Internat. J. Agric. Sci. Vol.4 No.1 January, 2008 : 204-206

Bio - efficacy and cumulative effect of *Verticillium lecanii* (Zimmerman) viegas against *Lipaphis erysimi* (Kaltenbach) on mustard

G. M. PARMAR*, M.N. KAPADIA[1] AND B.K. DAVDA
Krishi Vigyan Kendra, Millet Research Station, Junagadh Agricultural University, JAMNAGAR (GUJARAT) INDIA

ABSTRACT

The cumulative effect of *Verticillium lecanii* against *Lipaphis erysimi* (Kalt) on mustard was studied in laboratory during 2005-06. The results showed that there was consistent increase in nymphal mortality in all the four nymphal stages when they were allowed to feed for one day on *V. lecanii* @ 4.0 g/litre treated mustard leaves. The mortality in all nymphal instars ranged from 44.67 to 75.20 per cent after 10 days of spraying. First and second instar nymphs were found more susceptible than the third and fourth instar ntmphs. The cumulative mortality (nymph + adult) ranged from 65.50 to 86.50 per cent with an average of 77.16 per cent.

Key words: *Verticillium lecanii, Lipaphis erysimi,* Cumulative, Mustard.

INTRODUCTION

Mustard aphid, *L. erysimi* (Kalt) is one of the common and most serious pest of mustard crop in Saurastra region of Gujarat State. Sufficient work on chemical control against this pest on mustard has been done (Kumar *et al*., 2001; Muhammad *et al*., 2002 and Gour and Pareek, 2003). Some of these insecticides are highly toxic to pollinating agents, braconid parssitonoid, *Diaeretiella rapae* and aphid predator, *Coccinella septempunctata*. However, work on biocontrol is scanty. Since biocontrol is the major component in IPM, it was felt necessary to evaluate some safer pesticides, *V. lecanii* for its efficacy against mustard aphid. Entomopathogenic fungus, *V. lecanii* is an imperfect fungi belonging to the family Moniliaceae and order Moniliales. It causes epizootics in sucking pests of several crops in different parts of the world (Harper and Huang, 1987 and Sukhova, 1987). For sucking insects, entomopathogenic fungi are the more appropriate microbial agents as they infect the insect cuticle directly through contact and do not require to be ingested for infection to set in. In India, pathogenicity of *V. lecanii* @ 1×10^8 spores per milliliter has been reported to *L. erysimi* on mustard crop (Rana and Singh, 2002).

MATERIALS AND METHODS

In order to study the bio-efficacy and cumulative effect of *V. lecanii* against different stages of *L. erysimi* on mustard, a laboratory experiment was conducted at Department of Entomology, Junagadh Agricultural University, Junagadh during 2005-06. The entomopathogenic fungal preparation (VERTICEL) supplied by Excel Industries, Mumbai was used for present study. Spore counts in laboratory were 1 x 10^8 conidia per gram of *V. lecanii* material.

Fresh mustard leaves collected from the unsprayed crop field were washed properly with clean water and air dried. The spray of *V. lecanii* @ 4.0 g/litre was applied to mustard leaves with the help of atomizer. Care was taken to obtain the uniform coverage of *V. lecanii* solution. Four hour starved first, second, third and fourth instar nymphs of *L. erysimi* were allowed to feed on treated food. The nymphs were kept individually in Petri plates (1.5 × 9.0 cm). Twenty five nymphs in each treatment were tested in each repetition. The nymphs of each group were provided with fresh untreated leaves after 24 hours of feeding on the treated leaves. The nymphal mortality was recorded after 1, 3, 5, 7 and 10 days of treatment. Post treatment mortality was recorded in all the groups up to adult. Cumulative mortality was worked out. The percentage mortality was corrected by using the modified formula given by Henderson and Tilton (1955).

RESULTS AND DISCUSSION

The cumulative effect of *V. lecanii* @ 4.0 g/litre was determined against different instars of mustard aphid, *L. erysimi*. The cumulative mortality was studied by

* Author for correspondence.
[1] Department of Entomology, Junagarh Agricultural University, JUNAGADH, (GUJRAT) INDIA