



## Nematode Management Strategies for Healthy Guava Production

(\*Parwati, Seema Yadav and Rajkumar Verma)

Maharana Pratap University of Agriculture and Technology, Udaipur

\*Corresponding Author's email: [parvatichoudhary50@gmail.com](mailto:parvatichoudhary50@gmail.com)

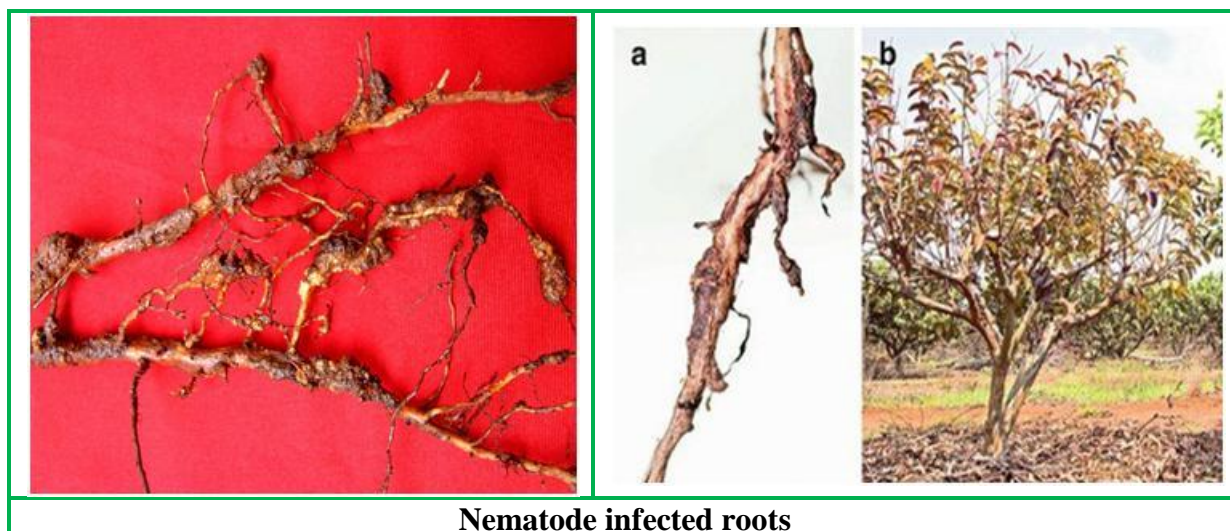
Guava (*Psidium guajava*) is a tropical fruit widely cultivated for its delicious taste and nutritional benefits. However, nematode infestations can pose a significant threat to guava orchards, leading to reduced yields and compromised fruit quality. Nematodes, particularly root-knot nematodes (*Meloidogyne entrolobii*), can affect the roots of guava trees, affecting nutrient uptake and overall plant health. Implementing effective nematode management strategies is crucial for sustaining guava production.

### Nematodes

Nematodes are microscopic, worm-like animals but not true micro-organisms as they have all the systems that higher animals possess, except the circulatory and respiratory organs. Nematode infections in guava can lead to various symptoms, affecting the overall health and productivity of the plant. Nematodes are microscopic roundworms that can damage plant roots, interfere with nutrient uptake, and create an environment conducive to other pathogens.

Here are some common symptoms of nematode infection in guava:

