Influence of Temperature on the Vegetative Growth and Pathogenicity of *Beauveria bassiana* on Shot-Hole Borer *Xyleborus fornicatus* (Coleoptera: Scolytidae) in Tea

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Abstract

Beauveria bassiana (Deuteromycotina:Hyphomycetes) is an entomopathogenic fungus known to have wide host range, and have been studying utilization of a locally isolated strain of this fungus to manage Shot-Hole Borer beetle, Xyleborus fornicatus (Coleoptera: Scolytidae) on tea. Shot-Hole Borer beetle classified as the most serious insect pest of tea and it is now distributed in all tea-growing areas of Sri Lanka. Growth of Beauveria bassiana at different temperatures was investigated and it found to be significant effect on vegetative growth (p<0.0001); increase in temperature from 10, 15, 20, 25, 30 and 35°C resulted in a corresponding increase in the growth up to 30 and a decline at temperature 35°C. The fungus was found to be able to optimum growth in between 25- 30°C. Pathogenicity of the fungus also increases with the increasing temperature up to 30° C and then decrease (p<0.0001). The highest mortality rate of the beetle was observed at 25°C and 30°C and the lowest mortality rate (1.1%) was observed at 35°C but 10% mortality rate was observed at 10°C. The optimum range for the performance of this isolate corresponds well to the general temperature fluctuation in tea growing areas of mid elevations (mid country dry and wet zones) which can be attributed to the fact that this strain was first isolated from a location also represented the mid elevation tea growing area. The findings of this study could be further confirmed with field evaluations in locations representing the major tea growing areas.

Keywords: *Beauveria bassiana*, pathogenicity, shot-hole borer, tea, temperature, vegetative growth, *Xyleborus fornicatus*