

Table 1 Hardness and infestation of guava fruit fly *D. dorsalis*

Pressure (kg/cm ²)	No. of fruits examined	No. of fruits infested	Per cent infestation
7-35	156 (21.1)	156 (21.1)	100
42-70	142 (19.2)	142 (19.2)	100
77-105	110 (14.9)	109 (14.7)	99
112-140	103 (13.9)	77 (10.4)	79
147-175	132 (17.9)	54 (7.3)	41
180 and above	96 (13.0)	8 (1.1)	8

Note: The hardness of the fruit was measured by using Magness-Taylor pressure tester; figures in parenthesis are the percentage of the total fruits examined.

ranged between 8 and 100% on the basis of fruit infestation in each of the above mentioned categories. It was, however, interesting to observe that the softer fruits were infested more than the harder fruit samples (table 1). From the results it was evident that the ovipositor of the fruit fly can exert a pressure more than 180 kg/cm². This is indeed a tremendous amount of force that is exerted by the fruit fly to lay its eggs. These results also contradict the commonly held view that the fruit flies lay their eggs on the small immature fruit⁵. From the observations made it appears that the fruit fly lays its eggs only after the fruits have been matured a little and have become soft and cannot withstand the pressure of 180 kg/cm².

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1. Wigglesworth, V. B., *The principles of insect physiology*, Methuen, London, 1970.
2. Heitler, W. J., *J. Exp. Biol.*, 1977, **67**, 29.
3. Pflüger, H. J. and Burrow, M., *J. Exp. Biol.*, 1978, **75**, 81.
4. Wadhi, S. R. and Batra, H. N., *Entomology in India*, Entomological Society of India, New Delhi, 1964, 227.
5. Narayanan, E. S. and Batra, H. N., *Fruit flies and their control*, ICAR, New Delhi, 1960, p. 1.

NEW RECORD OF THE NUCLEOPOLYHEDROSIS OF *TRABALA VISHNU* (LEFEVERE) FROM INDIA

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THE leppet-moth caterpillar, *Trabala vishnu* (Lefevre) (Lasiocampidae: Lepidoptera), distributed widely in Burma, China, East Indies, India, Java, Sri Lanka etc is a sporadic yet potentially destructive pest of forest and agricultural crop plants especially, castor, guava, gum tree, Indian almond, Indian rose, Java plum, pomegranate, rose apple, sal, surinam cherry, and yellow bells¹⁻⁵. Five natural enemies reported so far, from *T. vishnu* include the eupelmid⁶ egg parasite from Pantnagar in Uttar Pradesh, three larval parasites namely two braconids⁷, *Microdus fumipennis* Cam and *Microdus tuberculatus* Cam and one dipteran⁸, *Crossocosmia sericariae* Rondani from Calcutta in West Bengal and an unidentified bacterial disease⁹ affecting its larvae and pupae at Bangalore in Karnataka. The present communication deals with the occurrence of nucleopolyhedrosis in the larvae of *T. vishnu* feeding on castor, *Ricinus communis* Linnaeus leaves, in the Punjab. This appears to be the first report of a nuclear polyhedrosis virus infection in this lasiocampid caterpillar, *T. vishnu* from India.

During investigations on the microbial infections of insect pests, a few dead and dying *T. vishnu* larvae were noticed infesting castor in Ludhiana district and exhibiting symptoms of a viral disease viz hanging their heads downwards while keeping their larval cadavers fixed to the castor leaves by their prolegs and at times releasing their cloudy-body contents from ruptured integuments (figure 1). The field collected wild populations of *T. vishnu* were maintained on fresh clean castor leaves in the laboratory, to detect any natural infection. Up to 10% natural incidence of this viral disease alone was detected during October and November. The progressive symptoms of the viral disease observed, included loss of appetite, sluggish movements, loosening of the hairy-tufts from their integuments coupled with stretching of intersegmental membranes, characteristic whitening of sterna and quite frequently the rupturing of integuments before their death. Some of the diseased larvae could crawl to the top of the rearing containers and hang themselves in typical downward positions with their

