

Evaluation of Different Inoculation Methods of Entomopathogenic Fungi on Their Endophytism and Pathogenicity against *Chilo partellus* (Swinhoe)

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Abstract : The present study was carried to screen out the effective entomopathogenic fungi (EPF) inoculation method in maize and to evaluate pathogenicity and oviposition-choice in *C. partellus*. Three entomopathogenic fungi (EPF) formulations Pacer® (*Metarhizium anisopliae*), Racer® (*Beauveria bassiana*) and Meailkil® (*Verticillium lecanii*) were evaluated at three concentrations (5000, 10000 and 20000 ppm) for their endophytism in maize and pathogenicity in *C. partellus*. The stock solution of the highest concentration (20,000 ppm) was prepared and next lower from stock solution. In the first experiment, three EPF was inoculated in maize plant by four methods, i.e., leaf-inoculation (LI), whorl-inoculation (WI), shoot-inoculation (SI) and root-inoculation (RI). Leaf-discs and stem-cutting were sampled in all four inoculation methods and placed on fungus growth media in Petri dishes. In the second experiment, pathogenicity, pupal formation, adult emergence, sex ratio, oviposition-choice, and growth index of *C. partellus* were calculated. The leaves and stem of the inoculated plants were given to the counted number of larvae of *C. Partellus*. The mortality of larvae was recorded on daily basis till the pupation. The result shows that maximum percent mortality (86.67%) was recorded at high concentration (20000ppm) of *Beauveria bassiana* by leaf inoculation method. For oviposition choice bioassay, the newly emerged adults were fed on diet (water, honey and yeast in 9:1:1) for 48 hours. One pair of *C. Partellus* were aspirated from the rearing cages and were detained in large test tube plugged with diet soaked cotton. A set of four plants for each treatment were prepared and randomized inside the large oviposition chamber. The test tubes were opened and fitted in the hole made in the wall of oviposition chamber in front of each treatment. The oviposition chamber was placed in a completely dark laboratory to eliminate the effect of light on moth's behavior. The plants were removed from the oviposition chamber after the death of adults. The number of eggs deposited on the plant was counted. The results of 2nd experiment revealed that in all EPF and inoculation methods, the fecundity, egg fertility and growth index of *C. partellus* decreased with the increase in concentration being significantly higher at low concentration (5000ppm) and lower at higher concentration (20000ppm). Application of *B. bassiana* demonstrated that minimum fecundity (126.83), egg fertility (119.52) and growth index (15%) in *C. partellus* followed by *M. anisopliae* with fecundity (135.93), egg fertility (132.29) and growth index (17.50%) while *V. lecanii* show higher values of fecundity (137.37), egg fertility (1135.42) and growth index (20%). Overall leaf inoculation method showed least fecundity (123.89) with egg fertility (115.36) and growth index (14%) followed by whorl, shoot inoculation method and root inoculation method show higher values of fecundity, egg fertility and growth index.

Keywords : *Beauveria bassiana*, *Chilo partellus*, entomopathogenic, *Metarhizium anisopliae*, *Verticillium lecanii*

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