

AN OBSERVATION ON THE BIOLOGY OF LIME BUTTERFLY IN HOWRAH DISTRICT, WEST BENGAL

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Abstract : The Lime butterfly (*Papilio demoleus* Linnaeus, 1758) (Papilionidae: Lepidoptera) is considered among the most important insect pests of citrus trees in all over the country. Life history of Lime butterfly in Howrah district was studied in field conditions to find out different stages of its life cycle. Present communication reports the life cycle from 5th instar to adult. A detailed study on the pupal stage is provided here. Results of the present study on biological traits of lime butterfly may be valuable scientific evidence on planning citrus butterfly management programs.

Key words: Lime butterfly, life cycle, Howrah district, Citrus plant

Introduction:

Butterflies always are been attractive and tantalizing group of creatures in the class Insecta. This alluring group falls under the superfamily Papilionoidea Latreille, 1802 (Saji et al. 2020). Of which, family Papilionidae Latreille, 1802 is the sixth one in the world, according to their belonging species (Nieukerken *et al.*, 2011). Northern Lime Swallowtail (*Papilio demoleus demoleus* Linnaeus, 1758) or Lime butterfly falls into this family which is widely spread throughout India below 2000 m elevation (Varshney and Smetacek, 2015). In India, about 250 species of insects have been found attacking and spoiling various citrus species (Nayar et al, 1976). Among those

various insects, lime butterfly is one of the major pests even throughout Asia (Jahnavi et al, 2018). Caterpillars or larvae of this species are the ruinous pest of Key lime (*Citrus aurantifolia*) feeding upon the foliages voraciously and cause excessive defoliation.

Materials and methods:

The life cycle and different developmental stages have been observed in this study. The study was carried out in the locality near Finga Gachhi (Latitude 22.6115906° N, Longitude 88.1100699° E) in Howrah district of West Bengal from 23rd May, 2020 to 28th May, 2020. Though butterflies possess four stages (egg, larva, pupa and adult) in their holometabolus life cycle, in this study we recorded from the later larval stages. The host plant also been identified as *Citrus aurantifolia* upon which the larva was feed on.

Results and discussions:

Fertilized eggs were laid by the female of lime butterfly on the host plant, were then moved towards the larval stages.

Larval stage: During the developmental stages, the larva was collected on 23rd May, 2020 from the above mentioned place from the host plant, *Citrus aurantifolia* (Fig. 1). The collected larva was in plain uniform green with a few dark brown markings on each of the eighth and ninth sternites of the body and head orange in colour. With the characters found, the larva was at its fifth stage (Fig. 2).

