

Guess Who Is Coming To Dinner: Corn Nematodes

MILAN, TENN.

It's no secret that higher corn prices fueled by increased demand are causing corn producers to try to boost yields in any way they can. It's also no secret that damage caused by parasitic plant nematodes is among a crop's yield-limiting factors.

Corn nematodes, including a recently discovered cyst nematode in Tennessee, will be on the agenda during the Milan No-Till Field Day, scheduled for July 24 at the University of Tennessee Milan AgResearch and Education Center. A presentation by Pat Donald, a Research Plant Pathologist/Nematologist with the USDA ARS in Jackson, Tenn. and by Jamal Faghihi, Research and Extension Nematologist, Purdue University, will focus on corn nematode damage and control strategies.

Nematodes are once again under the spotlight partly because of the diminishing number of insecticides/nematicides that are available to manage soil insects and nematodes. Many former pesticides are no longer available due to environmental concerns and their high toxicity. However, surveys are being carried out to determine the distribution of plant parasitic nematodes throughout the Midwest.

Donald and Faghihi will discuss the renewed interest toward corn parasitic nematodes by the chemical industry. Several companies are either marketing or testing new products to help with the management of plant parasitic nematodes.

What makes corn parasitic nematodes difficult to spot and manage? First, the nematodes are transparent and not visible through routine root observations. They also require extraction and microscopic examination of the nematodes from the soil.

Symptoms of nematode damage to corn are often non-descriptive and nematode damage is often attributed to other problems because plant death usually does not occur. Still, yield loss is apparent.

Nematode symptoms are usually present in

patches and can include stunted growth, foliar symptoms similar to nutrient deficiency and even root deformity. Sometimes examination of affected roots may look like rootworm damage when certain plant parasitic nematodes are present.

Nematode activity usually starts when soil temperatures reach 50 degrees F. Nematodes commonly attacking corn growing in sandy soil often do their damage early in the season and cannot be detected later in the season. Soil sampling with inclusion of plant roots is important in determining whether poor corn growth is caused by plant parasitic nematodes.

Several nematode species can affect corn. Some lesion nematodes feed by entering the root system, others like needle nematodes feed from outside. Lance nematodes are capable of doing both. Regardless of their feeding habit, plant parasitic nematodes suck the juice out of the corn root with the aid of hollow needle-type mouth parts.

Cysts were found on roots of stunted corn plant in western Tennessee in the summer of 2006. Host studies have been conducted as well as morphological and molecular biological studies that have tentatively identified this nematode as a member of the genus *Cactodera*. Members of this genus attack primarily members of the Caryophyllidae and grains with most species having marked host specialization. Nematodes belonging to *Cactodera* have been found in the Americas and Eastern Europe but may be cosmopolitan. Little work has been done on these nematodes with field crops until they were found on small grains in Mexico.

The nematode reproduces well on commercial corn varieties as well as more distant corn relatives and ancestral corn. No other field crops have been found to be hosts.

Tour K at the Milan No-Till Field Day is a bus tour. Tours depart every 20 minutes throughout the day. Complete information is available online at <http://milan.tennessee.edu/MNTFDA>