RISK ASSESSMENT OF SPREADING *BANANA STREAK VIRUS* (BSV) THROUGH *IN VITRO* CULTURE

M. Folliot[1], S. Galzi[1], N. Laboureau[1], M.-L Caruana[2], P.-Y. Teycheney[3], & F.-X. Côte[1]

[1]CIRAD-FLHOR, TA50/PS4, Boulevard de la Lironde, F-34398 Montpellier cedex 5, France
[2]CIRAD-AMIS/UMR BGPI, TA 41/K, Campus International de Baillarguet, F-34398 Montpellier cedex 5, France
[3]CIRAD-FLHOR, Station de Neufchâteau, Sainte- Marie, F-97130 Capesterre Belle Eau, Guadeloupe

francois.cote@cirad.fr

Background

In vitro multiplication is one of the main abiotic stresses triggering the production of episomal infectious particles of *Banana streak virus* (BSV) in inter-specific banana hybrids, through the activation of BSV endogenous pararetrovirus (EPRV) sequences integrated into the *Musa balbisiana* genome (noted B). Nevertheless, mass production of vitroplantlets remains the most widely used method for diffusing wild *Musa* cultivars or new improved hybrid species. Therefore, there is a need to evaluate the effects of *in vitro* culture on the activation of BSV EPRVs and to assess the risk of spreading BSV through the diffusion of micropropagated *banana plants*. It is of particular relevance to check (i) whether BSV EPRV activation occurs through *in vitro* culture in all inter-specific hybrid species and wild edible cultivars and (ii) whether a correlation exists between the duration of *in vitro* subculture steps and the percentage of plantlets exhibiting BSV episomal particles.

Methods

Virus-free suckers from two natural triploid plantains (AAB) - Kelong Mekintu (KM) and Black Penkelon (PK)- and the tetraploid hybrid (AAAB) - CRBP 39 were mass propagated using standard *in vitro* budding methods. During the successive multiplication subcultures, at least 40 shoots were randomly picked and screened for the presence of episomal BSV particles.

Results

BSV episomal particles were detected during *in vitro* culture in both natural plantains and CRBP39 hybrid, with BSV-Ol being the predominantly detected BSV strain. Both natural plantains and CRBP39 displayed similar patterns of activation. Percentages of plantlets indexed positive for BSV-Ol rapidly increased after the first subculture cycles. Depending on cultivars, maximum percentages of BSV-Ol positive plantlets ranged between 10 % and 20 % and were reached for TPS (total produced shoots) values comprised between 800 and 2000. Following this increase step, a steady state phase was observed. Then the percentage of BSV-Ol positive plantlets decreased for the three cultivars studied when increasing the number of subcultures. This was especially striking for CRBP 39 hybrid, for which values of zero were reached from TPS values of 4000 onwards. These results will be presented and their impact on *in vitro* mass propagation and diffusion of *Musa* germplasm will be discussed.