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Evaluation of effect of ozone on two species of stored grain insects *Tribolium castaneum* and *Rhyzopertha dominica* and grain quality

Yu Xiao*, Manjree Agarwal, Yonglin Ren

College of Science, Health, Engineering and Education, Murdoch University,
90 South Street, Murdoch, WA 6150, Australia.
*Corresponding author's email: Amy.xiao@murdoch.edu.au

ABSTRACT

Ozone is a highly oxidative gas. It is generally recognized as safe (GRAS) by the United States Food and Drug Administration, and it is approved for use as an antimicrobial agent on processed food, including meat and operation theatre. The use of ozone to manage stored-grain insets has been explored more than a decade ago. This study reported the results on effects of evaluation of ozone on two species of stored grain insects *Tribolium castaneum* (Herbst) and *Rhyzopertha dominica* (F.) with and without wheat and grain quality. All four stages of two species of insects were easily killed without wheat, 100% mortality achieved using 700 ppm ozone for 1.8-2.3, 2.5-3, 3-3.5 and >4 h exposure for adults, larvae, eggs and pupae, respectively. However, unlike without grain, with grain 100% mortality needed to extend the exposure time 8-10 times longer, depending on the location and distance of ozone penetration. There was no effect of ozone on wheat quality, such as starch, protein, moisture content and bulk density.

Keywords: Fumigant, Ozone, *Tribolium castaneum* , *Rhyzopertha dominica,* Mortality, Wheat, Quality