

Title Control of *Penicillium digitatum* in citrus fruit by bergamot essential oil vapours
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Abstract

The effect of bergamot essential oil on postharvest decay incited by *Penicillium digitatum* Sacc. was evaluated on 'Marsh' grapefruit and 'Tardivo di Ciaculli' mandarin. Wound-inoculated fruits were left to incubate at 20 °C and 90-95% RH for 24 h before treatments. Treatments were carried out at 20 °C in air-tight 200-litre plexiglas cabinets equipped with two fans. For 'Marsh' grapefruits 2 ml of bergamot oil were placed on a strip of Watman paper in a dish and allowed to volatilize (method A) or vaporized by an aerosol device (method B). With 'Tardivo di Ciaculli' mandarins, 2.5 or 5 ml essential oil were supplied by method B. After 24 h of vapour exposure fruit were stored at 20 °C and 90-95% RH and checked for decay after 7 (grapefruit) and 5 or 8 days (mandarin). At the end of storage the incidence of decay in untreated fruit of 'Marsh' grapefruit averaged 16.8%, against 15.6% and 9.8% of those treated by method A and B, respectively. In 'Tardivo di Ciaculli' mandarins after 5 days, decay in untreated fruit was 50%; bergamot oil at 2.5 ml reduced decay by 48% at 2 ml and by 70% at 5 ml. After 8 days, untreated fruit decay increased to 84.4%, whereas bergamot oil reduced the losses to 59.4 and 44.4%, at 2.5 and 5 ml, respectively. Bergamot oil thus showed good activity against *P. digitatum*, but due to its low volatility it needs to be actively vaporized in the environment.