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Integrated Pest Management in Africa: Developing and Deploying Bio-Pesticides

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Abstract

Chemical insecticides are very often used by farmers as the first line of defence to control arthropod pests attacking their crops, also because there might not be other alternatives such as resistant varieties or appropriate agronomic practices. However, the inappropriate use of such agro-chemicals has led to adverse impacts on human and environmental health. Farmers are aware of these drawbacks and have long expressed a strong need for safer pest control options.

Formulated and used correctly, bio-pesticides are excellent alternatives to harmful pesticide regimes. Work carried out by IITA and its partners has found that entomopathogenic micro-organisms and natural plant extracts can function as safe and effective pest management agents. During the past 20 years, IITA has investigated the use of bio-pesticides for the control of several agricultural pests including locusts, grasshoppers, termites, storage weevils, mites and caterpillars attacking most of the African staple crops.

Entomopathogenic fungi including *Metarhizium anisopliae* var. *acidum* and *Beauveria bassiana* have been successfully tested at large scale for the control of several agricultural pests and are the object of commercial production. Bio-pesticide mixtures using baculoviruses and emulsifiable neem oil have showed a synergistic effect in the field, which warrants further investigations and might be expanded to include other compatible products.

While more stable and sustainable solutions against some of the most intractable pests are being pursued through biological control pipelines, e.g. the development and deployment of hymenopteran parasitoids which can establish themselves in the natural environment, bio-pesticides remain a valid pest management option for resource-poor farmers in Sub-Saharan Africa, who are very often not adequately educated and equipped to handle harmful chemical pesticides.

Keywords: Baculoviruses, *Beauveria bassiana*, entomopathogenic micro-organisms, *Metarhizium anisopliae*, neem oil