HOST PREFERENCE OF *AULACOPHORA FOVEICOLLIS* (LUCAS) IN MUZAFFARPUR (BIHAR)

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*Abstract : Aulacophora foveicollis(*Lucas*)* is a polyphagous pest, it is cosmopolitan in distribution. Adults and grubs both are destructive to vegetables. In present work it is established that pumkin is the best choice food among varieties of vegetable hosts belong to family Cucubetaceae, Solanaceae, Gramineae and weeds.

Keywords: Polyphagous pest, beetle, grub, weed.

I. INTRODUCTION

Vegetables are measure resource of vitamins minerals dietary fibres and phtyochemicals. It reduces risk from dangerous diseases. Vegetables are grown worldwide in almost 200 countries. A world vegetable survey indicated 392 vegetable crops cultivated worldwide (Dias, 2011). In Bihar major vegetables belongs to family Cucurbitaceae, Solanaceae and Gramineae. The total area under vegetable cultivation is currently about 11% of the state's gross sown area, and is increasing. The district Muzaffarpur is one of them those with high shares in vegetable (Wikipedia-Agriculture of Bihar). *Aulacophora foveicollis* Lucas (coleopteran: Chrysomelidac) is a Polyphagous pest of the area which damage varieties of vegetables.

Cucumber, melon, torai, tinda and lauki were found to be damaged by *Aulacophora foveicollis* L., *A. atripennis* F. and A. *stevenis* B. by Khanna (1977). Pruthi (1969) recorded *Rhaphidopalpa foveicollis*, *R. intermedia*, *R. atripenis*, *Dacus ciliates* and *Dacus cucubitae* as pests of cucurbitaceous vegetables in India. Where Singh et.al.(1996) was reported *Aulacophora foveicollis L.* as pest of tasar. Adults of red pumpkin beetle and its grubs were found destructive to cucurbites Shukla and Upadhyay, 1984, 1992, Said and Mohmed', (1997) and Mukesh et. al.,1995. Hence, the present work on its host preference has been undertaked to ascertain as valuable findings for olericulturists and workers.

II. MATERIALS AND METHOD

To have a distinct knowledge on host preference of red pumpkin beetle, experiments were conducted in two main steps:

(A) Field condition and

(B) Laboratory conditions

For study of host preference of red pumpkin beetle (*Aulacophora foveicollis* Lucas), experiments were conducted in field condition and laboratory condition.

(A) UNDER FIELD CONDITION:

In order to ascertain the host preference by both adults and grubs of *A.foveicollis* L a systematic periodical field investigations were conducted at Agriculture Farm of Mushahari (Muzaffarpur) on hosts named pumpkin (*Cucubita pepo),* ash gourd *(Benincasa hispido),* sponge gourd *(Luffa cylindrica),* cucumber *(Cucumis sativas),* tomato *(Lycopersicum esculentum),* weed *(Physalis minima),* moong *(Physeolus aureus.)* and bottle gourd *(Langenaria ciceraria).* In the second phase of this part of experiment,

host included only Cucurbitaceous plants. Sponge gourd (*Luffa cylindrica*) Pumkin(*Cucurbita Pepo*), Bottle gourd(*Lagenaria ciceraria*), Ash gourd(*Benincasa hespida*), Musk pumkin(*Cucurbita moschata*), Bitter gours(*Momordica charantia*) and cucumber*(Cucumis sativas)* Plants were visited and infested leaves were counted and recorded in tabular form. On the basis of the above two phases of the experiments only three host plants were considered, those host plants were pumpkin(*Cucurbita Pepo*), cucumber *(Cucumis sativas)* and sponge gourd(*Luffa cylindrica*).

(B) UNDER LABORATORY CONDITION:

In order to study the host preference of pumpkin beetle under laboratory conditions, four glass troughs 45cm diameter were used and each was provided with 2" thick layer of moist sand at the bottom and the upper surface of sand layer was covered with matching Size of a blotting paper. The top of the trough was covered with a very fine muslin cloth for aeration. Blotting paper provided in the trough was equally divided in as many divisions as the number of host plants included in the study. Grubs of third instar, taken from the mass culture were starvated for 8 hours (from 8 A. M. to 4 P.M) before releasing them in the glass troughs containing the leaves of different host plants.

Fresh leaves of these host plants were collected from the fields and placed randomly within a division, marked on the blotting paper, in each glass trough. The starved grubs in the group of ten were released in the center of each trough. Number of grub present on the leaves of different host plants as well as the leaf area of respective host plants consumed by grubs were recorded after 24 hours, of their release in the trough. Graph paper was used for finding out the leaf area consumed. The experiment was repeated thrice and host preference was assessed on the basis of average number of grubs per host as well as the leaf area (in cm2) consumed by the gurbs in case of each host.

