

# Effects Of Biopesticide and Synthetic Pesticides to Control the Berry Bugs (Hemiptera: Pentatomidae)

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## ABSTRACT

Virulent outcomes of Biosal (neem extract), Cypermethrin and Deltamethrin (pyrethroids), pesticides are used to check out three species of berry bugs, *Halys fabricii* Fabricius, *Salixocoris sindellus* Ahmed and Kamaluddin and *Halys sulcatus* (Thunberg) which are minor pest of several host plants. Toxicity of insecticides was analysed by Regression models and examined species were also grew to calculate the lethal concentrations after 24 hours of treatment, LC50s was detected and calculated with the destruction of these insecticides.

**Keywords:** Biosal, Lethal concentrations, insecticide, pyrethroids Cypermethrin and Deltamethrin.

## INTRODUCTION

There are plenty of harmful species of bugs that affect on plants worldwide. Species of *haylines* deemed as berry bugs, generally attack berry, mulberry and apple, Ahmed *et al.* (1997) investigate the infestation of RBa (neem extract) on the toxicity in *H. dentatus* (= *H. fabricii*). Pesticides are only short-term solution to the problem of pest control for many reasons, i. e., toxic chemicals have strong positive effects on several species other than pests, immune system of many pest species become strong and resist against toxic chemicals, which produce a pest problem by disorder of the natural enemies of the pest i.e. parasites and predators (Stern *et al.*, 1959; Croft, 1990) but also the outbreak of secondary pests (Leigh and Mulham., 1966, Eveleens *et al.*, 1973, Stoltz and Stern, 1978). Plant volatile organic compounds are known to have insecticidal activities against synthetic insecticides that can minimizes the application of chemical insecticides in management of stored grain pest (Singh *et al.* 2021).

Bio fertilizer is a combination of more than one microorganism that triggers the growth and productivity of plants by nutrients restoring (Malusá and Vassilev 2014). Extract from seaweeds can be used as an alternative to chemical fertilizers and can be used as a supplement rich in nutrients and biostimulants Ramya *et al.*, (2015).

## MATERIAL AND METHODS

Experiment was conducted on adults and nymphs of the three hemipteran species, *H. sulcatus*, *S. sindellus* and *H. fabricii*, were brought from different host plants like *Conocarpus erectus* L. at Saifee park N. Nazimabad, (Gulmohar) *Albizia lebbek* (L.) at Quaid-e-Azam Park Gulshan-e-Hadeed, Karachi. *lignum vitae* or *guaiaicum sanctum*, from Polo Ground, near P.C Hotel. Karachi. Bugs were captured especially in day time between 2 pm to 5 pm. Toxicity test of insecticides, were conducted in the Zoology Department, Jinnah University for Women. All the species were tested with the three variable pesticides in which two synthetic chemicals and one phyto-chemical were used to find out Lc 50.

## RESULTS AND DISCUSSION

Toxic effects of Biosal (neem extract), Cypermethrin and Deltamethrin (pyrethroid), were studied by using different concentrations, mortality rates were observed and compared with the toxicity of these three insecticides against three tested insects *H. fabricii*, *S. sindellus*, *H. sulcatus*. Mortality was observed at 24 hours of treatment, the mortality values were analysed statistically. After 24 hours of treatment virulency of synthetic and Bio-insecticide and the test species were also developed to calculate the lethal concentrations and the result was analysed by Regression models.

After testing of all three species, high resistivity was observed in *H. sulcatus* against all synthetic and Bio-insecticide.

## CONCLUSION

The present work showed the effectiveness of Bio-pesticide against pests of crops its eco-friendly and human friendly nature, whereas the synthetic pesticides are showed their destructive nature for human and environment and they also develop resistance in pests.

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**Table 1. Toxic effects of Deltamethrin, Cypermethrin (Synthetic pesticide) and Biosal, (Botanical Pesticide) against *H. fabricii*, *S. sindellus* and *H. sulcatus*.**

S. No.	Name of insecticides and Test insect	Regression Equation	LC <sub>50</sub>	LC <sub>90</sub>
1	Biosal <i>H. fabricii</i>	$Y=35.418x+33.811$ $R^2=0.227$	0.75	1.25
	<i>S. sindellus</i>	$Y=34.04x+30.597$ $R^2=0.191$	0.75	1.25
	<i>H. sulcatus</i>	$Y=23.908x+42.377$ $R^2=0.246$	1	1.5
2	Cypermethrin <i>H. fabricii</i>	$Y=9365x+(-107.935)$ $R^2=0.0014$	0.00625	0.025
	<i>S. sindellus</i>	$Y=12155x+(-229.84)$ $R^2=0.006$	0.0125	0.025
	<i>H. sulcatus</i>	$Y=9925x+(-140.575)$ $R^2=0.0102$	0.025	0.05
3	Deltamethrin <i>H. fabricii</i>	$Y=3734.66x+20.388$ $R^2=0.070$	0.00625	0.025
	<i>S. sindellus</i>	$Y=49.242x+66.656$ $R^2=0.016$	0.00625	0.0125
	<i>H. sulcatus</i>	$Y=4897x+16.007$ $R^2=0.112$	0.0125	0.025

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