

## RESISTANCE MECHANISMS OF SUGARCANE CULTIVARS TO THE SPITTLEBUG MAHANARVA FIMBRIOLATA

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Figure 1. A tolerant cultivar IACSP94-2094 infested (right) and non-infested (left) with spittlebug nymphs (Dinardo-Miranda LL)

The spittlebug *Mahanarva fimbriolata* (Stål) (Hemiptera: Cercopidae) is one of the most significant sugarcane pests found in Brazil, causing yield reduction up to 50 % and affecting sugarcane quality due to the reduction of stalk sugar levels and the increase of fiber content. Furthermore, sugarcane industrial processes are also affected by *M. fimbriolata*, as damaged stalks can reduce milling capacity. In particular, cracked and deteriorated stalks lead to increased levels of contaminants, making sugar recovery difficult and inhibiting fermentation.

Due to the importance of this insect to sugarcane growers, a number of studies have been conducted to establish parameters for integrated pest-management programs. However, information on the resistance of sugarcane cultivars to *M. fimbriolata* is very limited and is crucial for use in integrated pest-management strategies. In addition, resistant genotypes will be invaluable for breeding programs aimed at developing new resistant cultivars. Therefore, the objective of this study was to evaluate the resistance mechanisms of various sugarcane genotypes (obtained from the IAC Sugarcane Breeding Program) to *M. fimbriolata* attack. For that, isolated buds of each cultivar were planted in pots and maintained in a greenhouse for approximately three months. The pots were then moved to climate-controlled chambers ( $26 \pm 1^\circ\text{C}$ ;  $70 \pm 10\%$  RH; 12-h photoperiod) to carry out laboratory tests to evaluate adult feeding and female oviposition preferences (using both free-choice and no-choice tests) as well as the effects of the cultivars on nymph development and the cultivars tolerance to the pest attack.

## SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

The least attractive cultivars for adult feeding were IACSP96-2042 and IAC91-1099. In free-choice oviposition test, the cultivars IACSP95-1218, IACSP94-2094, SP91-3250, IACSP94-4004, IACSP95-3028, IACSP93-3046, IACSP95-5000 and IAC87-3396 appeared to be preferred for oviposition, whereas cultivars IACSP96-3060 and IACSP96-2042 received the least eggs. Cultivars IACSP96-2042, IACSP96-3060 and IACSP94-2101 also received the fewest eggs in the no-choice oviposition tests and exhibit some level of antixenosis resistance. It was observed that nymph survival was significantly greater for cultivars IACSP94-2101, IACSP95-5000, IACSP95-3028 and SP81-3250 (about 80 % nymph survival) compared with IACSP96-2042 (33 %) and IAC91-1099 (20 % nymph survival). Cultivars IACSP96-2042 and IAC91-1099 showed the highest level of antixenosis resistance. Finally, cultivar IACSP94-2094 appears to be tolerant to *M. fimbriolata*, as it did not show significant reductions in aboveground biomass weight, despite showing reduced leaf chlorophyll levels following pest attack.



Figure 2. A susceptible cultivar IAC87-3396 infested (right) and non-infested (left) with spittlebug nymphs (Dinardo-Miranda LL)

## MAIN PUBLICATIONS

Dinardo-Miranda LL, Fracasso JV, Perecin D, Oliveira MC, Lopes DOP, Izeppi TS, Anjos IA. Resistance mechanisms of sugarcane cultivars to the spittlebug *Mahanarva fimbriolata*. *Scientia Agricola*. (submitted).

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