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Bioefficacy of liquid formulation of *Verticillium lecanii* against red spider mite (*Tetranychus cinnabarinus*)

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ABSTRACT

Studies on liquid formulation of *Verticillium lecanii* (Zimmermann) Viegas was carried out at Biocontrol Research Laboratory, Department of Agricultural Entomology, Mahatma Phule KrishiVidyapeeth, Rahuri, Maharashtra State, India during 2002-04. The studies revealed that both the liquid formulation of *V. lecanii* irrespective of dosage tested had showed significantly higher efficacy in controlling red spider mite. Formulation A caused 67.66 to 82.78 per cent mortality and its 1.00 per cent concentration showed highest (82.78 %) kill. However, it was at par with its 0.45 to 0.75 per cent concentrations which recorded 73.46 to 81.59 per cent mortality. The reduction in the mite caused by formulation B was 70.08 to 85.23 per cent. The 1 per cent concentration of formulation B showed highest (85.23 %) mortality of the pest and its 0.60 to 0.75 per cent concentrations (79.97 to 82.40 %) were at par with it.

Key words : Bioefficacy, Liquid formulation, Red spider mite, *Tetranychus cinnabarinus, Verticillium lecanii.*

Integrated Pest Management is gaining importance in recent years in view of risk of synthetic chemical insecticides oriented environmental pollution and health hazards. Biological control is an important, effective, ecofriendly and economical component of IMP for almost all important pests of major crops for the development of sustainable cropping systems. Especially there is ample scope for microbial control of pests. Among the pathogens used in microbial control, entomopathogenic fungi have played an important role in the history of insect pathology and microbial control of insects (Sundarababu, 1992). Some of the important entomopathogenic fungi are *Beauveria bassiana*, *Metarhizium anisopliae*, *Nomuraea rileyii*,*Paecilomyces farinosus* and *Verticillium lecanii*. *Verticillium lecanii* (Zimmermann) Viegas (Moniliales : Moniliaceae) is a cosmopolitan fungus found on insects. Considering the ecofriendly benefits of biological control, a strain of *V. lecanii* was isolated from spiraling whitefly, *Aleurodicus dispersus* Maskell (Aleurodidae : Hemipetra) at Biocontrol Research Laboratory of Department of Entomology, M.P.K.V., Rahuri. A liquid formulation of this strain was developed with the help of some adjuvants. Initially two formulations were developed and bioassay of these formulations was proved for effectiveness against some sucking pests including red spider mite. Therefore, present investigations have been undertaken with a view to test its bioefficacy against red spider mite, *Tetranychus cinnabarinus* Boisduval.

MATERIALS AND METHODS

Studies on liquid formulation of *Verticillium lecanii* (Zimmermann) Viegas was carried out at Biocontrol Research Laboratory, Department of Agricultural Entomology, Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India during 2002-04.

Culture of V. lecanii:

The pure fungus culture was available in Biocontrol Research Laboratory of Entomology Department, M.P.K.V., Rahuri. It is the Rahuri *deme* of the fungus isolated from spiralling whitefly, *Aleurodicus dispersus* infesting wild guava plant in 1999.

Media:

The medium used for multiplication and growth of the fungus was Potato dextrose broth medium as suggested by Kadam and Jaichakravarthy (2003). Autoclaved Potato dextrose broth medium adjusted to pH 6.0 was taken in 200 ml capacity conical flasks.

Standardization of concentration of V. lecanii:

The Rahuri *deme* of *V. lecanii* isolated from spiralling whitefly, *Aleurodicus dispersus* was used for the experiment. The fungus was cultured on Potato dextrose broth medium and incubated at 21 ± 1^{0}c for 10 days. The culture was harvested in a UV light sterilized plastic container and ground with duly sterilized hand blender for 3 minutes. Test concentrations were prepared using distilled water as diluent. The stock samples were stored in 250 ml autoclave sterilized conical flasks. The flask neck was plugged with sterilized cotton wool. The whole process was carried out in laminar flow cabinet. Each preparation was