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THE INFLUENCE OF INSECT GROWTH REGULATORS, CHLORFLUAZURON ON BIOMAS *ACCUMULATION IN ANTIGSARTRA CATALAUNALIS DUPONCHEL. LARVA*

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ABSTRACT:

The fourth generation insecticide, Chlorfluazuron applied by adult feeding method and reseduce feeding methods to investigate the effects on biomass accumulation against Antigastra catalaunalis. Different concentrations (0.0001, 0.001,0.01, 0.10, 0.50 and 1.00 percent) of Chlorfluazuron were applied in this investigation. One per cent Chlorfluazuron affected the biomass accumulation significantly. Larva losse weight on 5th, 10th, and 15th day post treatment that is in compression of control. One per cent Chlorfluazuron effected biomass accumulation in this insect most significantly.

KEYWORDS: *Antigsartra catalaunalis Duponchel. Larva , Crop protection , chemical insecticides .*

Vivek Kumar Verma

INTRODUCTION:

Crop protection has become an indispensable component in the latest technology of crop production and much emphasis has been given to chemical insecticides for the control of noxious crop pests. This has posed a burning and alarming situation due to the indiscriminate use of chemicals on various agricultural commodities, resulting resistance in insects to insecticides and adverse effects on beneficial insects and human beings through food chain.

Although sesame is attacked by many insect pest (**Nayar et.al.,1976 and Ahuja and Bakhetia,1995**). Among the reported pest sesame leaf roller and capsule borer, Antigastra calaunalis (Dup.) is the most destructive and causing heavy yield loss in India (**Bhattacharaya et.al. (1977**) **and Lai, 1962).** This capsule borer infests the crop at leaf, flower and capsule stage and cause

yield loss upto 90% (**Murli Baskaran and Thangavelu, 1990 and Ahirwal et.al.,2008**).

To increase the productivity of sesame, a large number of insecticides have been used for the control of *A. catalaunalis* (**Desai and Patel, 1965, Jagtap et.al., 1986; Matur et.al, 1971; Patel and Bhalani, 1986; Singh and Grewal, 1989, 1991; Singh and Jakhmola, 1984; Mishra and Patnaik, 1994; Solanki et.al., 2006; Ahirwar et.al., 2008; Karuppaiah et.al., 2009 and Bharathimeena and Sudharma, 2009**) reported promising results against this notorious post. The bio efficacy of insect growth regulators is generally manifested during ecdysis as it disturbs the process of chitin deposition, thus effecting growth and development of the insects. It also results in failure to feed, due to displacement of mandibles, maxillae and labrum and blockage of the gut. These insect growth regulators also produce delayed symptoms, in which the adults fail to escape from pupal skin and therefore cannot fly, feed and mate. These insecticides also induce the fertility and fecundity as observed by many entomologists.

Several insect growth regulators have been found effective in suppressing the population of *Euprocits icilia, Euprocitis fraternal, Musca domestica, Pieris, brassicae, Spodoptera, litura, Pectinophora gossypiella, Earlas insulana, Leptinotarsa decemlinata, Achoea Janata, Oxya Japonica, Tenebrio monitor, Utetheisa pulchella* and many other insects.

These chemicals particularly penfluron, diflubezuron, cholorfluzuron, diamino fruly-S- triazine, diofenolan, cyromazine, esflumuron, novaluron, keyouniao, buprofezin, triflumuron, fenoxycarb,tebufenozide, telflubenzorun, lufenufron and fenoxiculve have been found effective without any obvious effects, mating ability and life span of the insect. The possible use of insect growth regulators present an intriguing and exciting area for research. In view of already proved efficacy of insect growth regulators as control measure in good number of insects and the notoriety of *Antigastra catalaunalis*. It was though desirable to apply Novaluron and Chlorfluazuron against this pest hence this investigation The work embodies the results relating to two insecticides (insect growth regulators) with reference to their effects on growth, development, longevity and reproduction of *Antigastra catalaunalis.*

MATERIALS AND METHODS

Male and female, Antigastra catalaunalis, were collected in second week of July, 210 on various agricultural crops, but it certainly manifests the marked preference for castor in field. The insect was reared and maintained in the laboratory on 10 percent sugar solution in glass chimneys with sesame leaves, Eggs obtained from them were kept as such for hatching. Larvae hatched from eggs were transferred on tender sesame leaves in petridishes (15 cm dia) and reared on them till pupation. The food supply to larvae was renewed twice a day in view of evaporation of water from third instar to population. They were reared in pneumatic trough (25-cm dia) in small groups. Pneumatic troughs having 6 inches thick moist soil layer on their bottom for pupation. Pupae, thus obtained were kept as such for eclosion.

