

Bioefficacy of Neem Products against *Pyrilla perpusilla* (Homoptera: Lophopidae): A Sugarcane Pest in Rampur Rudra, District, Chapra (Saran), Bihar (India)

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Abstract: Field Experiments were conducted to evaluate the bioefficacy of neem products and phosphamidon (0.05%) against, *Pyrilla perpusilla* (Leaf happer). Out of seven neem based insecticides, viz., Nimbecidine 2% NSKE (Neem Seed Kernel Extract) 3%, Neemazol 2%, Rakshak 2%, Achool 2%, Neemgold 2%, Neemol 2% none was superior to two chemical synthetic insecticides, viz, phosphamidon and endosulfn. However, Neem Seed Kernel extract and Nimbecidine were found better. Bioefficacy of neem products against *Pyrilla perpusilla*, were conducted the experimental village, Rampur Rudra, Distt. Chapra (Saran), Under P.G.Deptt. of Zoology (Entomological Laboratory), Jagdam College, Chapra (Saran), Jai Prakash University, Chapra (Saran) Bihar, during 2010-2012.

Keywords: Nimbecidine, Neemazol, Bioefficacy, *Pyrilla perpusilla*, Synthetic insecticides.

1. INTRODUCTION

Leaf hopper *Pyrilla perpusilla* is one of the harmful pest of Sugarcane with about 1.3 to 51.2 per cent damage of sugarcane leaf hopper. The fly occurs regularly and cause damage to the crop and plays an important role in reducing in yield. The female fly lays its eggs in the Sugarcane (*Saccharum officinarum*). It is most important commercial crop which produced in the state of Bihar. Sugarcane is commercially cultivated on a large scale in the dry zone of Bihar in the Rampur Rudra 25036' and 26013' North Latitude and 84024' and 85015' East longitude in the Southern Post. The production of sugarcane in 1990-92 was reported to 5,176 thousand metric tons. It is well known that pest and disease are important limiting factors which effects sugarcane production. Bihar sustained annual crop loss proved a great economical loss on account of sugarcane pest (Siddiali, 1965).

There are 30 species of insects pests have been reported to bring about damage to sugarcane in the state of Bihar. Gupta (1956), Prasad (1960), Chakarvarti (1970), and Srivastava (1979).

Since, application of synthetic insecticides cause toxic hazards to consumers and environment, an attempt was made to study the bioefficacy of neem based insecticides against *Pyrilla perpusilla* under field condition during 2011 to 2012.

2. MATERIAL AND METHODS

Field experiment was laid out in a randomized block design with three replications. Ten insecticidal treatments including control (Table 1) were evaluated for two consecutive years (2011, 2012) at the experimental farm, village Rampur

Rudra, Distt-Chapra (Saran) Bihar under P.G.Deptt. of Zoology (Entomological Laboratory), Jagdam College, Chapra (Saran), Jai Prakash University, Chapra (Saran), Bihar.

The sugarcane variety Nellam was sown in first fortnight of November at 25×5 cm. spacing in plots of 4×3m. and normal agronomical practices were followed for raising a good sugarcane crop. Each insecticidal treatment was applied twice at 15 days interval initiating and using poenumatic Knapsack sprayer. Observations on per cent infestation due to *Pyrilla perpusilla* was recorded by counting the number of infested leaf and total member of leaf on five randomly selected plants per plot a dough stage. The grain yield of each plot was recorded after harvesting the crop and the same was converted into yield per hectare. The data on per cent infestation and grain yield were subjected to analysis of variance.

3. RESULTS AND DISCUSSION

All the insecticides (neem based and organic synthetic) were found effective in reducing *Pyrilla perpusilla* infestation in linseed (Table1). Among the various insecticides phosphamidon (0.05%) showed maximum reduction while the application of endosulfan (0.05%) next in order was at par with Nimbecidine (2%), N.S.K.E. (3%) and Neem gold (2%) in both the years of experimentation. The treatment like Achook (2%) followed by Neemazol (2%) and Neemol (2%) significantly reduced infestation of *Pyrilla perpusilla* over control.

