

Identification of the physiological race of *Radopholus similis* populations infesting coconut, arecanut and banana in Kerala, South India

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Bally and Reydon¹ first reported the possibility of the existence of physiological strains in *Radopholus similis*. DuCharme and Birchfield² identified two physiological races, the "citrus race" which parasitizes both citrus and banana, recorded only in Florida and the "banana race" that parasitizes banana but not *Citrus*. Their field observations indicated the existence of a third race in Florida which attacks citrus only. The present study was undertaken to identify the race of *R. similis* found in Kerala infesting coconut, arecanut and banana at Kasaragod, Kayangulam and Palode.

Five seedlings each of all the eleven *Citrus* cultivars such as, *Citrus aurentifolia* Swingle (both var. kaghzilime and lime), *C. karna* Raf. (both var. kharna khatta and kharna), *C. limon* (L.) Burm. (both var. lemon and rough lemon), *C. maxima* (Burn.) Merrill (pummelo tree), *C. paradisi* Macf. (grape fruit), *C. pennivesiculata* ("kari narakom"), *C. reticulata* Blanco (orange — santra), *C. sinensis* (L.) Osbeck (sweet orange — malta) and trifoliolate orange (*Poncirus trifoliata* (L.) Raf.) were raised in steam sterilised sandy loam soil in 10 cm earthen pots and were inoculated at 4 to 6 leaf stage with *R. similis* banana isolates from Kayangulam, Kasaragod and Palode; coconut isolates from Kayangulam and Kasaragod; and arecanut isolate from Palode by placing 300 active specimens (females and larvae) suspended in 5 ml of water on or very near to the roots of each plant with a pipette. The very same populations were also simultaneously released around the root zone of healthy banana suckers var. Njalipoovan grown in sterile soil contained in 25 cm earthen pots. After four months all the plants were depotted, the roots were washed with a strong jet of water, to remove the adhering soil particles and then examined under a binocular stereoscopic microscope for evidence of penetration, multiplication and production of symptoms such as lesions and root rotting. Finely cut root sample of 0.5 g was stained in 1 per cent acid fuchsin-lactophenol and blended in 250 ml of water. The volume of the suspension was reduced to 50 ml and was scanned under a stereoscopic binocular microscope. Another 0.5 g stained root bits were pressed between two glass slides and examined for nematodes. The remainder of the roots were rubbed against a 20 mesh sieve and placed in tap water contained in 10 cm petri plates for 72 hrs for extraction. After three days this was screened through 20 and 60 mesh sieves and collected on 350 mesh sieve and the suspension observed for the presence of nematodes. The entire soil from each pot (500 g) was processed by the modified Baermann funnel method and observed for *R. similis*.

None of the *Citrus* and trifoliolate orange test plants was found to be infested. No nematode was observed to be present in the blended root suspensions of individual plants as well as from the stained roots pressed. There was also no recovery of nematodes from pot soil and from the roots left submerged in tap water for 72 hrs. However, there was good build up of population on banana plants indicating the viability of the inoculum and the suitability of the methods adopted in these studies. The non-infection of the *Citrus* spp. and the multiplication on banana plants confirm the identity of the Kayangulam, Kasaragod and Palode isolates of *R. similis* as the "banana race".

Indications are there to suggest existence of more than one banana race. The Kayangulam race appears to be different from Panama and Honduras races³ and also from the South Africa race⁶ because of their host specificity⁴.

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