



ROOT-KNOT NEMATODE OF TOMATO

Root-knot nematodes (*Meloidogyne* spp.) are destructive to tomatoes. Three species of root-knot nematodes, *M. incognita*, *M. javanica*, and *M. hapla*, are the most widely distributed nematode pathogens of tomato. *Meloidogyne* has a wide host range among cultivated crops and weeds, particularly broadleaf species.

SYMPTOMS

Root-knot nematode damage is usually associated with patches of stunted, chlorotic plants within a field. Infection of susceptible plant roots by root-knot nematodes results in the formation of swellings (galls) on the roots (Figure 1). The normal transfer of substances from roots to the plant top is restricted, often resulting in wilt and nutritional deficiencies. Above-ground symptoms include yellowing of foliage, reduced size and number of leaves, wilting in warm weather, and poor yield. In the field, galled roots may be invaded by microorganisms, causing more drastic damage than root-knot alone.

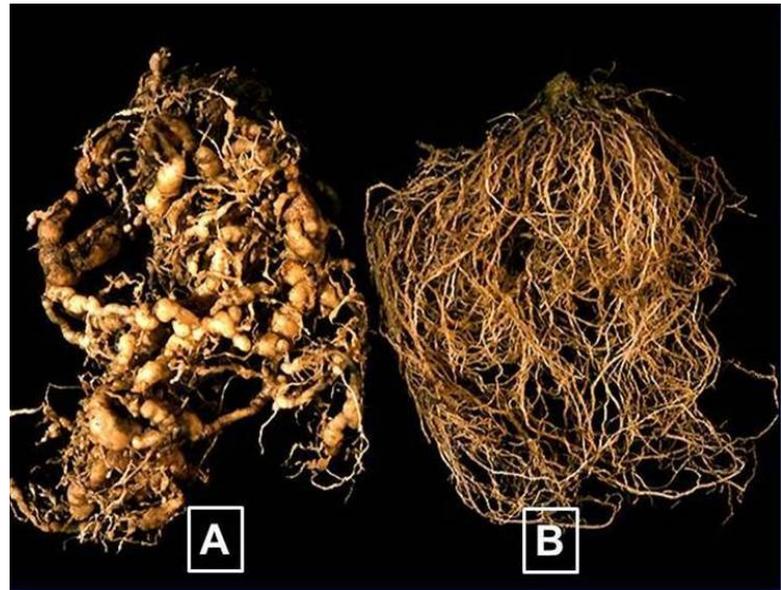


Figure 1. Root-knot of tomato. A, infected root (galls); B, uninfected root. (Photo courtesy University of Maryland)

DISEASE CYCLES

Root-knot nematodes survive in roots of weeds or as eggs in infected roots of previous crops. The eggs hatch, go through four larval stages, and then become adult (Figure 2). The duration of the life cycle is dependent on soil temperature and the host species. The life cycle is usually completed in 21 to 28 days at soil temperatures of 77 to 86°F (25 to 30°C).

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DISEASE MANAGEMENT

The management of plant-parasitic nematodes of tomato relies on integrated pest management (IPM), which includes use of various cultural, biological, and chemical strategies. A reliable preplant sample estimates of the nematode population density and consequent potential for damage forms the basis for selecting the appropriate management strategy. Cultural practices include a clean fallow during the off-season, control of weeds and volunteer plants, destroying infected plants, avoiding use of contaminated water with nematode, and using nematode-free transplants. Wherever it is available, using resistant cultivars to minimize losses to root-knot nematodes is recommended. Chemical control of root-knot nematodes of tomatoes should be considered as a preplant practice because once root infection occurs and plant damage become visible, it is not possible to resolve the problem completely. As a preplant treatment, using a multi-purpose fumigation such as methyl bromide or Telone C35 to reduce root-knot nematode populations and soilborne disease pressure to avoid significant yield loss.

