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## **A Critical Study of Life History of Red Cotton Bug, *Dysdercus cingulatus* (Fabricus) on Okra in Muzaffarpur District.**

**Dr. Namita Kumari, M.A., Ph.D.(Zoology)**

**B.R.A. Bihar University, Muzaffarpur (Bihar)**

### **ABSTRACT**

The annual production of fruits and vegetables in India is about 81.28 million tonnes and 161.18 million tonnes respectively. Bihar is one of the largest producer of fruits and vegetables in the country. The total area under vegetable cultivation in Bihar is about 5.00 lakh ha with annual production of about 7.6 million tonnes. Red cotton bug *Dysdercus cingulatus* (fab) is a serious pest of cotton in U.P., Bihar, A.P., Tamilnadu & Maharashtra. This also infests okra, white jute, maize, citrus fruits etc. Red cotton bug is a small, deep red or dusky brown coloured insect. The female lays eggs in the soil, debris or decaying vegetable matter. Female nymph is a little larger than the male ones. There are five nymphal stages. Life cycle duration varied between 40 to 47 days. The longevity of male and female was 20–23 days and 16–18 days respectively. Fecundity ranged between 54–64.

**Keywords :** Red Cotton Bug, *Dysdercus Cingulatus*, Okra, Infestation, Muzaffarpur.

### **INTRODUCTION**

Horticulture is a more vibrant and dynamic sector of India. It constitutes 30% of the agriculture GDP. The annual production of fruits and vegetables in India is about 81.28 million tonnes and 161.18 million tonnes respectively. Bihar is one of the largest producer of fruits and vegetables in the country. The total area under vegetable cultivation in Bihar is about 5.00 lakh ha with annual production of about 7.6 million tonnes. Red cotton bug *Dysdercus cingulatus* fab is the serious pest of cotton in U.P., Bihar, A.P., Tamilnadu & Maharashtra. This also infests okra, white jute, maize, teak, citrus fruits etc. Okra which is also known as "ladies finger" or "Bhindi" is one of the important vegetable crops in India. It is grown throughout the tropical and subtropical regions and also in the warmer parts of the temperate regions. It is cultivated in 0.35 million ha area with the annual production of 3.5 million tonnes and productivity of 9.6 tonnes / ha in India. The major okra producing states in India are Bihar, U.P., Orissa, West Bengal, A.P. & Karnataka. Ahmad and Mohammad [1]; Venugopal et al, [7]; Lot, [5], Kohro and Nagon, [4]; Kamble, [3]; Boopathi et al, [2]; Verma and Patel, [8]; Verma et al, [9] etc. reported red cotton bug as a serious insect pest of cotton & many vegetables including okra. *Abelmoschus esculentus* (okra) is slimy but delicious. Okra

has been also reported as a medicinal vegetable due to its high dietary fibre content. Fibres are amazingly helpful in cleaning up the colon. In the present investigation, life history of *Dysdercus cingulatus* was studied under laboratory conditions on Okra at Muzaffarpur (Bihar).

## **MATERIALS AND METHODS**

Nymphs of red cotton bug were collected from Okra field and confined to Jars (25 cms in diameter) with filter paper on the bottom and mouth of the jar was closed with muslin cloth. Fresh seeds of Okra were provided at 2 days interval till the emergence of the adults. Newly emerged adult pairs were confined in jars separately with filter paper at the bottom to obtain eggs. Moist cotton was provided under filter paper to maintain the humidity and fresh seeds of Okra were provided daily. Jars were checked daily to observe egg laying. After egg laying, 20 eggs were collected from jar and they were kept in petridishes. Incubation period was recorded. After hatching the nymphs were transferred to other petridishes and they were provided fresh okra seeds. Different nymphal stages and nymphal duration were recorded till the emergence of the adults. Now, male and female adults were reared separately to observe their longevity. The number of eggs laid by each female was also observed to calculate the fecundity. Experiment was carried out in laboratory at 26–28°C temperature and 72–76% humidity during the year 2016–17.

## **RESULTS AND DISCUSSION**

Eggs were laid singly or in small clusters. They were spherical and yellow in colour. Data of the investigation is summarized in table-1. Incubation period varied between 6–7 days. Freshly hatched nymphs were pale orange, later on turned into red colour. Early nymph was about 2.5 mm long with its rostrum reaching the abdomen. There were five nymphal instars. The duration of 1st, 2nd, 3rd, 4th and 5th instars varied between 2–3, 3–4, 6–7, 9–11 and 14–15 days respectively. The total nymphal period completed in 34 to 40 days. Total life cycle duration varied between 40 to 47 days. The longevity of male and female was observed 20–23 days and 16–18 days respectively. Fecundity ranged between 54–64. Adult insects were deep red or dusky brown in colour with dirty white transparent wings and black spots on forewings. The female adult was larger (13–14 mm in length) than the male (11–12 mm in length).

The results obtained here for life cycle duration on okra seeds were variable from the previous work of Kamble (1971) who studied the life cycle and bionomics of the pest on okra fruits. The change in food might change the life cycle duration & biology of the pest (Lot, 1956; Kohno and Nagan, 2004). The change of temperature could also alter the life cycle duration and other parameters of an insect (Schlichting and Pigliucci, 1998) & Kamble (1971) Verma & Patel (2012) studied the biology and bionomics of the pest at 24 + 7.70°C while we studied at room temperature (26–28°C).

**TABLE-I:**

**Life cycle duration, longevity and fecundity of Red cotton Bug, *Dysdercus cingulatus* in Laboratory conditions**

<b>Stages</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>
<b>Incubation period</b>	6 days	7days	6.5days
<b>Nymphal Period</b>			
1st instar	2days	3days	2.5days
2nd instar	3days	4days	3.5days
3rd instar	6days	7days	6.5days
4th instar	9days	11 days	10.0days
5th instar	14 days	15days	14.5days
Total nymphal period	34days	40days	37.0days
<b>Longevity</b>			
Male	20days	23days	21.5days
Female	16days	18days	17.0days
Fecundity	54 eggs	64 eggs	59 eggs



*Plate -1 Okra Field*



*Plate -2 Adult Red Cotton Bug*

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