

Evaluation of sulfuryl fluoride fumigation as a quarantine treatment for khapra beetle, *Trogoderma granarium*

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Abstract

Khapra beetle, *Trogoderma granarium* is a cosmopolitan pest of stored products, warehouses and other storage facilities. In the United States it is considered a quarantine species and great effort is made to prevent its introduction and establishment. In recent years interceptions of *T. granarium* have risen dramatically as a result of increased trade and improved sampling and detection efforts. When populations are detected in port environs or elsewhere efficacious treatments are needed to eradicate populations before they are able to establish and spread. As part of an ongoing project to develop new treatments for regulatory use, and to further the effort of reducing methyl bromide use in the U.S. sulfuryl fluoride was evaluated as a fumigant treatment for *T. granarium* as well as *T. variable*. A series of small scale fumigation experiments were conducted using field and laboratory strains of *T. granarium* as well as *T. variable* to develop quarantine level treatments, and to assess the latter species ability to serve as a surrogate for in fumigation efficacy assays. Quarantine doses, relative tolerances among species and life stages, including quiescent larvae, were determined for field and laboratory strains. Results will provide new tools for khapra beetle program in the U.S. and support eradication efforts when *T. granarium* introductions occur.

Keywords: phytosanitary treatment, methyl bromide alternative, dermestidae