Horticulture

Developing improved crop protection options in support of intensification of sweetpotato production in Papua New Guinea

Australian Government
Australian Centre for International Agricultural Research

Overview

Sweetpotato is Papua New Guinea's (PNG) major staple food crop with around 90% of the population consisting of semi-subsistence smallholder farmers for whom sweetpotato is a major crop species.

The crop is the focus of efforts to increase commercialisation of fresh product marketing and processing.

A number of crop protection issues have been identified and addressed in this project which aims to develop practical pest management options for smallholder growers. Prevalence of sweetpotato weevil and the need for clean planting material to address losses from viral diseases and nematodes is also addressed.

Postharvest losses to sweetpotato roots constrain the development of commercial production and marketing into cities as a cash crop. The development of new crop protection methods would support commercial production as well as food security for subsistence for smallholders and complement work on soil management and crop nutrition.

KEY FACTS

ACIAR Project No. HORT/2014/083
Duration: September 2016 to August 2021 (5 years)
Target areas: Papua New Guinea
Budget: A$1,898,596

Project Leader
Geoff Gurr, Charles Sturt University, Australia

Key partners
- University of Southern Queensland, Australia
- National Agricultural Research Institute, PNG
- Fresh Produce Development Agency, PNG
- PNG University of Technology (UniTech)

ACIAR Research Program Manager
Irene Kernot

Objective

The project's overall aim is to develop, test and promote the adoption of sustainable solutions to protect sweetpotato crop production.

The project's specific objectives are to:

- Evaluate the impact of soil management interventions on the incidence of pests and diseases (including plant-parasitic nematode).
- Develop and evaluate the effectiveness of novel pest management options.
- Evaluate and promote the adoption of 'best-bet' combinations of integrated pest and disease management (IPDM) options.
- Evaluate the social and economic impacts of promising IPDM combinations.
- Build the capacity of individuals and organisations in PNG to conduct IPDM research.

Expected scientific results

- A comprehensive, evidence-based foundation for sweetpotato crop protection.
- Rigorous in-country training in PNG to support ongoing collaboration on IPDM in sweetpotato.
- Increased availability of data on effects of altered soil management and crop nutrition practices, entomopathogens, barrier plants, altered agronomic practices and technical and socioeconomic impacts of the IPDM strategies.
- Improved knowledge of effect of cultural practices on soil improvement on pests and diseases.
- Capacity for growers and advisors to predict crop losses in relation to cultural practices such as organic matter incorporation.

Expected outcomes

- Potential for new and enhanced crop protection options based on cultural practices.
- Availability of biological control agents for growers.
- Greater understanding among farmers of the range of practices which can be used to manage sweetpotato pests and diseases.
- Accelerated change from a largely subsistence crop system, with some local marketing, to an expanded commercial sector for sweetpotato.
- Increased and more consistent sweetpotato availability and lower levels of pest infestation and pest and disease damage.
- Economic empowerment of women through opportunities to find paid employment in commercial sweetpotato growing and marketing enterprises.
- Reduced losses of sweetpotato due to weevils and soil-associated pests and diseases, creating far-reaching benefits for smallholder livelihoods and nutrition of the poor.
- Greater food security and reduced nutrient malnutrition in rural PNG communities.
- Greater cash income to rural households from the sale of sweetpotato.
- Increased capacity for farmers to prevent and, when necessary, stop major biotic threats.

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