

# EFFICACY OF OZONE TO CONTROL INSECTS, MOLDS AND MYCOTOXINS

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## ABSTRACT

With the reduced availability of traditional post-harvest storage pesticides, safe alternatives are desperately needed. The long range goal of this research is to find new technologies for controlling insects and mold growth in stored grain and decreasing the likelihood of mycotoxin contamination. With this as the goal, this research project focused on the use of ozone technology in post-harvest grain storage. The specific objectives were to determine the effect of ozone on the survival of insects (*Tribolium confusum* and *Oryzaephilus surinamensis*) and mold (*Aspergillus flavus* and *Fusarium moniliforme*), and the production of mycotoxin in stored corn. Ozone atmospheres (5 ppm) were compared to air environments (controls) in their respective effects on insect mortality, mold radial growth, sporulation and aflatoxin production. For *T. confusum*, 100% mortality was found in 5 d, and for *O. surinamensis* in 3 d. Radial growth of both *A. flavus* and *F. moniliforme* was inhibited for the first 2 d, but after 3 d in the ozone atmosphere growth paralleled that in the control. Sporulation and hyphal growth above the surface of the agar were completely inhibited by the ozone. Aflatoxin production was also reduced by over 99% in the *A. flavus* cultures exposed to ozone.