

**Title** Development of a system that can clean and disinfect the air and the content of storage facilities and its potential for decay prevention of table grapes

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### **Abstract**

A technology was developed to clean the air of storage facilities from particles and pathogens in a passive mode. The system termed MegAir® is also capable of actively disinfecting the air and the contents of the storage facility upon demand. In the passive mode particles are absorbed to a liquid phase that cleans the air going through the system. In the active mode, the liquid phase releases free radicals to the air which disinfect the storage facility and its contents. The passive mode was capable of reducing microbial air counts in a model storage facility. In its active mode the system was capable of killing conidia of *Botrytis cinerea* placed on solid media within 24 h. *B. cinerea* causes grey mold decay and is the most important storage pathogen of table grapes. Hence, the MegAir® system was tested for its potential to protect grapes from decay. It was found that exposure of 72 h did not inflict visible damage to 2 varieties of table grapes. Exposure of harvested 'RedGlobe' grapes to the system for 24 h prevented development of grey mold decay that developed abundantly in the untreated control after 25 d at 10°C. A single exposure to the treatment also had a very significant effect after storage for 2 month at 0°C but it is anticipated that multiple exposures to the treatment will be required to control decay in this time scale. According to our results the MegAir® system may have a potential to treat grapes as well as many other produce against decay, and maintain storage facilities with cleaner air and free of inoculum sources.