

SCIENTIFIC NOTE

Efficacy of Some New Organocarbamate and Chlorpyrifos in Controlling White Grubs of Sugarcane

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Received on 10.01.2006

Key words : Sugarcane, white grubs, chemical control.

An experiments was conducted in 2004-2005 cropping season with chemical insecticides namely Corosulfan 6G, Edfuran 5G, Pillar 5G, Krishan 5G, Amcofuran 5G, Q-furan 5G, Adfuran 5G, Nokoban 15G and Pyriban 15G were used to evaluate their effectiveness against white grubs of sugarcane with a standard Curaterr 5G. Soil applications of organocarbamates @ 2.0 kg ai ha⁻¹ and chlorpyrifos @ 2.25 kg ai ha⁻¹ the cane rows followed by irrigation during March and April in November planted fields controlled the white grubs effectively. All the insecticides showed statistically significant control but there was no difference among the insecticides and achieved the desired level (80%). Yield increase over control ranged from 15.95-36.05% in Sultanpur farm, Setabganj Sugar Mills Ltd., Dinajpur.

Sugarcane white grubs (*Holotrichia* sp., *Brahmina* sp., *Anomala* sp. and *Adoretus* sp.) infestation is a burning problem in Bangladesh sugarcane growing areas. Thakurgaon and Dinajpur districts are the most affected area. White grubs are serious pests of sugarcane and cause severe damage resulting loss in yield- from its attack is mainly confined to the non-flooded sandy/ sandy loam soil of northern as well as southern cane growing areas Carew & Co., Kustia Sugar Mills. Seventeen species of white grubs have been identified in sugarcane field from those areas causing damage every year (Anon., 1981; 1984; 1991). Alam, *et al.* (1982) reported that heavy infestation may cause 50-60% damages, maximum infestation 100% and yield loss 34.43 - 100.00% even total loss of canes. The grubs feed on the roots and under ground portion of stalks rendering the plants looking pale and sickly, ultimately the affected canes in clumps dries up which can easily be pulled out. The canes from affected clumps become unfit for crushing and as seed materials. The yield loss due to white grubs was found to be 23.07 to 38.17 t ha⁻¹ Miah *et al.* (1983). Miah *et al.* (1986) reported that among different chemicals Furadan (Carbofuran) and Ekalux (quinalfos) at 2.00 kg ai ha⁻¹ effectively controlled white grubs. The carbamate insecticides have both properties of killing insects by contact as well as systemic action. Therefore, the present study was aimed to suppress the grubs population resulting increased cane yield.

The experiment was set up at Sultanpur farm under Setabganj Sugar Mills Ltd., Dinajpur during the cropping season 2004-2005. The experiment was laid out in Randomized Complete Block Design (RCBD) with three replications. The plot size was 6m x 6m. Block to block distance was 2m and plot to plot distance was 1m. The vareity Isd 31 was used as planting material and planting was done through conventional sett placement end to end in the trenches in November, 2003. The application of insecticides

were done twice (March + April) in peak emergence of adults (Miah and Shahjahan, 1983). Furrows were made on both sides of cane rows. Insecticides were then applied at and between the furrows and covered with soils with the help of spade followed by irrigation. Before irrigation, soil ridges surrounding individual plots were made to protect on rush of water from one plot to another. The fertilizer application, weeding, mulching and earthing up were done as normal cultural practices. Considering the above observation-application of insecticides were done twice, one in March and other in April followed by irrigation.

Data on white grub population were taken from 5 randomly selected clumps per plot. An area of 60 cm x 60 cm was dug with a depth of 40 cm with spade. Larval population was counted in roots and in soils of these pits. The yield of canes per plot was recorded at harvest.

The Table 1 shows that white grubs population was reduced to a significant level giving the efficacy of different insecticides ranging from 81.00 - 97.43. The pooled efficacy percentage was 67.60- 82.60%. All the treatments such as Corosulfan 6G, Edfuran 5G, Pillar 5G, Krishan 5G, Amcofuran 5G, Q-furan 5G, Adfuran 5G, Nokoban 15G and Pyriban 15G reduced the white grubs population to a significant level over (80%) of efficacy at which it could be recommended for commercial use. Mean percentage efficacy of Curaterr 5G (standard chemical) was 85.71%.

Yield increase in treatments might be due to profused root development through increased mitotic index (Miah and Akhter, 1985) that enhanced nutrient uptake and subsequently increased the yield. White grub population decreased upto the desired level of efficacy. All the treatments were statistically significant in reducing the pest control. For cane yield, the treatment Adfuran 5G showed maximum yield of 36.05 MTH followed by Priban 15G 55.09 MTH. Therefore, Corosulfan 6G, Edfuran 5G, Pillar 5G, Krishan 5G, Amcofuran 5G, Q-furan 5G, Adfuran 5G, Nokoban 15G and Pyriban 15G might be recommended for the effective control of sugarcane white grubs.

Table 1. Efficacy of Carbofurans and Chlorpyrifos insecticides to control white grubs. Sultanpur farms, STSM, Dinajpur, 2005.

Treatments	white grub population/ 5 clumps		Yield (MTH) of cane	% increase over control
	Mean	% Efficacy		
Control	7.00 a	-	54.10 e*	-
Corosulfan 6G @ 2.0 kg ai ha ⁻¹	1.33 b	81.00	69.90 abc	27.73
Edfuran 5G @ 2.0 kg ai ha ⁻¹	1.33 b	81.00	66.40 cd	22.74
Pillar 5G @ 2.0 kg ai ha ⁻¹	0.33 b	95.29	67.73 bcd	25.20
Krishan 5G @ 2.0 kg ai ha ⁻¹	1.33 b	81.00	67.16 bcd	24.14
Amcofuran 5G @ 2.0 kg ai ha ⁻¹	0.67 b	97.43	70.76 abc	30.79
Q-furan 5G @ 2.0 kg ai ha ⁻¹	1.33 b	81.00	70.03 abc	29.45
Adfuran 5G @ 2.0 kg ai ha ⁻¹	1.00 b	85.71	73.60 a	36.05
Pyriban 15 G @ 2.25kg ai ha ⁻¹	0.33 b	95.29	72.26 ab	33.57
Nokoban 15G @ 2.25 kg ai ha ⁻¹	0.67 b	90.43	62.73 cd	15.95
Curaterr 5G @ 2.0 kg ai ha ⁻¹	1.00 b	85.71	64.03 d	18.36
LSD (5%)	1.416		5.726	

* Figures accompanied by the same letter(s) are not significantly different at 5% level by DMRT

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