

# Bio-efficacy of nucleopolyhedrosis virus against red-headed hairy caterpillar, *Amsacta albistriga* (Walker) (Lepidoptera: Arctiidae) on sesamum crop

Y.S. BASANTH, V.T. SANNAVEERAPPANAVAR AND G. NARABENCHI\*

Department of Agricultural Entomology, UAS, GKVK, Bangalore-560 065, Karnataka, India. E-mail: basanth\_gkvk@rediffmail.com

**ABSTRACT:** Field experiments at Kadur, Karnataka, during *Kharif* 2006 indicated that *Amsacta albistriga* NPV at higher doses @  $7.5 \times 10^{11}$  and  $1.5 \times 10^{12}$  POBs / ha was as effective as fenvalerate 0.4 D @ 25 kg / ha against red hairy caterpillar on sesamum.

KEYWORDS: Amsacta albistriga, nucleopolyhedrosis virus, sesamum ecosystem

## INTRODUCTION

The nucleopolyhedrosis virus (NPV) of *Amsacta albistriga* was isolated for the first time from larvae collected from groundnut fields at Pollachi, Coimbatore district by Jacob and Subramaniam (1972). When the NPV was applied in groundnut fields, viral disease epizootics were induced in field populations of *A. albistriga* larvae facilitating long term control of the pest (Rabindra and Balasubramanian, 1980).

Recent interest in the use of NPV against *A*. *albistriga* as a possible microbial agent necessitates establishing whether this virus is efficient in suppressing the pest population in field conditions also.

Few lab studies and some field studies had

been carried out in the past in Tamil Nadu and Karnataka to test the efficacy of AaNPV against the red hairy caterpillar (RHC) (Jayaraj *et al.*, 1976; Chandramohan and Kumaraswami, 1979; Rabindra and Balasubramanian, 1980; Veenakumari *et al.*, 2005; Ganiger, 2006). Therefore, an experiment was conducted on early second and third instars of RHC on sesamum crop in Pura village of Kadur taluk, Chickmagalur district during *Kharif*, 2006.

## **MATERIALS AND METHODS**

AaNPV was tested at three doses, viz., 2.5 x  $10^{11}$ , 7.5 x  $10^{11}$  and 1.5 x  $10^{12}$  POBs / ha with fenvalerate 0.4D (25 kg/ha) as the stan lard check. The experiment was laid out in complete andomized block design (RCBD) with four replications. Each experimental plot measured 3 x 3 m. The sesamun crop (var. TMV-3) was grown as per the

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Treatments	Dose / ha	Number of larvae/m <sup>2</sup>		
		Pre-treatment count	6 <sup>th</sup> DAS**	12 <sup>th</sup> DAS
AaNPV	2.5 x 10 <sup>11</sup> POBs	6.50(2.61) <sup>a</sup>	2.80(1.80) <sup>b</sup>	1.05(1.23) <sup>b</sup>
AaNPV	7.5 x 10 <sup>11</sup> POBs	7.40(2.79) <sup>a</sup>	2.40(1.70) <sup>b</sup>	0.55(1.02) <sup>bc</sup>
AaNPV	1.5 x 10 <sup>12</sup> POBs	6.45(2.61)°	1.35(1.34) <sup>b</sup>	0.20(0.82) <sup>bc</sup>
Fenvalerate 0.4 D	25 kg	7.00(2.70) <sup>a</sup>	0.20(0.82) <sup>b</sup>	0.10(0.76) <sup>c</sup>
Untreated cosntrol	-	7.60(2.80)ª	7.45(2.77) <sup>a</sup>	6.65(2.63) <sup>a</sup>

Table 1. Bioefficacy of AaNPV against early larval instars of A. albistriga

\*Figures in parentheses are "x + 0.5 transformed values; \*\*DAS – Day after spraying. Means followed by the same letters in each column are not significantly different by DMRT.

recommended practices. Polyethylene sheet barriers of one meter height were erected allround the individual plots to prevent the migration of larvae from one plot to another. The NPV sprays were given using a high volume knapsack sprayer. Jaggery (5gm / litre) and cloth whitener blue (Robin<sup>®</sup> blue) (1ml / litre) were added to the spray fluid as phagostimulant and UV protectant, respectively. The pre-treatment population of the pest was recorded before the spray. The post-treatment observations were made on sixth and twelfth days after application of AaNPV. The population of the pest was recorded as number of larvae per square metre at five spots in each experimental plot. The data were subjected to square root ("x + 0.5) transformation and the treatment means were compared by Duncan's multiple range test (DMRT).

## **RESULTS AND DISCUSSION**

The effectiveness of spray application of AaNPV against early stages of pest was evaluated in a field trial with fenvelarate dust as the standard check. Though fenvelarate dust suppressed RHC in a very short time, NPV was equally effective at higher doses tested ( $7.5 \times 10^{11}$  and  $1.5 \times 10^{12}$  POBs / ha) twelve days after application (Table 1). At lower dose ( $2.5 \times 10^{11}$  POBs / ha) also, the level of control achieved was statistically comparable with the larval suppression at higher doses, but inferior to chemical suppression. Similar experiments conducted in field conditions to find the bioefficacy of AaNPV by

Jayaraj *et al.*, (1977) indicated that AaNPV at a dose of 2 x  $10^5$  POBs per litre was as effective as Biotrol (4kg / hac), a Bt product.

The findings of the present studies are in conformity with those of Veenakumari *et al.* (2005) and Ganiger (2006) who also reported that spraying of AaNPV in the range of 6.5 x  $10^{11}$  to 7.5 x  $10^{12}$  POBs per hectare was effective against early stages of *A. albistriga* on groundnut.

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