Alliance

Bioversity International

CIAT
International Center for Tropical Agriculture
Since 1967 Science to cultivate change

CGIAR

Addressing CMD in Mainland Southeast: Have we learned the lesson?

Dr. Jonathan Newby
Cassava Program Leader
j.newby@cgiar.org

Overview

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT) is part of CGIAR – a global research partnership for a food-secure future.

Introduction

- Cassava has become an important upland crop in terms of both rural livelihoods and economic development in Southeast Asia
  - ~ 3.3 Billion USD exports for Thailand;
  - ~ 1.4 Billion USD exports for Vietnam
  - ~ 1.2 Billion USD imports from Cambodia
  - ~0.35 Billion USD export from Lao PDR

- Sri Lanka Cassava Mosaic Virus (SLCMV) was first reported in in Cambodia in **2015** and is now present throughout the major producing regions adding constraints to farmers already dealing with climate and market uncertainty.

- **Aim -** The overall project aim is to enhance smallholder livelihoods and economic development in mainland SEA by improving the resilience of cassava production systems and value chains by addressing the rapidly evolving disease constraints.

Alliance

Bioversity International

CIAT

Draw on global experience to develop a regional control plan
September 2018

Bioversity International

CIAT
International Center for Tropical Agriculture
Since 1967 Science to cultivate change

Our approach: Transdisciplinary teams, engaging with stakeholders, to achieve impact through targeted partnerships

1. **Transdisciplinary** research team and work packages;
2. **Working across scales** from field to global markets and trends
3. **Early Engagement with value chain and government actors** (core actors - *farmers, traders, processors, exporters*, and supporting - *extension, input suppliers, credit etc*); and
4. Developing and strengthen **regional partnerships** and networks.

All four elements are critical to maximising the research outputs and ensuring they are utilised by next users and rapidly scaling to target farmers across national borders

Establishing sustainable solutions to cassava disease in mainland Southeast Asia

Australian Government
Australian Centre for International Agricultural Research

CGIAR
RESEARCH PROGRAM ON Roots, Tubers and Bananas

Alliance
Bioversity International
CIAT

Establishing sustainable solutions to cassava diseases in mainland Southeast Asia

- **Objective 1**: Assess the opportunities, challenges and risks for the development of sustainable regional solutions for cassava disease management in mainland SEA including coordinated policy development, **sustainable business and public-private funding models**;
- **Objective 2**: Enhance 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 (CMD) and Cassava Witches Broom Disease (CWBD) into national breeding programs:
- **Objective 3**: Develop, test and deploy ***diagnostic protocols***, tools, and information platforms fit for purpose in monitoring, ***surveillance***, and certification applications; and
- **Objective 4**: 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.

CIAT
International Center for Tropical Agriculture
Since 1967 Science to cultivate change

