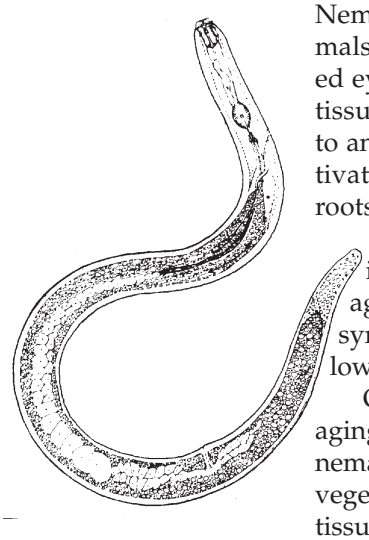
# Nematode Control in the Home Garden



Nematodes are slender, wormlike animals too small to be seen with an unaided eye. They live in soil, water, and plant tissues and can be spread from one area to another in infested soil clinging to cultivation equipment, in water, and on roots of transplants.

Although nematodes are hidden in the soil, they may cause much damage to plants. Typical aboveground symptoms are a general stunting, yellowing, loss of vigor, and general decline.

One nematode that is especially damaging in home gardens is the root-knot nematode, which attacks many common vegetables. This nematode enters the root tissue and feeds, stimulating the development of swellings, or galls.

The ability of the plant to take up water and nutrients from the soil is reduced by this nematode. Nematodes also damage plants by allowing other harmful organisms in the soil to enter the roots.

The best time to determine if you have a nematode problem is in the summer and fall, when nematodes are most numerous. Roots may be dug from the soil and examined for the presence of root-knot nematode galls.

The kinds and number of nematodes in the soil may be determined by sending soil samples to the Extension Plant Pathology Laboratory, 190 Bost North, Rm. 9, Mississippi State, MS 39762-9612. Nematode testing costs $11 per sample.

While it is practically impossible to rid the soil completely of destructive nematodes, you can reduce them to nondamaging numbers by the methods listed in this publication. Apply one or more of these methods when a root-knot nematode hazard is determined by root inspection or nematode assay.

## Resistant Varieties

The root-knot nematode is unable to feed on the varieties listed in Table 1. As a result, the nematode population dies of starvation in soil planted to these varieties, if weed hosts are not present.

Using resistant varieties is the easiest, least expensive, and most effective means of nematode control. Unfortunately, varieties resistant to root-knot are available only in certain crops. Asparagus, onions, and strawberries (all varieties) are resistant to most root-knot nematode populations in Mississippi.

**Table 1. Root-knot nematode-resistant varieties.**

| Plant | Variety |
|---|---|
| Tomato | Better Boy |
| | Big Beef |
| | Celebrity |
| | Terrific |
| Lima bean | Nemagreen |
| Snap bean (pole) | Alabama No. 1 |
| English pea | Wando |
| Southern pea | Mississippi Purple |
| | Mississippi Pinkeye |
| | Magnolia Blackeye |
| Pimiento pepper | Mississippi Nemaheart |

## Fallow

Fallowing is preventing any vegetation from growing, which starves the nematode population. Fallowed soil should be plowed every 2 weeks to reduce weeds and to expose the nematodes to the sun, which kills them.

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## Change Locations

If space is available, it is a good practice to change location every 1 to 2 years. The "resting" location may be either fallowed or incorporated into the lawn.

## Marigolds

Marigolds give off a substance from their roots that is toxic to nematodes, making these flowers a valuable aid in nematode control when they are planted in solid beds. For best results in small gardens, use the French marigold varieties Tangerine, Petite Harmony, or Petite Gold. Space plants 7 inches apart in 7-inch rows.

## Solarization

Solarization is using heat from the sun to kill nematodes in bare soil. This technique involves placing clear plastic (1–1½ ml thick) on moist, tilled soil and sealing the edges with soil, bricks, or other materials. The plastic should be tight and smooth, allowing water to run off rather than pool on top of the plastic. Plant directly into the ground without disturbing the top 4 inches of soil.

Apply the plastic in May or June. It should remain in place for at least 8 weeks (the longer, the better). The plastic may be removed in August in time to establish a fall garden, if desired. If not, remove the plastic before cold weather begins.

## Sanitation

Remove and burn plants (including the roots) in root-knot nematode-infested gardens immediately after the last harvest of each crop. Work the soil two to four times in winter, allowing the sun and weather to exert their killing effect.

## Combination of Controls

For best results, combine and rotate two or more of these nematode control techniques. Rotation involves dividing the garden in half, using a different control technique on each half the first year, and reversing the treatments the second year.

Members of the Brassica family also may be helpful in reducing nematode populations. Plant mustard and till into the soil after flowering, or do the same with broccoli, tilling it under after the broccoli has been picked. Dense plantings of these cover crops provide the best results.

The nematode-resistant cowpeas (Mississippi Purple, Mississippi Pinkeye, and Magnolia Blackeye) offer one of the best rotations for large garden plots. A pea patch of one of these varieties will reduce nematode populations as effectively as chemical nematicide used to. It takes the peas 2 months to control a nematode population. Some suggested rotations are shown in Table 2.

It is important to control weeds, so that nematodes will not survive on them. Your success in controlling nematodes can be determined, and recommendations for the following year can be provided, by sending soil samples to the Extension Plant Pathology Laboratory.

Some nematodes other than root-knot may cause some damage on vegetables. These nematodes include lance, lesion, stubby root, and sting. No variety is resistant to these nematodes, but the other control methods listed here are effective on them. These nematodes do not cause problems on vegetables as commonly as does the root-knot nematode.

**Table 2. Suggested rotations for large garden plots.***

| | | | | |
|---|---|---|---|---|
| 1 | Year 1 | resistant varieties | | cowpeas |
| | Year 2 | susceptible crop | | resistant varieties |
| 2 | Year 1 | resistant varieties | | marigolds |
| | Year 2 | marigolds | | susceptible or resistant varieties |
| | | | or | |
| 3 | Year 1 | resistant varieties | | fallow |
| | Year 2 | fallow | | susceptible or resistant varieties |
| 4 | Year 1 | resistant varieties | | solarization |
| | Year 2 | solarization | | susceptible or resistant varieties |

*Garden is divided into halves.

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