

**Title** Enhancing bioefficacy of *Bacillus subtilis* with sodium bicarbonate for the control of ring rot in pear during storage

**Author** Youzhou Liu, Zhiyi Chen, Yongfeng Liu, Xiaoyu Wang, Chuping Luo, Yafeng Nie and Kerong Wang

**Citation** Biological Control, Volume 57, Issue 2, May 2011, Pages 110-117

**Keywords** *Botryosphaeria berengeriana*; Pear ring rot; Biocontrol; Sodium bicarbonate; Combination

### Abstract

Pear ring rot caused by *Botryosphaeria berengeriana* is a common disease throughout pear-growing areas. The use of biocontrol agents to control the disease can potentially reduce the negative effects of chemical fungicides on fruit and on the environment. Here, we evaluated the preventative (before pathogen inoculation) and curative (after pathogen inoculation) effects of biocontrol agents (BA) with sodium bicarbonate (SBC) against *B. berengeriana* alone or in combination on plates and on fruit. The order of treatments applied in the combinations, and two different doses were also evaluated. The inhibition rates were 42.30%, 75.77–85.41%, and 83.00–90.23% *in vitro* with 2% SBC (w/v), BA (strains 11, 28, 2 and sf 628), and combination treatments, respectively. On fruit, the curative inhibition rates were 23.83%, 12.79%, 71.09%, 48.16%, 74.57%, and 57.90% when treated with BA 11 (30 mL), SBC (30 mL), BA 11 (15 mL) + SBC (15 mL), SBC (15 mL) + BA 11 (15 mL), BA 11 (30 mL) + SBC (30 mL), and SBC (30 mL) + BA 11 (30 mL), respectively; the preventative inhibition rates were 28.72%, 17.31%, 78.25%, 51.06%, 80.91%, and 61.50%, respectively. Combinations were superior to individual treatments and significantly better with SBC following BA than vice versa. Therefore, the proper combination of SBC with BA can be developed as a promising approach against pear ring rot during storage.