

Biological control of root-feeding scarabs: an experience in cooperation between New Zealand and Mexico

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Soil pests have represented one of the major challenges of crop production, yet a literature review on insect-plant interaction over the past two decades suggests that less than 2% of research has been applied to root feeding insects due to the difficulty of studying them in their subterranean environment. In the Michoacan state, Mexico, the immature stages of several species of Phyllophaga (Coleoptera: Melolonthidae) cause significant losses in maize production. With the goal of finding alternatives to chemical control of this pest, and to improve maize production and environmental quality, a team of researchers from INIFAP and AgResearch, developed a participatory research programme in collaboration with local farmers. The programme resulted in correct taxonomic identification of the most important pest species, the isolation of native strains of entomopathogenic fungi (*Beauveria bassiana* and *Metarhizium anisopliae*), their mass reproduction, evaluation and selection of highly pathogenic strains in laboratory and field tests. An IPM system was developed using plant tolerance through genetic improvement of native corn varieties and application of entomopathogenic fungi. In addition, training courses for farmers, technicians and researchers were held. The programme provided a foundation for new research and technology transfer projects, and the construction of the first biofactory for bioinsecticide production in Michoacan.

