

and Mar and is a major constraint to the early rice crop. We tested a new nursery-raising method and thereby identified a new rice pest.

Five recommended high yielding rices (see table) were sown in early Feb 1983. Seeds were sown in 1-m² plots and were covered with 1 cm layer of soil and 1 cm of cow dung compost. Covering the plots with a polythene sheet for 2 wk significantly raised the temperature (14-40° C vs outside temperatures of 4-

21° C). When the sheet was removed, we found a serious infestation of rice root aphid *Rhopalosiphum rufiabdominalis* (Sasaki). The nursery remained yellowish with stunted growth until the end of Feb, and circular dead spots called *aphid burns* developed. When we pulled the seedlings, we found that Ch-1093 was most susceptible (see table). Sprinkling the nursery with phosphamidon at 0.05% concentration effectively controlled the aphids.

When similar nurseries were grown on a raised trench (30 × 30 × 150 cm), *Rhopalosiphum maidis* (Fitch) became a pest. Other insects associated with this nursery technique were phytophagous beetle *Luperodes* sp. and predator beetles, *Micraspis inops* var. *vincta* (Gorham) and *Paederus* sp. A fungivorous and phoretic mite, *Uroovovella* sp., was also found in the root zone. *ℒ*

Movement of BPMC in rice

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Because downward movement of BPMC (2-Sec-butyl phenyl N-methyl carbamate) in rice has been reported, we quantified movement of BPMC from rice leaves to stems.

We conducted 2 greenhouse pot trials in 0.3 × 0.4 × 0.2 m³ trays. The upper leaves of 30- and 60-d-old TN1 plants were treated with 0.2% and 0.4% solutions of BPMC 50EC with an atomizer at constant volume basis while the lower 15 cm of stems was protected with a thermocole. Leaves and stems of all plants were sampled at 0, 1, 3, and 4 d after treatment. Thirty-day-old plants also were sampled after 5 and 6 d. Treatments were in a complete randomized block design with three replications. Foliage and stem samples

BPMC residues in rice leaves and stems, Bhopal, India.

Sampling interval (d)	BPMC residue ^a (ppm)							
	30-d crop				60-d crop			
	0.2% concentration		0.4% concentration		0.2% concentration		0.4% concentration	
	Foliage	Stem	Foliage	Stem	Foliage	Stem	Foliage	Stem
0	8.4	BDL	21.6	BDL	9.5	BDL	41.5	BDL
1	7.3	0.8	17.6	2.1	8.0	0.9	34.8	3.6
2	3.8	0.9	13.8	2.3	4.7	1.0	24.4	4.2
3	2.4	0.5	7.2	1.3	2.7	0.6	19.2	4.2
4	1.1	0.3	3.1	0.7	1.4	0.4	4.4	1.6
5	0.4	BDL	0.9	0.6	—	—	—	—
6	0.3	BDL	0.4	0.2	—	—	—	—

^a Av of 3 replications. BDL = below detectable level (less than 0.10 ppm).

were separately analyzed by spectrophotometrics.

On treatment day, BPMC deposits on leaves of 30-d plants treated with 0.2 and 0.4% solutions were 8.4 and 22 ppm. Corresponding values for 60-d plants were 9 and 41 ppm (see table). Residue on the leaves degraded gradually, persisting for 4-6 d. About 9% of the insecticide had moved to the

stem 24 h after treatment. BPMC concentration in stems increased to about 11% 2 d after treatment and then gradually decreased. The decrease may be due to dilution as a result of plant growth or may be because dissipation exceeded the downward movement of BPMC. Neither plant age nor dosage significantly affected downward movement. *ℒ*

Insect pests of upland rice in Uttar Pradesh

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Upland rice in Uttar Pradesh is attacked by green leafhopper *Nephotettix virescens* (Distant), brown planthopper *Nilaparvata lugens* (Stal), leafroller *Cnaphalocrocis medinalis* (Guenee), butterfly *Melanitis leda ismene*

(Cramer), rice bug *Leptocorisa acuta* (Thunberg) (*-varicornis* Fab.), stem borer *Scirpophaga incertulas* (Walker), armyworm *Mythimna separata* (Walker), and aphid *Hysteroneura setariae* (Thomas). Of those, *N. virescens*, *L. varicornis*, *S. incertulas*, and *M. separata* are of major importance. In recent years, *M. separata* has become increasingly important, with severe infestations causing 60-80% yield losses. Losses to *L. acuta* are 15-20%, to *S. incertulas* 10-15%, and to *N. virescens* 5-10%. *ℒ*

Efficacy of three synthetic pyrethroids for caseworm control

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Caseworm *Nymphula depunctalis* severely damages rice nurseries and young transplanted rice in thaladi (Nov-Dec) in Thanjavur district. Phosphamidon, monocrotophos, and endosulfan are recommended controls. We tested three synthetic pyrethroids for