

COMMUNICATION

Control of the sugarcane borers *Chilo infuscatellus* and *Tryporyza nivella* by Bactospeine, a microbial pesticide

RINGKASAN

Chilo infuscatellus dan *Tryporyza nivella* adalah dua jenis ulat pengorek yang penting di Pakistan, dan kebanyakannya sedang dikawal dengan bahan-bahan kimia. Pengawalan mikrobial belum pernah dicuba lagi di Pakistan. Oleh itu, Bactospeine formulasi pepasir dan 'wettable powder' telah diuji untuk pengawalan ulat-ulat pengorek tebu di Mardan. Formulasi pepasir telah memberikan pengawalan yang lebih tinggi dari 'wettable power'.

SUMMARY

Chilo infuscatellus and *Tryporyza nivella* are the important sugarcane borers of Pakistan and are being controlled mostly by chemicals. Microbial control has not been tried in Pakistan. Therefore, granules and wettable powder of Bactospeine were tested against sugarcane borers at Mardan. Its granular formulation gave higher control than wettable powder.

INTRODUCTION

Chilo infuscatellus Snell. and *Tryporyza nivella* F. the important sugarcane borers of Pakistan (Qayyum, 1975; Carl, 1962) are mostly controlled by chemical pesticides. Their microbial control has been investigated elsewhere but not in Pakistan. In India, promising results had been obtained against *Bissetia steniellus* Hamps. by microbial pesticides (Atwal and Paul, 1964; Atwal *et al.* 1966; Atwal and Sohi, 1969). Long *et al.* (1961) and Hensley *et al.* (1961) reported *Bacillus thuringiensis* to be less effective than endrin while Charpentier *et al.* (1973) found endotoxin of *Bacillus thuringiensis* HD-1 to be promising against sugarcane borers in the USA.

MATERIAL AND METHODS

Bactospeine, a microbial pesticide from *Bacillus thuringiensis* (Biochem Products Ltd., Belgium) formulated as granules and wettable powder (WP) with potency (expressed in international units IU) of 500 and 16.00 IU/mg respectively, was tested in the sugarcane field plots each measuring 1/6th acre with three replications at Mardan during 1977. Granules were applied by hand in the whorl of each plant at 10 kg/acre whereas 0.25 kg WP was mixed with 50 gallons of water for an acre and sprayed using an ordinary knapsack sprayer. Two treatments each of granules and WP were applied first during early July (32.4 ± 5.90°C, 37-63% relative humidity) and second a month later (31.9 ± 4.5°C, 50-76% relative humidity). As Bactospeine is known to be

more effective against young larvae (Irshad, 1978, it was applied at a time when maximum number of young larvae were present in the field. The overall incidence of *C. infuscatellus* and *T. nivella* was 18 and 2% respectively, before pesticidal treatment in the experimental plots.

Incidence of borers was determined by randomly selecting and examining 15 canes/plot of external signs of borer injury (bored stems for *C. infuscatellus* and bunchy top for *T. nivella*) at monthly intervals. Joint infestation was determined at the time of harvest (November) by counting total and bored joints in 15 canes per plot. The yield of cane was obtained by counting the stalks and multiplying by average weight per millable stalk as determined by 100 randomly selected stalks.

RESULTS AND DISCUSSION

The populations of *Chilo infuscatellus* and *Tryporyza nivella* were at maximum in November when the crop was ready for harvest. Granular formulation of Bactospeine was more effective than WP. Control obtained by both the formulations was significant statistically (Table 1). Control obtained on the basis of joint infestation was significant (S.E. 1.0). Mean joint infestation was 7, 10 and 17% in the plots treated with granules, WP and control respectively. The yield was significantly higher in granular treated plots (16.6 tons/acre than WP (13.9) and Control (11.6) (S.E. 0.66). It may be concluded that Bactospeine gave

TABLE 1

Effect of Bactospeine granules and wettable powder on sugarcane borers in variety Co.S. 245 at Mardan during July-November, 1977 (Temp. $27.5 \pm 6.3^\circ\text{C}$, humidity 52.3%)

