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Research Article

Efficacy of different entomopathogenic fungi against cowpea aphid, *Aphis craccivora* Koch under laboratory and field condition

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ABSTRACT

Six isolates of entomopathogenic fungi *viz., Beauveria bassiana, Fusarium solani, Verticillium lecanii*-1, *Verticillium lecanii*-2, *Verticillium lecanii*-3 (VL-3) and *Paecilomyces fumosoroseus* each at 1 x 10^8 conidia/ml were bioassayed against nymphs and adults by dipping method. The virulent fungal entomopathogen, *Verticilium lecanii*-3 was evaluated under field condition at three different concentrations *viz*., 1x10^7, 1x10^8, 1x10^9 spores/ml. It was found that VL-3 showed higher per cent mortality of 73.99 and 57.73 of adult and nymphs of *Aphis craccivora* , respectively. Under field condition VL-3 @1x10^9 spores/ml showed higher per cent mortality of aphids (71.62) compared to other two lower concentrations. This study indicates the scope of using *V. lecani* for the management of cowpea aphid under field condition.

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INTRODUCTION

Cowpea aphid, *Aphis craccivora* Koch is an important pest of wide range of leguminous crops such as cowpea, groundnut, pigoenpea, chickpea, peas, mungbean and urdbean. Both nymphs and adults infest all the stages of crop growthby sucking cell sap from tender shoots, flower stalks and pods resulting in stunting of plant growth and can cause yield loss of 20-40 per cent (Singh and Allen, 1980) due to transmission of virus diseases such as rosette, mottles, stunt and stripe (Porter *et al*., 1984). It is a difficult pest to control with insecticides because of its polyphagous nature with very short life cycle and high reproduction rates. Fungi have been considered the principal group of aphid pathogens, the most prevalent and widely encountered species belonging to the order Entomopthorales (Zygomycetes). In particular environments (green house/tropical regions) Deutermycetous species also significantly reduce aphid numbers. *V. lecanii* is a well documented, extremely wide spread entomopathogen and spectacular epizootics are observed on its most common hosts *viz*., aphids and scales in tropical and sub tropical region (Hall, 1980). In this context efforts have been made to evaluate efficacy of fungal entomopathogens on cowpea aphids under laboratory and field conditionss.

MATERIALS AND METHODS

Four different fungal pathogens were evaluated against cowpea aphid *viz*., *Beauveria bassiana* (Balsano) Vuillmin, *Fusarium solani* (Marts) Sacc., *Verticillium lacanii* (Zimn.) Viegas and *Paecilomyces fumosoroseus* (wize) Brown and smith. These were obtained from different sources (Table A).

Isolation and purification of entomopathogenic fungi from the infected aphids

The entomopathogenic fungi were isolated from field collected dead insect specimens adopting the procedure of Lomer and Lomer (1995). The specimens were surface sterilized with 0.1 per cent sodium hypochlorite solution and rinsed with sterile distilled water to remove the traces of sodium hypochlorite in order to prevent toxicity to the fungus. Surface sterilized specimens were planted on 20 ml water agar Petriplates and incubated at 25 ± 1°C under 95 per cent RH. The fungi were sub-cultured and purified by hyphal tip method (Tuite, 1969).