

# Outwitting SCN

## Specialist Discusses Various Methods Of Thwarting Soybean Cyst Nematode

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The basics of soybean cyst nematode was discussed recently by Dr. Don Hershman, University of Kentucky Extension Plant Pathologist. After 25 years in the business, he's learned first of all that interest in the pest goes in cycles.

"We're at a point where people are starting to listen again," he said. "We've been dealing with soybean cyst nematode in Kentucky since 1956, and it was first found in the United States in 1954. One of the first things I want to point out is that this is a teachable moment."

Basically, soybean cyst nematode is a small

so that information will be readily available to growers. They will know that the variety developed by company A is superior to the variety that is offered by Company Z; but right now that's not the case. The seed tag may suggest that they are equal, but the fact is they often aren't. Still, there's some information that growers can access and data they can ask for."

Hershman said the larger more substantial seed companies that have the resources to test their varieties in the greenhouse and in the field, under multiple environments, tend to have the most information on resistance in the varieties they develop, and can usually respond to grower queries about resistance in their varieties.



**Dr. Don Hershman, University of Kentucky Extension Plant Pathologist, discussed the basics of soybean cyst nematode.**

Photo by John LaRose, Jr.

parasitic worm that attacks the roots and can reduce yield significantly. It affects yield and, many times, no symptoms are produced. Often yield reductions reach to 30 percent with absolutely no visible evidence because the disease does things to the physiology of the plant that the eye really can't detect.

"Often farmers see yields declining in a field and have no idea why," Hershman said. "During the 1990s growers began to use Roundup Ready soybeans, the majority of which had soybean cyst nematode resistance. So for well over a decade, farmers didn't want to hear about soybean cyst nematode. Farmers were planting a resistant variety, and weren't concerned about it."

Then around 2005 some states did surveys and found that the populations of soybean cyst nematode had begun to shift in their fields. There were warnings about that for years.

"We were funded by the Kentucky Soybean Promotion Board in 2006 and in 2007 to do a similar kind of survey and we found, just like they had been finding in Tennessee, Indiana, Illinois and Missouri, that, sure enough, the majority of our populations now are able to reproduce on the vast majority of varieties that we have available in the state," he related. "That's the teachable moment and people began to understand the threat. This, now, is one opportunity to address the situation. Our effort now is to get the word out that the status quo is not going to last very long and things are just going to continue to get worse if some changes are not made in the way we manage cyst nematode."

Presently, soybean cyst nematode populations are modest, but indications are that over time it will continue to be more of a problem. The end result will be more yield reductions and maybe some populations that simply can't be managed.

"We have the information and the tools and, for the most part, we have resistant varieties that are working," Hershman said. "Crop rotation does a good job, and we are able to rotate in Kentucky. Normally when we don't rotate, it's because the farmer decides it's more profitable to grow soybeans than other crops; but typically crop rotation is pretty much engrained in the state.

A soybean cyst nematode website has been developed in Kentucky at <[www.uky.edu/scn](http://www.uky.edu/scn)>. Others also have such a website, but one thing different about this website is that instead of reinventing the wheel and feeling like everything needs to be UK, we looked at the best of the best information from Iowa, Illinois, Missouri, Tennessee, wherever, and put it on this website. So, at least from my perspective, the information that a grower would need to understand this problem and what could be done can be found on this website. While, ultimately, it's still going to be crop rotation and resistant varieties, there's also some minor things farmers can do to manage soybean cyst nematode better."

There are a lot of misconceptions about resistant varieties, probably one of the biggest is that they are all created equal when it comes to soybean cyst resistance.

"That's certainly not true," Hershman said. "Some companies do a much better job of developing and evaluating SCN resistance than others and the end result is that there is a range of success from really good to not so good. In the near future these companies will need to go through a voluntary process of standardizing the resistance that's in their varieties;

"The grower just needs to ask," he said. "How much testing has been done on this variety? May I see the data, or give me some background on it? Many times the company can't provide that information and that's a red flag. That doesn't mean it's going to be a bad variety, but it should cause the farmer to proceed with caution."

Since it takes money to do the research, many of the varieties that are released with substandard levels of resistance just haven't been tested against enough populations. In addition, some states, like Illinois, occasionally do greenhouse screenings; some companies will take advantage of those opportunities and some won't.

"If a company doesn't take advantage of that, it makes a difference in whether they have the data when they release a variety," he said.

Soybean cyst nematode is present in every county where soybeans are produced in Kentucky. It's extremely widespread. If soybeans have been grown in a field, chances are it's there and the question is what is the level.

"For many years the Kentucky Soybean Promotion Board has provided free soybean cyst nematode analysis," he added. "We do the analysis here at Princeton and they pay for it. The fact is very few producers take advantage of that. One key effort is to take a sample the preceding fall for a field that will be in soybeans the next year. You send us the sample and we tell you what the level is. It's as simple as that to identify your problem fields. This service is available, it's free, and it's just a matter of collecting the sample and getting it to us, and that is the first step in managing cyst nematode."

He warned farmers that the jury is still out on some seed treatment products that claim to have activity against soybean cyst nematode.

"This will be our second year of testing seed treatments," he said. "Certainly this is a possibility, but I don't think it's been proven yet; so be wary of these claims regarding soybean and corn nematodes."

His recommendation is to use the trusted methods: look for the best seed as far as resistance and quality go, and rotate your crops. Be sure to take soil samples periodically, as this helps you monitor how cyst is responding to your production practices.

"The bottom line for long term cyst nematode management really comes down to crop rotation, the period of time between soybean crops in the field, and which varieties you grow," he added. "Every time you grow soybeans, rotating sources of resistance is important if you can do it. However, this is often not possible since most of the varieties that are available were developed using the same resistance source, which is PI88788. That is changing, and the larger companies with resources are now beginning to develop more high yielding varieties based on other sources of SCN resistance. So in the future, rotating resistance sources will be a much easier thing to do than it is now.

"If rotating sources of resistance is not possible, the next best thing is not to plant the same variety in consecutive years," he summed. "Growing a different variety gives the nematode a different source to look at; even though the resistance source may be similar, there are enough differences to challenge the nematode's ability to reproduce allowing the farmer to maintain crop yield." Δ

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