



Field Evaluation Of Bio-Pesticides Against Jassid, (*Amrasca Devastans* Dist.) On Brinjal Crop From Sindh- Pakistan

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Abstract: Brinjal is considered as most delicious vegetable in the world including Pakistan but unfortunately it has been attacked by a number of insect pests. Amongst them brinjal jassid, *Amrasca devastans* Dist caused the severe damage to it and significantly affect its productivity and tastes. Results showed that after bio-pesticides sprays, the overall maximum reduction in jassid population were observed in neem oil (71.04%) followed by neem oil + beneficial microorganism (64.33%), neem powder (60.78%) and tobacco leaves (55.86%) respectively. The bio pesticides are found very selective, safer and moderate to highly effective against brinjal jassid.

Keywords: Brinjal, bio-pesticides, *Amrasca devastans*, vegetable,

1. INTRODUCTION

Brinjal is reported as most delicious fruit and vegetable in the world therefore it has been grown on a fairly wide scale in China, Japan India and Pakistan (Lohar, 2001) Brinjal is full of nutrients it contains 92.7% water, 1.1% Protein and 0.02% Carbohydrate. The fuel of calories is 13016 and rich source of vitamin A and B also (Shanmugavelu 1989). This valued crop is attacked by number of insect pests such as jassid, whitefly, thrips, aphids, shoot and fruit borer, mealy bug and mites (Seal, 1999). Brinjal jassid has a wide range of host plant within solanaceous and malvaceous crop. It is a common pest on *Solanum melongena*. Adults and nymphs suck the plant sap from the under surfaces of leaves. The affected leaves show "hopper burn" symptoms (Khosro, 1996). Farmers in the tropics countries extensively use various broad spectrum insecticides to reduce its population but unable to check the pest successfully due to their development of resistance and frequent resurgence. But unfortunately frequent use of insecticides has increased concern on its effect on non-target organism and human health (Solangi *et al.*, 2011). It was therefore, felt necessary to observe the evaluation of bio-pesticides against jassid, *Amrasca devastans* Dist on brinjal crop during rabi season in 2010. They are safer to non-target organisms and quickly degrade to non-toxic products that are ideally fit for IPM programs.

2. MATERIALS AND METHODS

The study was carried out at the experimental field of Habib Farm, District Hyderabad. Brinjal seedling was transplanted on 15-01-2010 in a complete randomized block design with four replications with the plot size (60x40 feet paths and feeding channel). The

distance between row-to-row and plant-to-plant was kept as 2 feet and 72 cm respectively. All the recommended cultural practices were performed throughout the growing season of the crop. The crop was sprayed thrice with tobacco leaves extract, neem oil, neem powder, neem oil + B.M. (Beneficial Micro-organism) with Knapsack sprayer. The sprayer was washed thoroughly after each spray to avoid possible contamination of the bio-pesticides. The pre treatment observation on jassid was recorded 24 hours before each spray. Whereas, the post treatment counts were made at the intervals of 1, 2, 3, 7 and 14 days after each spray. For this purpose, five plants in each sub-plot were randomly selected and were observed thoroughly. The data was statistically analyzed. The results were analyzed by following Henderson and Tilton (1955) formula to complete the reduction percentage.

$$\text{Reduction percentage} = \left(1 - \frac{\text{TA} \times \text{CB}}{\text{CA} \times \text{TB}}\right) \times 100$$

TB= Number of jassid in treated plot before treatment.

TA = Number of jassid in treated plot after treatment

CB = Number of jassid before treatment in control plot.

CA= Number of jassid after treatment in control plot

3. RESULTS

(Table 1, 2 a-c and 3) showed that overall reduction percentage in first, second and third spray of biopesticides against jassid in the brinjal field showed that population of *A. devastans* was significantly reduced when treated with Neem oil 71.97%, 72.30%, 68.86% and 71.04% followed by neem oil + beneficial micro-organism 65.48 %, 63.68%, 63.84% and neem powder 61.56%, 59.82% and 60.98 % however treatment of Tobacco leaves 54.75 % , 55.55% and 57.28 % has insignificant effect against this pest.

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Table I. Bio-pesticides their formulation doses and grouping used against jassid in brinjal field

Treatment	Name Bio pesticides	Dose/acre	Dose/plot
T ₁	Tobacco Leaves extract	5 kg	1 ½ kg
T ₂	Neem oil	1 litre	50 CC
T ₃	Neem powder	3 kg	1 Kg
T ₄	Neem oil + BM	1 Litre	50 CC
T ₅	Control	-	-

Table-2. Reduction percentage of jassid population at different intervals of various biopesticides on brinjal crop

(a) after 1st spray

Biopesticides	Time Intervals					Mean
	24 hours	48 hours	72 hours	One week	Two week	
Tobacco leaves	43.99	46.74	85.90	47.70	49.40	54.75
Neem oil	67.89	79.78	80.00	71.10	61.10	71.97
Neem powder	53.40	70.70	65.50	60.00	58.20	61.56
Neem oil+ B.M.	55.50	75.70	70.00	68.00	58.20	65.48

(b) after 2nd spray

Biopesticides	Time Intervals					Mean
	24 hours	48 hours	72 hours	One week	Two week	
Tobacco leaves	44.10	54.74	80.10	48.70	50.10	55.55
Neem oil	68.10	80.20	82.00	72.20	59.00	72.30
Neem powder	55.00	68.10	60.50	60.20	55.30	59.82
Neem oil B.M.	59.50	68.10	68.30	57.00	65.50	63.68

(c) after 3rd spray

Biopesticides	Time Intervals					Mean
	24 hours	48 hours	72 hours	One week	Two week	
Tobacco leaves	48.10	58.80	82.10	48.20	49.20	57.28
Neem oil	69.90	80.80	85.90	57.60	50.10	68.86
Neem powder	52.50	68.70	65.50	60.00	58.20	60.98
Neem oil B.M.	55.00	70.00	68.00	75.70	50.50	63.84

Table-3 Overall reduction percentage in the population of *Amrasca Devastans* first, second and third spray of biopesticides

Biopesticides	Time Interval			Mean
	First spray	Second spray	Third spray	
Tobacco leaves	54.75	55.55	57.28	55.86
Neem oil	71.97	72.30	68.86	71.04
Neem powder	61.56	59.82	60.98	60.78
Neem oil +B.M	65.48	63.68	63.84	64.33

4.

DISCUSSION

Brinjal crop is attacked by number of insect pests among them jassid is found more serious pest of brinjal crop and directly affect on its growth and development stages. Actually *A. devastans* is wide spread in tropical and sub tropical areas of Southeast Asia. Insecticides have been shown as a key component in the management of insect pests. Many insecticides are toxic to non- target organism including beneficial insects (parasites and predators), wild life and human Riffat *et al.*, (2012). The suppression of natural enemies by insecticides in eggplant growing areas has resulted in rising of minor pests. Their population has always remained under check by their predators and parasites.

However, botanical compounds are fine answer to avoid environmental pollution and increasing population of beneficial insects when applied in appropriate time. The results are agreement with work has been done by (Gupta *et al.* 1998; and Mann *et al.*, 2001; Solangi *et al.*, 2011, Riffat and Wagan 2011.). In the light of present findings it is recommended that use of biopesticides (neem product) is most beneficial in controlling the incidence of jassid on brinjal crop successfully. Furthermore, it was also observed that use of neem products could be an effective component of the Integrated Pest Management system. The incidence of jassid can be controlled by use of neem products, which is also beneficial for protecting environment from pollution/toxic effect. Similarly use of neem products is also beneficial for human health. Because the brinjal marketed for human consumption would be free of toxic effects.

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