Results of rearing newly hatched yellow stem borer larvae on stem pieces and whole plants of wild and cultivated *Oryza* species, Cuttack, India

Species	Genome group	Larvae life-span		
		On stem pieces[a]	On whole plants	
			Deadhearts produced	Fate of larvae
Cultivated rice				
Oryza sativa Linn.	AA	Pupated	Yes	Moths emerged in 41 days
O. glaberrima Steud.	AA	Pupated	Yes	Moths emerged in 41 days
Wild *Oryza* species				
O. perennis Moench.	AA	a	Yes	No moth emergence
O. rufipogon Griff.	AA	Pupated	Yes	Moths emerged in 42 days
O. nivara Sharma et Shastry	AA	Pupated	Yes	Moths emerged in 41 days
O. barthii Cheval (=longistaminata)	AA	a	Yes	No moth emergence
O. punctata Kotschy ex Steud.	BB	a	Yes	No moth emergence
O. eichingeri Peter	BB	a	No	Larvae not traceable on 10th day
O. officinalis Wallich	CC	a	No	Larvae not traceable on 10th day
O. collina Trimen	CC	a	Yes	No moth emergence
O. minuta Presl.	BBCC	a	No	Larvae not traceable on 10th day
O. alta Swallen	CCDD	a	Yes	No moth emergence
O. latifolia Desv.	CCDD	Pupated	Yes	Moths emerged in 42 days
O. grandiglumis Doell	CCDD	a	Yes	No moth emergence
O. australiensis Domin	EE	a	Yes	No moth emergence
O. granulata Nees	GG	a	No	Larvae not traceable on 10th day
O. perrieri A. Camus	–	b	No	Larvae not traceable on 10th day
O. ridleyi Hook f.	–	a	No	Larvae not traceable on 10th day

[a]a= survived for more than 10 days but died without pupation, b = died by 5th day.

dissection showed no larvae. Typical deadhearts appeared in 6-9 days on all other species tested, but moths emerged only from *O. rufipogon, O. nivara, O. latifolia,* and *O. glaberrima* (41-42 days as in *O. sativa*).

Larval development and pupation on stem pieces and larval development to moth emergence on whole plants warrant consideration of *O. glaberrima, O. rufipogon, O. nivara,* and *O. latifolia* as potential yellow rice borer hosts. The first three and *O. sativa* belong to the AA genome group and *O. latifolia* belongs to the CCDD group. □

Interspecific hybridization between *Nilaparvata lugens* (Stål) and *Nilaparvata bakeri* (Muir) collected from *Leersia hexandra* Swartz

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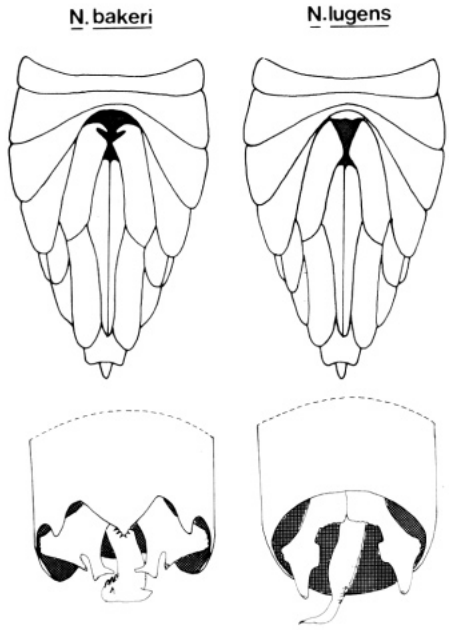
A *N. lugens* population was recently observed thriving on a weed grass *L. hexandra* growing in ditches along rice fields on the IRRI experimental farm. Unlike the common rice-infesting brown planthopper (BPH) biotypes, the grass-infesting population does not survive when caged on rice *Oryza sativa* L. plants. Morphological and morphometric evaluation of rostral, leg, and antennal characters of grass-infesting individuals indicated that they are different from BPH biotypes 1, 2, and 3.

