

Title Biological control of the potato dry rot caused by *Fusarium* species using PGPR strains
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Abstract

In this study, a total of 17 Plant Growth Promoting Rhizobacteria (PGPR) strains, consisting of eight different species (*Bacillus subtilis*, *Bacillus pumilus*, *Burkholderia cepacia*, *Pseudomonas putida*, *Bacillus amyloliquefaciens*, *Bacillus atrophaeus*, *Bacillus macerans* and *Flavobacter balastinium*), were tested for antifungal activity in *in vitro* (on Petri plate) and *in vivo* (on potato tuber) conditions against *Fusarium sambucinum*, *Fusarium oxysporum* and *Fusarium culmorum* cause of dry rot disease of potato. All PGPR strains had inhibitory effects on the development of at least one or more fungal species on Petri plates. The strongest antagonism was observed in *B. cepacia* strain OSU-7 with inhibition zones ranging from 35.33 to 47.37 mm. All PGPR strains were also tested on tubers of two potato cultivars ‘Agria’ and ‘Granola’ under storage conditions. Only *B. cepacia* strain OSU-7 had significant effects on controlling potato dry rot caused by three different fungi species on the two potato cultivars. There were no significant differences in rot diameters among the treatments in comparison to the negative control (with water). This is the first study showing that *B. cepacia* has great potential to be used as effective biocontrol agent of *Fusarium* dry rot of potatoes (*F. oxysporum* and *F. culmorum*) under storage conditions.