Abstract

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

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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 ProFume and Propylene oxide (PPO). ProFume™ gas fumigant (99.8% sulfuryl fluoride or SF) is now registered for use on many stored products. Like MB, SF adheres to the principles of "CT product" for efficacy, and CT products are most important in fumigating where sorption is a factor created by commodity. SF is highly effective against post embryonic stages but requires higher CT (concentration X times) product of eggs mortality. PPO is highly effective against eggs, but requires a higher CT product for post embryonic stages. Vacuum fumigations are used for PPO microbial fumigations of nuts and spices. Recent studies here at DFA, have shown vacuum fumigations increase mortality to insects with less dosage for SF and PPO.

The main 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. Studies will include CO_2 for NAP fumigation. Findings of this innovative technology may provide considerable financial savings as well as very effective way to control stored product insects.