

Solarization: Reducing Nematodes in the Vegetable Garden

Vegetable gardening is a therapeutic pastime for many people in Florida. In addition to being therapeutic, vegetables that are home grown just seem to taste better. We are not the only ones who like our vegetables, so does a tiny creature that lives in our soils.

Due to our warm temperatures, high humidity and sandy soil, Florida has more than it's fair share of these pests and diseases. Plant-parasitic nematodes can be among the most damaging and hard-to-control pests in a vegetable garden.

Nematodes are very small, aquatic, unsegmented roundworms that live in the soil. Most can only be seen using a microscope. There are many different kinds of nematodes and most are beneficial because they feed on bacteria, fungi and other insect pests. Unfortunately, there is a group of nematodes that can damage plants.

Plant-parasitic nematodes feed upon a plant's root system and reduces the plant's ability to obtain water and nutrients from the soil. When there is a high population of nematodes in the soil or when the plant is stressed, the plant begins to show symptoms.

Gardeners discover how devastating nematodes can be when symptoms occur. Mild symptoms include stunting, loss of vigor, wilting and reduced yields. Severe symptoms include early plant death and complete loss of production.

Root-knot nematodes are the most well-known, and most destructive, of the plant-parasitic nematodes. Galls produced by root-knot nematodes are such a distinctive symptom that it can generally be recognized by anyone. Galls are small to large swelling of the roots in the areas where the nematodes have entered the root. Nematodes can feed from the outside and inside of a plant root, depending on the type of nematode.

Okra, tomato, cucumber, butter beans, squash and melons are some of the most vulnerable vegetable plants. The greatest damage occurs on plants that are grown during the summer months, when soil temperatures are warm.

Managing nematodes may involve using one or more techniques that reduce nematode populations.

Plant resistant varieties: Some vegetable varieties are marketed as "nematode resistant." Contact your local Extension Office for recommendations.

Crop rotation: Most of the problems with nematodes are caused by susceptible crops are grown in the same area each year. Rotating crops within the garden and never planting very susceptible crops consecutively will reduce the nematode population. Another alternative is to grow vegetables in containers using a soilless potting media.

Solarization: This is a process of using heat from the sun to kill nematodes and other pests. The soil should be worked with a hoe or rototiller to break up clods. Remove all sticks, roots, and clumps. The soil should be moist, but not wet. Cover the soil with a **clear** plastic and bury

Root-knot galls



With nematodes Without nematodes

the edges of the plastic. Leave the plastic on the soil for at least 4 to 6 weeks. Do not remove the plastic until you are ready to plant.

Sunlight goes through the clear plastic and heats the soil underneath. The plastic then holds in the heat so it penetrates the soil. Long-term exposure to high temperature kills nematodes, as well as many weeds, fungi, and insect pests. The disinfested zone is usually 6 to 8 inches deep.

Because it depends on sunlight and heat, solarization works best during the summer months when the soil will receive maximum direct sunlight. However, while these recommendations can help avoid or reduce problems with plant-parasitic nematodes in the vegetable garden, they are not guarantees of success.

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