

Title Postharvest volatile treatments and preharvest elicitor applications reduce ripe rot disease incidence in 'Hort16A' kiwifruit

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Abstract

Ripe rot, caused by *Cryptosporiopsis actinidiae*, can cause significant loss of yellow-fleshed *Actinidia chinensis* 'Hort16A' kiwifruit fruit in long-term storage. Disease incidence can be reduced by storage of fruit in air rather than in controlled atmosphere; however, there is no other current form of disease control and alternative measures are sought. Fourteen volatiles, sourced from two commercial kiwifruit cultivars, *Actinidia deliciosa* 'Hayward' and 'Hort16A', were tested for in vitro fungitoxicity to *C. actinidiae*. (E)-2-hexenal and ethyl hexanoate completely inhibited mycelial growth at 6 mg/Petri dish. These volatiles also reduced the incidence of *Cryptosporiopsis* rots relative to that in control fruit, when used as fumigants in bins containing 360 fruit. However, fruit in the ethyl hexanoate atmosphere suffered skin breakdown leading to increased incidence of *Phomopsis* sp. side rots. Butanoate concentration, which is associated with ripening/softening, also increased more rapidly after ethyl hexanoate treatment. In field studies, six different elicitors were applied on multiple occasions preharvest, for two seasons. Ripe rot incidence was reduced by 50-75% in fruit treated with salicylate-based compounds but was less affected by methyl jasmonate. This may suggest resistance to ripe rots in kiwifruit is mediated by salicylate-responsive rather than jasmonate-responsive pathways.