

Identification of two new species of the Genus *Phytophthora* causing black pod disease of cocoa, (*Theobroma cacao* L.) in Sri Lanka and a possible non-chemical method of its control

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Different *Phytophthora* species were isolated from infected black pods obtained from the fields of Export Agriculture Research station, Matale and Millawana estate, Melsiripura.

Microscopic observations of pure cultures of the isolated fungi consisted of three different species and were identified and categorised according to l/b ratio and stalk length of sporangium. They were *P. palmivora*, *P. megakarya* and *P. capsici*. *Phytophthora* isolates from both locations had different percentages of above three species; highest populations of *P. palmivora* and *P. megakarya* were found in Millawana and Matale isolates respectively. In both the locations *P. capsici* showed lowest percentages. However, Millawana and Matale isolates consisted of 25% and 10% of *P. capsici* respectively.

Fungal isolates examined consisted of sporangium with different sizes, shapes and stalk lengths. Different l/b ratios and stalk lengths confirmed the presence of different spp. of *Phytophthora*. Sporangia with l/b ratios ranging from 1.2 – 1.8 μ m and stalk lengths 2 – 5 μ m were identified as *P. palmivora* (MF-1) and sporangia with l/b ratios ranging from 1.2 – 1.6 μ m and stalk lengths ranging from 10 – 30 μ m were identified as *P. megakarya* (MF-3). Sporangia which had l/b ratios in between 1.6 – 2.0 μ m and stalk lengths ranging from 20 – 15 μ m were identified as *P. capsici* (MF-4). Besides, the *in vitro* experiments conducted with the extracts of mature *Adathoda vasica* leaves in the culture medium showed suppression of mycelia growth. Culture media prepared with either 4% (v/v) or higher concentrations of *A. vasica* leaves suppressed the growth of *Phytophthora* mycelia. This indicates the possibilities of using *Adathoda* in black pod disease control. However more research has to be carried out on *Adathoda* extracts before application of this finding in controlling black pod disease.

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