

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

LSU
AgCenter
Research & Extension

Southern Root-knot Nematode on Vegetables

Meloidogyne incognita (Kofoid and White) Chitwood

The southern root-knot nematode (*Meloidogyne incognita*) is a widespread pest problem in Louisiana. This pest favors the soils where most vegetables are produced and has been found in about 25 percent of the vegetable gardens in our state. This nematode can be extremely damaging to some crops and causes severe losses.

Symptoms usually are noticed on the foliage, although the real damage occurs on the root system. After the nematode finds and enters a plant root, it sets up a feeding site within the root and begins development. During this process, plant cells swell and enlarge around the nematode, leading to galls or knots on the root system. The galls can vary in size depending upon the plant and range from fairly small on peppers (Fig. 1) to extremely large on butterbeans (Fig. 2). Some of the vegetable crops such as carrots can have splitting or cracking of the roots (Fig. 3) and ruin the quality of the vegetable. The edible storage root of beets (Fig. 4) may not develop properly. Above-ground symptoms may be difficult to recognize: stunting, early wilting during drought, loss of fruit production or premature death.

The southern root-knot nematode is an obligate parasite that requires a live host plant to feed on and develop. The nematode prefers a sandy soil and naturally occurs throughout the state. However, it is very easy to introduce this pest into a new area. Any soil attached to gardening tools such as tillers, shovels, trowels or hoes may move the nematode from one area to another. Infected plants are another source of spread. Always use transplants that have been grown in fresh potting soil rather than a transplant bed. Don't dig up plants from one garden and move them into another because this is a great way spread disease.



Fig. 1. Small galls visible on the roots of a bell pepper plant.



Fig. 2. Extremely large galls developed on a butter bean plant. Notice the absence of almost all small roots and root decay that is beginning.

Although it is possible to starve root-knot nematode and drastically reduce it after a year or so, its host range includes most vegetables, grasses or weeds that are found in the garden. This would mean that you would have to keep it completely free of any vegetation for an extended period. A more practical approach is rotation and the use of resistant or immune vegetables. Several vegetables have been developed that have resistance against the southern root-knot nematode, including tomatoes, Southern peas, lima beans and hot peppers.

Resistant tomato varieties include Big Beef, Champion, Terrific, Monte Carlo, First Lady, Better Boy, Crista and Celebrity. Southern pea varieties that will perform well in nematode-infested soil include Magnolia, Mississippi Purple and Mississippi Silver. Charleston hot pepper and NemaGreen lima bean are also resistant.

Plant the resistant varieties first to lower the populations of the nematode and then plant susceptible crops such as melons, cucumbers, squash or okra. Nematodes build up very rapidly on the susceptible crop so be sure to rotate back to either a resistant crop or one that doesn't appear to suffer as much damage (corn, mustard or turnips). Most of the crops grown during cool or cold weather don't appear to suffer from this pest. For more information on managing this disease, see the Louisiana Plant Disease Management Guide or visit our Web site www.lsuagcenter.com.



Fig. 3. Splitting of carrot root by root-knot injury.



Fig. 4. Galling and lack of development of the storage root of garden beets.

Authors and Photo Credits:

Charles Overstreet, PhD
Extension Nematologist

Edward C. McGawley, Ph.D.
Nematologist

Donald M. Ferrin, PhD
Extension Plant Pathologist

Department of Plant Pathology and Crop Physiology

Louisiana State University Agricultural Center

William B. Richardson, Chancellor

Louisiana Agricultural Experiment Station

David J. Boethel, Vice Chancellor and Director

Louisiana Cooperative Extension Service

Paul D. Coreil, Vice Chancellor and Director

Pub. 3077 (online only)

6/08

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.