NEMATODES ASSOCIATED WITH COCONUT

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arasitic nematodes cause heavy losses to over the world. The first plant parasitic described was *Anguina tritici* causing ear-wheat in 1743 by John Needham. Plant y took its birth in India with the report of on tea by Barber in 1901 from Munnar, Mayne and Subramaniam (1933) reported *us coffeae* associated with yellowing and f coffee in Coorg, Karnataka. Even with y reports, adequate attention has not been nematological investigations on these crops

ral, the symptoms of nematode attack are root-rot, necrosis and lesions, root proli- ubby root, curly tip, necrosis and discolou- stem, leaf-spot, leaf-galls and seed galls.

des are multi-cellular, non-segmented, bila- mmetrical, vermiform, colourless organisms. ycle consists of egg, four stages of larval he adult. Generally the life-cycle extends ys. Plant parasitic nematodes range in n 0.5 mm to 2.0 mm and possess a protru- for feeding. Plant nematodes occur chiefly ere they attack plant roots. They are classi-

parasites, which do not penetrate the root ie. e.g. *Dolichodorus*, *Paratylenchus*, *onemoides*. (2) *Semi-endoparasites*, which normally feed with the front part of the body buried in the root. e.g. *Tylenchulus*, *Roty-lenchulus*.

(3) *Endoparasites*, which normally enter the root completely and feed for at least part of their life-cycle with the body wholly inside the root. The nematode species which enter and move within the plant tissue are called migratory endoparasites. e.g. *Radopholus*, *Pratylenchus* and those which enter the tissue completely and do not move are called sedentary endo-parasites. e.g. *Meloidogyne* and *Heterodera*.

The most important nematode disease of coconut is the "red-ring" disease of coconut and oil-palm caus-ed by *Rhadinaphelenchus cocophilus*. The disease is known to occur in most of the Caribean islands, Brazil and San salvador. The early symptoms are yellowing of the lower leaves, starting from the tips of distal pinnae and later extending progressively downwards to the base of the pinnae and to the base of the leaf. The yellowing is succeeded by browning and eventual death of the leaf. This yellowing and browning subsequently spread to the other leaves and palms die within 3 to 4 months after the appearance of the early symptoms. Plants are more susceptible in their bearing age whereas the older and younger palms exhibit high degree of resistance. The internal conditions of a tree suffering from red-ring is charac-teristic. In cross-section, approximately 2.5 cm beneath the stem surface will be found an orange-red

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ring of discolouration about 3 cm in width. This ring normally extends the whole length of the stem and roots and into the petioles. Large numbers of nematodes can be recovered from the discoloured tissue. This deadly disease is not known in India. Strict quarantine measures should be adopted while importing seednuts of coconut and oil-palm, and no import should be made from countries where disease is known to occur. No effective method of control of this disease is known at the moment.

Besides the work on the red-ring disease not much studies has been undertaken on plant parasitic nematodes associated with coconut. Nematology section at CPCRI, Kayangulam started in 1972 has made the following findings. Twenty-three genera of plant parasitic nematodes were isolated and identified. They include all the three known virus vectors, *Longidorus Xiphinema,* and *Trichodorus* and the burrowing nematode, *Radopholus similis.*

The most important nematode found in coconut root is the burrowing nematode, *Radopholus similis.* It is notorious for causing root-rot of banana in almost all banana growing regions, spreading decline of citrus in Florida and Pepper yellows in Indonesia. *R. similis* on infestation produce small elongate, reddish brown cortical lesions on roots of coconut and arecanut, which later coalesce and cause extensive root-rotting. Very few lateral roots are seen infested palms. Investigations at CPCRI had sho that *R. similis* has a wide host-range having species of plants as hosts including arecanut, ban pepper, groundnut, sugarcane, sweet potato etc. the extraction of the nematode, a low temperature 4°c—14°c is optimum for maximum recovery. maximum of 3541 nematodes per gram of root been recorded from coconut. Maximum popula occurs during October-November with light rain coupled with lower soil temperature conditions. T semi-hard portion of main roots which is orange colour harbours the maximum population.

To prevent *X.* the spread of *R. similis* to the n infested areas through infested coconut seedlings, in DBCP (Nemagon) 1000 ppm for 15 minutes found to be the most effective. This was found to effective in controlling *R. similis* populations harbo ed by roots of one-year old seedlings within the h without causing any injury to the plants.

Various nematicides screened against *R. similis* coconut in the nursery showed that fensulphothion 50 kg ai/ha brought down the population to a mi mum level. Studies on the effect of nematicides in controlling of *R. similis* as well as in the amelio tion of the symptoms of the wilt-affected palms are progress.