The different concentrations of insect growth regulator Chlorfluazuron was applied against Antigastra catalaunalis. These concentrations were obtained by dissolving the desired quantity of insect growth regulator in acetone.

The influence of insect growth regulators on biomass accumulation in larva under treatment (AFM):

This was studied by employing larvae of adults treated with a strength of a insect growth regulator by AFM. The influence on an insect growth regulator on the larval growth under this treatment was studied by six experiments, one for each strength, each consisting of 3 replicates. Twenty larvae (1/2-lhr old) per replicate were reared on tender leaves of sesame till the 16th day of their development. The weight of these larvae was recorded on the 5th, 10th and 15th day of their larval duration. These records were obtained with reference to each strength of both insect groth regulators as described above. The experiment designed to determine the influence of insect growth regulator were accompanied by a control.

The Influence Of Growth Regulators On Biomass Accumulation In Larva Under Treatment (RFM):

The larvae obtained from the adult treated with different strengths of the tested insect growth

regulators by the RFM were employed for evaluation of their growth was determined with reference to identical six strengths of insect growth regulator exactly on the above mentioned pattern and related above mentioned records were obtained with reference of them. The experiments for insect growth regulator was accompanied by a control.

RESULTS AND DISCUSSION

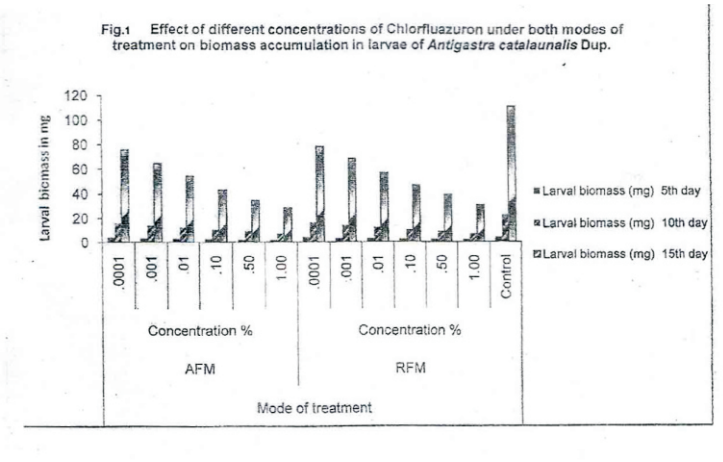
The effect of different concentration of Chlorfluazuron on biomass accumulation in larve of *Antigastra catalaunalis* given in Table-1 and Fig-1

Effect of different concentration of Chlorfluazuron under different modes of treatment on biomass accumulation in larvae of *Antigastra catalaunalis* Dup.

Effect of different concentrations of chlorfluazuron under different modes of treatment on biomass accumulation in larvave of *Antigastra catalaunalis* Dup.

(Values are Means +S.E.)

Mode of treatment	Concentration %	Larval biomass (mg) ± S.E. on		
		5th day	10th day	15th day
AFM	.0001	4.14±0.05	16.31.023	75.24±0.42
	.001	3.12±0.16	14.12±0.24	64.24±0.62
	.01	2.83±0.17	12.53±0.25	54.24±0.74
	.10	2.54±0.13	10.66±0.24	42.82±0.53
	.50	1.96±0.12	9.44±0.13	34.26±0.63
	1.00	1.84±0.14	7.32±0.22	28.32±0.81
RFM	.0001	4.37±0.11	16.26±0.15	77.92±0.67
	.001	3.24±0.02	14.16±0.26	67.93±0.46
	.01	3.13±0.13	12.54±0.16	56.25±0.65
	.10	2.62±0.12	10.57±0.15	46.22±0.42
	.50	2.41±0.04	8.92±0.14	38.34±0.43
	1.00	2.23±0.14	6.85±0.13	30.26±0.50
	Control	**4.32±0.14**	**22.64±0.56**	**110.94±0.84**



