

# Nematodes on banana

*Radopholus similis*



Toppled banana with blackened necrotic roots caused by *Radopholus similis* (CABI)



*Radopholus similis* lesions on banana root (CABI)



*Radopholus similis* lesions on banana corm (Michael McClure, University of Arizona, Bugwood.org)

Prevention	Monitoring	Direct Control
<ul style="list-style-type: none"> <li>• Nematodes are tiny worm-like animals which live in the soil and burrow into roots which cause damage to crops. They are not visible to the naked eye</li> <li>• Use clean planting materials e.g. clean suckers or tissue cultured bananas</li> <li>• Dip suckers in hot water (50-55°C) for 20 minutes after trimming all the roots and pairing (cutting) 1 cm tissue around the corm until you get the white tissue</li> <li>• Use tolerant varieties if available</li> <li>• Before planting, solarise the soil using a polythene sheet (gauge 150) for at least a month during hot weather. This kills nematodes</li> <li>• Fallow the land prior to planting for a period of at least 6-12 months to reduce potential nematode populations.</li> <li>• Apply heavy mulch with organic waste e.g. maize stover, grass or another non-banana plant</li> <li>• Take measures to conserve soil such as constructing terraces and contour farming</li> <li>• If the field has been previously infested, remove as many weeds as possible</li> <li>• If nematodes have been a previous problem, plough deeply in hot weather, before planting, to expose nematodes to heat and kill them</li> <li>• Ensure adequate soil moisture and fertilization levels to maintain healthy plants and minimise the impact of nematodes</li> <li>• Rotate crops with legumes (e.g. beans, peas), brassicas (e.g. cabbages, kales), rape and/or marigold flowers (<i>Tagetes</i> spp.) for at least 2 years. Avoid planting spinach, capsicum, eggplant or citrus during this period.</li> <li>• Alternatively rotate with paddy rice to flood field and reduce populations</li> <li>• Avoid movement of planting materials and soil as well as run off of irrigation water to prevent spread of nematodes. They can only move a few metres in the soil per year</li> <li>• Clean farm tools and equipment after use</li> </ul>	<ul style="list-style-type: none"> <li>• Regularly monitor for symptoms both above and below ground.</li> <li>• Look for:                         <ul style="list-style-type: none"> <li>• Single stunted plants in a smallholding or spots of stunted plants in larger plantations</li> <li>• Plant toppling (due to loss of anchoring roots)</li> <li>• Wilting of plants even if there is adequate water supply</li> <li>• Leaves: Uniform yellowing or chlorosis of the lower leaves even if soil is adequately fertilized. Reduced number and size of leaves</li> <li>• Roots: Brown-coloured rot on root surface. Brown lesions and tunnels within rhizomes. Clumping of side roots</li> </ul> </li> <li>• Symptoms can be similar to those caused by Fusarium wilt but Fusarium does not cause discolouration on the root surface</li> <li>• Consider taking control action as soon as symptoms are found in one plant or when 3-5 plants have fallen on a smallholding</li> <li>• Send soil samples to a lab to test for the presence of nematodes</li> </ul>	<ul style="list-style-type: none"> <li>• Leave the pulled out rhizomes of the fallen plants in the sun for 14 days to kill the nematodes</li> <li>• Apply <i>Tithonia</i> or Mexican marigold (<i>Tagetes</i> spp.) as green manure. This is antagonistic to nematodes</li> <li>• Drench the stools or suckers using Azadirachtin (e.g. Achook EC, Neem cake, Nematon, Nimbecidine) at the rate of 600 ml/20 L. (app. 200 ml/stool of the mixture)</li> <li>• Peel the outer layer of diseased corms and coat with nematicides (Azadirachtin at a rate of 600ml/20Ltrs) coated in mud or left in the sun for 14 days</li> <li>• Spray chilli solution around the base of the remaining standing plants at a rate of 50 mg / 10 litres of water per plant</li> <li>• Support infected plants with a wire or hooked post to prevent falling over to preserve harvestable crop</li> </ul>

Note: Pesticides may be available to control this pest. Please check with the Ministry of Agriculture in your country to find out which pesticides are registered in your country and the local restrictions for their use.