

Title The application of various disinfectants by fogging for decreasing postharvest diseases of strawberry

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Abstract

In this study, chlorine dioxide (ClO_2), sodium hypochlorite (NaClO), hydrogen peroxide (H_2O_2), citric acid ($\text{C}_6\text{H}_8\text{O}_7$) and ethanol (EtOH) were applied to strawberry fruit using a fogger with an ultrasonic aerosol generator that can produce spheres at $1.2 \mu\text{m}$ in diameter. Fruit were treated at room temperature for 30 min while with the fogger operating and for an additional 30 min in the fog consisting of disinfectants. Treated fruit were stored at 1°C for 5 days and an additional 2 days at 20°C . The percentage of infected fruit and microorganism populations on the surface of the fruit and in the storage air were evaluated to determine the efficacy of treatments. Chlorine dioxide, hydrogen peroxide, sodium hypochlorite, citric acid and ethanol significantly reduced the percentage of infected fruit. The percentage of decay was reduced to 14.5% from 83.2% by the hydrogen peroxide treatment at $2000 \mu\text{L L}^{-1}$ and to 32.5% by sodium hypochlorite at $2000 \mu\text{L L}^{-1}$ in the first experiment. In addition, all chemicals significantly reduced the total number of microorganisms on the fruit surface and in the storage atmosphere. Hydrogen peroxide at $2000 \mu\text{L L}^{-1}$ achieved approximately a 2 log reduction on the surface microorganism population in the first experiment. The study showed that application of disinfectants by fogging was effective in reducing postharvest diseases of strawberry.