Species	Formulation	% Attack during				
		Aug.	Sept.	Oct.	Nov.	x
* <i>C. infuscatellus</i>	Granules	25	34	41	43	35.75 ^a
	Wettable powder	30	42	49	51	43.0 ^b
	Control	40	58	66	68	58.0 ^c
** <i>T. nivella</i>	Granules	3	5	7	8	5.75 ^a
	Wettable powder	4	8	12	10	8.25 ^b
	Control	11	15	16	17	14.0 ^c

S.E.* = 6.0

S.E.** = 1.31

Means followed by the different letters (a, b, c) indicate that these are statistically significantly different.

satisfactory control of sugarcane borers under the conditions tested.

ACKNOWLEDGEMENT

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Figs. 2, 3, and 5 referred to in the text of "The Use of A Lasser Light-Scattering Technique in Fluvial Sediment Measurement" (p. 12 – 19) by M.Y. Sulaiman, M. Moksini, S. Ibrahim, S.K. Leong should be:

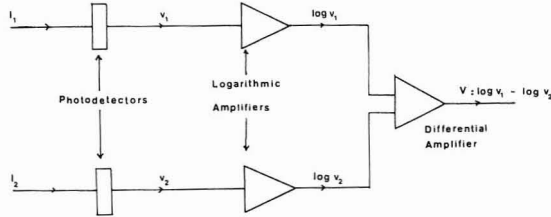


Fig. 2

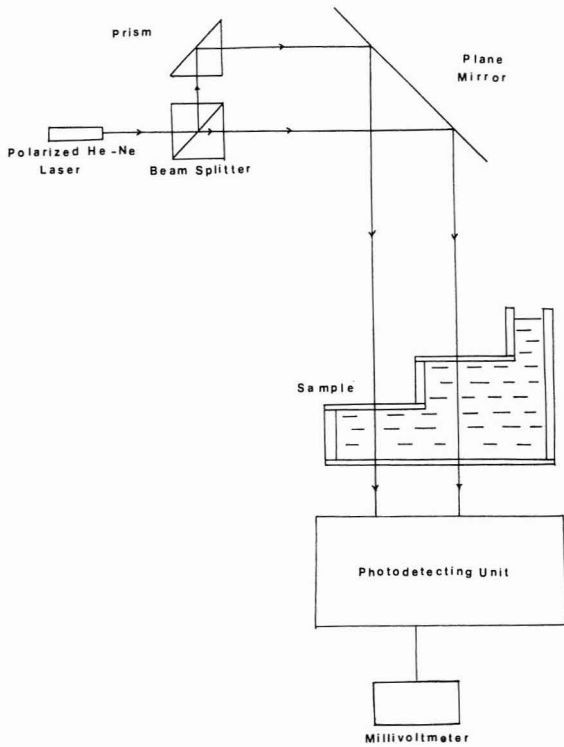


Fig. 3

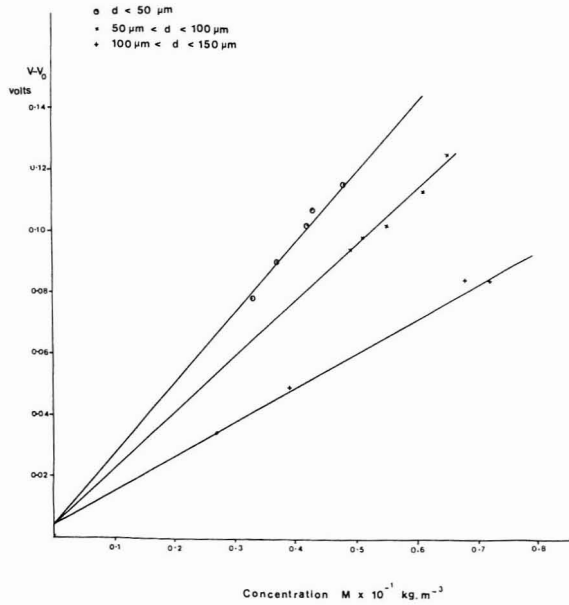


Fig. 5