



Seasonal Incidence of Leaf Webber (*Orthaga euadrusalis* Walker) and its Management

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ABSTRACT

Studies on mango leaf webber (*Orthaga euadrusalis* Walker) with respect to seasonal incidence was conducted during the year 2021-22 and 2022-23 at farmer's plot of different villages of Madhepura district of Bihar. Seasonal incidence data revealed that maximum leaf webber population in mango was observed from last fortnight of September to last fortnight of November ranged from 15.40 to 16.10 with highest 21.40 webs/tree in first fortnight of November. A gradual decline from 13.00 to 2.80 webs/tree was observed from first fortnight of December to second fortnight of January, respectively.

The study was carried out in RBD and observations were recorded before spray and 15 DAS (Days After Spray). Data on management of leaf webber reflect that at 15 DAS of combination product (Acephate 45% + Cypermethrin 5%) @ 2g/L gave the best result in per cent reduction of web and larvae per tree. The pest incidence ranged between 73.25 and 87.23 and 83.34 and 83.61 during 2021-22 and 2022-23, respectively which was followed by Quinalphos 25EC @ 1.5ml/L. The management techniques given in this research paper would be a valuable resource for mango orchardist, researchers, and stakeholders involved in managing the mango leaf webber problem.

Key Words: Acephate 45% + Cypermethrin 5%, Lambda cyhalothrin 5 EC, Quinalphos 25 EC, Mango.

INTRODUCTION

Mango (*Mangifera indica* L.) is the most important subtropical fruit crop of India. India accounts for 41 per cent of the world production of mango (Chakrabarti, 2014). Several insect-pests include leafhopper, mealy bug, inflorescence midge, fruit fly, scale insects; shoot borer, leaf webber and stone weevil, causing considerable crop damage (Hati *et al*, 2005). Mango leaf webber (*Orthaga euadrusalis* Walker) had become a serious pest of mango in Northern India (ICAR, 2014). Recently, it has emerged as a serious threat to mango growers in Koshi region of Bihar. The pest activity in the mango orchards start in the months of July and remain active up to the December. The caterpillars loosely web several leaves of a shoot together and then result in defoliation. After feeding what remains are dry bits of leaves, web and excreta. When the whole tree is attacked, it gives a completely burnt

appearance. The infestation range varied between 25 to 100 per cent on trees.

MATERIALS AND METHODS

The studies on seasonal incidence of leaf webber was carried out in farmer's mango orchards of Madhepura district, Bihar during Kharif 2021-22 and 2022-23 with three treatments on ten farmers plot (replications) including untreated control. The orchard was observed at fortnight intervals for the incidence of mango leaf webber. Observations on leaf webber incidence were recorded on five randomly selected tree from each plot. The total numbers of webs were recorded by counting the number of webs in each tree. In total three insecticidal treatments, along with one untreated control were maintained for its management in the investigation (Table 1). The two insecticidal sprays were applied at 15-20 days interval, starting soon

after the pest incidence. The second spray was given 15-20 days after the first spray. Observation on pest infestation was recorded and statistically analyzed.

Table 1. Treatments including insecticides along with doses.

Treatment	Treatment Detail
T0 (Untreated check)	Spray of Cypermethrin 20 EC @1.5ml/L
T1	Two spray of lamda cyhalothrin 5 EC @ 2ml/L at 15days interval.
T2	Two spray of Quinalphos 25EC @1.5ml/L at 15days interval.
T3	Two spray Acephate 45% +Cypermithrin 5% @ 2g/L at 15days interval.

*cutting and burning of affected twigs/ branches

RESULTS AND DISCUSSION

The leaf webber (*Orthaga euadrusalis* Walker) larvae were pale greenish in colour with brown head pupae was dark brown in color and pupation occurred with the webbed foliage. The larvae make web with adjacent leaves, feed on greenish chlorophyll content of the leaves. The massive damage could be seen on terminal shoot webs with dried leaves. The leaf webber was active throughout the year, except during the month of February to May i.e., flowering, fruit setting, fruit maturity and ripening stages of mango. The results

(Table 2) showed that the maximum leaf webber population was encountered in the first fortnight 45 Meteorological Standard Week (MSW) of November (21.4). Population increase was observed from July to November with twine of 3.1-21.4. Thereafter natural population was decreasing from 21.4 to 2.80 in the month of January. The incidence increasing sharply from 45 MSW to 4th MSW i.e. during first fortnight of November when the leaves were dark green and succulent. The present observations were in agreement with the findings of Kannan and Rao (2006)., Bharath Babu (2001), who observed the activity of leaf webber during June to January in South Zone of Andhra Pradesh. Similarly, Srivastava *et al* (1982) also observed maximum population of the webber during October-November in Uttar Pradesh.

Studies on effect of treatments on number of web/tree at pre-spray and at 15 DAS showed that mean number of web/tree declined from 27.04 to 12.01 in orchard with no treatment while orchard treated with Lamdacyhalothrin 5 EC @ 2 ml/L reduced number of web /trees from 26.69 to 8.79. On the other hand, orchard treated with Quinalphos 25EC @ 1.5 ml/L recorded reduction of web/tree from 26.7 to 6.91. Maximum suppression of web/ tree recorded from 26.59 to 4.44 in orchard treated with Acephate 45% + Cypermethrin 5% @ 2g/L. Likewise mean number of larvae/tree declined from

Table 2. Seasonal incidence of mango leaf webber (*Orthaga euadrusalis* Walker).