This might be due to antifeedent and ovipositional deterrent activity of neem products as reported by Kareem et al. (1974) and Raghuraman (1987) against dipterans. The development and reproduction inhibitory effect of azadirachtin in are attributed to its interference with endocrine events. (Shashi Gupta and Rao, 1990). These properties of neem might have played a role in having comparatively lesser bud infestation in linseed treated with neem products.

Table 1. Evaluation of Neem based insecticides against Leaf hopper *Pyrilla perpusilla* infestation and yield during 2011 to 2012.

Sl. No.	Treatment	Concentration (Percent)	Percent Infestation		Grain Yield (Kg/plot)		Grain Yield (g/ha)		Percent increase in yield over control (pooled)
1.	Nimbecidine	2.0	20.93 (4.63)	20.53 (4.59)	1.69	1.67	14.0	13.97	65.78
2.	N.S.K.E.	3.0	20.37 (4.56)	19.57 (4.48)	1.68	1.73	14.07	14.47	66.48
3.	A Chook	2.0	23.13 (4.86)	22.80 (4.83)	1.46	1.47	12.27	12.33	61.10
4.	Neemgold	2.0	21.00 (4.64)	21.17 (4.65)	1.57	1.58	13.17	13.20	63.17
5.	Neemol	2.0	24.74 (5.02)	23.60 (4.91)	1.43	1.54	11.93	12.90	61.45
6.	Neemazol	2.0	24.73 (5.02)	23.60 (4.91)	1.41	1.43	11.83	12.00	59.85
7.	Rakshak	2.0	23.93 (4.94)	22.00 (4.74)	1.41	1.49	11.83	12.83	61.19
8.	Phosphamidin	0.05	16.03 (4.10)	15.20 (3.96)	1.84	1.91	15.37	16.00	69.50
9.	Endosulfan	0.05	16.63 (4.49)	19.60 (4.48)	1.67	1.69	14.03	14.17	65.93
10.	Control	-----	46.23 (6.48)	41.20 (6.46)	0.54	0.6	4.60	4.97	-----
	SEM+		0.81	0.055	0.057	0.88	0.18	0.21	
	CDat 5%		0.24	0.162	0.17	0.26	0.54	0.63	

Maximum sugarcane yield recorded with application of Phosphamidon (0.05%) followed by endosulfan (0.05%). Amongst N.S.K.E. (2%) were found at par with help the synthetic insecticides in relation to sugarcane yield (Kg/Plot) in both the years. Maximum per cent increase in grain yield was recorded with phosphamidon (67.5%) followed by endosulfan which were near to that of N.S.K.E. (66.48%) and Nimbecidine (65.78%).

The overall performance of all the neem based insecticides revealed the two viz., N.S.K.E. (3%) and Nimbecidine (2%) were better in controlling *Pyrilla perpusilla* and Comparative to organic synthetic insecticides used.

4. CONCLUSION

Pyrilla perpusilla is a most sugarcane pest. It is one of the most destructive pest of sugarcane (Gupta and Ahamad,1983). Experiments were conducted to evaluate the biefficacy of neem products and phosphamidon against *Pyrilla perpusilla*. Out of seven neem based insecticides, viz. , Nimbecidine 2% NSKE (Neem Seed Kernel Extract) 3%, Neemazol 2%, Rakshak 2%, Achool 2%, Neemgold 2%, Neemol 2% none was superior to two chemical synthetic insecticides, viz, phosphamidon and endosulfn. However, Neem Seed Kernel extract and Nimbecidine were found better. Field experiment was laid out in a randomized block design with three replications. All the insecticides (neem based and organic synthetic) were found effective in reducing *Pyrilla perpusilla* infestation in linseed (Table 1). Among the various insecticides phosphamidon (0.05%) showed maximum reduction while the application of endosulfan (0. 05%) next in order was at per with Nimbecidine (2%), N. S. K. E. (3%) and Neem gold (2%) in both the years of experimentation. The treatment like Achook (2%) followed by Neemazol (2%) and Neemol (2%) Significantly reduced infestation of *Pyrilla perpusilla* over control.

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