

**Title** Assessment of application timing of *Bacillus* spp. to suppress pre- and postharvest diseases of apple

**Authors** Anissa Poleatewich, Henry Ngugi and Paul Backman

**Citation** Plant Disease 96 (2): 211 – 220. 2012.

**Keywords** apple; biological control

#### **Abstract**

Four isolates of *Bacillus* spp. were tested in a two-year field study for biological control of pre- and postharvest diseases of apple. For the pre-harvest test, bacteria were applied to ‘Golden Delicious’ and ‘Rome Beauty’ trees in May or May and June. Foliar apple scab severity was assessed weekly. After harvest, fruit were wounded and then either left untreated or received a postharvest application of the bacteria. Wounded fruit were then inoculated with the bitter rot pathogen and lesion size measured over 8 days. *Bacillus megaterium* isolate A3-6, *B. mycooides* isolate A1-1 and *B. cereus* isolate FLS-5 applied in May or May and June significantly reduced fruit and foliar apple scab severity in both years. A postharvest application of the bacteria (alone or in combination with a pre-harvest application) resulted in the greatest suppression of bitter rot on both cultivars ( $P < 0.04$ ). The May + June + postharvest application of isolate A3-6 resulted in the greatest suppression of bitter rot with an average of 45% and 95% reduction in lesion size compared to non-treated controls on ‘Golden Delicious’ and ‘Rome Beauty’ fruit, respectively. Results from this study indicate that pre-harvest applications of the bacteria were able to reduce foliar and fruit scab and an additional postharvest application was effective in reducing bitter rot severity.