

# Know *Your* Nematodes

## Soil Test, Scout To Curb Nematode Damage In Crops

BETTY VALLE GEGG-NAEGER  
MidAmerica Farmer Grower

LELAND, MISS.

**N**ematodes are the most abundant multicelled animal in the world; they are found wherever there is water. While there are many different types, Dr. Gabe Sciumbato, Mississippi State research plant pathologist, recently discussed the kind that parasitize plants.

"There are about 24 species," he began, "but the main three I am talking about are on soybeans, and those are the root knot, the reniform and the cyst nematodes. The thing about plant parasitic nematodes is they are what they call obligate parasites. They have to live on a living organism. They can't live on leaves or anything else, it has to be alive. If they don't have a living organism to live on, they die."

The root knot nematode can cause as much as a 30 percent to 40 percent yield loss on soybeans. Only an extremely bad cyst nematode infestation can cause more damage. Root knot populations are very erratic in the fields. There is resistance to the root knot nematode in some varieties.

"The reniform nematode is a subtropical and tropical nematode and it probably causes a lot more damage in the world than the root knot," Sciumbato added. "It has moved into the south from the tropics. It's attracted to 160 different species of plants and it's very hard to tell that your losing yield from these nematodes. The reniform shows no external symptoms other than the plant doesn't yield as good, it may not be quite as tall; but you can't tell by looking at the plants that they're infested with nematodes.

"If a field is infested with the reniform nematode, everywhere there is a root, there are reniform nematodes," he said. "Researchers got a backhoe and dug down 10 or 15 feet and if there was a root there, these nematodes were attached to it. They can build up in tremendous numbers if you grow a susceptible variety year after year. The threshold, in other words the level of nematodes that can cause economic loss given the right environmental conditions for reniform, is 1,000 to 5,000; but we have seen in a lot of cotton fields, 20,000 to 40,000 nematodes per pint of soil. That's 40,000 nematodes in one little pint of soil. They build up through the years and the amount of damage and yield loss you're going to have is dependent upon how many are present at the beginning of the year – unless you do something about it."

Corn is resistant to the reniform nematode, and that is one good way of knocking the numbers back. Rotating to corn after soybeans or cotton can knock them back. However, if susceptible soybeans or cotton are grown for one year reniform nematode build right back up to where they were before. Also, corn is susceptible to the root knot nematode.

"With the loss of Temik, we've lost a real good tool for managing nematodes," Sciumbato said. "And in Mississippi there has been a reduction in cotton acreage, and our soybean acres have moved into lands where cotton had been grown on lighter soil types. Nematodes like light or mixed soils. They don't cause much yield loss on the heavy clays where we used to grow soybeans. They do a lot of damage on the lighter soils. The root knot is the worst on the real light soil but the reniform likes the medium textured soil."

The cyst nematode probably causes the most damage throughout the United States, especially in the north.

"We had a big problem with cyst nematode in the 1970s when we grew a lot of soybeans on lighter soils," he recalled. "Then the price of soybeans went down and we moved into the heavy

soils only and a fungus came through and killed a lot of the nematodes, so we haven't had much problem with the cyst nematodes lately; but a lot of soybeans are being grown on lighter soils now and it takes several years for the cyst to build up to real high proportions where it can cause severe yield losses. We're having a lot more races of the fungus now so resistance is harder to come by, so I look for the cyst nematode to become much more of a problem. We just don't have a whole lot of tools to control these nematodes other than rotation and resistant varieties."

There are some nematode seed treatments



**Dr. Gabe Sciumbato, Mississippi State Research Plant Pathologist, recently discussed some of the 24 species of nematodes, the kind that parasitize plants.**

Photo by John LaRose, Jr.

farmers can use, but with the reniform there is no resistance in commercial cotton varieties and very little resistance in high yielding soybean varieties. So many farmers who have been growing cotton and now growing soybeans not realizing that they are building up their nematode numbers.

"So I look for more and more problems from this and it's going to take a lot of attention on the farmer's part to sample the soil, see what is in the soil, and do what it takes to keep these numbers down."

Root knot and cyst nematodes were always here but the reniform only showed up in Louisiana in the 1950s and 1960s. Since then, it has moved its way up. It can travel around a lot more on implements. It can take desiccation and overwintering more than the root knot or the cyst, and it moves around a lot. It has become the number one problem in the Mississippi Delta. Farmers must soil sample and pay close attention to the crop to manage these things.

That's a big part of Sciumbato's take-home message:

"If you're growing soybeans on a lighter soil type, not buckshot, then you need to take soil samples, see what you have, and then decide on a course of action. Be aware of what you're planting. There should be some reniform resistant cotton varieties in a few years, there are already some resistant soybean varieties, if you can find them.

"You can rotate to corn. There are all kinds of control methods that you can use and they need to be used appropriately in the right way. Seed treatment nematicides are not recommended if you have extremely high numbers of reniform nematodes. So you just really have to be aware of what's going on in your field and take appropriate action." Δ

BETTY VALLE GEGG-NAEGER: Senior Staff Writer, MidAmerica Farmer Grower