

## Literature

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***Epilachna vigintiocto-punctata* F. and *E. dodeca-stigma* Muls.  
(Coleoptera; Coccinell.) as Pests on Cow Pea**

By A. S. SRIVASTAVA and S. S. L. KATIYAR

**Abstract**

The lady bird beetles, *Epilachna vigintiocto-punctata*, F. and *E. dodeca-stigma*, Muls. were observed for the first time damaging cow pea crop in Uttar Pradesh. The adults as well as grubs feed on the foliage leaving only the hard tissues of veins. The maximum number of plants are severely damaged, which varies from 35 to 75 %. The average number of adults as well as grubs is 2.9 to 6.4 per plant. The *Epilachna* beetles have now migrated from solanaceous and cucurbitaceous crops to cow pea crop.

**Introduction**

*Epilachna* species or lady bird beetles are serious pests of solanaceous and cucurbitaceous crops (PUKINSKAYA 1965; NAKATA 1967; ELKHIDIR 1969 and

JUDGE et al. 1970), but in India it is reported to cause damage to brinjal and potato crops as a major pest while to tomato, bittergourd and other cucurbits as a minor pest (LEFROY 1909; SINGH 1943; AYYAR 1963 and CHOWDHARI 1965). CHOPRA (1925) and BASU et al. (1968) observed beetles on brinjal. SINHA et al. (1969) studied feeding behaviour of lady bird beetles on *Luffa aegyptica*. The authors have observed *Epilachna vigintiocto-punctata*, F. and *E. dodeca-stigma*, Muls. to be pest on cow pea, *Vigna sinensis*, in an epidemic form for the first time in Uttar Pradesh.

### Nature and extent of damage

The distinguishable features of *Epilachna vigintiocto-punctata*, F. and *E. dodeca-stigma*, Muls. are the number of black dots on their tegmina, the former have numerous dots on each tegmina while the latter bears only six dots on each tegmen. The grubs and adults of both species feed upon the leaves and the tender shoots. The grubs nibble and scrape the surface of leaves with the help of mandibles and eat the softer tissues of the leaves rejecting the cellulose and other hard tissues previous to ingestion. The adults consume leaf tissue in a semicircular manner with the help of dense setae on galea and neighbouring parts holding the tender portions during process of scraping and leaving behind the veins and nervures intact. Thus all the green matter of the leaves is consumed by the adults and grubs thereby affecting the photosynthesis in the plant. The severely attacked leaves ultimately dry up and fall down. Such skeletonized weakened plants show stunted growth in earlier phases and later on wither out and die.

The extent of damage is correlated with the progressive population of the pest infesting the crop. The plants are most susceptible in earlier stages of development being tender leaves.

Ten samples each consisting of 20 plants were taken atrandom throughout the field. The damaged plants were catagorised into three distinct types viz., "Light"-showing 0 to 25 % damaged leaves; "Medium"-showing 26 % to 75 % damaged leaves and "Severe"-showing 76 % and more damaged leaves vide table 1. The symptoms of the damage caused by the pest are the blighted patches in the leaves.

Table 1

Showing the extent of damage by *E. vigintiocto-punctata* and *E. dodeca-stigma* on cow pea during July 1971

No. of plants	No. of plants attacked			Percentage of plants attacked		
	Light	Medium	Severe	Light	Medium	Severe
20	4	5	11	20	25	55
20	3	4	13	15	20	65
20	5	8	7	25	40	35
20	2	6	12	10	30	60
20	6	5	9	30	25	45
20	2	3	15	10	15	75
20	1	5	14	5	25	70
20	6	4	10	30	20	50
20	7	—	13	35	—	65
20	5	7	7	25	35	35

The population of adults as well as grubs feeding on the cow pea crop were recorded to determine their intensity per plant vide Table 2.

Table 2  
Showing the population of adult and grub stages of *Epilachna* beetles on cow pea in July 1971

No. of plants	Adults	No. of insects recorded Grubs	Total	Average per plant
20	21	43	64	3.20
20	33	35	78	3.90
20	26	41	67	3.35
20	39	50	89	4.45
20	47	55	102	5.10
20	46	48	94	4.70
20	27	30	57	2.85
20	24	47	71	3.55
20	56	72	128	6.40
20	44	62	106	5.30

From the above tables 1 and 2 it is clear that the percentage of attacked plants varies from 5 % to 15 %, 15 % to 40 % and 35 % to 75 % in light, medium and severe categories of attack respectively. The maximum number of plants show the "severe" attack leaving a few under "light" or "medium" attack. The intensity of the pest (adults and grubs) population varies from 2.85 to 6.40 per plant. *Epilachna* beetles have been recorded to damage the cucurbits and solanaceous crops in Uttar Pradesh so far, but it is interesting to note that they have gradually migrated to cow pea crop and cause considerable damage.

#### Zusammenfassung

##### *Epilachna vigintiocto-punctata* F. und *E. dodeca-stigma* Muls. als Erbsenschädlinge

Die Marienkäfer *E. vigintiocto-punctata* und *E. dodeca-stigma* wurden erstmals als Erbsenschädlinge in Uttar Pradesh/Indien beobachtet. Die Käfer und ihre Larven fraßen die Blätter, wobei sie nur die Blattadern überließen. Maximal wurden 35 bis 75% der Pflanzen befallen. Die mittlere Zahl an Käfern und Larven betrug 2,9 bis 6,4/Pflanze. Der Schädling wanderte von Solanu auf Cucurbitaceen und Erbsen über.

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## Biological Studies on Certain Species of Leaf-Hoppers (Hemiptera — Cicadellidae) in Egypt

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### Abstract

The biological studies carried out on *Empoasca lybica* de Berg., *Asymmetrasca decedens* Paoli, *E. decipiens* Paoli and *E. distinguenda* Paoli., showed a negative correlation between temperature and the incubation period. At 19° C, eggs of *E. lybica* and *A. decedens* failed to hatch. All species passed through five nymphal instars, but those of *E. lybica* and *A. decedens* had six instars at 29 and 27° C. Very few individuals of *distinguenda* reached the adult stage after four instars. The durations of the last nymphal instar were always longer than the preceding. The host plants proved to have a profound effect on the duration of the nymphal stage, the total egg production and longevity of adults. Mating was essential for egg production, but repeated copulation seemed to be unnecessary. The longevity of females was nearly double that of the male, sometimes more. Unmated adults of both sexes lived much longer than those mated once or several times. The sex ratio obtained was 1:1 for *E. lybica* and *E. decipiens* and 2:3 for the remaining two species. Nineteen species of jassids on twenty four host plants and five species of egg parasites were recorded.

### Introduction

The presence of jassids in Egypt has been recorded by HORVATH (1911); WILLCOCKS (1937); WAGNER (1954) and LINNAVUORI (1964). Though the damage done by jassids is at the time being not very serious, leafhoppers are expected to constitute a real treat to many crops in the near future. The large number of species recorded, the wide range of host plants that are liable to be attacked and the high populations attained by certain species are among the most important factors that support this idea. Much work has been carried out on the population distribution and control of jassids (COWLAND 147; JOYCE 1961; LOMAS 1961; SCHULTZ 1961; EVANS 1966). But apart from short accounts given by EVANS (1964) and DI MARTINO (1965), nothing of importance on the biology has been published.