



Studies of The Distribution of Red Cotton Bug, *Dysdercus cingulatus* (Fabricus) on Certain Host Plants of Malvaceae Family in Bihar (India)

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ABSTRACT

Dysdercus cingulatus Fb. (Pyrrhocoridae: Hemiptera) is commonly known as red cotton bug or red cotton stainer. It is tropical and subtropical in distribution. It is a serious pest of fibre crops, vegetables, citrus fruits, oil seeds, cereals and a variety of ornamental plants causing immense economic loss to the farmers by its adults and nymphs both. This insect pest infests many plants of Malvaceae family in Bihar. In present investigation, eight host plants of Malvaceae family viz; cotton, okra, China rose, Holly hock, common mallow, musk mallow, white jute and Tossa jute were selected to determine the susceptibility to red cotton bug. This is evident from the findings that cotton was most susceptible to *Dysdercus cingulatus* followed by okra.

Keywords: Distribution, Bihar, Red cotton Bug, *Dysdercus cingulatus*, Malvaceae, cotton, okra.

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INTRODUCTION

Dysdercus cingulatus Fb. (Pyrrhocaridae: Hemiptera) is commonly known as red cotton bug or red cotton stainer. It is tropical and subtropical in distribution. It is a serious pest of fibre crops, vegetables, citrus fruits, oil seeds, cereals and a variety of ornamental plants causing immense economic loss to the growers by its adults and nymphs both [7, 9, 11, 8]. Cotton is the main host plant of *Dysdercus cingulatus* but many other plants belonging to Malvaceae, solanaceae and Cucurbitaceae family are also susceptible to this pest.

Schaefer *et al.* [10] reported the occurrence of *Dysdercus cingulatus* in Sri Lanka, North east India, Bangladesh, Thailand, Philippines, Sumatra, Borneo, New guinea and northern Australia. Kamble [3] Lot [6], Boopathi *et al.* [1] Verma and Patel [12] etc. reported red cotton bug as a serious pest of cotton and many vegetables. In the present investigation a survey was made to study the distribution of red cotton bugs on certain host plants of malvaceae family in different Division of Bihar.

MATERIAL AND METHODS

Bihar can be divided into following three Agri-ecological zones:-

1. Zone First:- Includes Purnea, Kosi, Darbhanga and Tirhut divisions.
2. Zone Second:- Includes Saran, Patna, Magadh and Gaya divisions.
3. Zone Third:- Includes Mungher and Bhagalpur division.

The Cultural, geographical and socio-economic conditions are quite different in these zones.

For extensive survey, different districts in all the three zones were selected and every month grower's field with large acreage were visited. Different districts were selected in every zone for survey work. Zone first (I) included Muzaffarpur, Samastipur, Madhubani, Vaishali, Sitamarhi and Sheohar districts. Second Zone (II) included Patna, Nalanda, Biharsharif and Barh districts while third zone (III) included only Bhagalpur district. These places were visited regularly during 2018 and 2019.

In present investigation, following host plants of Malvaceae family were selected-cotton (*Gossypium*), okra (*Hibiscus esculentus*), China rose (*Hibiscus rosasinensis*), Holly hock (*Althae arosea*), Common mallow (*Malvaneglecta*), Musk mallow (*Abelmoschus moschatus*), White Jute (*Corchorus capsularis*) and Tossa Jute (*Corchoru solitorius*). Young and tender shoots were cut from the main plants and put into knop's culture solution. It was now kept in wooden cage (1 meter × 30 cms) with glass door fitted at three levels. Nymphs of *Dysdercus cingulatus* were transferred in the cage and doors were closed. Now number of pests was counted and tabulated.

RESULTS AND DISCUSSION

Results and summarized in Table - 1 and statistically analysed in Table-1 (A). From the data of the table, it is evident that out of eight host plants of malvaceae family, cotton was most susceptible to *Dysdercus cingulatus* followed by okra in both years of experiment i.e. 2018 & 2019 in all three zones of Bihar. Common mallow was found to be less susceptible to the post. The susceptibility of the host plants to red cotton bug (*Dysdercus cingulatus*) was in following descending order: cotton < okra < white jute < Tossa jute < Holly hock < musk mallow < China rose < common mallow.

Kohno [5] reported that distribution of red cotton bug was worldwide. Kohno & Nagan [5] and Hill [2] reported that red cotton bugs infested malvaceous and sorghum plants. According to Boopathi et al., [1] red cotton bug was a serious pest of cotton and many vegetables including okra. Kohno [5] reported some favourable host plants of *Dysdercus* viz., *Abelmoschus moschatus*, *Hibiscus esculentus*, *Hibiscus tiliaceus*, *Hibiscusrosa-Chinesis* *H. Syriacus*, *H. mutabilis* etc in Ishigaki - Jima Island.

**Table-1: SURVEY WORK : ABUNDANCE OF PESTS ON MALAVACEOUS PLANTS
(AVERAGE OF TWO YEARS)**

S.N.	Host	Zone-I		Zone-II		Zone-III		Average
MALAVACEOUS PLANTS								
		2018	2019	2018	2019	2018	2019	
1.	Cotton	26.8 (31.18)	29.8(33.09)	27.0 (31.31)	28.6 (33.33)	14.1(22.05)	12.6 (20.79)	23.1 (28.72)
2.	Okra	25.8(30.52)	27.6(31.69)	26.5(30.98)	28.3 (32.13).	14.0 (21.97)	13.1 (21.21)	22.5 (28.31)
3.	China rose	8.4 (16.84)	10.0(18.43)	8.1 (16.53)	7.4(15.78)	4.8(12.65)	5.8 (13.93)	7.4 (15.78)
4.	Holly hock	16.2(23.73)	17.6(24.80)	14.8(22.62)	16.2(23.73)	9.8(18.24)	9.8(18.24)	14.6(22.46)
5.	Common mallow	---	---	5.6 (13.6)	9.0(17.45)	2.0(8.13)	3.0(9.97)	4.9(12.79)
6.	Musk mallow	9.1(17.55)	12.2(20.40)	5.0(12.92)	4.6(12.38)	8.6(17.05)	9.6(18.04)	8.2 (16.63)
7.	White Jute	14.7(22.54)	17.7(24.87)	18.7(25.62)	20.0(26.56)	12.2(20.44)	14.2(22.14)	16.2(23.73)
8.	Tossa jute	15.6(23.26)	13.6(21.64)	19.6(26.27)	20.8(27.13)	12.0(20.27)	11.4(19.73)	15.5(23.18)
	Average	16.6(24.04)	18.3(25.32)	15.6(23.26)	16.8(24.19)	9.6(18.04)	9.9(18.33)	14.0(21.97)

Table-1 (A): Statistical Analysis of ANOVA

SOURCE OF VARIANCE	SUM OF SQUARES	d.f.	MEAN SQUARE (VARIANCE)	F-RATIO
Between the samples	162.05	2	81.02	1.3753
Within the samples	1237.21	21	58.914	
Total	1399.26	23		
Significant at 0.05%				

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