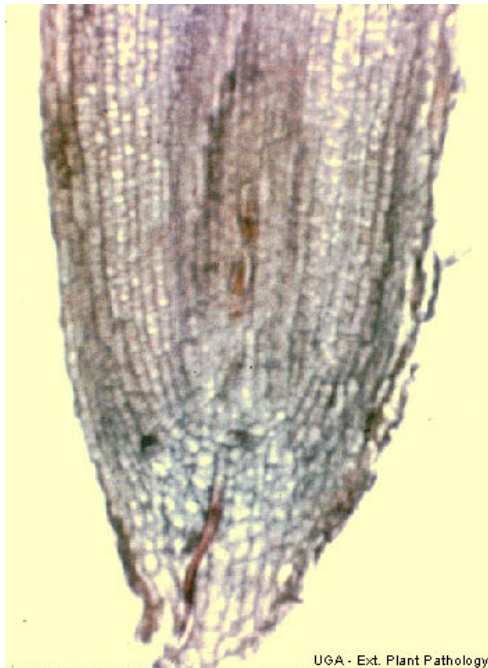
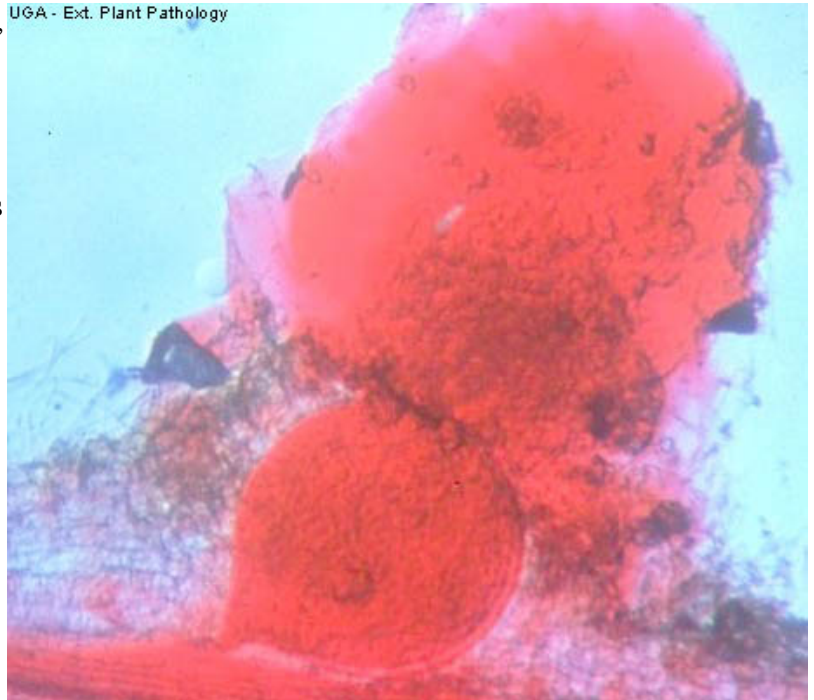


Root-Knot Nematodes

Root-knot nematodes, *Meloidogyne* spp., are the most important plant-parasitic nematodes in Georgia because of their wide host range and widespread distribution. Root-knot nematodes cause more economic damage to Georgia crops and home gardens than any other type of nematode. At least four species are present, but only southern root-knot (*M. incognita*) and peanut root-knot (*M. arenaria*) species are widely distributed. The most frequently occurring species in Georgia is southern root-knot.

Different species of root-knot nematodes may look similar, but their host ranges are different. Some plants may be attacked by all four species while others will be affected by only one species.

This host specificity can be used to plan an effective rotation or to select resistant varieties of plants if the nematode species present is known. Always include past cropping information on the sample submission form because this information can be helpful in determining which species are present.



Root-knot larvae enter roots of host plants near root tips and remain inside the root at one location throughout their life. As larvae feed, the root cells divide rapidly near the nematode's head. This rapid cell division and enlargement cause the swelling or knots on roots. The female nematode undergoes three additional molts and changes shape to become a pear shaped adult. The adult female may live two to three months or longer and lay 500 to 1000 eggs. Eggs may hatch if temperature and moisture are favorable. However, hatching is delayed by extremely dry soil conditions or low temperatures. Rain following prolonged dry soil conditions may cause many eggs to hatch at the same time if temperatures are high enough and a large number of unhatched eggs are present.

Above-ground symptoms of root-knot nematode injury are stunting, yellowing, excessive wilting, reduced yield, and premature death of plants. Below-ground symptoms are the swollen, knotted roots. The most severe damage usually occurs if the plants are infected as seedlings, but significant damage may also result from the infection of older plants. Root-knot galls should not be confused with nitrogen-fixing nodules that develop on roots of legumes. Nitrogen-fixing nodules are attached to the side of the roots, but root-knot nematode galls are formed by enlarged root tissue which will not "flick off" as will nitrogen nodules. Galls on peanuts are

sometimes difficult to distinguish from nitrogen nodules. Nematode galls on corn and other members of the grass family are usually extremely small and difficult to see. Also, root-knot nematodes in corn may cause root tips to stop development, giving some degree of "stubby-root" effect.

Root-knot nematodes have an extremely wide host range. All major field crops, most vegetable crops, peaches, ornamentals, and many weed or grass plants are susceptible to one or more species of root-knot nematodes. Coastal bermudagrass, French marigold varieties, and some pearl millet and vetch varieties are non-hosts for root-knot species found in Georgia.

If root-knot species can be identified, rotating with a non-host crop becomes a feasible means of control. Crop varieties resistant to various species of root-knot nematode have been developed for some crops. Thus species identification becomes very important when selecting resistant crop varieties for root-knot nematode control. Nematode-free nursery stock or transplants, weed control, root plow-out and chemical control can also be effectively used in a root-knot nematode control program.

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