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Field Efficacy of Granulosis Virus and Insecticides In The Control of sugarcane Shoot Borer *Chilo infuscatellus* Snellen

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The Sugarcane shoot borer, *Chilo infuscatellus* Snell. a key pest of sugarcane enjoys a wide distribution in the sugarcane growing areas of India (Avasthy and Tiwari, 1986) and accounts for significant loss in cane yield and sugar recovery (Patil and Hapase, 1981). A granulosis virus (GV) reported from *C. infuscatellus* (Easwaramoorthy and David, 1979) and was found to be highly pathogenic to *C. infuscatellus* in laboratory studies (Easwaramoorthy, 1984). Application of GV at 10^9 and 10^7 inclusion boidies (IB)/ml and carbofuran at 1 and 2 Kg a.i./ha reduced the shoot borer incidence (Easwaramoorthy and Santhalakshmi, 1988). Present studies were carried out to study the efficacy of GV in comparaison and in alternation with insecticides.

Mass multiplication and purification of the GV was done as described by Easwaramoorthy and Santhalakshmi (1988). An experiment was laid out with the popular sugarcane variety Co 8021 in a farmers' field at Sathiamangalam, Periyar district, Tamil Nadu, during 1990-91, in a randomised block design with eight treatments (Table 1) replicated thrice. The plot size was 80 m^2. The virus was applied twice, on 35 and 50 days after planting (DAP) and compared with whorl application of Padan 4G, foliar application of endosulfan, combination of virus and insecticides and an untreated check. Virus was applied at 10^7 IBs/ml with 0.05 percent teepol in all the treatments and the spray was directed to the stem and leaf whorls. Counts were made five times at forthnightly intervals from 35th day by recording total

Table 1. Efficacy of GV and insecticides in the control of shoot borer on CO 8021 sugarcane*

Treatments	Mean % dead hearts	Plot yield (kg)	Cane yield (t/ha)	Yield increase over control (t/ha)
GV 10^7 IB/ml 35 and 50 DAP	5.4^a	1094.7^a	136.8	12.9
Endosulfan 350 g a.i./ha 35 and 50 DAP	5.5^a	1088.0^a	136.0	12.1
Padan 4G 1 Kg a.i./ha 35 DAP	7.7^b	1053.7^b	131.7	7.8
GV 10^7 IB/ml 35 DAP + Endosulfan 350g a.i./ha 50 DAP	4.5^a	1090.7^a	136.3	12.4
GV 10^7 IB/ml 35 DAP + Padan 4G 1 Kg a.i./ha 50 DAP	5.0^a	1086.0^a	135.7	11.8
Endosulfan 350 g a.i./ha 35 DAP + GV 10^7 IB/ml 50 DAP	4.6^a	1086.7^a	135.8	11.9
Padan 4G 1 Kg a.i./ha 35 DAP + GV 10^7 IB/ml 50 DAP	5.2^a	1092.0^a	136.5	12.6
Untreated Check	35.5^c	991.3^c	123.9	

Figures in parentheses are arc sine $\sqrt{percentage}$ transformation.

* Means followed by same letters are not different significantly (P=0.05) by L.S.D.

number of shoots and deadhearts in each plot. The data over the periods were pooled and analysed. At harvest cane yield was recorded and increase over control was worked out. The data were subjected to analysis of variance and the means compared with L.S.D.

The results showed that all the treatments significantly reduced the damage by the shoot borer and increased the cane yield (Table 1). The treatments except Padan 4G 1 kg a.i./ha 35 DAP were on par with each other in reducing the borer infestation and increasing the yield. Earlier, Easwaramoorthy (1984) reported that the application of GV and carbofuran significantly increased the cane yield. Easwaramoorthy and Santhalakshmi (1988) observed that though the different treatments gave significant increasse in yield when compared to control, it was not so between the treatments which conforms with the result of the present study. Since application of two rounds of virus alone was as effective as the virus insecticide combination this may be recommended in order to aviod the use of chemical insecticides.

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REFERENCE

AVASTHY,P.N. AND TIWARI,N.K. 1986. The shoot borer, *Chilo infuscatellus* Snellen. In "Sugarcane entomology in India" (H.David, S.Easwaramoorthy, R.Jayanthi, eds.), Sugar cane Breeding Institute, Coimbatore. p. 69- 92.

EASWARAMOORTHY,S. 1984. Studies on the granulosis virus of sugarcane shoot borer, *Chilo infuscatelluss* Snellen and internode borer, *Chilo sacchariphagus indicus* (Kapur). Ph.D. thesis, Tamil Nadu Agricultural University, Coimbatore.

EASWARAMOORTHY,S. and DAVID,H. 1979. A granulosis virus of sugarcane shoot borer, *Chilo infuscatellus* Snellen (Lepidoptera: Cerambidae). *Curr. Sci.*, **48**, 685-686

EASWARAMOORTHY,S. and SANTHALAKSHMI,G. 1988. Efficacy of granulosis virus in the control of shoot borer, *Chilo infuscatellus* Snell. *J. Biol. Control,* **2**, 26-28.

PATIL,A.S. and HAPASE,D.G. 1981. Research on sugarcane borers in Maharashtra. *Proc. Natl. Sym. Stalk borer,* Karnal. p. 165-175.