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### STAPHYLINID BEETLE, *PAEDERUS FUSCIPES* CURTIS.—A POTENTIAL BIO CONTROL AGENT IN RICE

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RICE is the foremost food crop of the developing world and also a major source of protein for masses in Asia<sup>1</sup>. It is subjected to attack by more than 100 insect pests, 20 being of major importance<sup>2</sup>. During the past several years, there has been an increased interest in the utilization of natural enemies, particularly predators for the regulation of rice insect pests<sup>3-5</sup>. Due to abnormal increase in the number of insect pests associated with the rice crop, integrated pest management strategies require a systemic study of the natural enemy complexes of rice pests. Among them, the predatory beetle (*Paederus fuscipes* Curtis.) is highly abundant in the rice fields and this, if conserved or augmented, can regulate many insect pests. An attempt was made to study the predatory potential of the beetle on rice hoppers under green house conditions at the Paddy Breeding Station of this university.

#### Natural occurrence

Natural occurrence of this predatory beetle in large numbers was noticed in certain rice ecosystems of Avinashi at Coimbatore district during January and February, 1988. The predatory beetle population ranged between 5 and 20/m<sup>2</sup> and it was identified as *Paederus fuscipes* Curtis. (Staphylinidae: Coleoptera).

Beetles are small, 9 mm long, elongate, brightly coloured with black sclerotized head, red thorax and bluish abdominal segments. Hind wings are well-developed. They are very active and nocturnal in habit. They occur in paddy fields ready for harvest and are found in the field bunds, cracks and crevices in the soil. They are highly attracted towards the moist soil and shady places. The grubs are predacious and prey upon dead and disabled ants. Adult beetles are known to secrete toxic substances cutaneously or from their pygidial glands. The substances cause blisters on the skin which subside in 3-4 days.

#### Predatory potential

The predatory potential of the adult staphylinid beetle on the adults of brown plant hopper (BPH), *Nilaparvata lugens* Stal., white backed plant hopper (WBPH), *Sogatella furcifera* Horvath. and green leaf hopper (GLH), *Nephotettix virescens* Distant was studied in three different experiments by caging in the potted rice plants with definite number of hoppers along with prestarved (4 h) two adult beetles. Thirty adults of each type were provided in each experiment as food for every two adult beetles. Five replicates (hills) were maintained in each experiment.

The number of each type consumed by beetles was recorded daily. Fresh population of hoppers (BPH/WBPH/GLH) was provided each day to maintain a constant population of 30/replication. The predatory potential was assessed for five days.

The data collected on their predatory rate on BPH, WBPH and GLH are presented in table 1. The results revealed that each staphylinid beetle consumed on an average 8.7 BPH or 8.3 WBPH or 8.4 GLH per day. The information on the predatory rate of the staphylinid beetle on rice hoppers will help us to fix an appropriate threshold level for rice

Table 1 Predatory rate of staphylinid beetle, *Paederus fuscipes* Curtis. on different species of rice hoppers

Rice hopper	Stage	Number of hoppers introduced	Mean number consumed by a beetle per day
<i>N. lugens</i>	Adult	30	8.7 <sup>a</sup>
<i>S. furcifera</i>	Adult	30	8.3 <sup>a</sup>
<i>N. virescens</i>	Adult	30	8.4 <sup>a</sup>

<sup>a</sup>Mean numbers are not significantly different at 5% level.

hoppers, when predatory beetle and rice hoppers complex exist in the field.

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day with maximum population between 9 and 11 h. *X. valga*, on an average visited more almond flowers per min (22.40) compared with honeybee *Apis cerana indica* F. (7.5). It remains active from March to mid November. Perusal of the literature reveals that *X. valga* has not been recorded from India so far. Evidently, this report constitutes the first record of *X. valga* from India. Further studies on its pollination potential, bioecology and management could be of great applied value in temperate zones of India and elsewhere where very low temperature coupled with low light intensities and inclement weather are anticipated, when fruit crops like almond, apple, peach, plum, cherry and pears are in bloom.

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#### NEW RECORD OF *XYLOCOPA VALGA* GERSTACKER (HYMENOPTERA: ANTHOPHORIDAE) FROM INDIA

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THE species of *Xylocopa* are acknowledged as pollinators of several crops<sup>1-7</sup>. The genus is characterized by large, usually black insects with long tongues and dark wings. They nest in thatched houses or hollows of bamboos used to construct hut roofs on the countryside. They have powerful jaws and drill holes in forest timber<sup>8-10</sup>, to make provision for their nests. More than 19 species of *Xylocopa* have been recorded from Indian sub-continent including Burma and Ceylon<sup>11</sup>. In the present study, a survey of various bee pollinators of fruits and agricultural crops was conducted for two years (1986-87) from March to December. In this survey, a very efficient pollinator species of *Xylocopa* was collected, which has been identified as *Xylocopa valga* Gerstacker through the courtesy of Dr K. M. Harris, Director, Commonwealth Institute of Entomology, London.

The emergence of *X. valga* coincides with the blooming of almond during early March, when the inclement weather limits the field activities of pollinating insects. *X. valga* has been found working during unfavourable weather conditions. It works at a critical air temperature of 6-7°C and on cloudy/overcast days. Field activity continues throughout the

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#### THE CORPUS LUTEUM OF THE BAT, *HIPPOSIDEROS LANKADIVA* (KELAART)

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IN most bats the corpus luteum develops within the confines of the ovary<sup>1-5</sup>. However, in rhinoloph-