Percentage of grain discoloration recorded at 4 levels of bug infestation on the variety CP4, WARDA, Sierra Leone.

Bugs (no./cage) in 6 panicles	Grains discolored (no.)		Grains (%)			
			Discolored		Discolored due to bugs	
	Aspavia	*Stenocoris*	*Aspavia*	*Stenocoris*	*Aspavia*	*Stenocoris*
0	20.8	25.0	4.2	5.2	–	–
5	39.0	30.3	7.8	6.1	3.6	0.9
10	41.8	31.3	8.4	6.3	4.2	1.1
20	108.3	42.0	21.7	8.4	17.5	3.1

In this preliminary study, yield in grams per 500 grains (Y) and grain damage percentage (X) were linearly related as follows:

Aspavia sp. on variety ROK5
$y = 10.5 - 0.12 \times (r = -0.98^{**} \; n = 8)$
Aspavia sp. on variety CP4
$y = 9.91 - 0.11 \times (r = -0.99^{**} \; n = 16)$
Stenocoris sp. on variety ROK5
$y = 9.2 - 0.15 \times (r = -0.90^{**} \; n = 8)$.

by *Stenocoris* or *Aspavia.* Two to three days after the grain had been punctured the glumes began to change color, first to light brown, 2nd gradually darkened. In severe cases the glumes became dark grey after about a week. Severity of damage depended on the stage of grain development at the time, and on the number of feedings on the grain. The nymphs preferred to feed on the grain immediately after flowering; the adult bugs preferred grain in the milk stage. Grains at the hard dough stage were rarely punctured.

In the cages without bugs, grain discoloration was noted but the incidence was lower than in cages with bugs. This indicates that other factors, probably pathogenic fungi, can cause grain discoloration. The number and the percentage of discolored grains, however, increased as the rice bug density increased. That might suggest that 3.6 to 17.5% of the dirty panicle syndrome due to *Aspavia* on the variety CP4 in this study was caused by bug damage (see table). ■

Nisaga simplex damage to rice in the hill tracts of South India

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The hairy caterpillar *Nisagu simplex* Walk. (Eupterotidae: Lepidoptera) is becoming increasingly important as a rice defoliator in the hilly tracts of Karnataka. The caterpillar damages extensive areas of rice in Coorg district.

The adult emerges in July and August. The females lay about 140 to 21 0 eggs in linear rows on leaf blades of grassy weeds on the bunds, or on the rice plants themselves. Eggs hatch in about 9 days. On hatching, the larvae are blackish, about 3 mm long, and have dark hairs on the tubercles. The larvae feed on the margin of the leaf blades. After the second molting, the general body color is a mixture of black and green.

During successive moltings, the larvae feed on the leaves and defoliate the plants, leaving only the midribs. The sixth-instar larvae are about 30 mm long; the body is covered with dark dense hair and its color changes to a mixture of grey and black. The fully grown larvae attain a length of 45–50 mm. The larval development is completed in about 60 to 65 days. The larvae enter the soil for pupation, which takes places in a loosely woven silken case covered with mud particles. The adults emerge in July and August; there is only 1 generation/year.

Dusting BHC 10% or parathion 2% is an effective control measure provided the field bunds and vacant lands adjoining the field are also dusted. ■

Distinct geographic populations of brown planthopper in India

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Preliminary differential reactions of some rice varieties tested in the International Rice Brown Planthopper Nursery (IRBPHN) indicated the existence in India of different biotypes of brown planthopper (BPH) (IRRN 1 [2] :8). Subsequent screening tests at Pantnagar indicated that PTB33, which is highly resistant at all sites where BPH occurs. is susceptible. This susceptible reaction to the naturally occurring BPH populations is of great interest.

The BPH is cultured on TN1, a susceptible variety, and every year it is either replaced or augmented with a field population.

Data on the differential reactions of some rice varieties (see table) at different locations are from past IRBPHN and BPH screening trials. They suggest that the population at Pantnagar and nearby areas is geographically distinct from the population in southern India. The resistant reaction of ARC10550 in all the Indian subcontinent countries and its susceptible reaction in all the other countries of the eastern hemisphere where BPH occurs divides the BPH into two major groups that can be further subgrouped on the basis of varietal reaction. The populations of Pantnagar and of southern India are examples of two different naturally occurring BPH biotypes. But detailed studies on its occurrence and migration in a one season crop are needed before we can say that the BPH in the entire northern part of the lndian subcontinent is distinct from that in the southern peninsular region. ■

Differential reactions[a] of selected rice varieties at different locations.

Variety	Rajendranager	Maruteru	Pantnagar
Sinna Sivappu	R	R	R
ARC6650	MR	R	S
ARC10550	R	MR	R
PTB33	R	R	S

[a]Reaction based on a 0–9 scale. R = 0–4, MR = 4–7, S = 7–9.