

BIONOMICS OF CABBAGE CATERPILLARS IN THE MIDCOUNTRY  
OF SRI LANKA WITH SPECIAL REFERENCE TO DIAMONDBACK MOTH,  
Plutella xylostella L. (Lepidoptera : Yponomeutidae)

By

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## ABSTRACT

Laboratory and field investigations were carried out under insecticide free conditions to study the bionomics of lepidopteran pests of cabbage grown in mid-country of Sri Lanka. The major pests were Plutella xylostella L., Spodoptera litura F., Crocidolomia binotalis Z., Chrysodeixis eriosoma Doubl. and Hellula undalis Fab. The life history, external morphology, behaviour and damage caused by each species were studied. Observations were also made on degree of infestation of immature stages in respect of age and inhabiting sites of plants and the season. The lifespan of respective species ranged from 15.7-27.2 (mean=18.4), 28.40-42.92 (mean=32.48), 20.93-42.83 (mean=28.57), 19.83-37.43 (mean=25.81) and 16.35-35.81 (mean=25.6) days. Two keys were developed to differentiate the eggs and larvae of the different species in the field. The damage done by a density of 1-2 larvae per plant of H. undalis and S. litura prevented the establishment of young plants and therefore was more severe than that of other species.

Plutella xylostella, S. litura and C. binotalis were more predominant than other species. The population of H. undalis peaked during the period from March to July. Higher temperature, relative humidity and lower day temperature variation seemed to favour its abundance. Populations of other caterpillars were severe from December to April and at a lower rate from mid July to October. Higher incidences were associated with weather conditions such as lower temperature and relative humidity and a higher day temperature variation after a period of higher temperature and relative humidity.

Seventeen species of parasitoids were observed to parasitize cabbage caterpillar species. Major species included Trichogrammatoidea? bactrae (caused up to 35% egg parasitism), Apanteles plutellae Kurdjumov (caused up to 51% larval parasitism) and Tetrastichus species (caused up to 25% pupal parasitism) on P. xylostella, Teleocmus remus Nixon and Microplitis similis Lyle on S. litura, Apanteles stantoni Ashmead on C. binotalis, Apanteles ruficrus Haliday on C. eriosoma and Diaeretiella rapae M'Intosh on H. undalis. All the parasitoids exhibited seasonal occurrences. Hyperparasitism by Tetrastichus sokolowskii Kurdjumov and Aphanocmces fijiensis Ferr. was observed on A. plutellae and their occurrences were occasional.

All these information will be useful to develop Integrated Pest Management strategy (IPM) for cabbage.