Australian Government
Australian Centre for International Agricultural Research

TTDI

CTCRI

Alliance

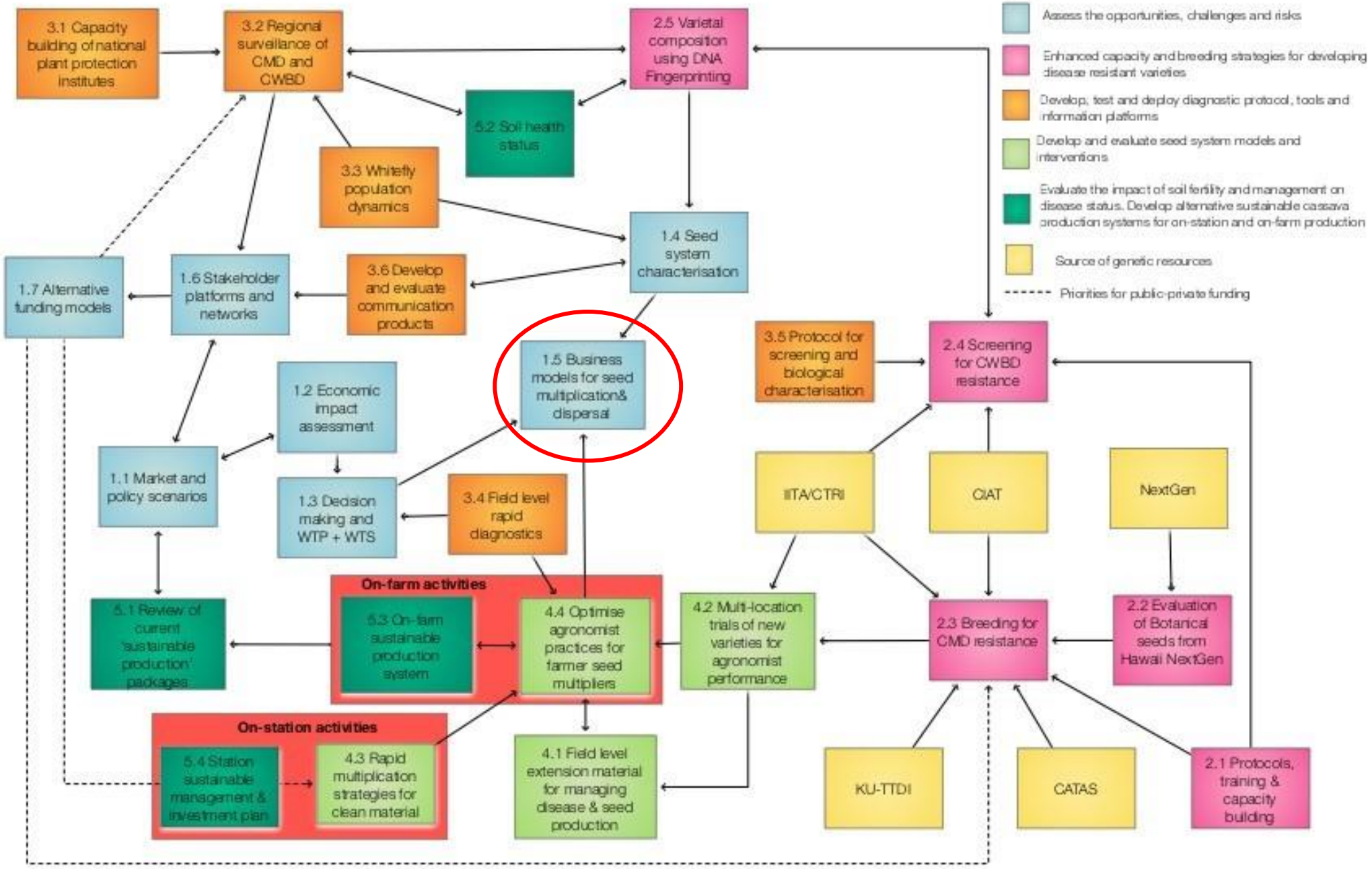
Bioversity International

CIAT

Project Objective

- **Objective 5**: Evaluate the impact of soil fertility status and management practices on the prevalence, incidence, and severity of cassava disease. Co-develop and evaluate alternative cropping-system options relevant in different biophysical, social and market contexts that mitigate the impact of disease and improve the overall sustainability of smallholder cassava production.

    1. Conduct review of current practices promoted by government, NGO, and private sector including organic production, Good Agricultural Practice (GAP) and best management practices. Including interviews and assessment of contract farming arrangements, changes in physical and labour inputs and costs, and existing and potential market incentives for adoption.
    2. Establish the relationship between current crop management, soil fertility and soil physical properties, and cassava pest and disease in Lao PDR and Cambodia.
    3. Initiate on-farm trial in the 2022-23 season for evaluating impacts and trade-offs of alternative cropping systems and management strategies, including formulating indicators for monitoring of the agronomic, environmental and soil health status, incidence and severity of pest and disease, farm economics, and social impacts.
    4. Develop and implement a ‘research station management and investment plan’ at key government research stations for the long-term sustainable production of disease-free cassava stems and cassava research in Lao PDR (NAFRI) and Cambodia (GDA)


3.1 Capacity building of national plant protection institutes
3.2 Regional surveillance of CMD and CWBD
2.5 Varietal composition using DNA Fingerprinting
5.2 Soil health status
3.3 Whitefly population dynamics
1.4 Seed system characterisation
1.7 Alternative funding models
1.6 Stakeholder platforms and networks
3.6 Develop and evaluate communication products
1.5 Business models for seed multiplication& dispersal
3.5 Protocol for screening and biological characterisation
2.4 Screening for CWBD resistance
1.2 Economic impact assessment
1.1 Market and policy scenarios
1.3 Decision making and WTP + WTS
3.4 Field level rapid diagnostics
IITA/CTRI
CIAT
NextGen
On-farm activities
5.1 Review of current 'sustainable production' packages
5.3 On-farm sustainable production system
4.4 Optimise agronomist practices for farmer seed multipliers
4.2 Multi-location trials of new varieties for agronomist performance
2.3 Breeding for CMD resistance
2.2 Evaluation of Botanical seeds from Hawaii NextGen
On-station activities
5.4 Station sustainable management & investment plan
4.3 Rapid multiplication strategies for clean material
4.1 Field level extension material for managing disease & seed production
KU-TTDI
CATAS
2.1 Protocols, training & capacity building
Assess the opportunities, challenges and risks
Enhanced capacity and breeding strategies for developing disease resistant varieties
Develop, test and deploy diagnostic protocol, tools and information platforms
Develop and evaluate seed system models and interventions
Evaluate the impact of soil fertility and management on disease status. Develop alternative sustainable cassava production systems for on-station and on-farm production
Source of genetic resources
Priorities for public-private funding