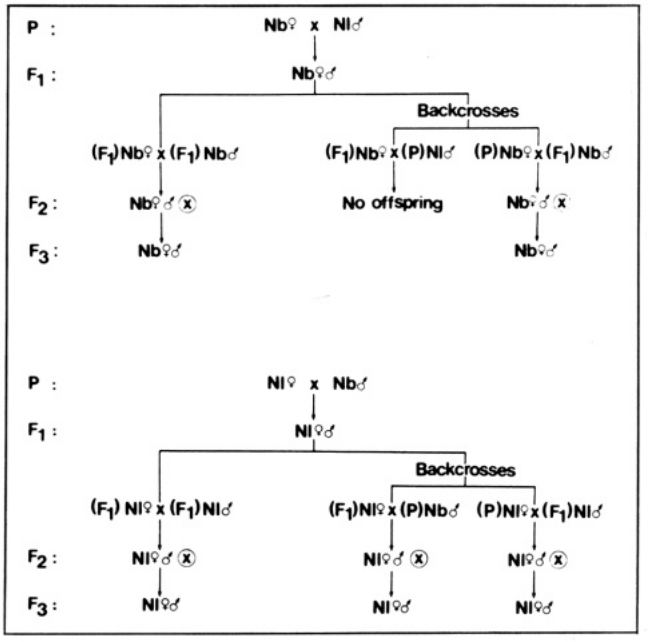
Another closely related planthopper species, *N. bakeri,* also thrives on *Leersia* grass but not on rice. The two species are easily distinguishable by male and female genitalic characters (Fig. 1). The coexistence of the two species on Leersia led us to examine the possibility of interspecific hybridization. Genetic crosses (Fig. 2) were also made to establish the taxonomic status and other biological relationships between the two species. Conspecific crosses of grass-infesting *N. lugens* and *N. bakeri* were the control.

Stock cultures of both species were maintained on potted *L. hexandra* plants in mylar cages. Genetic crosses of the two species were made. Three generations of offspring and backcross progenies yielded the following information:

1. Direct and reciprocal matings of heterogamic parentals resulted in less F_1 progenies than those produced by homogamic parentals. Eggs from the heterogamic cross had significantly lower



1. Female (top, 20X) and male (bottom, 50X) genitalic characters of *N. bakeri* and *N. lugens* planthoppers, IRRI, 1982.



2. Schematic diagram of the genetic crosses between *N. bakeri* (Nb) and *N. lugens* (Nl), IRRI, 1982.

hatchability. Hatchability was 11 and 21% in the direct and reciprocal interspecific crosses, while hatchability in conspecific crosses was 86 and 91%.

2. The genitalic characters of F_1 progenies of the interspecific crosses resembled those of their respective immediate female parent. When selfed to produce F_2, and backcrossed, a similar genetic transmission mechanism was found. An exception was a backcross involving $(F_1)Nb♀ \times (P)Nl♂$, which failed to produce any offspring. The mechanisms for such maternal inheritance may involve:

a. cytoplasmic inheritance, wherein the characters are determined or controlled by independent cytoplasmic genes;
b. maternal effects, wherein the characters are controlled by nuclear genes, but behave through the effects produced in the maternal cytoplasm; or
c. gynogenesis, wherein the sperm serves only to activate the egg and plays no further part in fertilization nor contributes to the genetic constitution of the embryo.

These observations indicate the existence of some pre- and post-mating barriers between *N. bakeri* and *N. lugens*. Their genetic incompatibility negates possibility of interspecific hybridization occurring in nature. □

Microvelia atrolineata Bergroth, a predaceous bug of _Nilaparvata lugens_ (Stål)

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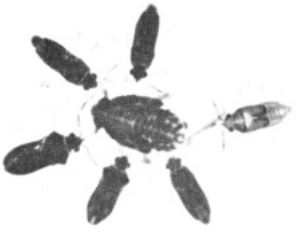
Veliid bug *Microvelia atrolineata* was found for the first time in Karnataka during a survey for natural enemies of brown planthopper (BPH) *Nilaparvata lugens* during 1982 wet season. The bugs were feeding on BPH nymphs.

Veliid adults and nymphs were found on the water surface around BPH-infested rice hills. When BPH nymphs dropped onto the water, the veliid bugs paralyzed and fed upon them. As many as six veliid bugs (see figure) attacked a single BPH nymph. There were 10-12 veliid bugs/ 400 cm^2 when the crop was at milk stage. Bugs are active and run on the water surface. Population did not fluctuate at different water levels as long as the field remained saturated.

Because veliid bugs feed voraciously on first- and second-instar BPH nymphs, they may contribute to significant pest mortality. □



Veliid bugs attacking a BPH nymph.

Pest management and control NEMATODES

Root-knot nematode damage to rice in West Bengal, India

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Root-knot nematode damaged about 8 10 ha of aus (Mar-Jun) paddy in the drylands of Islampur and Balurghat subdivisions of West Dinajpur. Foliage yellowed, number of tillers and yield were reduced, and plants lost growth vigor.

Plant analysis showed 30 galls and 90 females with or without egg masses/10 g of rice roots. Varieties IET2233, IET1444, and CNM25, grown on seed farms in Islampur and Chopra, were seriously damaged. The nematode also attacked standing crops in farmer fields in Balurghat and Tapan Block.

Nematodes were cultured on TN1. Measurements were:

10 females: length = 395-490 µm, width = 290-350 µm, stylet = 11 µm,