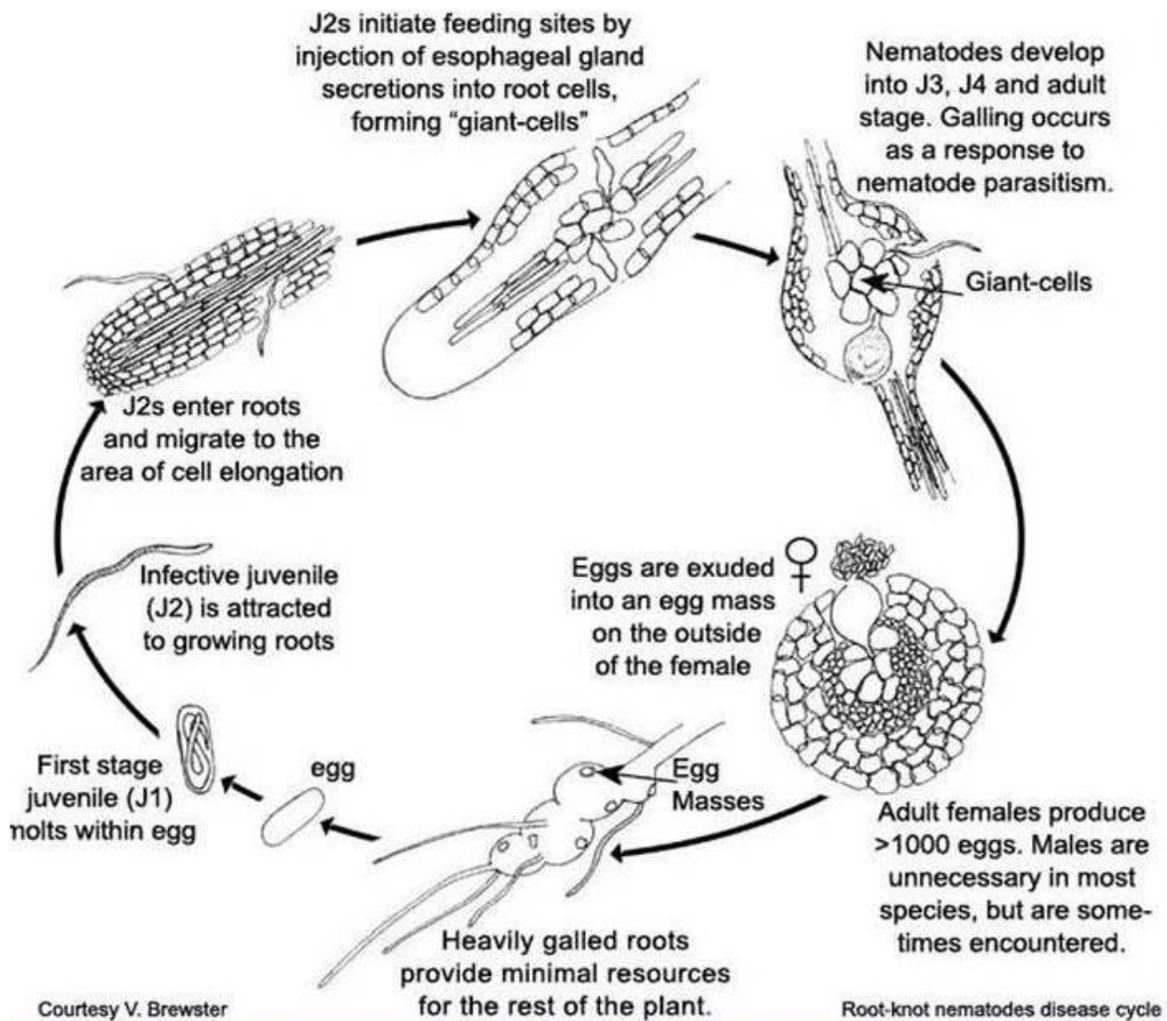


Figure 2. Life cycle of *Meloidogyne* spp. (Photo courtesy the American Phytopathological Society).