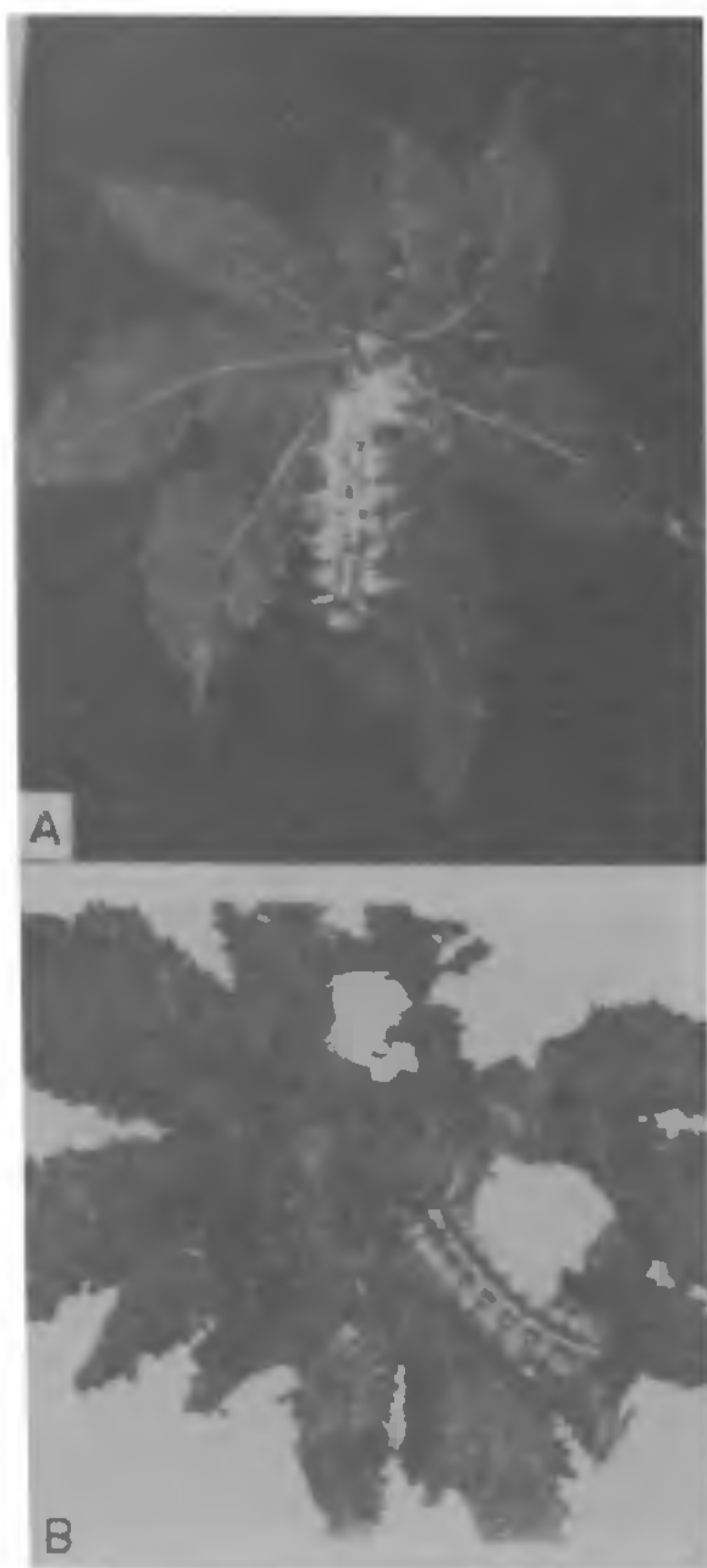


Figure 1A and 1B. Larvae of *Trabala vishu* (Lefevre) on castor leaves. **A.** Diseased dead larva fixed to the leaf by means of prolegs (pl) while hanging its head downwards. **B.** Left, diseased dead larva with broken integument releasing cloudy body content (bc); Right, healthy larva.

posterior prolegs attached either to the glass surface or to the cloth covering mouths of rearing jars while others lay over the left-over leaves and died immediately. The cadavers later turned brownish black. The microscopic examination of the tissue-smears prepared from dying and dead insects revealed the presence of hypertrophied nuclei containing polyhedral inclusion bodies of the causative-

virus in the cells of fat body, hypodermis and haemocytes. The refringent inclusions observed in aqueous smears were mostly polyhedral though cuboidal and triangular shapes were also seen and all these inclusions were able to pick up Azocarmine stain only after acid-hydrolysis. Thirty younger larvae of *T. vishnu*, when fed on castor leaves dipped in an aqueous suspension of polyhedral inclusion bodies (5.0×10^6 PIBs per ml) of the causative viral agent for 24 hr and subsequently reared on the clean untreated castor leaves, contracted the typical viral disease registering cent per cent mortality within 4 to 8 days. A similar pattern of disease progression (signs and symptoms) was observed among treated larvae and a large number of refringent polyhedral inclusion bodies similar to the fed polyhedra were obtained, thereby confirming the highly pathogenic nature of the causative-virus identified as a nuclear polyhedrosis virus. Further studies on this virus are being reported elsewhere.

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1. Beeson, C. F. C., *Indian Forester*, 1919, **24**, 10.
2. Lefroy, H. M., *Indian Insect Life*, Thacker, Spink and Co., London, 1909, p. 491.
3. Rathore, Y. S. and Verma, J. K., *J. Bombay Nat. Hist. Soc.*, 1976, **74**, 481.
4. Sevastopulo, D. G., *J. Bombay Nat. Hist. Soc.*, 1939, **41**, 311.
5. Wadhi, S. R. and Batra, H. N., Pests of tropical and sub-tropical fruit trees, In: *Entomology in India*, (ed.) N. C. Pant, The Entomological Society of India, New Delhi, 1964, p. 227.
6. Khan, M. A., *J. Bombay Nat. Hist. Soc.*, 1983, **80**, 656.
7. Niceville, de L., *Indian Mus. Notes*, 1901, **5**, 107.
8. Alcock, A., *Indian Mus. Notes*, 1900, **4**, 136.
9. Viswanat, B. N. and Gowda, B. L. V., *Curr. Res.*, 1974, **3**, 34.