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M.ANAGING PHOSPHINE RESISTANCE IN GRAIN INSECTS THROUGH INTERNATIONAL COLLABORATION

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ABSTRACT

Control failures in Australia and Asia in the early 1990s attributed to phosphine resistance in grain insects was the impetus for collaborative research between scientists in Australia, China, India and Vietnam, aimed at evaluating the threat posed by phosphine resistance in grain insects, and determining the means of managing them. Some of this collaborative research has been completed while some is still in progress. Collaboration took place through a number of ways. Scientists agreed to standardise resistance detection and measurement methods used in national resistance surveys, and to exchange reference insect strains between countries. There were reciprocal visits between countries, and meetings were held to plan and review research, and on specific topics such as extension training. Surveys in each country confirmed that-resistance was widespread, and that strong resistance had developed in some of the major pest species. The responses of significant strains were characterised in the laboratory experiments using adults or mixed-age cultures, and the concentrations and exposure times needed to control resistant insects were identified. Field trials were undertaken to generate efficacy data under practical conditions, and to validate proposed national standards.