Pest Control and Management
INSECTS

First recorded incidence of rice bugs in Manipur, India

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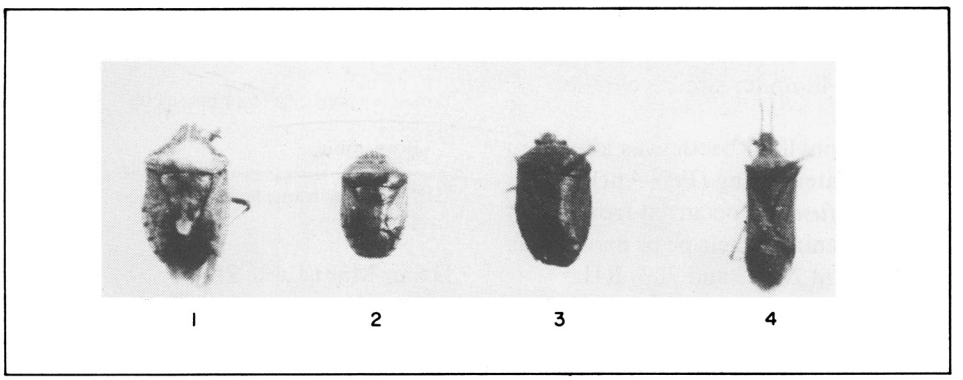
Surveys of insects in the major rice growing districts of Imphal, Thoubal, and Bishnupur covered 24 villages of Manipur Sep-Nov 1986. Four species of bugs were recorded for the first time during the milk stage of rice. Three belong to family Pentatomidae, and one to Coreidae (see figure). These bugs caused chaffy grains and discoloration, depending on time of appearance and intensity.



Four rice bugs found in Manipur, India, 1986. 1) *Dolycoris indicus* Stal: mild, active in Apr-Oct. 2) *Menida histrio* (Fabr.): mild, active in Jun-Oct. 3) *Scotinophara coarctata* (Fabr.): mild, active in Jul-Sep. 4) *Cletus signatus* (Walk.): severe, active in Apr-Oct. Nos. 1-3 are Pentamidae, 4 is Coreidae.

The stink bug *Cletus signatus* was a major pest, with 10-40% infestation. In severe cases, 2-3 bugs/ 10 panicles caused heavy rice yield losses. Other bug species were of minor importance, with 3 to 6% infestation. □

Predators of brown planthopper *Nilaparvata lugens* Stål (BPH) in ricefields of the Mekong Delta, Vietnam

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Predators of BPH in the Mekong Delta were sampled visually.

The predator complex and its populations were counted on the bunds of ricefields in sample areas of 1 m^2 with 3 replications at 7-d intervals.

Some species that had high populations were *Lycosa pseudoannulata, Tetragnatha nitens, T. javana, T. virescens, Paederus fuscipes, Clubiona japonicola, Ophionea indica, Zelotes* sp., Callitrichia formosana (Table 1). The remainder of the complex were sparse.

Wolf spider *Lycosa pseudoannulata,* four jawed spider *Tetragnatha* sp., staphylinid beetle *Paederus fuscipes,* and carabid beetle *Ophionea indica* are four important predators of rice BPH found in the Mekong Delta.

Table 1. Predator complex of BPH in winter-spring and summer-autumn, Hau Giang, Vietnam, 1985.

Family	Species	Abundance
Salticidae	*Bianor*	++
	Plexippus paykulli	+
	Phidippus sp.	+
Sparassidae	*Heteropoda* sp.	+
	Clubiona japonicola	++
	Clubiona sp.	+
Lycosidae	*Lycosa pseudoannulata*	+++
Oxyopidae	*Oxyopes* sp.	+
Tetrwthidae	*Tetragnatha japonica*	++
	T. javana	+++
	T. mandibulata	++
	T. nitens	+++
	T. virescens	+++
Micryplantidae	*Callitrichia formosana*	++
Staphylinidae	*Paederus fuscipes*	+++
Carabidae	*Ophionea indica*	++
Coccinellidae	*Verania discolor*	++
	Coccinella repanda	+
Miridae	*Cyrtorhinus lividipennis*	++
Veliidae	*Microvelia* sp.	++
Agrocnemidae	*Agrocnemis* sp.	++

++++ = highly abundant, +++ = abundant, ++ = less abundant, + = scarce.

Their population dynamics were observed during four seasons 1982-84. The study used rice varieties IR36, IR46, IR48, Triveni, Utri Rajapan, and TN1 in a randomized block design with three replications. Twenty-day-old seedlings were transplanted at 20- × 20-cm spacing, fertilized with 100 kg N + 60 kg P_2O_5 + 30 kg K_2O/ha, and hand weeded. Predator populations were recorded at 5-d intervals on 1 m^2 per plot.

Wolf spider occurred throughout the crop cycle. The peak period was at

tillering 35-50 d after transplanting, in Jan in winter season rice and in Jul in summer season rice, when the temperature was 23-25 °C and relative humidity (RH) 89-94%.

