GAU Res. J. 1996. 22 (1) : 142-145

Response of *Spodoptera litura* Fab. Larvae to A Phagostimulant*

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Feeding in insects on plants is elicited by carbohydrates, amino acids, sterols, vitamins as well as by specific phagostimulants (Schoonhoven, 1972). There are many reports on chemicals that control the feeding behaviour in phytophagous insects (Thorsteinson, 1960 and Jacobson, 1966).

In the present work on attempt has been made to study the respeonse of *Spodoptera litura* Fab. larvae to a commercial liquid feeding stimulant, 'Entice' (Specially prepared from cotton flour, diasaccharide, polysaccharide, vegetable lipid oil, alcohol and Alkoxylate by 33.965%).

Two separate trials were made in the laboratory to know (i) the response of *S. litura* to phagostimulant alone and in combination with insecticide and (ii) the influence of the phagostimulant on the larvae feeding behaviour.

In the first experiment, four treatments viz., cypermethrin, cypermethrin + Entice, Entice alone and intreated (check) were evaluated in Completely Randomized Block Design with 5 replications. Cypermethrin

TABLE 1

Response of *Spodopetra litura* larvae to Entice treatments.

Sr. No.	Treatments	Dose (Per lit. water)	Mean + % larvae responded	
1.	Cypermethrin	0.5 ml.	20.20*	(26.66)a
2.	Cypermethrin + Entice	0.5 ml + 3 ml..	21.90	(27.90)a
3.	Entice only	3 ml.	28.20	(32.05)b
4.	Untreated (Check)	—	25.80	(30..51)b
	S. Em. ±		0.73	
	C. D. at 5%		2.18	
	C. V. (%)		5.56	

*Figures in parenthesis are Aresin transformed values.
+ Mean of 5 replicatlons.
Means followed by the same letter in each column are not statistically different.

*A part of Ph.D. thesis submitted to UAS Dharwad by first auther under the guidance of second.
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TABLE 2

Influence of Entice (Phagostimulant) on larval and excretal weight of *Spodoptera litura*.

Sr. No.	Treatment	Mean + Larval weight (mg)				Mean + excretal weight (mg)		
		BT	3 DAT	7 DAT	10 DAT	3 DAT	7 DAT	10 DAT
1.	Treated	61.25	176.69	525.44	1120.81	109.25	328.75	1041.07
2.	Check	52.94	141.75	409.50	894.13	86.81	244.13	906.13
	Difference	8.31	34.94	115.94	226.68	22.44	84.62	134.94
	'T' test	N.S.	N.S.	N.S.	Sig.	N.S.	N.S.	N.S.

+ Mean of 16 observations.
BT = Before treatment.
DAT = Days after treatment.

NS = Not significant.
Sig. = Significant.

10 EC and Entice were tried at 0.5 Ml. and 3 Ml/lit. water, respectively. Fresh cotton leaves receiving various treatments were kept separately in each corner of iron tray (51 cm X 51 cm X 5 cm). Fifty laboratory reared third instar larvae were released in the centre of the tray and prevented from escape by a suitable cover. Observations on the number of larvae responded to each treatment were recorded after 3 hr. The experiment was repeated 4 times. The data obtained were analysed after Arcsin transformation.

The larval feeding behaviour as influenced by phagostimulant was assessed in terms of larval and excretal weight. Sixteen larvae (5 days old) after recording the weight were released individually on cotton leaf treated with 5% Entice solution in a petriplate (20 cm dia. X 4 cm ht). Fresh leaves treated with Entice were provided everyday. Larval and excretal weight of individual larva were recorded 3, 7 and 10 days after treatment. Similar observations were also made for another set of larvae by providing untreated cotton leaves. Data were subjected to 'T' test analysis.

Results (Table 1) revealed that minimum number of larvae responded to the leaves treated with insecticide alone (20.2%) followed by combination of insecticide and Entice (21.9%). Statistically both the treatments were equally effective in stimulating the larvae. In contrast significantly more number of larvae responded to leaves treated with entice alone (28.2%) followed by untreated check (25.8%).

Non-significant difference in the larvae response to insecticide alone and in combination with Entice suggests that positive response evoked by the phagostimulant was perhaps nullified by the repellent or antifeedant action of insecticide. This explanation is supported by the findings of Aerts (1978), Tan (1981) and Nagia *et al.,* (1989).

Observations on larval and excreted weight (Table 2) indicate that larval growth was not impaired upto 7 days. However, the larvae gained significantly higher weight when fed on Entice treated leaves upto 10 days. These findings revealed that Entice induced phagostimulatory effect on treated surface. The report of Navon *et al.,* (1987) is in accordance with the present findings who reported that treatments differed significantly from control when neonate larvae of *Spodoptera littoralis* Boisd. were fed on FEST (Feeding Stimulant mixtures) treated leaves for 10 days. Further, they noted that experimental period of less than 10 days did not result in significantly higher feeding rates than control. Increased body weight is a reflection of enhanced feeding due to phagostimulatory action of the test product. Interestingly, though the weight of excreta was more in the treated, statistical differences in excretal weight were never noticed between treated and untreated at all intervals of study. It is possible that differential digestion efficiency after 7 days among the treatments might be an explanation for the observed phenomenon. In contrast, Meisner *et al.,* (1970) observed that the number of fecal pellets in case of *S. littoralis* larvae fed on thin styropor discs treated with host plants extracts was in fair agreement with rate of surface consumed.

(Received on 6th July, 1995)

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