also makes some other soybean diseases, like brown stem rot and soybean sudden death syndrome, worse. SCN-resistant soybean varieties are an important SCN management tool. There are hundreds of resistant varieties available for Iowa growers. The Iowa State University SCN-resistant Soybean Variety Trial Program evaluates many of these varieties for agronomic performance and for nematode control at numerous locations throughout Iowa each year. The results of the 2006 evaluations were released recently.

As a group, the SCN-resistant soybean varieties yielded 1.7 to 17.6 bushels per acre more than the widely grown, SCN-susceptible varieties included in the trials in 2006. And SCN population densities increased two- to 15-fold on the susceptible varieties but were kept in check or even decreased a little with the SCN-resistant varieties. The results also show that not all SCN-resistant soybean varieties are the same in terms of yield and also in terms of nematode control.



SCN-resistant Soybean Variety Trial Program sites in 2006.

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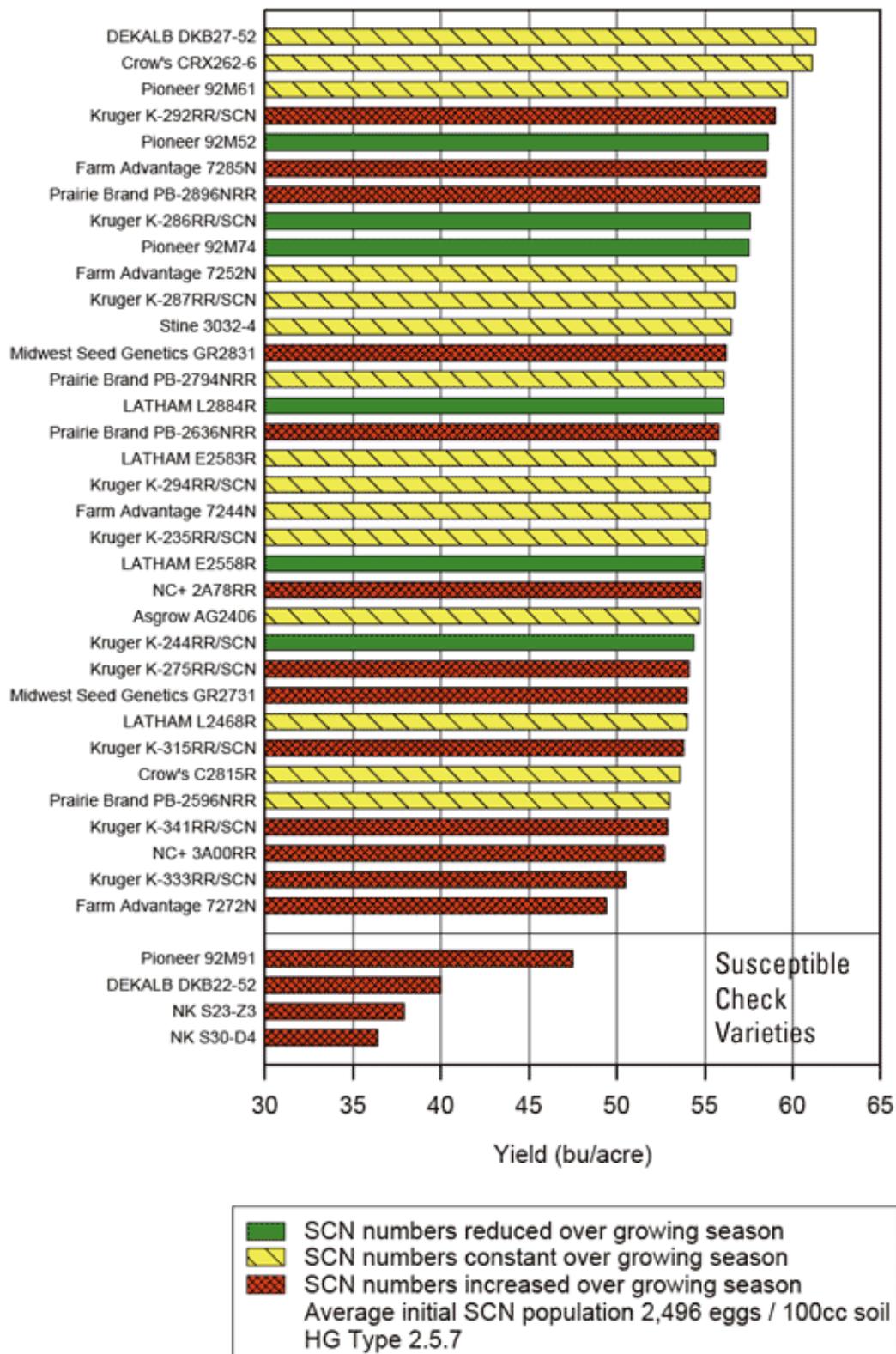
The yields of SCN-resistant soybean varieties in fields without SCN do not indicate likely yield performance in SCN-infested fields, so Iowa State University tests the varieties in SCN-infested fields. Also, the presence of SCN is verified in each plot in all of the variety trial locations because the nematode can occur in patches and not uniformly throughout some infested fields. Soil samples are collected from each variety trial plot at the end of the season to determine how well the resistant varieties controlled the nematode throughout the season. Results from previous years and again this year reveal that high-yielding SCN-resistant soybean varieties do not necessarily keep SCN from increasing in numbers.

The yield and nematode control that occur in the field are the result of a season-long, complicated inter-action of the resistance genes in the soybean varieties with genes in the SCN populations. And preventing increases in SCN population densities is necessary for continued profitable soybean production in Iowa because SCN is extremely long-lived in the soil.

Combined data from multiple years and numerous variety trial locations often are used to select soybean varieties that have a high probability of yielding well in many different environments. But SCN is not an environmental factor, like soil type or weather, that allows the data from SCN-infested research locations to be averaged with other locations, particularly noninfested locations. The individual location data reveal the amount of SCN reproduction that a resistant variety supports.

New in the 2006 report are color-coded bar graphs that complement the traditional data tables to illustrate, at a glance, the yield of the SCN-resistant soybean varieties as well as the extent of SCN reproduction on the varieties. When using these data to help pick a soybean variety for SCN management, look carefully at the data in the tables, including the statistical data. The color graphs are meant just to give a first indication of the overall yield and nematode control of the numerous varieties evaluated at each of the nine variety trial sites. The Iowa State University SCN-resistant Soybean Variety Trial Program is funded, in part, by soybean checkoff dollars from the Iowa Soybean Association.

Single copies of the 2006 Iowa State University SCN-resistant Soybean Variety Trial Program results (ISU Extension publication IPM 52) can be obtained free of charge from county extension offices or from the Extension Distribution Center by calling (515) 294-5247. The 2006 results, as well as those from previous years, also can be found on the Internet at www.isuscntrials.info.



Example of new data presentation in ISU SCN-resistant Soybean Variety Trial Program results (ISU Extension Publication IPM 52).

This article originally appeared on pages 41-42 of the IC-498 (2) -- February 26, 2007 issue.

Updated 02/23/2007 - 5:29pm