

Risk assessment of spreading bsvs through the cultivation of interspecific hybrids harbouring infectious eBSVs

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Infectious alleles of endogenous Banana streak viruses (eBSVs) are present in the genome of *Musa balbisiana* spp. Their activation by biotic and abiotic stresses lead to spontaneous infections by several species of *Banana streak virus* (BSV) in triploid (AAB) and tetraploid (AAAB) interspecific hybrids, making them the main constraint for breeding new banana interspecific hybrids and for exchanging germplasm. However the risk of spreading BSVs associated to the cultivation of interspecific hybrids has never been assessed, although such hybrids are grown over important areas throughout the Caribbean, Latin America and Africa.

In order to tackle this issue, a study of the kinetics of activation of infectious alleles OL1 and GF7, whose expression lead to spontaneous infections by BSOLV and BSGFV, respectively, was carried out in natural plantains French Clair, Pelipita and Macho x Hembra and hybrids FHIA-18 and FHIA-21 under field conditions in the Dominican Republic, Cuba and Guadeloupe. Experimental plots using similar randomized block designs and planting material originating from suckers, vitroplants or stem fragments were set up. Plants were monitored visually for symptoms and checked every 3 months by multiplex immunocapture PCR indexing for the presence of BSOLV and BSGFV.

Results collected over 24 months showed that infectious alleles OL1 and GF7 display differential expression levels, pointing to the existence of additional (plant) factors involved in their activation. They also showed that the mode of multiplication of the planting material influences expression levels. Preliminary results also suggested that infection by BSOLV and BSGFV does not have a major effect on fruit production, although additional data are needed to reach definite conclusions in this regard.

Overall, this work contributes significantly to the development and implementation of appropriate strategies for evaluating and recommendations for mitigating the risks of spreading BSVs associated with the cultivation of banana interspecific hybrids.

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