

**POTENTIAL OF MANAGING CARROT SOFT ROT CAUSED BY  
*ERWINIA CAROTOVORA* USING A BACTERIAL ANTAGONIST,  
*BURKHOLDERIA SPINOSA***

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*Erwinia carotovora* is an economically important phytopathogenic bacterium causing soft rot of carrot. The present study was focused on determination of practical feasibility of using *Burkholderia spinosa*, a bacterial antagonist as a potential biological control agent of *E. carotovora*, towards the effective management of carrot soft rot. *E. carotovora* was isolated from carrot tubers showing typical soft rot symptoms and the identity was confirmed by PCR using pathogen specific Y1 and Y2 primers. Population dynamics of the pathogen and the biological control agent were investigated *in vitro*. Cell suspensions of *E. carotovora* ( $1 \times 10^5$  cfu/ml) and *B. spinosa* ( $1 \times 10^8$  cfu/ml) were applied to sterilized soil samples (25 g) separately and in combination. Cell density of the two organisms in different soil samples was quantified by serial dilution plate technique over a period of three weeks. In *B. spinosa* treated soils, *E. carotovora* population was significantly ( $p < 0.005$ ) reduced for a period of 10 days starting from seven days after co-inoculation of the soil with *E. carotovora* and *B. spinosa*. Survival of *B. spinosa* on outer and inner tissues was also quantified dilution plate technique using carrot tubers which were treated with a postharvest dip treatment of *B. spinosa* cell suspension ( $1 \times 10^7$  cfu/ml) for 30 minutes. Findings revealed the total absence of *B. spinosa* colonies in carrot tissues at a depth of 0.5 mm of the *B. spinosa* treated- tubers and a better appearance of the peel tissues with no microbial infections, even after two weeks of the treatment. Findings of the present study conclude that *B. spinosa* is a promising agent to be used as a post-harvest and a soil treatment for biological control of carrot soft rot.

**Keywords:** Antagonist, *B. spinosa*, Carrot, *E. carotovora*, Soft rot