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Choosing an SCN-resistant soybean variety: It's not just about yield

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Choosing an SCN-resistant soybean variety: It's not just about yield

Abstract

Resistant soybean varieties are a very effective strategy for managing the soybean cyst nematode (SCN), producing acceptable yields and suppressing reproduction of the nematode. The number of soybean varieties with genetic resistance to SCN in maturity groups I, II, and III has increased dramatically, from a few dozen in the early 1990s to more than 600 currently. Today, most soybean seed companies have SCN-resistant soybean varieties available for Iowa growers, and yield results of soybean variety trials conducted by private testing programs and universities have begun to be released in the past few weeks.

Keywords

Plant Pathology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

INTEGRATED CROP MANAGEMENT

Choosing an SCN-resistant soybean variety: It's not just about yield

Resistant soybean varieties are a very effective strategy for managing the soybean cyst nematode (SCN), producing acceptable yields and suppressing reproduction of the nematode. The number of soybean varieties with genetic resistance to SCN in maturity groups I, II, and III has increased dramatically, from a few dozen in the early 1990s to more than 600 currently. Today, most soybean seed companies have SCN-resistant soybean varieties available for Iowa growers, and yield results of soybean variety trials conducted by private testing programs and universities have begun to be released in the past few weeks.



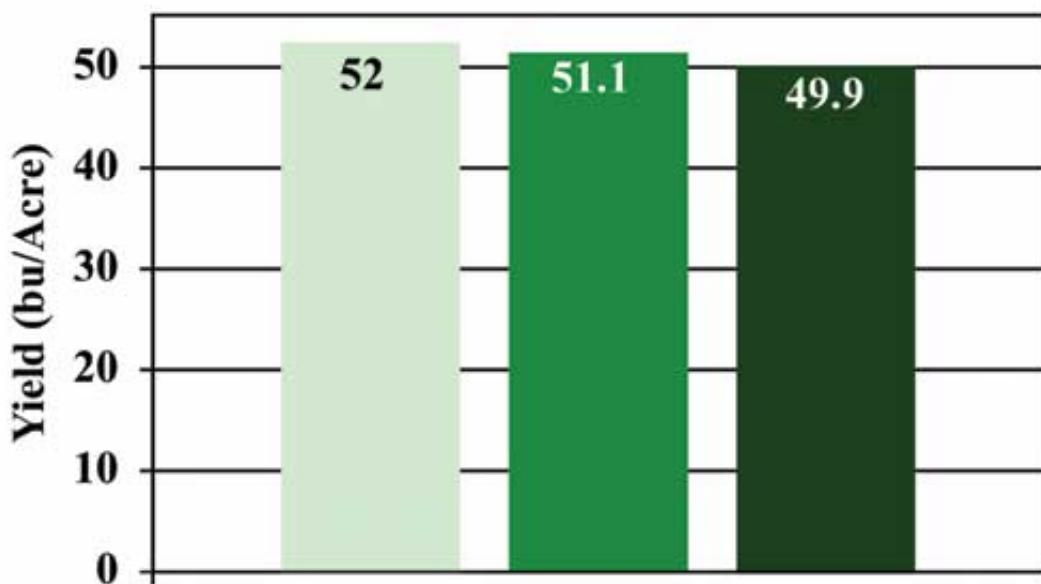
[1]

SCN-resistant soybean varieties are evaluated each year at plots around Iowa for the ISU SCN-resistant Soybean Variety Trials. (Greg Tylka)

But what data should be considered when selecting SCN-resistant varieties? The most important characteristic of SCN-resistant soybean varieties is yield in SCN-infested fields, and the yield can vary greatly among varieties reported to be resistant to the nematode. But in addition to yield, growers must consider the effectiveness of the varieties in suppressing SCN reproduction.

