Title Antifungal activity and possible mode of action of borate against *Colletotrichum gloeosporioides* on mango

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Citation Plant Disease 95 (1): 63-69. 2011.

Keywords mango; anthracnose

Abstract

The effect of potassium tetraborate on germination of conidia of *Colletotrichum gloeosporioides*, and postharvest rot of mango were studied. An application of $K_2B_4O_7$ to mango trees at flowering increased fruit set and decreased the incidence of anthracnose on harvested fruit. The effects of borate on the germination, nuclear division, endocytosis, and ultrastructure of conidia of *C. gloeosporioides* were studied using light, confocal, and transmission electron microscopy. The results showed that borate inhibited germination and germ tube elongation, delayed nuclear division, and impaired endocytosis of *C. gloeosporioides* conidia. Ultrastructural abnormalities also occurred in conidia treated with borate, and these included an increase in numbers of vacuoles, cytoplasmic disintegration, mitochondria degradation, and plasmolysis. These results suggest that borate can serve as a potential alternative to synthetic fungicides for the control of the postharvest disease of mango fruit caused by *C. gloeosporioides*.