

Research Paper :

## Bio-efficacy of different insecticides and bio-pesticides against grape mealybugs *Maconellicoccus hirsutus* (Green)



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### SUMMARY

An investigation was undertaken at NRC, Grapes, Pune, during 2009-10. The treatment with buprofezin (0.05%) dichlorvos (0.15%) and methomyl (0.08%) appeared to be the best treatments against the second instar nymphs of *Maconellicoccus hirsutus* which gave 100 per cent mortality after 13 days of insecticidal spray. The least effective treatment was *Verticillium lecani* which recorded 36.00 per cent mortality of nymphs after 13 days of spray. The LC<sub>50</sub> value of neem oil 0.32 per cent, *V. lecani* 0.30 per cent, dichlorvos 0.20 per cent, methomyl 0.08 per cent, buprofezin 0.05 per cent, chlorpyrifos 0.04 per cent and thiamethoxam 0.01 per cent were effective against *Maconellicoccus hirsutus* (Green)

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### Key words :

Buprofezin,  
Methomyl,  
Thiamethoxam, *V. lecani* and  
*Maconellicoccus hirsutus*, Bio-  
Pesticides

In recent years, the mealybugs have caused severe damage to grape vines in certain parts of India and elsewhere. There are about sixteen species of mealybugs, which have been reported on grapevine in the world. There are several species of mealybugs reported in grape viz., *M. hirsutus* (Green), *Ferrisia virgata* (Cockrell), *Nipaecoccus viridis* (Newstead), *Dysmicoccus brevipes* (Cockrell), *Planococcoides* sp. and *Planococcus citri* (Risso.) have been found to be infesting grapevine in South India and Punjab. Among these, *M. hirsutus* (Green) has been found more in Maharashtra state. The outbreak of *M. hirsutus* on grapevine in Maharashtra, Karnataka and Tamil Nadu states has been reported by Manjunath (1985) and Mani (1986). According to Azam (1983), the grape mealybug alone caused yield loss ranging from 50 to 100 per cent in the field.

So far, various chemical pesticides have been attempted for the control of mealybugs either singly or in several combinations. However, they kill only those mealybugs that are exposed on the shoots, those sheltering in crevices of the bark escape and quickly rebuild their population and eventually cause serious damage (Manjunath, 1985). Another problem associated with the use of pesticide is residual

toxicity, which is affecting the export potentiality of fruits.

Several new generation insecticides are available in the market and there is a need to evaluate their toxicity to the mealybugs. Biopesticides and botanicals commonly being used near to harvest to avoid the pesticide residues.

Even though many methods are available, chemical control is largely practiced to manage the mealybugs. There is an urgent need to select and recommend the highly effective chemicals for mealybug control, which require the generation of data on the toxicity of different insecticides to mealybugs.

In view of the above, the present research work aims to study the bioassays of insecticides and biopesticides to the grape mealybug, *Maconellicoccus hirsutus* (Green)

### MATERIALS AND METHODS

During the course of present investigation, studies on bioassays of insecticides and biopesticides to the grape mealybug, *Maconellicoccus hirsutus* (Green) were undertaken. Laboratory trials were conducted at Entomology Section, National Research Centre for Grapes, Pune during 2009-10. Mass culturing of host insect is one of the basic needs

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