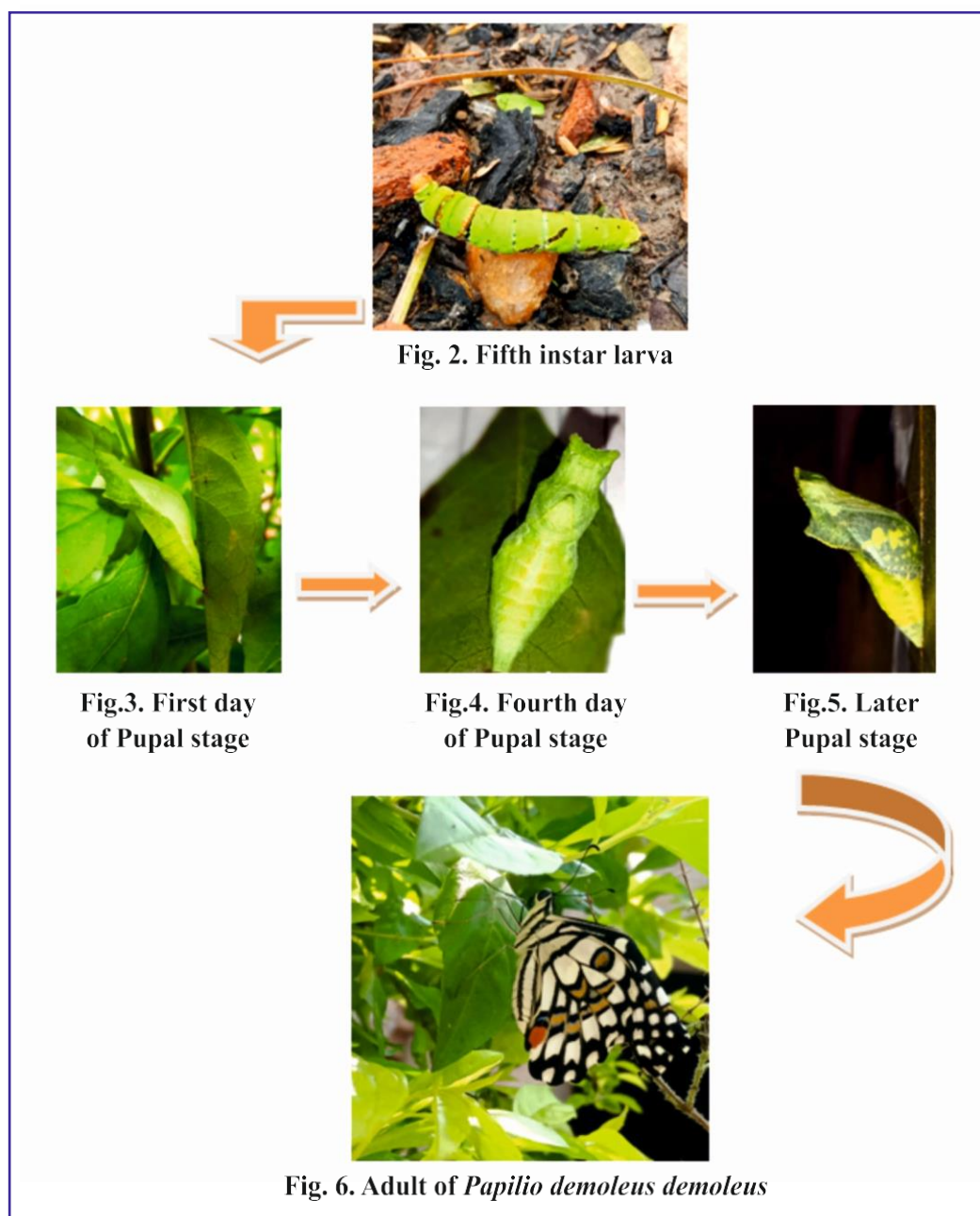


Fig. 1. Host plant of Lime butterfly (*Citrus aurantifolia*)

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Pupal stage: After two days of fifth instar larval stage, the caterpillar started expelling the silk like wastes from its system and round it all over its body to form chrysalis. A silken girdle helped the pupa to stay in upward position. The pupa was formed above 1 meter from the ground. It was light green with two projections to the front of its head and also one on its thorax and abdominal segment was lime green. The length of the pupa was in 29 mm (Fig. 3, 4, 5).

Adult stage: The fully developed butterfly emerged out from the pupal case. The adult one was quite large in size whose head and thorax were black with creamy yellow streaks on each side. Antennae were dark brown (Fig. 6). Wings were dull black, decorated with yellow markings at the outer edge with a chain of yellow spots.



Discussion: Lime butterfly being a destructive pest of Key Lime or *Citrus aurantiifolia* damages it excessively. As the larvae feed on foliage of the host plant, it causes severe devastation of the whole plant. And this results to excessive economic loss too. To reduce the loss and enhance the yield, proper crop management procedure should be involved and for which the biology of the affecting species, its behavioral activities, seasonality, reproductive cycle are need to known. Butterflies have an impact on climatic factors like temperature and humidity. In warmer temperature and high humidity, they have the tendency to grow faster. Islam et al (2019) studied and revealed the effect of temperature on the life cycle and pupal color of lime swallowtail butterfly. Their study

concluded that lime butterfly showed great activity in warm months and hibernated in winter months. This might help the relative abundance of this pest and further would be helpful in pest management.

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