regards the influence of the insect growth regulator on biomass accumulation in *Antigastra catalaunalis* larva, the result has shown that insect growth regulator considered under this investigation has potential to reduce the growth in *Antigastra catalaunalis* even at a very low concentration. **Afifi & Knutson (1956), Chattoraj and Singh (1972), Chattoraj & Dwivedi (1980), Sharma (1993), Tembhare and Shinde (1998), Zhong (2001), Nakano and Romano (2002), Gupta et.al. (2005) and Gupta and Khattri (2012)** have also observed similar influence of insect

growth regulators in other insects. The effect of the different concentrations of insect growth regulators on the accumulation of the biomass in the larva, which may not be graded in early larval life, becomes quite distinct in the late larva, the biomass reducing potential of fourth generation insecticide increases with the increase in its concentration.

Furthermore, in respect of the influence of insect growth regulator on the biomass accumulation in *Antigastra catalaunalis* under different modes of their application to this insect, the related results, indicate that insect regulator tested during this investigation proved effective. The insecticide, Chlorfluazuron reduce the larval biomass almost identically in early larval life. The identical decline in the larval biomass at a corresponding under of their concentration under modes of their application only up to the mid-larval life but thereafter, their corresponding concentration exert different biomass curtailing influence under their application.

The Chlorfluazuron applied by the adult feeding method reduced the biomass of the late larva more than when it is applied as residue film; this chemosterilants's different concentrations are equally effective in reducing the larval biomass under the treatment. The Chlorfluazuron is translocated to the sites of their action under the both methods of their application to the . *Antigastra catalaunalis*, Since adequate growth is an attribute of proper nutritional metabolism, it may be presumed that Chlorfluazuron, the insect growth regulator interfere this aspect of physiology in *Antigastra catalaunalis* hence they reduce the accumulation of the biomass in larvae of this insect. Harper (1981) has reported that the apholate accepts amino acids as ligands. binding to NH2 site and consequently, inhibiting formation of the linkage, it reduces the synthesis of some proteins in Diaphania nilidalis which owing to the same, exhibits poor growth. In *Antigastra catalaunalis* also, the insect growth regulator used in this work may hinder the protein synthesis causing consequent reduction in the larval biomass but this needs confirmation. In context of the efficiency of the insect growth regulator reducing the accumulation of the biomass in larvae, as per results of this investigation, considering concentrations form 0.0001 to 1.00 percent the insect growth regulator screened under this investigation may be arranged as Chlorfluazuron in descending order.

REFERENCESS

1.Ahirwar, R.M., Gupta, M.P. and Banerjee, S. (2008). Evaluation of natural products and endosulfan against incidence of Antigastra catalaunalis (Dupon.) in sesame. Annals, of Plant Protection Sciences, Vol. 16, issue : 1, P.24-32.

2.Ahuja, D.B. and Bakhetia, D.R.C. (1995). Biology and Management of insect pests of sesame - A Review, J. Insect Set, 8(1) : 1-19.

3.Bhattacharya, A.; Jaiswal, A.K.; Sharma, K.K.; Mishra, Y.D.; Chandrika P. (1997). Evaluation of diflubenzuron on Eublemma amabilis Moore (Lep.; Noctuidae) a predator of lac insect, Kerria lacca (Kerr.), J. of Ent: Res., 21:4, 365-369.

4.Chattoraj, A.N. and D.R.Singh (1972). Studies on weight and water loss in the larvae of P.hcini with certain insecticides. Proc. Natl. Acad. Sci. India. 42(B) Parts 11', 169-172.

5.Chattoraj, A.N. and S.Dwivedi (1980). Effect of penfluron on the sterility and mortality of Spodoptera litura (Boisd.) Comp.Phys.Ecol 5(4) : 310-313.

