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2012 Season is Not a Good One to “Roll the Dice” with SCN

Gregory L. Tylka

Iowa State University, gltylka@iastate.edu

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Abstract

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2012 Season is Not a Good One to “Roll the Dice” with SCN

By Greg Tylka, Department of Plant Pathology and Microbiology

The soybean cyst nematode (SCN) is one of Iowa’s most serious and persistent soybean pests. The nematode has the potential to cause devastating yield losses, population densities can increase very rapidly within a single growing season, and dormant eggs can survive for more than a decade in infested soils in the absence of soybeans. Random surveys funded by the soybean checkoff in 1995-1996 and again in 2006-2007 revealed that 70 to 75 percent of fields in Iowa are infested with the nematode.

SCN in dry years

The amount of symptoms and yield loss caused by SCN is affected greatly by the availability of moisture during the growing season. Symptoms and yield losses from SCN can be quite severe in dry years (figure 1). But symptoms can be mild (figure 2) or nonexistent and yield loss unnoticed in years with adequate or excess rainfall. Regardless of the extent of symptoms, SCN will produce three or more generations during a single growing season on susceptible soybeans, resulting in an increase in SCN egg population densities in the soil.

Hatched SCN juveniles enter soybean roots and form permanent feeding sites, called syncytia, inside the root tissue (figure 3). The SCN juveniles seem to establish feeding sites deeper into the root vascular tissue under dry soil conditions than wet conditions. Nematode feeding sites would be considerably more disruptive to root function if located in the vascular tissue than if in the outer cortex region of the roots. Also, SCN juveniles feeding in the vascular tissue could have better nutrition than those feeding in the root cortex, possibly leading to greater SCN reproduction, which somewhat supports the observation that SCN reproduction is greater under dry soil conditions.



Figure 1. Aerial image of severe SCN damage to soybeans in central Iowa in a dry growing season.

Dry soil can spell disaster if SCN is unmanaged

It has been 20 years or more since there has been widespread and severe damage from SCN in Iowa. And because of this, some people may have let down their guard on SCN. It is not uncommon for farmers to grow high-yielding, SCN-susceptible soybean varieties in fields with low or moderate SCN infestations.

As we approach spring planting season, increased vigilance about SCN is warranted for the 2012 growing season because of the dry soil conditions statewide. SCN can cause substantial yield loss to susceptible soybean varieties under dry soil conditions, even when SCN egg population densities are low. If soybeans will be produced in 2012 in fields infested with SCN, high-yielding SCN-resistant varieties should be grown.

Resistant soybeans: the foundation of SCN management - but all are not created equal

There are hundreds of SCN-resistant soybean varieties from which Iowa farmers can choose. Their availability was most recently reviewed in an [October 2011 ICM News article](#).

The yield and nematode control provided by SCN-resistant soybean varieties can vary greatly because several genes confer SCN resistance and not every resistant variety possesses the full complement of resistance genes. The Iowa State University SCN-resistant Soybean Variety Trial Program annually assesses the agronomic performance and nematode control provided by hundreds of SCN-resistant soybean varieties. The work is supported by soybean checkoff funds from the Iowa Soybean Association. The results of the 2011 variety trial experiments were distributed in ISU Extension publication [IPM 52, "Evaluation of Soybean Varieties Resistant to Soybean Cyst Nematode in Iowa - 2011,"](#) in the Jan. 21, 2012 issue of the Iowa Farmer Today magazine. The publication also can be downloaded from the [ISU Extension's online store](#) and the [Iowa Soybean Association's production research library](#).

More information about SCN

Results from all variety trial locations from 1997 through 2011 can be found online at www.isucntrials.info. Also, more information about the biology and management of SCN can be found at www.soybeancyst.info and the [Plant Health Initiative's website](#).



Figure 2. Uneven plant height as a result of SCN damage in central Iowa in a wet growing season.

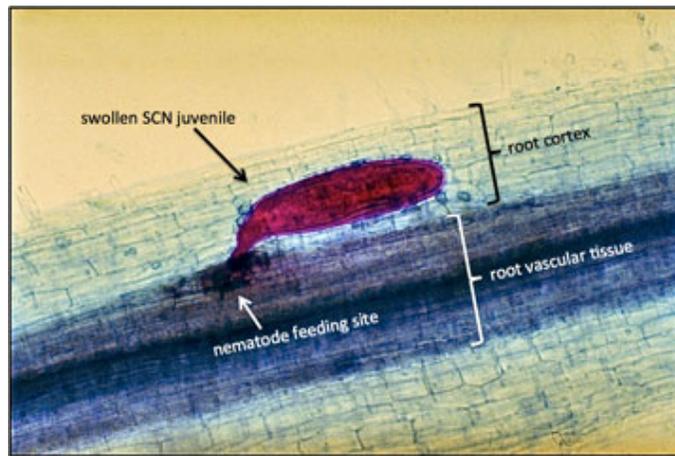


Figure 3. Stained soybean root segment with swollen SCN juvenile attached to feeding site inside the vascular tissue.

Greg Tylka is a professor with extension and research responsibilities in management of plant-parasitic nematode in the Department of Plant Pathology and Microbiology at Iowa State University.

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