

# Postharvest applications of disinfectants using a fog tunnel system to manage botrytis gray mold in tomatoes

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## Abstract

Greenhouse tomatoes marketed on the vine are very susceptible to *Botrytis* gray mold during shipping and storage. We evaluated the efficacy of the disinfectants StorOx<sup>®</sup> (hydrogen dioxide and peroxyacetic acid) and KleenGrow (didecyl dimethyl ammonium chloride) applied using microdroplet technology (Smart Fog<sup>®</sup> tunnel system) in controlling postharvest gray mold of cluster tomatoes. Tomatoes were inoculated with a suspension of  $10^6$  conidia/ml of *B. cinerea*. Treatments were applied in the fog tunnel with 10 and 30 s contact times, then five calyces were sampled and numbers of conidia were determined by dilution plating on PDA and *Botrytis*-selective media immediately after treatment. Samples were placed in storage at 13°C, 70% RH for 15 days. The number of fruits and calyces with gray mold were recorded 2, 4, 6, 8, 10 and 15 days after treatment. Sporulation of *B. cinerea* was quantified on day 15. Treatment with a 1:10 rate of StorOx<sup>®</sup> and 1:5 and 1:10 rates of KleenGrow were consistently effective in reducing *Botrytis* disease incidence. However, the higher rate of KleenGrow was phytotoxic to the clusters. Contact time of 30 s was significantly more effective in reducing *Botrytis* disease incidence than 10 s contact time. Where tomato fruits were in contact, disinfectant deposition was blocked and disease incidence and severity were higher than on unblocked surfaces. Microdroplet application of effective disinfectants may be an integral component of postharvest loss prevention when used in conjunction with preharvest management practices to reduce *Botrytis* inoculum on fresh produce.