6.Desai, M.T. and Patel, R.M. (1965). Studies on the sesame leaf roller (Antigastra catalaunalis Dup.) in Gujarat, Indian Oilseeds J., 9(2):109-112.

7.Gupta, L.; A. Kumar and Shukla, G.S. (2005). Effect of bacterial preparations on the growth of Diacrisia obliqua Walker (Lepidoptera : Arctiidae). National Seminar on "New Horizons in Biosciences", Nov.20-30 pp. 103.

8.Gupta, L.and Khattri, S.N. (2012). Effect of DIPEL on The growth and development Diacrisia obliqua Walker (Lepidoptera : Arctiidae). Of Seminar held at Janta college,Bakewar,Etawah", Nov.20-30 pp. 103.

9.Jagtap, A.B.; Ghule, B.D. and Deokar, A.B. (1986). Comparative efficacy of some insecticides against capsule borer on sesame. J. Maha. Agric. Univ., 11 : 360-361.

10.Karuppaiah, V.; Nadarajan, L., Kumar, K. (2009). Mechanism of resistance in Sesame genotype of Antigastra catalaunalis Dup. Annala. of Plant Protection Sciences, Vol.-17, Issue 2, P: 18-26.

11.Mathur, VJK; Verma, J.P. and Singh, B. (1971). Insectical control of til leaf and pod caterpillar, Antigastra catalaunalisJDup.) Pesticides, 5:18-19.

12.Mishra, H.P. and Patnaik, N.C. (1994). Comparative efficacy of some insecticides against the Sesamum leaf webber and pod borer, Antigastra catalaunalis (Dupon.) (Lepidoptera : Pyralidae). Jour, of Entomological Research. Vol.18, Issue 2. pp. 134-144.
13.Murali Baskaran, R.K. and Thangavelu, S. (1990). Studies on the incidence of sesame shoot webber, Antigastra catalaunalis (Dup.) and its parasitoid, Tratha flavo-orbitalis, Corneroin Sesame Flower Newsl. 5:29-31.
14.Nakano, O; Romano, F.C.B. (2002). Use of insect growth regulator on fruit fly, Ceratitis capitata (Wield.) (Diptera : Tephritidae) Sterilization. 23(1) : 115-125.
15.Nayyar, K.K., Ananthakrishnan, T.N. and David, B.V. (1976). General and Applied Entomology, McGraw-Hill Publishing Company Ltd., New Delhi, 589 pp.
16.Patel, A.A. and Bhalani, P. A. (1986). Chemical control of seasame leaf roller, Antigastra catalaunalis (Dup.) (Lepidoptera:Pyralidae). Pesticides 20:23-26.
17.Sharma, M. (1993). Effect of certain insect growth regulators on the growth and development of Utetheisa pidchella L. (Lep.; Arctiidae). A thesis submitted for the Ph.D. Degree to Kanpur - University, Kanpur.
18.Singh, Gurdip and Grewal, G.S. (1989). Efficacy of new insecticides against sesame leaf webber and capsule borer, Antigastra Catalaunalis Dup. (Lepidoptera : Pyralidae). J.Ent.Res. 16(4):305-310.
19.Singh, Gurdip and Grewal, G.S. (1991). Efficacy of new insecticides against sesame leaf webber and capsule borer, Antigastra catalaunalis Dup. in Punjab J. Insect Sci. 2(2): 146451.
20.Singh, O.P. and Jakhmola, S.S. (1984). Efficacy of new insecticides in the control of sesame leaf webber and capsule borer. Indian J. Agric. Sci. 54:509-511.
21.Tembhare, D.B.; Shinde, J.S. (1998). Effect of dimilin on cephalic. Neuroendocrine organs in the larvae of fruit sucking moth, Othreis materia. (Lep.: Noctuidae). ; Indian J. of Exp. Bio. 36:3, 287-291.
22.Zhong, G.H.; Hu, M. Y.; Weng, O.F.; Ma, A.Q.; Xu, W.S.(2001). Laboratory and field evaluations of extracts from Rhododendron molle flowers as insect growth regulators to imported cabbage worm, Pieris rapae L. (Lepidoptera; Pieridae). Journal ofAppl. Entomology, 125 (9/10): 563-569.

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