

Characterisation of plant-pathogenic fungal associate from an invasive ambrosia beetle (*Euplatypus parallelus*) infesting rubber plantations of South India

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Ambrosia beetle infestations in rubber plantations of northern Kerala caused rapid tree decline, impacting farmers significantly. The present study focused on isolating and identifying fungal strains associated with *Euplatypus parallelus*, a recently reported invasive pest in rubber trees. Two fungal associates, *Fusarium solani* and *Fusarium ambrosium*, were identified. While *F. Solani* is a major sporulating plant pathogen; this marks its first report from adult *E. parallelus* beetles. Phytopathogenicity tests confirmed both isolates as pathogenic to rubber, with *F. solani* exhibiting higher virulence. The findings emphasise the need for stringent phytosanitary measures to prevent the spread of this infestation to other regions.

Keywords: Ambrosia beetles, *Fusarium ambrosium*, *Fusarium solani*, *Hevea brasiliensis*, mutualistic fungus.

trees⁶. They differentiate stressed trees from healthy trees from olfactory cues; ethanol emitted by stressed trees is one such olfactory cue. Different ambrosia beetle species are attracted to different concentrations of ethanol⁵.

The beetle-fungus mutualism gives several advantages for the survival of both partners of the association. When beetles cause mechanical injury to the tree by boring tunnels on live rubber trees, fungal partners' spores are disseminated. The fungi, in turn, grow and weaken the wood by secreting several enzymes, through which the beetle can penetrate better into the tree. Fungi present in the beetle can be of two types, namely primary ambrosia fungi and auxiliary ambrosia fungi. The former category of fungi is species-specific and is generally seen in galleries during the peak growth of brood, whereas the latter group of fungi are transitory and non-specific; they are accidentally related to ambrosia beetles⁷. They excavate into trees and create galleries in which a fungal symbiont is inoculated, and this serves as food for the growing progeny. The fungi also