

Title Preharvest treatments for induction of resistance to postharvest diseases in fruits
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Abstract

Resistance to post-harvest diseases has been successfully enhanced in a range of annual and perennial fruit crops, including melon and mango, by preharvest treatment with non-pesticidal activators. One of the most effective treatments has been acibenzolar-S-methyl (Bion®). Three or four sprays or soil drench applications applied to mango trees from early fruit-set reduced post-harvest anthracnose in fruit caused by *Colletotrichum gloeosporioides*, by up to 50%. Application of the activator to well maintained trees resulted in better induction of resistance than in poorly managed orchards. The activities of chitinase and β -1,3-glucanase were enhanced in leaves of mango seedlings treated with Bion, however activities were not significantly enhanced in fruit peel after soil drench applications to trees. Activities of the enzymes and concentrations of two alk(en)ylresorcinol compounds were greatest in developing fruit prior to harvest, then declined to the 'sprung' stage, but did not decline further as ripening progressed. Soil drench or trunk injection treatments with potassium silicate solutions were less consistently effective against the same diseases in mango and avocado. Activation of plant defences for post-harvest disease control should be considered in conjunction with other disease-minimising practices. For example, severity of anthracnose is largely influenced by rootstock or variety in mango and avocado, and can be related to levels of the pre-formed antifungal compounds alk(en)ylresorcinols and 'diene', respectively. As defences are maximally enhanced in healthy plants or trees, other important disease management strategies include balanced and timely fertilisation and irrigation, maintaining good crop hygiene (eg. pruning for inoculum minimisation), and targeted applications of fungicides and other pesticides.