

ABSTRACT

Management of the burrowing nematode (*Radopholus similis*) in anthurium and banana: An assessment of the efficacy of indigenous bio-nematicides.

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Radopholus similis is considered the most destructive nematode to anthurium and banana production, with the potential to reduce yields by 50%. In the Caribbean, *R. similis* management involves the application of synthetic nematicides. However, due to strict environmental policies their usage has been restricted and farmers seek alternative nematode control strategies. This study evaluates the effects of resistant/tolerant cultivars and bio-nematicides as alternatives in managing *R. similis* in anthurium and banana. From pot studies utilizing anthurium plants it was observed that the number of *R. similis* in the roots varied in response to different cultivars with cv 4235 having the highest nematode counts in its root while cv 31 had the least. The results of the nematode reproduction factor indicated that cultivar 31 had the lowest value and was considered a poor host to *R. similis*. The nematicide Ethoprop was the most effective at reducing *R. similis* populations in the roots and soil of anthurium, while Azadirachtin was the only bio-nematicide that was comparable to the synthetic nematicides. The results of the modified plant tolerance index indicated that anthurium cultivar 4149 was the most tolerant to *R. similis*, followed by cultivars 4235, 1103 and 31. In pot trials utilizing banana plants, Ethoprop was more effective than the other bio-nematicide at reducing *R. similis* in the roots and soil. Azadirachtin caused a major reduction in nematode density in the roots but was ineffective in the soil. The Pearson correlation between the *R. similis* density in the roots and the root necrosis index (R.N.I) showed a strong positive relationship, which indicated that the R.N.I has potential for use as a rapid technique to predict nematode population densities in anthurium roots. It was also determined that the *R. similis* density in the root had a direct effect on banana corm weight. The banana yield data confirmed that the bio-nematicides were comparable to their chemical counterparts at preventing plant growth losses, since no significant differences in pseudostem length and girth, as well as, the leaf numbers and area were observed between the treatments in both trials. It is recommended that anthurium and banana producers utilize Azadirachtin, in combination with, fully or partially resistant/tolerant cultivars as a suitable alternative to synthetic nematicides.

Keywords: *Anthurium andreanum*; bio-nematicides; nematode reproduction factor; *Musa* spp.; *Radopholus similis*; root necrosis index; tolerance index