Evaluation of Mango Exotic Collections for Resistance to Hopper, *Idioscopus niveosparsus* Leth.

PV Rami Reddy and MR Dinesh
Indian Institute of Horticultural Research, Hessaraghatta Lake P.O., Bangalore-560 089, Karnataka

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Mango (*Mangifera indica* L), the king of fruits is known in India for over 6,000 years and is indigenous to Malyan Archipelago (Butani, 1979). It is now cultivated in all tropical and subtropical countries. More than 400 species of pests attacking mango have been listed, of these about dozen insect species severely affect different parts of mango. Mango hoppers, *Idioscopus niveosparsus* Leth., *I. clypealis* and *Amritodus antkinsoni* (Leth.) are the serious pests which are considered to be a major constraint in mango production (Tandon and Verghese, 1985). They suck sap from inflorescence and tender shoots leading to 60-100 per cent flower drop. The honeydew excreted by hoppers attracts fungus, *Capnodium mangiferum* Cooke resulting in sooty mould which considerably hinders the photosynthetic activity of leaves. Among the three species of hoppers mentioned, *I. niveosparsus* is more predominant in Karanataka and Maharashtra region. Hence the present study was concentrated on this species. So far, insecticides have been the sole means of controlling mango hoppers. However keeping in view the myriad of problems like pest resistance, resurgence and environmental pollution associated with large scale use of chemicals in plant protection, considerable attention has been laid on the study of host plant resistance. Screening a large number of germplasm collections helps in finding resistance source. However, such systematic studies in case of mango hoppers, especially covering exotic collections are lacking.

With this background, field evaluation of ten exotic collections of mango *viz.*, 'Carabao (G)', 'EC 95862', 'Kensington', 'Kitchher', 'LA Resource-2', 'LA Resource-2', 'Nom Dok Moi', 'Ostin', 'Sensation' and 'Tom Atkins' was carried out during 2001-03 at the Indian Institute of Horticultural Research, Bangalore, India. These collections were introduced during last ten years from different countries. Three trees of each collection, planted at a spacing of 10m x 10m, were selected for the study. They were kept free from any insecticidal application during the study period. Each tree was considered as one replication. Visual counts of nymphs and adults of hopper, *I. niveospursus* were taken from 10 panicles, randomly selected from all the directions. Data were recorded twice at 15 days interval during January-February. The observations on the morphology of inflorescence were also taken in terms of compactness (dense/ scarce) and panicle length. Attempts were made to correlate the hopper incidence with inflorescence morphology. The data were subjected to ANOVA after effecting $\sqrt{n+1}$ transformation. Based on the pooled data of both the years, the varietal collections were classified into 4 susceptibility groups *viz.*, least susceptible (0-2 hoppers/panicle) moderately susceptible (2-6), susceptible (>6-10) and highly susceptible (>10).

There were significant variations among genotypes in their susceptibility to *I. niveosparsus* (Table 1). The mean hopper population per panicle varied from the lowest 0.80 in 'LA Resource-1' to the highest 7.96 in 'EC 95862' in 2001-02 and from 2.40 in 'LA Resource-1' to 10.56 in 'Kensington' during the following year. The varieties 'Carabao (G)', 'EC 95862', 'Kensington', 'Kitchner', 'Nom Dok Moi and 'Ostin' were on par with one another in their hopper susceptibility in both the years of the study. Based on the pooled means, 'EC 95862' (8.24/panicle) was found to be the most susceptible collection followed by 'Kensington (7.92) and 'Ostin' (7.36). 'LA Resource-1', had the least hopper population (1.60/panicle) and was the sole representative in least susceptible group. Four genotypes *viz.*, 'LA Resource-2', 'Nom Dok Moi', 'Sensation' and 'Tommy Atkins' were moderately susceptible while Carabao (G)', 'EC 95862', 'Kensington', 'Kitchner' and 'Ostin' formed the susceptible group. None of ten collections evaluated was in highly susceptible group. Earlier Nachiappan and Baskaran (1984) recorded significant variability in mango hopper preference to certain indigenous mango collections.

Panicle morphology seemed to have influenced the hopper preference to different collections (Fig. 1).

Table 1. Relative susceptibility of mango exotic collections to hopper, *Idioscopus niveosparsus*

Genotype	No. of hoppers/panicle			Compactness of	Status
	2001-02	2002-03	Pooled	inflorescence	
Carabao (G)	6.14 (2.67)	6.98 (2.83)	6.56	Dense	S
EC 95862	7.96 (2.99)	8.52 (3.09)	8.24	Dense	S
Kensington	5.28 (2.51)	10.56 (3.40)	7.92	Dense	S
Kitchner	5.36 (2.52)	7.84 (2.97)	6.60	Dense	S
LA Resource-1	0.80 (1.32)	2.40 (1.84)	1.60	Scarce	LS
LA Resource-2	2.02 (1.74)	3.84 (2.20)	2.93	Scarce	MS
Nom Dok Moi	4.00 (2.24)	2.66 (1.91)	3.33	Scarce	MS
Ostin	5.20 (2.49)	9.52 (8.24)	7.36	Dense	S
Sensation	2.97 (1.99)	4.47 (2.34)	3.72	Dense	MS
Tommy Atkins	3.24 (2.06)	5.04 (2.46)	4.14	Scarce	MS
CD (*P=0.05*)	0.52	0.61			

S-Susceptible, LS-Least susceptible, MS-Moderately susceptible

* Values in parentheses are square root of $\sqrt{n+1}$ transformations.

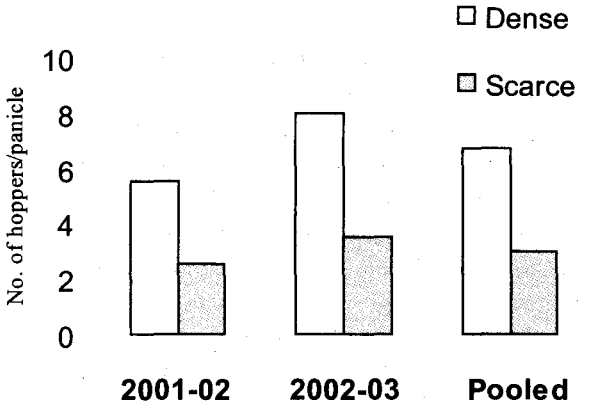

Fig. 1 Mango hopper incidence in relation to panicle compactness

Varieties with dense inflorescence had attracted more hoppers than those with scarce inflorescence. Dense bushy type inflorescence might have offered an ideal microenvironment for hoppers, besides presumable protection from chemicals, natural enemies and adverse climatic conditions. Though there were reports on the nutrient content of panicle influencing hopper resistance (Nachiappan and Baskaran, 1984), role of morphological traits has not been thoroughly explored and hence these findings can be a pointer to a further step in mango hopper resistance breeding. The findings of the present study suggest that exotic collection; 'LA Resource-1' can be one of the options for hopper resistance source. Evaluation of newly introduced germplasm collections for resistance should be a continuous prioritized activity in order to achieve a long lasting stable solution to major pest problems.

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