Abstract

EVALUTION OF COMBINING SULFURYL FLUORIDE, PROPYLENE OXIDE & CO_2 FOR STORED PRODUCT INSECTS

Jeannette Muhareb[1*], Preston Hartsell[1], Gail Sargant[1], J.M. Hurley[1]
[1]DFA of California (American Council for Food Safety and Quality), Fresno, CA

DFA has spent the past 11 years doing research to find alternatives to MB and has had promising results with many of the alternatives tested. Two very promising fumigates are Sulfuryl Fluoride and Propylene oxide (PPO). ProFume™ gas fumigant (99.8% sulfuryl fluoride or SF) is now registered for use on many stored products. Currently we are conducting a study with these two fumigates along with adding CO_2. We have completed the first year of the three year project titled, "Efficacy with the Combination of Sulfuryl Fluoride and Propylene Oxide as Replacement for Methyl Bromide Fumigation of Stored Food Products."

The goal of this project is to conduct laboratory research to evaluate the efficacy of combining SF and PPO on stored product insects as compared to the efficacy of each alone and the costs and other implications to the industry. Our findings this last year have shown that it may be possible to combine the two fumigates for successful treatments as an alternative to MB. We have results of combinations on all stages of RFB, WB, and IMM under NAP at 26.7^{o}C for 24 hours. We found that RFB eggs are the most tolerant using the combination. A combination CT of about (SF/PPO) 45/160 enabled an LD_{50} and CT of about 150/220 enabled an LD_{95} on eggs. The post-embryonic stages for all three insects with a CT of about 120/170 produced an LD_{50} and a CT of about 150/220 produced an LD_{95} on larvae. The pupae stage for all three insects with a CT of about

50/220 produced an LD_{50} and a CT of about 120/240 produced an LD_{95}. At the time of this writing the results reported here are of a preliminary nature as all insect counts are not completed.

Our objective in this study for the next year is to complete the work at NAP. Next to study the affects of adding CO_2 at levels of 5, 7, and 10% and finally conduct test under vacuum.