

Title Host responses to biological control agents
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Abstract

Biological control of plant diseases is a three-way interaction in which pathogen, plant tissue and biocontrol agent (BCA) are involved. The plant tissue cannot merely be considered as the battle-field where pathogen and biocontrol agent confront each other, because it appears to perceive both the presence of the pathogen and the BCA. Perception of the pathogen and/or the BCA can be followed by deployment of an active response that results in localized and/or systemic induced resistance. The localized response is based on rapid cell death, reinforcement of cell walls and accumulation of phytoalexins. Systemic resistance also involves synthesis and accumulation of antifungal depolymerases that attack the fungal wall. Although systemic resistance can be considered a typical response of more metabolically active tissues, some of its mechanisms have also been reported in BCA-treated stored fruits. Especially for stored fruits, the defence capability gets weaker with time. As the physiology of the fruits changes during maturation and senescence, inhibitors of fungal growth decrease and the fruit become more susceptible to pathogens, especially necrotrophic ones. These changes, which affect the fruit in favour of necrotrophic pathogens, such as tissue softening and the physiological shift of the plant cells to a more oxidized state, also negatively influence the success of BCAs. This work attempts to gather and analyse the available information on host responses to BCAs, thereby presenting new possibilities for research in postharvest biocontrol.