DEPARTMENT OF BIOLOGY, FACULTY OF SCIENCES
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DIVERSITY OF *Radopholus similis* (COBB, 1893) (NEMATODA:TYLENCHIDA)

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Abstract

The variability of 19 populations of *Radopholus similis* collected world-wide was studied from various angles. Morphological and morphometrical variations were found within and between populations. Variations occurred e.g. in total body length, number of lip annules, tail shape and length. Characters separating *R. citrophilus* from *R. similis* were overlapping between the species. *Hinf*I, *Nde*II and *Taq*I RFLPs of ITS regions did not separate the populations. A group composed of populations from Karkoug, Sennar, Chendi (Sudan), *Calathea* and Indonesia was visualised by *Alu*I, *Rsa*I and *Tru*9I restrictions. Sequencing of the ITS separated the same group by 10-24 substitutions. The same five populations were clustered separately for all combinations of alignments and tree construction methods. RAPD analysis resulted in 179 scored bands from 10 decamer primers. OPA3 distinguished the five populations. The dendrogram constructed on the basis of the RAPD results, placed the five populations in one main cluster.

Reproductive fitness was found to vary among populations and was controlled by the temperature. At 15°C only three populations originating from ornamentals reproduced. Maximum reproduction was observed at 25°C. At this temperature populations from Chendi and *Calathea* showed the highest reproduction; the lowest reproduction was observed for populations from Indonesia and Australia. At 30°C the reproduction declined. Juvenile reproduction obtained in single female tests ranked the populations in the same way. Populations differed also in number of reproducing females and in the male:female ratio.

When inoculated on banana, *Anthurium andreanum*, or *Maranta amabilis* the populations showed a specific relationship to their host of origin. Populations isolated from ornamentals and black pepper multiplied well on *M. amabilis* and *A. adreanum* but not on banana. Populations isolated from banana (with exception of populations from Chendi, Sennar, Kamlin and Karkoug) multiplied poorly on the ornamentals. Four banana cultivars were tested five populations. The cv. Yangambi Km 5 proved its resistance to all of the populations; cv. Gros Michel was found to be moderately resistant. Pisang Yari Buaya was found to be as susceptible as 'Grand Naine'. None of the populations did multiply and inflict damage to *Citrus sinensis*. The results obtained from the molecular studies correlate with the biological observations.