

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

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Reniform Nematode in Louisiana

Rotylenchulus reniformis Linford & Oliveira

During the past two decades, the reniform nematode (*Rotylenchulus reniformis*) has emerged as one of the most important nematode species of plant crops in Louisiana. It attacks a wide range of plant types and is particularly damaging to crops such as cotton, sweet potato, soybeans and many vegetables.

This nematode was first reported in Louisiana in the 1940s. Because it was thought to be present in only a few thousand acres in the early 1960s, this pest likely is an invasive species that was introduced into our state in the early part of the 20th century. It spread rapidly throughout the state and was estimated to occur in 500,000 acres based on survey work conducted during 1994 and 1995.

Most likely, reniform nematode originated in a tropical area. It has the unique ability to survive for long periods in very dry soil, much like what is encountered in many tropical areas. Some tropical areas don't have summer and winter; instead they have only wet and dry periods. This ability to survive in dried soil for extended periods also could account for the quick spread throughout the state. Anything that could move infested soil, such as farm equipment, birds, flooding or even dust, can contribute to the spread of this nematode. The other characteristic that indicates reniform nematode comes from a tropical climate is that it cannot withstand cold climates. Northern Arkansas, southern Tennessee and eastern Virginia seem to be as far north as this nematode can successfully survive. Unfortunately, it seems to thrive under the temperatures found in Louisiana and survives our mild winters without any problems.

Reniform nematode has the distinction of being one of the most highly successful plant nematodes in the world. It can attack a wide range of plants and make similar changes within all these different types of plants that will allow the nematode to successfully feed and reproduce. Only the females of this nematode actually feed on the roots (Fig. 1). Males



Fig. 1. A swollen female of the reniform nematode projecting from a cotton root.



Fig. 2. Uneven growth in cotton with high levels of reniform nematode.

apparently never feed during their life and simply are involved in reproduction with the females. The life cycle can be fairly short for this nematode, averaging 18-20 days depending on soil temperature, and a number of generations can occur during a growing season.

The above-ground symptoms of this nematode include stunting (Fig. 2 & 3), uneven plant heights, early wilting and poor yields. The damage to the root system is much more difficult to identify but may include thinning, reduced feeder roots and dead tissue. The presence of large numbers of egg masses may cause numerous soil particles to stick to the roots and give the roots a more gritty appearance (Fig. 4). Unfortunately, none of these symptoms are completely reliable for making a diagnosis in the field. The best method is to collect a soil sample and have it processed for nematodes.

Although hundreds of plants can host this nematode, major losses from this pest occur on cotton, sweet potato, soybeans and melons. Many of the agronomic crops such as rice, sugarcane and milo appear either to be immune or very resistant to the reniform nematode. A number of vegetables including cabbage, cantaloupe, kale, lettuce, okra, pumpkin, radish, cowpea, sweet potato, eggplant and tomato are very good hosts to this nematode. Unfortunately, a number of weeds also can host reniform nematode, including morningglory, hemp sesbania, cocklebur, sow thistle, jimson weed, Florida beggarweed, Florida pursley, sicklepod, velvetleaf and teaweed.

Several management strategies are used to help reduce damage from this nematode. Crop rotation, resistant varieties and chemical nematicides are widely used in several of the major crops damaged by this pest. For more information on managing this pest, see the Louisiana Plant Disease Management Guide or visit our Web site www.lsuagcenter.com.



Fig. 3. Control of reniform nematode in an infested cotton field. Plants on the far right side were treated with a nematicide. Those on the left were untreated.



Fig. 4. Egg masses stained slightly red are visible on a small root. A female is beneath each egg mass.

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