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Variability of Pathogenicity of Different Isolates of *Phellinus noxius*: The Causal Organism of the Brown Root Disease of Rubber in Sri Lanka

Silva M.K.R.^{1*}, Fernando T.H.P.S.¹, Wijesundara R.L.C.², Nanayakkara C.M.²

¹*Rubber Research Institute, Dartonfield, Sri Lanka*

²*University of Colombo, Colombo 03, Sri Lanka*

**keshanisilva@yahoo.com*

Abstract

Phellinus noxius is the pathogen causing brown root disease: an emerging disease condition in Sri Lanka rubber industry, especially in dry and intermediate regions. The possibility of the pathogen to be mutated into more virulent forms can be considered as one of the factors influencing the increased frequency of its occurrence in the country during the recent past especially in certain parts of the country. Considering the diversity of soil and climatic conditions in which the pathogen has been reported and the large number of tree species it attacks, it is necessary to have an understanding whether there is any variation in pathogenicity within the population of the fungus. Ultimately, this heterogeneity in the pathogenicity of the pathogen population within the country would be helpful in the development of management strategies against the disease. The current study has evaluated the pathogenicity of 24 Sri Lankan isolates of *Phellinus noxius*. A pot trial was carried out by artificial inoculation of three months-old rubber seedlings with an inoculated mixture (with respective fungal isolates grown on MEA) of rice bran and saw dust. Forty seedlings were inoculated by each isolate, and another forty seedlings were kept as control without inoculation. Starting after four months of inoculation, ten destructive samplings were done at two months intervals to observe the pathogenicity levels of different pathogen isolates against rubber seedlings. Based on the underground signs and symptoms, a pathogenicity score was given of each uprooted plant as; 0 (no infection), 1 (mycelial crust without root decay), 2 (mycelial crust with root decay) and 3 (plant death). The pathogenicity levels recorded as ranks were subjected to Kruskal–Wallis analysis and subsequently to the Wilcoxon rank-sum test, as the scores obtained for the different isolates were significant. A variation of pathogenicity was observed among the 24 *Phellinus noxius* isolates. As all the isolates had initiated to show a stabilised pathogenicity value at three and half months of the inoculation, a cluster analysis was performed for the mean score values of pathogenicity rank at three and half months and the dendrogram showed that the test isolates were separated into two main clusters at the similarity level 0.8.

Keywords: Brown root disease, Rubber, Pathogenicity of isolates, Clustograms