

Effect of bioformulations on the biocontrol efficacy, microbial viability and storage stability of a consortium of biocontrol agents against Fusarium wilt of banana

ABSTRACT

Aims: This study sought to investigate the effect of bioformulation on the biocontrol efficacy, microbial viability and storage stability of a consortium of *Pseudomonas aeruginosa* DRB1 and *Trichoderma harzianum* CBF2 against Foc Tropical Race 4 (Foc-TR4). **Materials and Results:** Four bioformulations consisting of dry (pesta granules, talc powder and alginate beads) and liquid formulations were evaluated for their ability to control Foc-TR4, sustain microbial populations after application and maintain microbial stability during storage. All tested bioformulations reduced disease severity (DS) by more than 43.00% with pesta granules producing the highest reduction in DS by 66.67% and the lowest area under the disease progress curve value (468.75) in a glasshouse trial. Microbial populations of DRB1 and CBF2 were abundant in the rhizosphere, rhizoplane and within the roots of bananas after pesta granules application as compared to talc powder, alginate beads and liquid formulations 84 days after inoculation (DAI). The stability of both microbial populations after 180 days of storage at 4°C was the greatest in the pesta granule formulation. **Conclusion:** The pesta granule formulation was a suitable carrier of biological control agents (BCA) without compromising biocontrol efficacy, microbial population and storage stability as compared to other bioformulations used in this study. **Significance and Impact of the Study:** Pesta granules could be utilized to formulate BCA consortia into biofertilizers. This formulation could be further investigated for possible applications under agricultural field settings.

Keyword: Banana; BCA consortium; Biocontrol efficacy; Bioformulation; Fusarium wilt; Microbial population; Pesta granules; Storage stability

