

the entire crop at the seedling stage.

Recently a late-sown 1978 kharif crop of the variety Jaya was attacked after the heading stage. Small punctures

appeared in the middle of the flag leaf and its margin was sometimes discolored. On a few plants, the second and third leaves were also damaged. ■

Evaluation of insecticides for gall midge control

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Large strips of Ratna that had been transplanted on 3 August 1978 were

treated on 8 and 24 September with several insecticides and formulations.

At harvest observations were made on two 1- × 1-m plots in each treatment to determine the percentages of silver shoots and the yield (see table). Percent silver shoots was lowest and yield highest in the granular treatment of quinalphos. ■

Percentage of silver shoots and panicles, and yield of Ratna treated with various insecticides. Raipur, India, 1978.

Treatment	Dosage	Silver shoots (%)	Yield (t/ha)
Quinalphos 5G	1 kg a.i./ha	32.0	2.7
Phorate 10G	1 kg a.i./ha	36.0	2.0
Carbofuran 3G	1 kg a.i./ha	36.7	1.8
Malathion 50EC	0.05% concn	47.6	1.6
Sevimol 40EC	0.05% concn	41.0	2.0
Phosalone 35 EC	0.05% concn	48.3	1.9
Monocrotophos 40 EC	0.05% concn	56.8	1.8
Phosphamidon 100EC	0.05% concn	33.9	1.6
Quinalphos 30EC	0.05% concn	40.2	1.5
BHC 10% dust	25 kg/ha	41.4	1.5
Untreated control	—	69.0	1.5

^aCarbaryl in molasses.

Biological studies of the population dynamics of rice brown planthopper and green leafhopper

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The influence of weather factors on the field populations of rice brown planthopper (BPH) and green leafhopper (GLH) was studied.

GLH populations increased at both

higher maximum and minimum temperatures (see table). BPH populations decreased at both high temperatures and lower minimum temperatures. GLH populations were higher at lower humidity levels. but BPH populations were positively correlated with higher humidity. No direct relationship between the amount of rainfall and GLH incidence was found. But the BPH population peaked at no or low rainfall (6-10 mm) and declined when rainfall exceeded 10 mm.

Correlation between weather elements and the incidence of rice green leafhoppers and brown planthoppers, Annamalaiagar, India.^a

Weather element	Green leafhopper		Brown planthopper (short-term season)
	Short term (Jul-Sep)	2d season (Nov-Jan)	
Max temp	+0.7166**	+0.5030*	-0.8122**
Min temp	-0.6922**	-0.5021*	+0.9122**
Humidity	-0.7022**	-0.7790**	+0.5610**
Rainfall	0.0056 ns	1.1450 ns	-0.7101**
Sunshine	+0.6328*	+0.7516**	-0.6222**

^a* Significant at 5% level. ** Significant at 1% level. ns = not significant.

The GLH population was higher with more bright sunshine (3-8 hours) and decreased with fewer hours of sunshine. The BPH population increased with fewer bright-sunshine hours. ■

Rice leaf folder attacks in India

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The rice leaf folder *Cnaphalocrosis medinalis* (Lepidoptera: Pyralidae), normally a minor rice pest, occurred in epidemic proportions in 1978 on upland, drilled autumn rice (aus) in Coochbehar and Jalpaiguri, two rice-growing districts of North Bengal, India. Most areas of maximum infestation were on the peripheral regions of forest reserves and on plains near the foothills of the sub-Himalayan ranges. In aus rice, which is generally sown in March or April and harvested in July or August, the infestation was first noticed in the last week of April; incidence peaked in the second week of May. The insect spread to about 22,000 ha. Where infestation was severe, the rice plants (almost entirely rainfed) withered completely. Coochbehar and Jalpaiguri receive an average annual precipitation of about 3,200 mm. Rainfall averages 50, 130, and 400 mm in March, April, and May. But in 1978, it averaged 3.2, 100.2, and 295 mm. The attack was confined mostly to the late-sown crop. But the infestation subsided with the onset of late May rains. ■

Performance of sprayers and influence of water volumes in insecticidal control of rice ear-cutting caterpillar

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A field experiment was conducted to test the performance of sprayers and the influence of water volumes in control of the rice ear-cutting caterpillar *Mythimna separata* Walk in paddy at Varansai in 1976-77. The ground sprayers evaluated were mist-blower, hand-compression, foot, and knapsack sprayers. The volumes