Month	Meteorological Standard week (MSW)	No. of web / tree	Month	Meteorological Standard week (MSW)	No. of web /tree	Remarks
July	25-26	03.10	November	43-44	21.40	
	27-28	03.50		45-46	16.10	
August	29-30	04.80	December	47-48	13.00	
	31-32	06.50		49-50	09.20	
September	33-34	10.70	January	51-52	08.30	
	35-36	13.70		01-02	05.90	
	37-38	15.40		03-04	02.80	
October	39-40	16.70				
	41-42	18.20				

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Table 3 (A) Effect of treatments on infestation of mango leaf webber (*Orthaga euadrusalis* Walker).

Treatment Detail	Per cent infestation											
	Pre spray						15 DAS					
	web/tree			Larva / tree			web/tree			Larva / tree		
	2021	2022	Mean	2021	2022	Mean	2021	2022	Mean	2021	2022	Mean
T0= (Untreated check) Spray of Cypermethrin 20 EC @ 1.5 ml/L	27.67	26.41	27.04	32.25	31.86	32.06	12.56	11.45	12.01	18.20	17.89	18.04
T1= Spray of Lamdacyhalothrin 5 EC @ 2 ml/L If infestation persist 2 nd spray at 20 days after 1 st spray	27.43	25.95	26.69	32.16	32.87	32.52	8.82	8.76	8.79	12.30	12.60	12.45
T2= Spray of Quinalphos25EC @ 1.5 ml/L If infestation persist 2 nd spray at 20 days after 1 st spray	26.84	26.56	26.7	31.98	31.64	31.81	7.18	6.65	6.91	10.11	10.14	10.12
T3= Spray of Sorter (Acephate 45% + Cypermithrin 5%) @ 2 g/L If infestation persist 2 nd spray at 20 days after 1 st spray	27.12	26.06	26.59	32.32	31.79	32.06	5.55	3.33	4.44	5.38	5.21	5.30
CD (5%)			NA			NA			1.63			1.12
Sem			0.842			0.859			0.559			0.385

Table 3 (B) Effect of treatments on Per cent reduction of mango leaf webber (*Orthaga euadrusalis* Walker).

Treatment Detail	Per cent reduction					
	web/ tree			Larva / tree		
	2021	2022	Mean	2021	2022	Mean
T0= (Untreated check) Spray of cypermethrin 20 EC @1.5ml/L	54.60	57.63	56.12	43.58	43.85	43.85
T1= Spray of lamdacyhalothrin 5 EC @ 2 ml/L If infestation persist 2 nd spray at 20 days after 1 st spray	67.85	66.25	67.05	61.75	61.67	61.67
T2= Spray of Quinalphos25EC @ 1.5 ml/L If infestation persist 2 nd spray at 20 days after 1 st spray	73.25	74.97	74.11	68.40	67.95	67.95
T3= Spray of Sorter (Acephate 45% + Cypermithrin 5%) @ 2 g/L If infestation persist 2 nd spray at 20 days after 1 st spray	79.54	87.23	83.39	83.34	83.61	83.61

Table 4 Effect of treatments on yield and economics of mango leaf webber (*Orthaga euadrusalis* Walker)

Treatment Detail	Yield (q/ha)			Cost of cultivation (Rs.)			Gross return (Rs.)			Net return (Rs.)			BCR		
	2021	2022	Mean	2021	2022	Mean	2021	2022	Mean	2021	2022	Mean	2021	2022	Mean
T0=(Untreated check) Spray of cypermethrin 20 EC @1.5 ml/L	56.45	57.63	57.04	42,600	43,200	42,900	141125	144075	142600	98525	100875	99700	3.31	3.34	3.325
T1= Spray of lamda cyhalothrin 5 EC @ 2ml/L If infestation persist 2 nd spray at 20 days after 1 st spray	66.25	66.78	43,200	44,100	43,650	168250	165625	166937	125050	121525	123287	3.89	3.76	3.825	
T2= Spray of Quinalphos25EC @1.5ml/L If infestation persist 2 nd spray at 20 days after 1 st spray	74.97	75.74	43,750	44,650	44,200	191250	187425	189337	147500	142775	145137	4.37	4.2	4.285	
T3= Spray of Sorter (Acephate 45%+Cypermithrin 5%) @ 2g/L If infestation persist 2 nd spray at 20 days after 1 st spray	87.23	86.985	43978	44870	44424	216850	218075	217462	172872	173205	173038	4.93	4.86	4.895	
CD Sem	6.227	2.134													

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32.60 to 18.04 in untreated check at 15 DAS. But significant reduction observed from 32.52 to 12.45 and 31.81 to 10.12 in number of larvae/tree orchard treated with Lamdacyhalothrin 5 EC @ 2 ml/L and Quinalphos 25EC @ 1.5 ml/L, respectively. Maximum reduction of larval population/tree recorded in orchard treated with Acephate 24% + cypermethrin 5% @ 2 g/L which was significantly superior then all other treatments.

Per cent reduction in web/tree and larvae/tree calculated based on pre and post (15 DAS) spray reflected that all three treatments significantly reduced the population. But maximum mean per cent reduction 83.39% and 83.61% in web/tree and larvae/tree recorded in orchard treated with Acephate 45% + cypermethrin 5% @ 2 g/L, respectively.

CONCLUSION

The study of seasonal incidence and management of mango leaf webber (*Orthaga euadrusalis* Walker) during 2021-22 and 2022-23 at mango orchard of Madhepura district of Bihar indicated that the most active period of mango leaf Webber in both years was found from September to November. Insecticides combination product (Acephate 45% + Cypermithrin 5%) @ 2 g/L at 15 DAS reduced maximum number of web and larvae followed by Quinalphos 25 EC @ 1.5 ml/L of water sprayed.

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