1. **Stunted Growth:** Infected guava plants may exhibit overall stunted growth, with reduced vigor and smaller leaves.
2. **Yellowing of Leaves (Chlorosis):** Nematode-infested guava plants often show symptoms of chlorosis, where the leaves turn yellow due to impaired nutrient uptake.
3. **Leaf Drop:** As nematodes damage the root system, guava plants may experience premature leaf drop, further contributing to a reduction in overall canopy density.
4. **Root Knots:-** Root knot nematodes (*Meloidogyne entrolobii*) can induce the formation of characteristic swellings or knots on the roots. These galls disrupt normal root function.
5. **Reduced Fruit Yield:** Nematode-infected guava trees may produce fewer fruits, and the fruits themselves may be smaller in size.
6. **Root Damage:-** The roots of infected guava plants may show signs of damage, including lesions, necrosis, and overall poor development.
7. **Wilting:-** Guava trees infected with nematodes may exhibit wilting, especially during periods of stress such as hot weather. This is a result of compromised root function and water uptake.
8. **Increased Susceptibility to Other Diseases:-** Nematode-infested guava plants become more susceptible to secondary infections by bacteria, fungi, or other pathogens due to the weakened state of the plant.
9. **General Decline in Plant Health:-** Overall, nematode-infected guava plants may show a decline in health, with symptoms such as reduced resistance to environmental stress, poor response to fertilization, and a general lack of vitality.



**Nematode infected roots**

### How it is spread

As with all root-knot nematode species, guava root-knot nematode can be easily transmitted with soil and plant material. Infested soil and growing media, plants for transplanting, bulbs, and edible tubers from sites where guava root-knot nematode occurs are the most probable pathways of introduction into new areas. Soil attached to machinery, tools, footwear or plant products are other possible pathways.

### Prevention

There are simple steps you can take to protect your farm or property:

- Source planting material from reputable suppliers and request a written statement indicating the absence of plant-parasitic nematodes.
- Ensure planting material is free from soil and plant residues.
- Purchase healthy seedlings from reputable nurseries.
- Keep records of where plants/planting material/tubers are sourced from, and where and when they are planted on your property.
- Check planting material on arrival to make sure they look healthy and visibly free of all pest and disease symptoms.
- Regularly check your farm and report any unusual or unfamiliar symptoms or damage to plants.

### Management

1. **Soil solarization:-** Soil solarization is a non-chemical method that involves covering the soil with transparent plastic sheets to capture solar heat. This process raises soil temperatures, effectively reducing nematode populations and other soilborne pathogens. This technique is particularly effective in warm climates and can be implemented during the hot summer months.
2. **Crop Rotation:-** Crop rotation is a cultural practice that disrupts the nematode life cycle. Avoid planting guava trees in the same location consecutively. Instead, rotate guava with non-host crops or plants that are less susceptible to nematode infestations. This helps to break the nematode cycle and reduces the risk of infestation.
3. **Sanitation:** Practice good sanitation measures to prevent the spread of nematodes between fields. Clean and disinfect equipment, tools, and footwear to minimize the transfer of soil borne pathogens. Avoid planting infested transplants or using contaminated planting materials.
4. **Monitoring and Scouting:** Regularly monitor fields for signs of nematode damage, such as stunted growth, wilting, and root galling. Conduct soil tests to assess nematode

populations and species composition. Early detection allows for timely intervention and management decisions.

5. **Nematode-Resistant Rootstocks:-** Consider using guava rootstocks that exhibit resistance to specific nematode species. Nematode-resistant rootstocks can provide a natural defense mechanism against nematode infestations, contributing to healthier and more productive guava trees. P. guajava “B-12” was classified as resistant to M. incognita (FR=0.88) having the potential to control the nematode, so that it could be used as a rootstock for commercial guava clones.
6. **Organic amendments:-** Use of organic amendments is a good option to reduce nematode build up as well increase plant tolerance by raising nutrient status. Both edible and non-edible oil cakes are used for suppressing nematode population in soil. Organic amendments manage the nematode population by release of toxic compounds during decomposition, improve soil fertility increased the plant vigor, tolerance and promoting antagonistic microbial activity
7. **Cover Crops:-** Additionally, certain cover crops, like marigold or mustard, can release compounds toxic to nematodes, contributing to their suppression.
8. **Pre-Plant Soil Fumigation:-** In severe cases, pre-plant soil fumigation with chemical nematicides may be considered. It is essential to follow recommended application rates and safety guidelines while considering the environmental impact. This method should be used cautiously and as a part of an integrated nematode management plan.