

PERFORMANCE OF DIFFERENT INSECTICIDES FOR THE CONTROL OF CUT WORM (*Agrotis ipsilon* (Hfn). (NOCTUIDAE: LEPIDOTERA)

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ABSTRACT: Field experiment was conducted during the year 2007 and 2008 at the Tobacco Research Station of Pakistan Tobacco Board Khyber pakhtunkhwa Mardan., to study the effectiveness of four different insecticides for the control of cut worm (*Agrotis ipsilon*.Hfn). Insecticides namely Larvin, Hostathion, Acephate and Provideo (Imidacloprid) were tested for the control of cutworm under natural field condition. Experiment was carried out in RCB design, with three replications. All the approved agronomic practices were followed. All the insecticides were applied in proper dose and proper time as recommended. All the insecticides significantly reduced the cutworm damage. However, Provideo (Imidacloprid and Lavrin) gave the best results.

Key words: Cut worm, Tobacco, Insecticides, damage,

INTRODUCTION

Tobacco occupies comparatively a small area (0.27%) of the total irrigated land in Pakistan; however it is of significance economic as a source of revenue, employment and foreign exchange earnings [15 & 2] and about 50,000 people are engaged in the production and marketing of this crop. Tobacco is major cash crop of the Khyber pukhtoonkhwa, Province of Pakistan. In spite of the fact that tobacco plant contains 1-5 percent nicotine, yet over a dozen of insect pest and diseases attack the tobacco crop at all stages starting from the time of nursery sowing right up to the stage of final consumption by abundant insects [1], which include cutworm, budworm and aphids [10]. These pest insects are dangerous on tobacco [6]. The extent of damage by these pest insects to leaf quality of tobacco crop varies from place to place and also dependent upon the environmental conditions [7 & 6].

Cutworm is a polyphagous pest [18] causes serious and sever damage to the crop from the beginning till harvest. Three species *Agrotis ipsolon* (Hfn), *Agrotis segetam* (Schiff) and *Agrotis Flametra* (Schiff) recorded to cause extensive damage to tobacco crop. Larvae of cutworm remains in the soil during daytime and feed at night. Larvae are of grayish colour and having small black spots on both the sides. These larvae are 3-4 cm long and 1/3 cm thick. The larvae eat less but cause damage more to main stalk and leaves. The damaged plants are usually replaced by seedling but this is possible only upto a certain period. When the weather gets warmer, new seedling is mostly difficult to establish. Leaf feeding and cutting above the soil line are less damaging, than cutting at the soil surface. These larvae and caterpillars, feed at night on the stems and roots of young plants, often cutting them off near the surface of the ground. They hide in soil by day; an average cutworm feeding on corn consumes 65 sq. in (410 sq.cm) of foliage during its development. Different types of insecticides are being used to manage *Agrotis Ipsilon* on FCV tobacco throughout the world. Hunag [5] tried to control cut worm by drenching insecticides solution round the stem and root base of tobacco in spring. Similarly, [3, 11 and 14] have tested various insecticides for cut worm control on tobacco.

Keeping in view the importance of damage caused by cut worm in tobacco crop, the present study was initiated with the aim to compare different insecticides for the control of cutworm for increasing tobacco production in the region.

MATERIALS AND METHODS

A field experiment on efficacy of four different insecticides for the control of cutworm (*Agrotis ipsilon* Hfn) was conducted at the Tobacco Research Station of Pakistan Tobacco Board (Mardan) during the year 2007-2008. The experiment was laid out in randomized complete blocked design replicated three times. Insecticides i.e. larvin, hostathion, acephate and provideo (Imidacloprid) were applied in natural field conditions. Tobacco cultivar Spt. G.28 was transplanted with plant-to-plant and row-to-row distance of 2 and 3 feet, respectively. Insecticides were applied just after observing the attack of cutworm at an interval of 10 days. Observations regarding damaged or killed plants by the pest in each treatment were thoroughly recorded. Final data in each plot was recorded during the fourth week after application of insecticides. All the agronomical practices were undertaken uniform to all experimental units as required. The insecticides were sprayed, for determining their relative effectiveness for cutworm control. Details of the insecticides are given in (table-1)

Table -1. : Various insecticides with their trade name, group and recommended dose.

S.no	Trade name	Group	Dose/Hat
1.	Larvin	Thiodicarb	250gram
2	Hostathion	Phosphatic	1lit
3	Acephate	Methomyl (organophosphate)	250gram
4	Provideo	(Imidacloprid)	500gram
5	Control	-	

STATISTICAL ANALYSIS

The data were statistically analyzed using the procedure appropriate for randomized complete block (RCB) design. Means were compared using least significant difference

(LSD) test at 5% level of probability when F values were significant [8].

RESULTS AND DISCUSSION

The data regarding plants damaged by cut worm are reported in Fig. 1 and Fig. 2 during 2007 and 2008, respectively. Statistical analysis of the data showed that application of insecticides during both the years significantly reduced the cutworm attack as compared with untreated plots (Control). Among the insecticides, there were no significant differences observed, which means that all insecticides evenly control the attack of cut worm. However, the provide and larvin proved to be the best with minimum cutworm attack of 1.11 and 1.48%, respectively during 2007. Hostathion and acephate also showed reliable results with 2.22% and 2.50% as compared with untreated plots having 7.41% cutworm attack (Fig. 1). Like wise in 2008, the same trend was observed however the attack was slightly higher than that of 2007. Plots where Insecticide Provideo was sprayed resulted in least attack of cutworm (2.11%), followed by larvin (2.88%) and higher attack of cutworm (8.40 %) was observed in control plots (Fig. 2). Results of the present work are similar with the results of Kanga *et al.* and Greenstone [9 & 4], who found considerable decrease in cutworm attack by using various insecticides. The results are also in line with Iqbal and Saljoki [7]; Talpur *et al.* [19] and Shah and Hussain [16], who reported significant control of cutworm with the application of endosulfan insecticides in tobacco crop. Like wise Malik [12] found that Agritox 50 E.C and Hostathion 40 E.C also give good control of cutworm. Similarly, Shahid and Naeem [17] investigated that Hostathion and acephate showed effectiveness in reducing cut worm attack as compared with untreated plots.

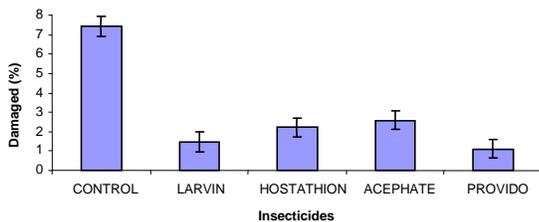


Fig. (1) Shows plant damage (%) by cut worm and effect of insecticides in 2007

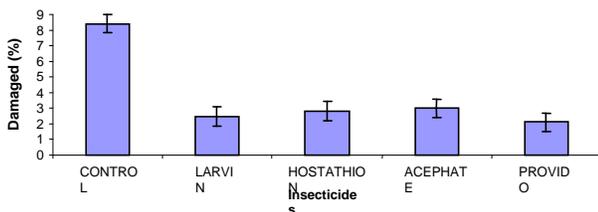


Fig. (2) Shows plant damage (%) by cut worm and effect of insecticides in 2008.

CONCLUSION

It was concluded that all the insecticides significantly reduced the cutworm damage. However, Provideo (Imidacloprid and Larvin) gave the best results.

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