

Diagnostic of Banana streak viruses (BSV) and study of their levels of prevalence and molecular diversity in Cuba

Elisa Javer Higginson¹, Caridad Font¹, María del Loreto Reyes², Neyda Arencibia¹, Acela Fonseca², Pedro Luis Ramos³, Gloria González¹, Ana Lidia Echemendía¹ & Pierre-Yves Teycheney⁴

¹ INISAV, Calle 110#514, Municipio Playa, CP11600, Ciudad de la Habana, Cuba

² Laboratorio Provincial de Sanidad Vegetal, Cuba

³ IIFT, Ave 7ma, No.3005 e/ 30 y 32, Miramar, Playa, CP11600, Ciudad de la Habana, Cuba

⁴ CIRAD Bios, UPR75, Station de Neufchâteau, 97130 Capesterre Belle-Eau, Guadeloupe, FWI

ejaver@inisav.cu, teycheney@cirad.fr

Banana and plantain play a significant role in food security in Cuba, as reflected by the important surfaces (ca 101 000 ha) devoted to their culture. Interspecific triploid (AAB) and tetraploid (AAAB) plantain hybrids harbouring both the *Musa acuminata* (A) and *M. balbisiana* (B) genomes are the most cultivated varieties, however triploid AAA dessert banana types such as Dwarf Cavendish and Yangambi Km 5 are also widely cultivated. All types are currently affected by Banana streak disease caused by several species of *Banana streak virus* [1]. This prompted a nationwide research effort focused on the occurrence, prevalence and diversity of BSV species in dessert and cooking banana.

To this aim, leaf samples from symptomatic and asymptomatic plants of various genotypes (AAA, AAB, AAAB, AAB and ABB) were collected throughout Cuba and indexed for BSV species Goldfinger (BSGFV), Imové (BsImV), Mysore (BSMysV) and Obino l'Ewaï (BSOLV) by multiplex immunocapture PCR [2]. 33% of the 521 samples collected from plants harbouring only the A genome (AAA, AAAA) were found to be infected by one or several BSV species, with BSMysV the most prevalent species present in 45.3 % of the 172 infected samples. On the other hand, 39,4 % of the 1638 samples collected from interspecific hybrids (AAB, AAAB, ABB, AAB) were also found to be infected by one or several BSV species. However the presence of residual *M. balbisiana* genomic DNA in leaf extracts proved to interfere with multiplex immunocapture PCR and to lead to many false positives. This was confirmed by Southern blot analyses. Attempts to decrease contaminations by plant genomic DNA in PCR reactions were made by modulating the duration of immunocapture or by preventing the binding of plant genomic DNA to PCR tubes or plates.

Using degenerate primers, viral sequences that appeared to belong to new BSV species were amplified from a limited number of plant samples. One of these sequences amplified from Dwarf Cavendish displayed 96 % identity with BSACyuv. Southern blots performed using this amplified sequence as a probe confirmed the presence of this species in AAA dessert banana types.

Keywords: *Banana streak virus*; prevalence; diagnostic; diversity

References :

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[2] Le Provost G., Iskra-Caruana M.-L., Acina I., Teycheney, P.-Y. (2006). Improved detection of episomal *Banana streak viruses* by multiplex immunocapture PCR. *J. Virol. Meth.* **137**: 7-13.