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GRAIN PROTECTANTS AND PHOSPHINE RESISTANCE OF STORED INSECT PEST IN VIETNAM

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ABSTRACT

Chemicals such as grain protectants and fumigants have been used to control stored insect pests ~~from since the~~ 1960s in Vietnam. However, ~~for over~~ the last 15 years, many cases ~~have been recorded~~ of insect surviving ~~after treatments~~ ~~have been recorded~~ and ~~the possibility considered as of~~ resistance ~~of by~~ stored insect pests ~~has been considered~~.

~~Since 1990, r~~esearch ~~on into the~~ resistance of some major stored insect pests to grain protectants (included Sumithion and Dichlorovos-DDVP) and ~~the fumigant~~ phosphine ~~fumigant~~ has been ~~done undertaken since 1990~~ using ~~the~~ FAO methods (numbers 15 and 16).

~~The Lesser lesser~~ grain borer (*Rhyzopertha dominica* Fab.) had the highest tolerance, not only to phosphine but also to Sumithion and DDVP. ~~Almost Most of the~~ local strains of this species were highly resistant to both ~~of the~~ grain protectants and ~~Phosphinephosphine~~. ~~Rice-The rice~~ weevil (*Sitophilus oryzae* L.) was susceptible to all ~~those these~~ pesticides. Tolerance of ~~Red red~~ flour beetle (*Tribolium castaneum* Herbst.) to ~~those these~~ chemicals was ~~found to be~~ increased, but the ~~resistant resistance~~ levels of some local strains of this species were not high.

~~Continuing~~Further research ~~s~~ on the resistance of other stored insect pests such as *Cryptolestes* spp. and *Liposcelis* spp to the above chemicals ~~resistance of other stored insect pests such as *Cryptolestes* spp. and *liposeelis* spp. are is~~ necessary in Vietnam to carry out in order to enable improvement in Phosphine-phosphine fumigation practices and -the application procedures for applying grain protectants ~~in Vietnam~~.