

**[BIO01]**

**Managing Fusarium wilt of bananas with endophytic microorganisms**

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The potential use of endophytes as biological control agents in managing Fusarium wilt of banana was established in this study. From a total of 213 and 124 bacterial and fungal endophytes isolated from roots of wild bananas respectively, only two isolates (UPM39B3 and UPM31P1) showed the most promising characteristics of a biocontrol agent. Both UPM39B3 (bacterial endophyte) and UPM31P1 (fungal endophyte) have been shown to be highly antagonistic towards the pathogen (*Fusarium oxysporum* f. sp. *cubense* race 4, FocR4), inhibiting growth through production of both volatile and nonvolatile inhibitory substances. In addition, their association with the host plant did not result in any detrimental effect on the overall plant growth. In disease assessment studies, plants treated with UPM39B3 and UPM31P1 prior to challenge with FocR4 recorded low disease severity of 20% (single treatment UPM31P1) and 33.5% (combined treatment UPM31P1 and UPM39B3) as compared to 74% in untreated plants. Repeated testing using a larger number of replicates at the glasshouse stage produced similar results. Their efficacy in disease suppression at the field-testing level is currently investigated on a 'Fusarium hot-spot plot' in United Plantations Bhd. Teluk Intan. The isolates UPM39B3 and UPM31P1 were also amenable to mass production on solid (UPM31P1) and liquid (UPM39B3) substrate, and could be easily introduced into the plant host system through simple drenching method, highlighting their valuable potential as biopesticide in integrated pest management that encourages sustainable agriculture in the near future.