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| **Bibliography** | Inapo, D.; Ban, G.; Akanda, S. (2024) Identification and distribution of Trichoderma species in the four regions of Papua New Guinea, In: Interdisciplinary Journal of Papua New Guinea University of Technology, Vol.1 (1), 59-67, URL: https://doi.org/10.63900/3cpm2x91 |
| **Abstract / Content summary** | Trichoderma, a soil-dwelling fungus, is a reliable biocontrol agent that combats crop diseases, enhances plant resistance to environmental stresses, improves nutrient uptake efficiency, and promotes plant growth. Studies were conducted in the Papua New Guinea University of Technology (PNGUoT) laboratory using soil samples collected from four regions across 16 provinces in PNG. The objectives were identifying Trichoderma species, determining their phylogenetic relationships, and analyzing their population distribution. Twenty isolates were morphologically identified as Trichoderma, and further categorized into five species, i.e., T. harzianum, T.virens, T. hamatum, T. lixii, and T. asperellum, through molecular characterization. The phylogeny analysis generated an outgroup and two clades. Trichoderma
lixii from Chimbu Province was an outgroup compared to the other four species. The first clade showed that T. harzianum (SHP) is closely related to T. virens (Manus) with a bootstrap value of 100%. The second clade showed that T. harzianum (Sandaun) is closely related to T. asperellum (East Sepik); T. harzianum (Central) with T. harzianum (NCD) and T. harzianum (Morobe); T. virens (Madang) with T.virens (New Ireland); and T. asperellum (Madang) with T. hamatum (ENB), respectively. Trichoderma harzianum was the dominant species. The highest population of Trichoderma was found in New Ireland Province with 15 882 CFU (A. manihot), while the lowest of 47 CFU (I. batatas) was in Western Highlands Province. The findings from this study can contribute towards the potential development of a Trichoderma species into a biological control against soil-borne pathogens in PNG.
Keywords: Prevalence, morphology, molecular identification, phylogeny. |
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