Title Waxflower-botrytis pathosystem: a model for pathogen induced flower abscission?

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Abstract

Cut waxflower (*Chamelaucium* spp. and hybrids) stems bear numerous small attractive flowers. However, unsightly flower abscission often occurs during their postharvest handling. A range of possible causes of this symptom were initially investigated, including exogenous ethylene, water deficit stress, physical injury, and pathogen infection. Ultimately, the flowers proved to be particularly susceptible to *Botrytis cinerea*. This cause was not initially obvious because ethylene mediated abscission was elicited by Botrytis infection before disease became evident. Airborne conidia of *Botrytis* are typically dispersed in the field before harvest. They require cool temperatures and, ideally, free water to germinate. Such conditions are common during handling after harvest. Botrytis can infect all organs of waxflower flowers. Under ideal incubation conditions, flower abscission occurs within 2-4 days. Flower fall occurs at least 1 day before tan coloured lesions appear. A further 1-2 days are required before superficial mycelia and conidiophores form and sporulation occurs. Heavily infected flowers become water-soaked and turn dark brown. Postharvest flower abscission in waxflower can be prevented by treatment with anti-ethylene agents, including silver thiosulphate and, to a lesser degree, 1-methylcyclopropene. However, through better understanding the host-pathogen interaction, opportunities exist to directly address the cause of the problem as opposed to the initial symptom. Fungicides are effective in suppressing Botrytis-elicited flower fall, but their use is falling from favour. In this general context, the waxflower-Botrytis pathosystem constitutes a potentially useful 'model system' for further investigation of pathogen elicited flower abscission at physiological, cellular, biochemical, and molecular levels.