



3376: Genetic diversity in *Melanaphis sacchari* and host-plant resistance in sugarcane

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📍 Convention Center - Room W224 B

Introduction: The anholocyclic aphid *Melanaphis sacchari* is a pest of sugarcane and sorghum which originated in the old world, was introduced into the Americas, and is now distributed worldwide. It causes feeding damages on sorghum and is the vector of the Sugarcane yellow leaf virus on sugarcane.

Methods: The worldwide genetic diversity and structuring of populations of *M. sacchari* was analyzed according to host and locality (57 samples from 15 countries), using microsatellite genotyping and partial sequencing of the mitochondrial COI gene.

The genotypic variability of sugarcane resistance to *M. sacchari* was field assessed within a 181 sugarcane cultivar panel. Analysis of variance revealed significant genetic variance. A Genome Wide Association Study was carried out with this cultivar panel, using 3,327 genetic markers.

Results/Conclusions: Results revealed the existence of five multilocus lineages, with distributions strongly influenced by geography but not by host plant. A further field and laboratory study carried out in Reunion Island revealed the existence of host plant specialization, either on sorghum or sugarcane, despite low genetic differentiation.

No marker significantly associated with the resistance to *M. sacchari* was detected. Nevertheless, twenty-two aphid resistant cultivars were identified in the panel. A laboratory study of the development of *M. sacchari* on four of these 22 resistant cultivars confirmed the resistant status of three of them. Resistance was further characterized in one of these resistant cultivars, R 365, using the electrical penetration graph technique. Delayed aphid salivation in phloem and inhibition of passive phloem sap uptake was detected in R 365.

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