Australian Government
Australian Centre for International Agricultural Research

Agribusiness

Establishing sustainable solutions to cassava diseases in mainland Southeast Asia

Overview

Cassava is an important crop throughout mainland Southeast Asia, where more than 2 million households are estimated to be engaged in cassava production.

The majority of the crop is cultivated to meet rapidly growing regional and global demand for animal feed, starch-based products, ethanol and biofuel.

Cassava production has grown quickly in Cambodia, Laos and Myanmar, resulting in significant cross-border trade of cassava planting stems and raw materials (fresh roots and dry chips) with Vietnam and Thailand. There are strong inter-dependencies between countries for both feedstock and processing capacity, and access to export infrastructure, new technologies, and foreign investment capital.

This boom has coincided with the emergence and spread of two serious diseases throughout the region: Cassava Witches Broom Disease, which can reduce yields by up to 90% and affect starch content and quality; and Sri Lanka Cassava Mosaic Virus, which also results in significant yield losses.

Both diseases are spread through the movement of infected root stems, with secondary infection through invertebrate vectors. The interdependence of Southeast Asia's regional cassava economies has caused the diseases' rapid spread across national borders, with significant impacts on household livelihoods and the global competitiveness of the cassava sector.

KEY FACTS

ACIAR Project No. AGB/2018/172
Duration: August 2019 to June 2023 (4 years)
Target areas: Vietnam, Laos, Cambodia, Thailand, China
Budget: A$3,999,999

Project Leader
Dr Jonathan Newby, International Centre for Tropical Agriculture

Key partners
- University of Queensland
- Hung Loc Research Agricultural Research Centre, Vietnam
- Plant Protection Research Institute, Vietnam
- Agricultural Genetic Institute, Vietnam
- National Agriculture and Forestry Research Institute, Lao PDR
- Plant Protection Centre, Lao PDR
- General Directorate of Agriculture, Cambodia
- Thai Tapioca Development Institute
- Kasetsart University, Thailand
- The Chinese Academy of Tropical Agricultural Sciences

ACIAR Research Program Manager
Howard Hall

Objective

This project aims to improve smallholder livelihoods and economic development in mainland Southeast Asia through the increased resilience of cassava production systems and value chains, by addressing the rapidly evolving disease constraints.

The objectives are to:

- Assess opportunities, challenges and risks for the development of sustainable regional solutions for cassava disease management in mainland Southeast Asia, including coordinated policy development, sustainable business and public / private funding models.
- Improve the capacity and collaboration between breeding programs in mainland Southeast Asia to develop new product profiles for commercially viable cassava varieties, by identifying and incorporating known and novel sources of resistance to Cassava Mosaic Disease and Cassava Witches Broom Disease into national breeding programs.
- Develop, test and deploy diagnostic protocols, tools, and information platforms fit for purpose in monitoring, surveillance, and certification applications.
- Develop and evaluate technically feasible and economically sustainable cassava seed system models for the rapid dissemination of new varieties and clean planting material to smallholder farmers in different production systems and value chains.

Expected scientific results

- Improved breeding methods to introduce disease resistance into cassava breeding lines.
- Improved protocol for screening a large volume of cassava clones for host resistance to Cassava Witches Broom Disease, and screening of Latin America x African cassava hybrids to identify those with superior resistance to Cassava Mosaic Disease.
- Development of a regional expert network for the early detection of emerging pests and diseases in Southeast Asia.
- Improved field diagnostics and real-time reporting of Cassava Mosaic Disease and Cassava Witches Broom Disease cases in Southeast Asia.
- Effective, efficient and sustainable cassava rapid multiplication protocol developed for Southeast Asia.
- Development of best agronomic practices for farmers to achieve rapid field multiplication of cassava stems, including optimal density, irrigation and varieties.

Expected impact/outcomes

- Improved awareness of cassava disease and management options among farmers and industry stakeholders.
- Production and procurement of high quality planting materials by farmers, to minimise yield losses.
- Adoption of new disease resistant cassava varieties.
- Improved coordination of national agencies in disease surveillance, quarantine and management.
- Implementation of sustainable business models for upstream research and development and downstream farmer entrepreneurs working in the seed system.
- Cassava farmers, traders and processors will avoid significant losses in production and income, processors will remain efficient and competitive and export revenue will be maintained for national governments.
- Entrepreneurs will engage in the development of new seed system markets, with the multiplication and distribution of disease free planting material providing alternative streams of income for cassava farmers and traders.

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