

INSECTICIDE AND FUMIGANT RESISTANCE IN INSECTS OF GRAIN
AND STORED-PRODUCTS IN AUSTRALIA.

F.I. Attia

Biological and Chemical Research Institute,
New South Wales Department of Agriculture.
P.M.B. 10, Rydalmere, 2116. N.S.W. Australia.

Abstract: A survey of the occurrence of insecticide or phosphine resistant strains of the major grain and stored-products insects is given. Cross-resistance to different groups of insecticides had been studied in multiple-organophosphorus (OP) resistant strains of *P. interpunctella*, *E. cautella*, *E. kuehniella*, *R. dominica*, *T. castaneum*, *T. confusum* and *O. surinamensis*. Data obtained showed that some populations of these species have developed resistance to most insecticides from the different groups.

Resistance levels were determined in the abovementioned OP-resistant strains. High levels of malathion resistance were recorded in all strains, except the *O. surinamensis* strains which were only moderately resistant to malathion. Fenitrothion and dichlorvos resistance factors in *P. interpunctella* and *E. cautella* were low, but *E. kuehniella* was susceptible to these two insecticides. Dichlorvos resistance factors in *R. dominica*, *T. castaneum* and *T. confusum* were moderate, but low in *O. surinamensis*. Resistance factors to fenitrothion in *R. dominica* and *T. castaneum* were low, but moderate in *T. confusum*. The resistance factor to fenitrothion in *O. surinamensis* was very high.

Synergism studies with OP multi-resistant strains of *P. interpunctella*, *R. dominica* and *O. surinamensis* were carried out to indicate the type of detoxification involved in the resistances. Data obtained showed that hydrolases and mixed function oxidases are largely responsible for OP multi-resistance in *P. interpunctella*, *R. dominica* and *O. surinamensis*.