III. RESULT AND DISCUSSION

For ascertaining the host preference a field trial was conducted at Mushari farm where eight varieties of the hosts were visited at weekly intervals. Leaves were pluckedat random from ten plants. Healthy and infested leaves wereisolatd. Data presented in Table indicated that the Pumpkin recorded the highest percentage as of 36.66 and the lowest 3.68 in bottle gourd. The next higher percentages were marked in Cucumber (21.94), Sponge gourd (21.91) and Moong (20.27). Out of these four hosts three belonged to family cucurbitaceae while one belonged to Gramineae. Such similarly in the matter of infestation among plants of two different families may be owing to some other factors also. Hence, in the next phase observations of only seven varieties of cucurbites were concentrated. Data are mention in table.

Observation on host preference of *A.foveicallis* L. against different host plants.

Sl. No.	Host	No. of observation						Average	% Infestation
		I	II	III	IV	V	VI		
1.	Pumpkin	07 (25)	18 (42)	20 (51)	26 (55)	12 (41)	23 (54)	17.6 (48)	36.66
2.	Ash gourd	00 (29)	06 (42)	05 (38)	08 (50)	00 (36)	02 (28)	03.5 (37.1)	9.43
3.	Sponge gourd	02 (17)	08 (21)	12 (44)	13 (57)	09 (50)	04 (30)	8.0 (36.5)	21.91
4.	Cucumber	05 (31)	11 (38)	10 (52)	14 (60)	08 (39)	13 (58)	10.16 (46.3)	21.94
5.	Tomato	02 (30)	06 (39)	01 (27)	08 (63)	05 (54)	01 (42)	3.8 (42.5)	8.94
6.	Weed	05 (40)	08 (30)	00 (51)	02 (48)	13 (60)	10 (52)	6.3 (46.8)	13.46
7.	Moong	06 (35)	09 (32)	13 (44)	02 (37)	01 (28)	13 (40)	7.33 (36)	20.27
8.	Bottle gourd	00 (27)	02 (31)	01 (30)	04 (46)	00 (38)	01 (40)	1.33 (35.3)	3.68

( ) denotes number of healthy leave.

Observation on host preference of *A.foveicallis* L. against cucurbitaecous plants.

Sl. No.	Host	No. of obseration						Average	% Infestation
		I	II	III	IV	V	VI		
1.	Sponge gourd	07 (30)	12 (37)	13 (35)	08 (21)	00 (28)	09 (40)	08.16 (31.83)	25.63
2.	Pumpkin	12 (32)	14 (41)	18 (38)	21 (30)	19 (40)	05 (31)	14.83 (35.33)	41.97
3.	Bottle gourd	06 (22)	01 (31)	09 (37)	03 (30)	10 (31)	05 (38)	05.66 (31.50)	17.96
4.	Ash gourd	03 (27)	08 (30)	00 (24)	03 (38)	05 (32)	09 (40)	04.66 (31.83)	14.64
5.	Musk pumpkin	08 (42)	04 (21)	03 (31)	01 (29)	06 (30)	04 (37)	04.33 (31.66)	13.67
6.	Bitter gourd	00 (29)	02 (37)	08 (24)	07 (29)	01 (33)	06 (33)	04.00 (30.83)	12.97
7.	cucumber	09 (30)	06 (20)	11 (31)	02 (28)	08 (30)	12 (31)	08.00 (28.33)	28.23

( ) denotes number of healthy leave.

The highest percentage (41.97) of infestation was noticed in Pumpkin followed by Cucurbites viz. Bottle gourd, Ash gourd, Musk pumpkin and Bitter gourd showed percentage of 17.96, 14.64, 13.67 and 12.97 respectively. These observations confirmed the polyphagous nature of *A.foveicollis* in one hand and on the other Pumkin is the major host of the pest followed by Cucumber and Sponge gourd. Considering all the hosts it was also evident that cucurbits are the preferred hosts. Weed *(Physalis minima)* and Moong may be named as alternate hosts. Cultivation of Pumpkin in large scale is done during February to July and the timing of showing and harvesting Moong is March and May respectively.

Weed belonging to family Solanaceae remains available throughout the year with lean period in winter and summer. It starts spreading with the onset of monsoon and vigous foliage develops during rainy season. Such synchronomous in growing helps the insect to build up population to ward off the evil effects

of ensuring unfavourable seasons i.e. rainy and winter when it maintains its restricted breeding and undergoes hibernatioin.

Results on host preference made it clear that, Cucumber, Pumpkin and Sponge gourd are the major host or red pumpkin beetle.

IV. CONCLUSION

First choice of red pumpkin beetle is Pumpkin followed by Cucumber and Sponge gourd.

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