

Effect of Diflubenzuron Against Tobacco Caterpillar, *Spodoptera litura* F. on Tobacco, *Nicotiana tabacum* L.*

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A field experiment was conducted in Tamil Nadu, India to find out the efficacy of diflubenzuron (1-(4-Chlorophenyl)-3-(2,6-difluorobenzoyl)urea) against tobacco caterpillar, *Spodoptera litura* F. on tobacco, *Nicotiana tabacum* L. and the efficacy was compared with that of chlorpyrifos. Chlorpyrifos caused quick mortality while mortality due to diflubenzuron treatment was comparable after 144 hrs of treatment. Combination of diflubenzuron with chlorpyrifos had no significant additive effect than chlorpyrifos alone.

Tobacco caterpillar, *Spodoptera litura* F. is one of the most important polyphagous pests causing severe damage to various crops by defoliation. In recent years, severe outbreaks of this pest in Tamil Nadu, India caused extensive damage to many economically important crops including cotton, tobacco and groundnut and this pest had become very difficult to control by the common insecticides. Diflubenzuron (1-(4-chlorophenyl)-3-(2,6-difluorobenzoyl) urea) a novel insecticide which acts by interfering with chitin deposition is known to give better control of several defoliating insects like cabbage butterfly, *Pieris brassicae* L. (Post and Vincent, 1973), gypsy moth, *Lymantria dispar* L. (Granett and Durbar, 1975), Egyptian cotton leaf worm, *Spodoptera littoralis* B. (Ascher and Nemny, 1976) and Spruce bud worm, *Choristoneura fumiferana* C. (Granett and Retnakaran, 1977). Re-

sults of experiment conducted to find the efficacy of diflubenzuron in field scale against *S. litura* on tobacco, *Nicotiana tabacum* L. are presented below:

MATERIAL AND METHODS

The field experiment was conducted in Athigoundenpudur village, Sathiyamangalam taluk, Coimbatore district, Tamil Nadu, India, where there was severe outbreak of *S. litura* on tobacco during February, 1977. The variety of tobacco was "Vazaikkappal" and the age of the crop was 100 days old after transplanting. The experiment was laid out in a randomized block design and with the treatments as given in Table which were replicated thrice. The plot size was 3.6 x 1.5 m with a spacing of 60 cm in the row and 75 cm between the rows with buffer rows between the plots. The chemicals were applied to run-off

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stage with a knapsack sprayer. For assessing the efficacy of the chemicals, population of *S. litura* was recorded once previous to treatment and then 72 and 144 hours after treatment from the entire plot.

RESULTS AND DISCUSSION

In 3 days after treatment chlorpyrifos gives upto 97.14% reduction in the larval population as against a maximum

TABLE. Field efficacy of Diflubenzuron and Chlorpyrifos on *S. litura* in tobacco

(Figures in parentheses are arcsin / percentage transformed values)

Treatments	Percentage reduction of larval population after treatment of		
	72 hrs.	144 hrs.	Mean
Diflubenzuron 0.01%	26.33 (30.85)	63.95 (53.18)	45.15 (42.01)
Diflubenzuron 0.02%	39.19 (38.77)	78.81 (62.73)	59.00 (50.75)
Chlorpyrifos 0.02%	78.25 (62.36)	95.57 (78.60)	87.11 (70.48)
Chlorpyrifos 0.06%	97.44 (81.08)	97.44 (81.08)	97.44 (81.08)
Diflubenzuron 0.01% + Chlorpyrifos 0.02%	79.63 (63.31)	96.71 (79.69)	88.18 (71.50)
Diflubenzuron 0.01% + Chlorpyrifos 0.06%	97.95 (82.10)	97.95 (82.10)	97.95 (82.10)
Diflubenzuron 0.02% + Chlorpyrifos 0.02%	83.01 (65.78)	97.94 (81.93)	90.48 (73.85)
Diflubenzuron 0.02% + Chlorpyrifos 0.06%	98.36 (82.91)	98.36 (82.91)	98.36 (82.91)
Control	0.00 (1.81)	0.00 (1.81)	0.00 (1.81)

C.D. (P = 0.05)

Between treatments	0.01	2.40
Between periods	0.01	1.15
Treatments x Periods	0.01	3.46

of 39.19% given by diflubenzuron (Table). In 6 days however, diflubenzuron registers a suppression upto 78.81%. This delayed impact of diflubenzuron on the larval suppression is evidently due to the slow action of the material which affects the moulting process of the larva. There is no indication of any advantage in mixing the insect growth regulator with the insecticide.

These findings agree with those of Rizk and Radwan (1975) who reported 100% kill of larvae of Egyptian cotton leaf worm, *S. littoralis* in 5 days after treatment with diflubenzuron which was equal to phospholan treatment. Donaubauer (1979) also reported that larval mortality of *Lymantria dispar* L. reached a peak within 6-7 days.

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