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

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Abstract

Soybean cyst nematode (SCN) is a widespread pest of soybean in Iowa. The nematode is a serious threat to soybean production in the Midwest because it reproduces very quickly, survives in the soil for many years in the absence of a soybean crop, and can cause substantial yield losses. Resistant soybean varieties are a very effective strategy for managing SCN, producing acceptable yields yet suppressing nematode reproduction. The number of maturity group I, II, and III soybean varieties with genetic resistance to SCN has increased dramatically, from a few dozen in the early 1990s to more than 650 currently.

Keywords

Plant Pathology

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INTEGRATED CROP MANAGEMENT

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

Soybean cyst nematode (SCN) is a widespread pest of soybean in Iowa. The nematode is a serious threat to soybean production in the Midwest because it reproduces very quickly, survives in the soil for many years in the absence of a soybean crop, and can cause substantial yield losses. Resistant soybean varieties are a very effective strategy for managing SCN, producing acceptable yields yet suppressing nematode reproduction. The number of maturity group I, II, and III soybean varieties with genetic resistance to SCN has increased dramatically, from a few dozen in the early 1990s to more than 650 currently. Today, most soybean seed companies have SCN-resistant soybean varieties available for Iowa growers.

Very soon, the yield results of soybean variety trials conducted in 2002 will be released. But what data should be considered when evaluating 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.

Unfortunately, SCN-resistant varieties that yield comparably do not necessarily control the nematode equally. On the contrary, SCN-resistant varieties can vary considerably in how well they control nematode population densities, even 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 Iowa State University SCN-resistant Soybean Variety Trials in 2001 are shown in Figure 1. There was no significant difference among the yield of these three varieties. However, one of the varieties did not control the nematode as well as the other two, as illustrated by the end-of-season SCN egg population densities (Figure 2). Such a large difference in nematode control among high- and comparably yielding soybean varieties is not unusual; 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 the next time that soybeans are grown in that field.

Consequently, growers must 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. Selecting SCN-resistant varieties based solely on yield data is short-sited 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 results of the Iowa State University SCN-resistant Soybean Variety Trials - 2002 will be published as Iowa State University Extension publication IPM 52 and will be available in January 2003. Copies of the results can be obtained from county extension offices, the Iowa State University Extension Distribution Center (515-294-5247), and [online](#) [1].

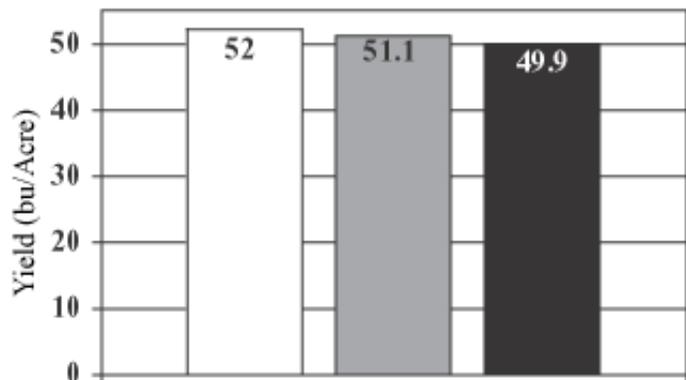


Figure 1. Yield of the three best-yielding conventional (non-Roundup Ready) soybean varieties in a north central Iowa variety trial location in 2001.

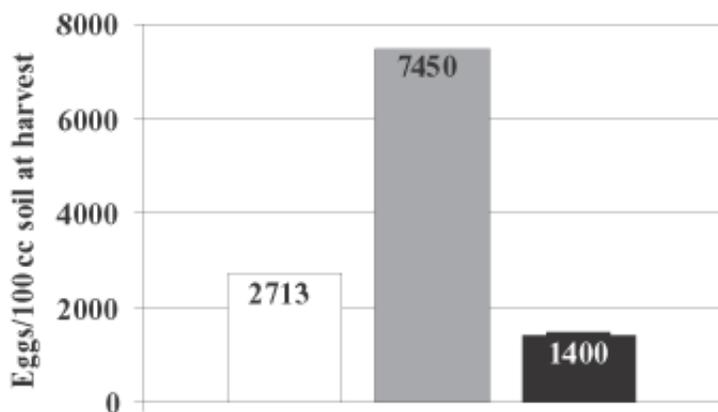


Figure 2. End-of-season SCN egg population densities in plots of the three best-yielding conventional (non-Roundup Ready) soybean varieties in a north central Iowa variety trial location in 2001.

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