

Plant pathogenic fungi as potential biocontrol agents for water hyacinth *Eichhornia crassipes* (Mart.) Solms

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Water hyacinth (*Eichhornia crassipes*), an invasive alien species in Sri Lanka, has been rated as the world's worst weed. A study was performed to isolate pathogenic fungi in water hyacinth and to evaluate their pathogenicity under field conditions. Plant pathogenic fungi associated with naturally-infected water hyacinth were surveyed in selected waterways in the eastern part of Sri Lanka and four potential isolates (*Alternaria alternata*, *Cercospora rodmanii*, *Aspergillus sp.* and *Trichoderma sp.*) were identified based on morphological features and disease symptoms. These fungi were evaluated for their pathogenicity against water hyacinth under field conditions, as a separate laboratory study had already confirmed the pathogenicity of these fungi against water hyacinth. Water hyacinth plots were laid in a Randomized Complete Block Design to spray the spores of fungal pathogens (treatments) in triplicate, with an untreated plot as the control, and the affected leaf area was measured for each treatment after 50 days from inoculation. An ANOVA was performed to analyze the data. The field trial indicated that all four fungal types resulted in different levels of dead lesions in water hyacinth ($p < 0.01$). The disease started as small necrotic spots and developed into a leaf blight that tended to spread over the leaf. Bonferroni mean separation indicated that 50 days after inoculation, *Alternaria alternata* had the highest affected leaf area (1138 cm²) followed by *Cercospora rodmanii* (1047 cm²) and *Aspergillus sp* (845 cm²). However, *Trichoderma sp.* gave the least affected leaf area under field condition. The study suggested that *Alternaria alternata* and *Cercospora rodmanii* were the more virulent candidates under field conditions. These may be potential biocontrol agents against water hyacinth. Though these fungal species are present in nature, they have failed to control the water hyacinth completely, perhaps due to limited amounts of inoculum present in the natural environment, competition between the concerned fungi and other species, or antagonism by other microbes. Therefore, further studies on performance evaluation under natural environmental conditions and host specificity tests are needed.

Key words: Water hyacinth, pathogenic fungi, biocontrol.