and unhatched eggs counted.

Carbofuran. azinphos ethyl, and fenitrothion had ovicidal activity (see table). There was no hatch when carbofuran was applied at 0.75 kg a.i./ha, but the hatch was high (see table) with carbofuran at 0.25 kg a.i./ha. Fenitrothion slightly reduced egg hatch at the high rate in experiment 1, but had no ovicidal activity at the lower rate in experiment 2. ■

Ovicidal activity of certain insecticides on brown planthopper eggs. IRRI, 1979.

Insecticide and formulation	Rate (kg a.i./ha)	Eggs hatched[a] (%)	Insecticide and formulation	Rate (kg a.i./ha)	Eggs hatched[a] (%)
Experiment 1			*Experiment 2*		
Perthane 45 EC	0.75	97 c	Carbofuran 12 F	0.25	98 b
Methomyl 90 WP	0.75	97 c	Permethrin 10 EC	0.25	95 b
Fenitrothion + BPMC 75 EC	0.75	89 c	Miral 50 EC	0.75	93 b
Fenitrothion 30 EC	0.75	78 b	Fenitrothion 30 EC	0.25	85 ab
Azinphos ethyl 40 EC	0.75	7 a	Pirimiphos ethyl 25 EC	0.75	84 ab
Carbofuran 12 F	0.75	0 a	Propoxur 20 EC	0.75	58 a
Check		100 c	Check		95 b

[a] Means followed by a common letter are not significantly different at 5% level. Av. 4 replications, each with 2 gravid females.

Recent records of natural enemies of the brown planthopper in India

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Studies in and around Mandya (Karnataka) and other areas during 1977-78 revealed the presence of the following natural enemies of the rice brown planthopper *Nilaparvata lugens* StåL (Homoptera, Delphacidae):

Nymphal and adult parasites

Hymenoptera	: Dryinidae	- *Dryinus* sp.?
”	: ”	- *Haplogonatopus? orientalis* Roh.
Strepsiptera	: Elenchidae	- *Elenchus* sp.
”	: Halictophagidae	- *Halictophagus* sp.

Predators

Coleoptera	: Carabidae	- *Elaphrus charis* (Andr.)
”	: Coccinellidae	- *Coccinella repanda* Thunb.
”	: ”	- *Menochilus sexrnaculatus* (F.)
Hemiptera	: Anthocoridae	- *Orius* sp.
”	: Nabidae	- *Tropiconabis capsiformis* (Ger.)?
”	: Reduviidae	- *Polytoxus* sp.

Nymphs and adults of *N. lugens* collected from the field at V. C. Farm, Mandya, were reared and dissected in the laboratory to estimate parasitism (see table).

Of the two strepsipterans, *Elenchus* sp. was the most numerous. One parasite per host was common, but occasionally two and rarely three individuals of some species were encountered in the same host. The triungulinids of *Elenchus* emerged in quick succession from the dorsolateral region of the host's posterior segment and crawled actively on the plant surface. About 1,500 triungulinids emerged from a brachypterous female host in about a minute. Another 1,000 larvae were recovered from the same host when it was dissected. The emergence of the parasite did not result in the immediate death of the host.

The predators listed fed on brown planthopper nymphs and adults and were found to also feed on several other insect pests. Their population was low. ■

Parasitism of *Nilaparvata lugens*, Mandya, India, April 1978.

Brown planthopper	Brown planthoppers examined (no.)	Parasitism[a] (%)		
		Dryinids	Strepsipterans	Total
Brachypterous female	88	10.2	21.6	31.8
” male	25	4.0	8.0	12.0
Macropterous female	31	3.2	19.4	22.6
” male	23	8.7	8.7	17.4
Av parasitism		7.8	17.4	25.2

[a] *Echthrodelphax fairchildii* Fallen (Dryinidae), earlier reported as a parasite of *N. lugens,* also contributed to the parasitism.

Moth population fluctuation — a tool for forecasting stem borer outbreaks

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Pest forecasting plays an important role in the control of impending pest outbreaks in crops. When meteorological conditions favor the development of a potent pest, scientists can forecast the outbreak and warn the farmers to use precautionary plant-protection measures.

To develop a forecasting index scientists studied the fluctuations in stem borer moth populations in Faisalabad in 1972-73. Light traps were installed at different rice-growing locations from March until November. Moths were identified and the numbers of each species were averaged as weekly totals (see table).

The data show peaks in the moth populations of *Tryporyza innotata* and *T. incertulas,* and times when moth populations became alarming.

The first generation of white and yellow borers appeared on wing when the weather was warm. Adult formation was fastest in April, and slowed to a minimum by July — probably because of hot unfavorable temperatures and the lack of host crops in the preceding months. The moth populations of white and yellow borers were alarming from the last 2 weeks of August through September because of meteorological conditions. After tile monsoon rains, the temperature favors earlier moth emergence. If temperature remains mild because of a later or prolonged monsoon, the number of moths remains critical until the first 2 weeks of October. That is especially true for *T. incertulas,* which