Nematodes are microscopic roundworms. Although most nematode species either have no effect on agriculture or are actually beneficial, some types can be harmful to livestock and pets, and other types, the plant-parasitic nematodes, pose a major threat to horticulture, and ornamental industries. Most of the plant-parasitic types of nematodes that are of concern in our state are found in the soil and feed on the roots of plants. They damage the roots which lead to a range of problems, including poor plant growth, poor fruit, seed, or fiber production, or in extreme cases, plant death. Unfortunately, because nematodes are microscopic, they may not be identified as the cause of these problems. Many nematode problems each year are mistakenly attributed to poor fertility, insect problems, or weather.

In Highlands, three major groups of nematodes are of the most economic concern, although several other types can be damaging in certain situations. The most widespread is the root-knot nematode. Root-knot nematodes get their name because they cause small galls or swellings to form on the roots of infected plants. This nematode species can feed on over 5,000 different plant species. In Highlands County, corn, most vegetables, many tree and small fruits, most turf grass types, and many ornamentals can be affected. A second major economic nematode species is the soybean cyst nematode. As its name implies, soybean is the preferred host for this species, and in contrast to root-knot, the soybean cyst nematode has only a limited number of hosts and hasn't been found in Highlands. Soybean cyst nematodes do not cause visible galls to form on roots of infected plants, but tiny, white, yellow, or brown adult nematodes (cysts) can be seen with the aid of a magnifying glass attached to the roots of the plants. The reniform nematode species is a relative newcomer to the County . Reniform nematodes, like soybean cyst nematodes, do not cause galls to form on roots. Unfortunately, while reniform nematodes are also attached to the roots, they are not generally visible even with a magnifying glass. Other nematode species that may be a problem on certain plant species under specific conditions include lesion nematodes, lance nematodes, ring nematodes, dagger nematodes, and stubby-root nematodes.

Because of their microscopic nature and the fact that nematodes live in the soil, the only practical means of determining whether nematodes are present in a field, lawn, orchard, or nursery is by collecting a soil sample and having the soil assayed by a Nematology laboratory. The University of Florida's laboratory in Gainesville will process the sample through several steps to separate the nematodes from the soil, and then all nematodes will be identified using a microscope.