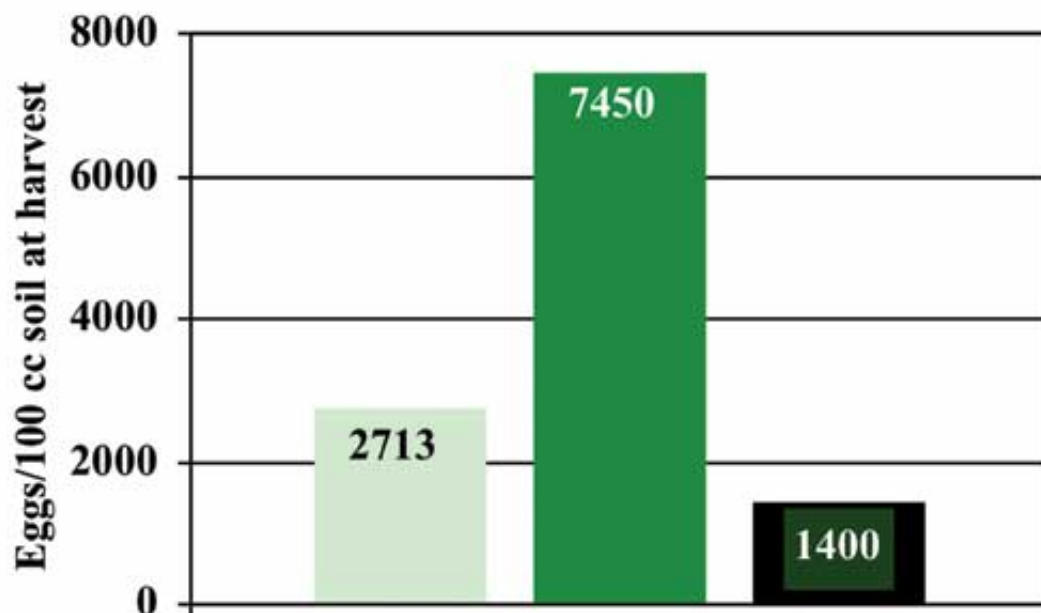
SCN-resistant varieties can vary considerably in how well they control nematode population densities, even among top varieties that yield comparably. For example, the yields of the top three conventional (non-Roundup Ready®) soybean varieties that were evaluated at a north central Iowa location of the ISU SCN-resistant Soybean Variety Trials in 2001 are shown in Figure 1. There were no significant differences among the yield of these three varieties.

However, one of the varieties allowed significantly more nematode reproduction than the other two, as illustrated by the end-of-season SCN egg population densities (Figure 2). Large differences in nematode control among high and comparably yielding soybean varieties is not rare; the same trends occurred among the three top-yielding Roundup Ready® varieties evaluated in the SCN-resistant variety trials at the same location in 2001. There was no significant difference among the yields, but one of the three top-yielding Roundup Ready® varieties allowed significantly more SCN reproduction than the other two. Greater SCN reproduction will result in higher SCN egg population densities present in the soil and greater potential for yield loss the next time that soybeans are grown. It is extremely important to consider how SCN-resistant soybean varieties affect SCN population densities in addition to how well the varieties yield to maintain the long-term productivity of the land for soybean production.



[2]

Figure 1. Yield of the three best-yielding conventional (non-Roundup Ready®) soybean varieties in a north central Iowa variety trial location in 2001. There was no significant difference in yield among the three varieties.



[3]

Figure 2. End-of-season SCN egg population densities in plots of the three best-yielding

conventional (non-Roundup Ready®) soybean varieties in a north central Iowa variety trial location in 2001. The egg population density of the variety represented by the middle bar was significantly greater than that of the other two varieties.

Selecting SCN-resistant varieties based solely on yield data is shortsighted and risky because some relatively high-yielding soybean varieties allow substantial amounts of SCN reproduction. Keep this point in mind when evaluating soybean variety trial data.

The ISU SCN-resistant Soybean Variety Trial program evaluates more than a hundred SCN-resistant varieties each year at locations throughout Iowa and collects data on SCN control as well as yield of the varieties. Results from the past several years can be viewed online at www.isuscnavarietytrials.info [4].

The results of the 2005 ISU SCN-resistant Soybean Variety Trials will be published as ISU Extension publication IPM 52 and will be available in January 2006. Copies of the results can be obtained from county extension offices and online at www.isuscnavarietytrials.info [5].

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