

### Bionomics of brown planthopper biotype 2 from field and greenhouse

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Two biotype 2 populations of brown planthopper (BPH), *Nilaparvata lugens* stål, were used in this experiment. One was purified by determining the weight of honeydew excreted on susceptible rice variety TN1 and resistant rice varieties Mudgo (bearing resistant gene *Bph1*) and ASD7 (bearing resistant gene *bph2*) by female adult in paddy field in Guangxi Province, south China, and the other was obtained from greenhouse and continuously reared on rice resistant variety Mudgo in IRRI, Philippines. One newly hatched nymph was introduced into the test tube containing two 60-day old rice plants and cultured at  $26 \pm 1^\circ\text{C}$ , L : D = 12 h : 12 h. Sixty replications were set up for each tested rice variety. The number and instar of nymphs were recorded every day. The body weight and honeydew

excreted by female adult emerged within 24 h and 72 h, the number of eggs laid, and newly hatched nymph on different resistant rice varieties were measured. The hatchability, net reproductive rate, female adult nutritional indices such as relative growth rate (RGR) and efficiency of conversion of ingested food (ECI) were calculated.

Results indicated that the biotype 2 from greenhouse had longer nymphal duration than that from paddy field. Both biotype 2 populations had the lowest nymphal survival, weight of female adult body, honeydew excreted, fecundity, net reproductive rate, and the longest nymphal duration on ASD7. Higher net reproductive rate was found on IR26 in field populations than that on Mudgo. The female adult RGR of biotype 2 from field population on Mudgo was lower than that on TN1, while no obvious difference in female adult ECI was found in both biotype 2 populations on the three tested rice varieties. Results suggested that IR26 should be regarded as an optimal variety to monitor the virulence of BPH population and to evaluate the resistance of rice varieties to BPH. □

Table 1. Development and reproduction of biotype 2 populations from field and greenhouse on different rice varieties.

Item	Variety							
	TN1		Mudgo		IR26		ASD7	
	G <sup>a</sup>	F	G	F	G	F	G	F
Survival rate of nymph (%)	57.00a <sup>b</sup>	60.33a	60.33a	50.67a	53.33a	53.67a	21.67b	28.60b
Nymphal period (d)	16.48b	15.60b	16.31b	16.21b	18.25a	15.14b	19.30a	18.82a
Fecundity (eggs·♀ <sup>-1</sup> )	112.33a	132.40a	97.17ab	123.33a	130.00a	179.00a	23.83b	34.30b
Hatchability (%)	92.20	93.10	71.30	99.00	77.30	90.00	72.50	85.60
Net reproductive rate (%)	36.80	39.50	21.70	22.30	28.90	46.30	0.75	9.80

<sup>a</sup> G = Greenhouse population and F = Field population; <sup>b</sup> Data in the row followed by the same letter was not significant at 0.05 level.

Table 2. Adult nutritional indices of biotype 2 populations from field and greenhouse on different resistant rice varieties.

Item	Variety							
	TN1		Mudgo		IR26		ASD7	
	G	F	G	F	G	F	G	F
Weight of female adult (mg·♀ <sup>-1</sup> )	2.00a	18.50a	1.50b	1.52b	1.71b	2.10a	1.30c	1.40bc
Weight increased (mg·d <sup>-1</sup> )	0.25ab	0.30a	0.15cd	0.10d	0.20bc	0.24ab	-0.05d	0.00d
Honeydew Excreted (mg·d <sup>-1</sup> )	30.90a	25.70a	28.04a	22.04a	21.45a	22.56a	7.32b	16.02ab
RGR (mg·mg <sup>-1</sup> ·d <sup>-1</sup> )	0.11ab	0.14a	0.10ab	0.06b	0.11ab	0.11ab	-	0.00
ECI (%)	0.80a	0.83a	0.76a	0.85a	0.78a	0.88a	-	0.00