

Report for Practice Abstract may2020**IAS-CSIC & COPLACA Sdad Coop.**

The banana root endosphere harbours a myriad of microbes with potential as plant growth promoters and antagonists against *Fusarium oxysporum* f.sp. *cubense* (*Foc*). A collection of bacteria and fungi was obtained from the root endosphere of 'Dwarf Cavendish' plants surveyed at different banana farms located in the Canary Islands. *In vitro* antagonism assays against *Foc* races STR4 and TR4 enabled the identification and selection of a fair number of endophytic isolates displaying phenotypes traditionally associated with biocontrol and/or plant growth promotion abilities. Interestingly, high prevalence of *Pseudomonas* spp. representatives was observed in the root endosphere. This finding points to the fact that this bacterial genus can play an important role in the fitness, development and health of banana plants. A final selection of bacterial isolates (mostly identified as *Pseudomonas chlororaphis* and one *Pseudomonas protegens*) displaying the best *in vitro* inhibition against STR4 and TR4 was made. They were evaluated as potential biocontrol agents (BCA) against Fusarium wilt of banana (FWB) under controlled conditions. Results from these experiments only showed limited biocontrol performance of the selected isolates. While a disease reduction trend was observed in plants pretreated with some of the banana endophytes (i.e. IAS-B-364; Figure 1), only plants treated with a well-characterized BCA (*Pseudomonas fluorescens* PICF7 originated from the olive root endosphere) showed a significant reduction of disease symptoms caused by STR4. Similar results were observed when *Foc* TR4 was used as target. More experiments are needed to assess whether the selected indigenous banana root endophytes can be used as effective BCA against FWB under different environmental scenarios. In contrast, a non-indigenous endophyte (strain PICF7) showed as an effective BCA against both races of *Foc*.

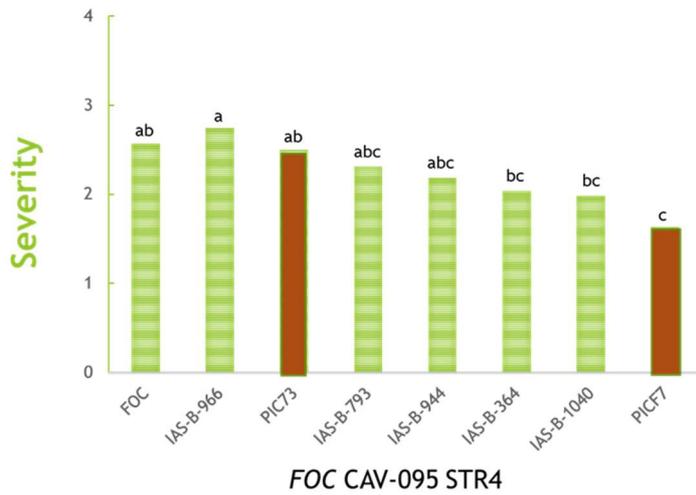


Figure 1. Disease severity scored on banana plants inoculated with *Fusarium oxysporum* f. sp. *cabense* STR4 (CAV-095) and pretreated with endophytic bacteria isolated from banana (strains IAS-B364, IAS-B-793, IAS-B-944, IAS-B-966 and IAS-B-1040; light green bars) or olive (strains PIC73 and PICF7; brown bars) roots. Data scored at 90 days after inoculation with the pathogen.

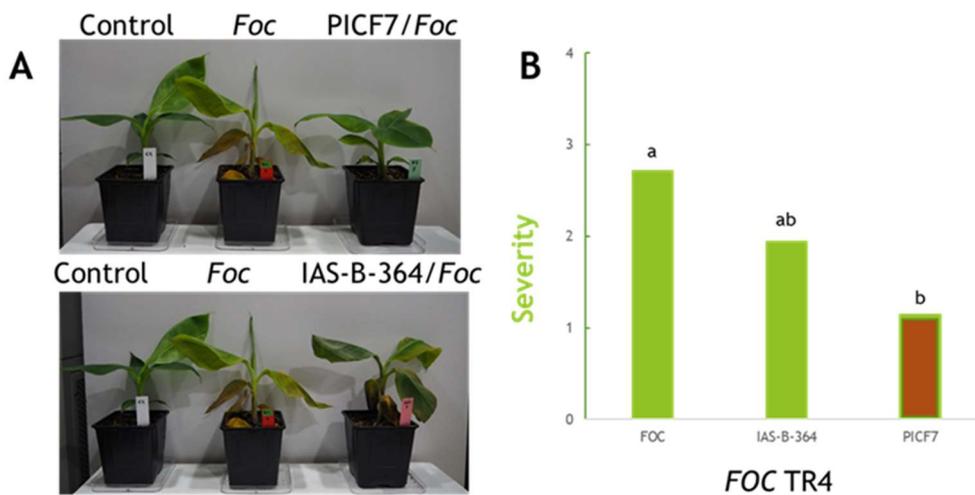


Figure 2. General symptoms (A) and disease severity (B) scored on banana plants inoculated with *Fusarium oxysporum* f. sp. *cabense* TR4 and pretreated with the endophytic bacteria IAS-B-364 from banana roots or strain PICF7 (brown bar) from olive roots. Data scored at 90 days after inoculation with the pathogen.