Four jawed spiders appeared 1-70 d after transplanting (DT) with the peak period 25-40 under similar climatic conditions.

The staphylinid beetle was abundant during winter-spring (Feb-Apr). *Paederus fuscipes* occurred from 40 DT to ripening. Their peak period was 60-80 DT at 28°C and 78% RH.

The carabid beetle appeared 35-75 DT in winter-spring and erratically in summer-autumn, with the peak at 40 DT in Mar (Table 2).

Table 2. Population dynamics and predatory capacity of BPH predators. Hau Giang, Vietnam.

Item[a]	*Lycosa pseudoannulata*	*Tetragnatha* sp.	*Paederus fuscipes*	*Ophionea indica*
Time of occurrence (DT)	1-100	1-70	40-100	35-75
Peak period (DT)	35-50	25-40	60-80	40
Population of adults/m^2				
Highest	8.4	5.6	23.4	0.4
Average	3.4	1.1	11.0	0.1
Predatory capacity (nymphs/d) on				
BPH	8.5	6.1	5.8	5.2
Bean aphid	7.3	7.4	8.4	9.5

[a] DT = d after transplanting.

Predatory capacity was studied by releasing 10 third-instar nymphs of BPH and bean aphid with an adult predator in 10- × 25-cm glass jars with 4 replications. *L. pseudoannulata* had the highest capacity on BPH; *O. indica* had the highest on bean aphid. □

Juvenoid-induced shortening of overwintering in stem borer (SB) *Sesamia inferens*

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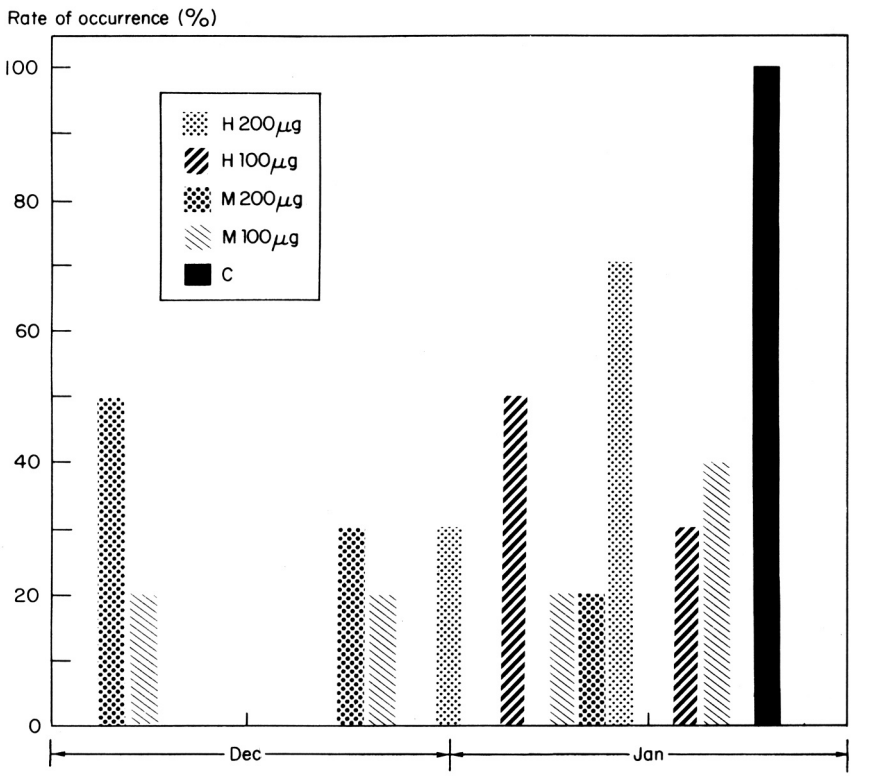
We collected overwintering larvae of pink SB *S. inferens* (Walker) in the first week of Dec by incising the tillers of rice stubbles uprooted from ricefields having more or less physiologically well-synchronized populations. Each larva was placed inside a small glass tube (5 cm long and 0.5 cm bore) with moist cotton plugging both ends. The tubes were wrapped in black paper. The larvae were reared in a chamber with temperature 23 ± 1°C, light-dark cycle 11-13 h, and relative humidity 70-80%.

Juvenoids hydroprene (Zoecon, ZR-0512) and methoprene (Zoecon, ZR-0515) in acetone dilution were applied topically. Each larva received 1 μl solution; 1 μl acetone/ individual served as check. Some check larvae were left in the stubble in the open to compare overwintering duration. The duration of larvae inside and outside was the same.

Check moths (normal adults) emerged in the second half of Jan. In the treated populations, adultoid larvae having one or two pairs of wing pads, juvenile labrum, mandible and maxillo-labial-hyphopharyngeal complex, antennae incompletely segmented, larval maxillae often incompletely differentiated into proboscis, developed much earlier (see figure). This indicates that juvenoids may have a role in early termination of the overwinter dormancy. □



Occurrence of different forms of overwintering *S. inferens* larvae treated with juvenoids hydroprene (H) and methoprene (M). West Bengal, India. C = control.