

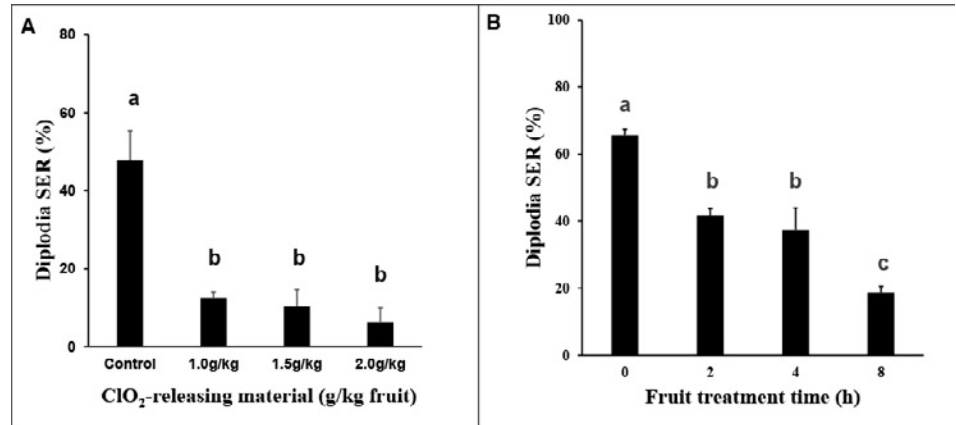
Grapefruit Exposure to Chlorine Dioxide Gas Reduces Development of Diplodia Stem-end Rot

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Summary: Besides causing reduced yields in Florida, huanglongbing (HLB) has also resulted in more postharvest Diplodia stem-end rot (SER). Chlorine dioxide (ClO_2) has long been used to sanitize water, including water used in fresh produce packinghouse operations. However, new ClO_2 gas-releasing products are now available that are easy to use, release ClO_2 gas over different lengths of time, and are registered for the treatment of fresh produce. We tested 1.0, 1.5, and 2.0 g of ClO_2 -releasing materials (ICA TriNova, Newnan, GA) per kg grapefruit, placed in sachets within sealed plastic containers (42.5 L) containing the fruit and incubated



Effects of postharvest ClO_2 treatments on Diplodia SER incidence at different application rates (A; 8 h exposure) and exposure durations (B; 1g/kg) on naturally infected red grapefruit. Standard error is expressed on each bar of the graph. Bars with different letters are significantly different ($P \leq 0.05$).

at 70-75 °F for 8 hours, or treated with 1 g ClO_2 per kg fruit for 2, 4, or 8 hours before degreening the fruit. Afterward, fruit were evaluated for decay, peel injury, and Diplodia SER decay after storage for up to 3 weeks at 72-75 °F. As little as 1.0 g ClO_2 per kg of fruit reduced Diplodia SER incidence by 74%, with no significant benefit from treating with higher concentrations. Only two hours of ClO_2 at the lowest dose reduced decay 36%, increasing to 71% after 8 hours. Fruit absorbed about 93% of the ClO_2 gas during the 8 hour treatment, which caused no peel injury or changes in fruit weight loss, firmness, total soluble solid, or acid content.

While the results show great promise, further work is needed to develop these treatments commercially.

Take Home Message:

- As little as 1.0 g ClO_2 per kg of fruit reduced Diplodia SER incidence by 74%, with no significant benefit from treating with higher concentrations.
- Only two hours of ClO_2 at the lowest dose reduced decay 36%, increasing to 71% after 8 hours.
- Fruit absorbed about 93% of the ClO_2 gas during the 8 hour treatment, which caused no peel injury or changes in fruit weight loss, firmness, total soluble solid, or acid content

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