

and the average number of parasitoids developed per host egg was 1.9.

Results of the field release studies showed that the parasitoids could parasitize the eggs of *A. moorei* in the field with a mean parasitization of 21.9 per cent (Table 1). These results indicate that *T. brasiliensis* could be of great use in suppressing the population of *A. moorei* in the field. *T. brasiliensis* has been found to be a promising parasitoid against *Heliothis armigera* (Hb) (Bournier and Peyrelongue, 1973). It could parasitize *H. armigera* in tomato fields to the tune of 34.6 to 51.3 per cent (Mani and Krishnamoorthy, 1983). The findings have demonstrated the usefulness of *T. brasiliensis* in the management of cotton pests.

**Key words:** *Trichogramma brasiliensis*, *Amsacta moorei*, field parasitization.

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## Occurrence of Cytoplasmic Polyhedrosis Virus in Citrus Leaf Caterpillar, *Papilio demoleus* L. (Papilionidae : Lepidoptera)

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The citrus leaf caterpillar, *Papilio demoleus* L. causes serious damage to citrus, especially in the nurseries. During the course of our field survey of citrus orchards at the Indian Institute of Horticultural Research Farm Bangalore, a cytoplasmic polyhedrosis virus (CPV) was isolated from a few dead caterpillars of *P. demoleus*.

The diseased caterpillars were reduced in size and phase contrast microscopic examination of the tissues revealed numerous polyhedral inclusion bodies. Occlusion bodies (OB) negatively stained with Giemsa revealed the more or less round shape of polyhedra. To determine the size of the OBs, one hundred polyhedra

were measured at random under a pre-calibrated phase-contrast microscope at 400x using a micrometer. The diameter of the OBs varied from 0.175 to 2.0  $\mu$  with an average of 1.25  $\mu$ . A nuclear polyhedrosis virus has been reported earlier by Godse (1976) from *P. demoleus*, but this appears to be the first report of cytoplasmic polyhedrosis virus in *P. demoleus* in India. On inoculation to late third instar larvae of *P. demoleus* larvae by leaf surface contamination technique, the virus produced death of the larvae in 9-16 days. The symptoms of CPV infected *P. demoleus* resembled those described for other lepidopterous larvae (Smith, 1963).

Invariably, the dead larvae infected with CPV were bent backwards dorsally (Fig. 1). Similar symptom of bending backward due to infection by CPV has been reported by Steinhaus and Dineen (1959) in the alfalfa caterpillar, *Colitis eurytheme*. In the course of our observation, it was also found that in some cases, the CPV infection was associated with natural parasitisation by the internal, gregarious parasite *Apanteles papilionis* Viereck. Further studies are in progress to find out the interaction of CPV with parasitisation by *A. papilionis*.

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**Key words:** *Papilio demoleus*, Cytoplasmic polyhedrosis virus

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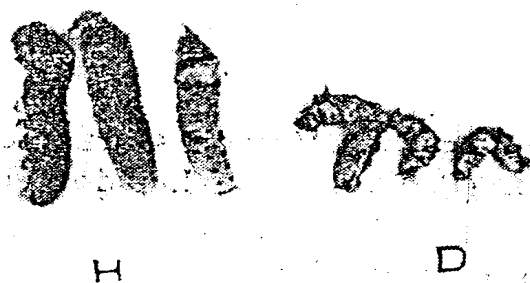


Fig. 1. Healthy (H) and CPV-infected (D) larvae of *P. demoleus*