From the first report in a single plantation in Northeast Cambodia

- The economic impact of cassava disease continues to accumulate rapidly. Estimates of infected production area from partner include
- **419,560 ha in Cambodia** (~76% of planted area in June 2022),
- **120,686 ha in Vietnam** (72,400ha in 2021),
- ~**480,000ha in Thailand** (105,777ha in 2021).
- In Laos there had been several new outbreaks, but eradication has efforts have reportedly kept the area low **(<100ha)** decreasing from the 600 ha in 2021

- **This represents over 37% of the combined cassava area in those countries (up from 24% in 2021).**

Phased strategy to get resistant varieties into farmers fields as quickly as possible

1. Determine the best existing elite Asian cassava variety for rapid multiplication

2. Evaluate existing resistant varieties and clones from outside Asia.
   Under strict phytosanitary protocol for the movement of genetic material

3. Develop new varieties through conventional breeding with national cassava breeding programs in Thailand and Vietnam

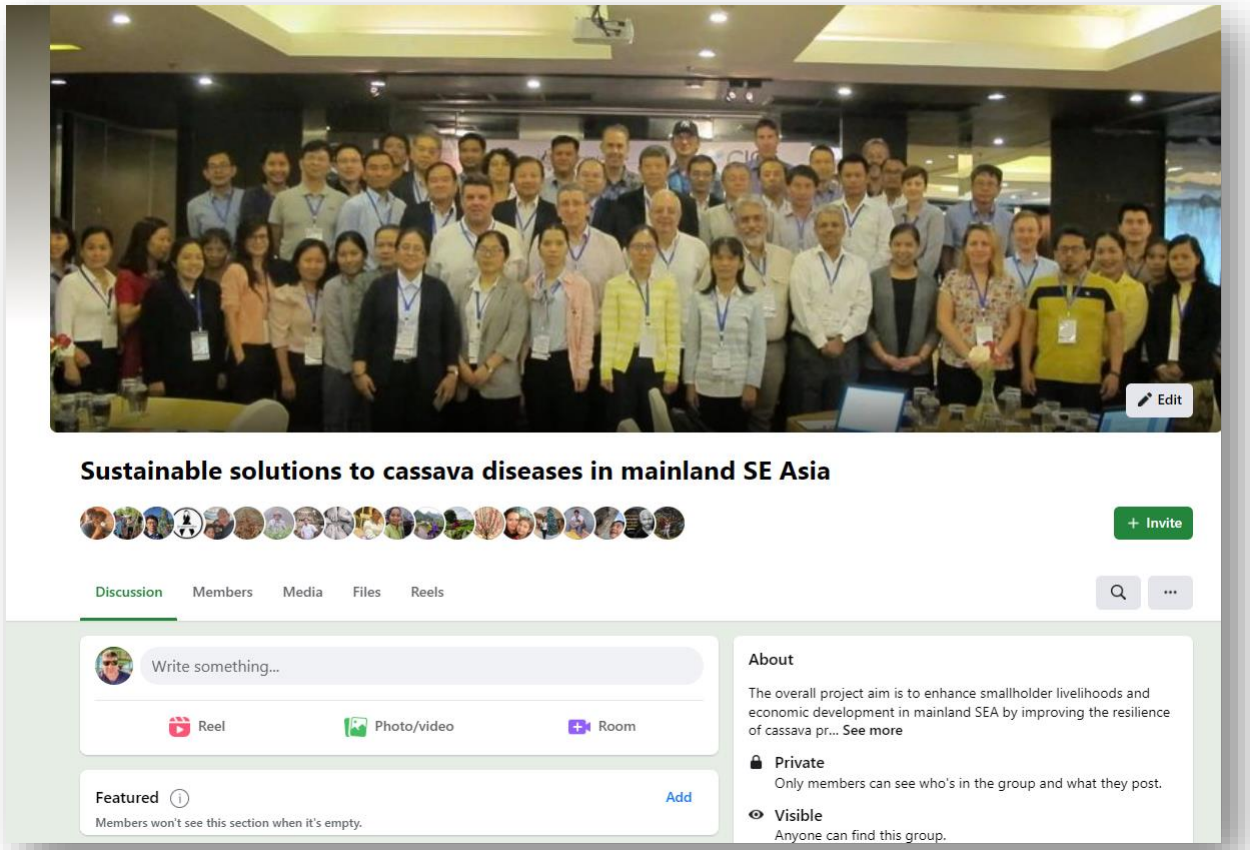
Enhanced capacity and strengthen network between NARs

AGI lab (Vietnam) → NAFRI lab (Lao PDR)

Alliance Bioversity International CIAT

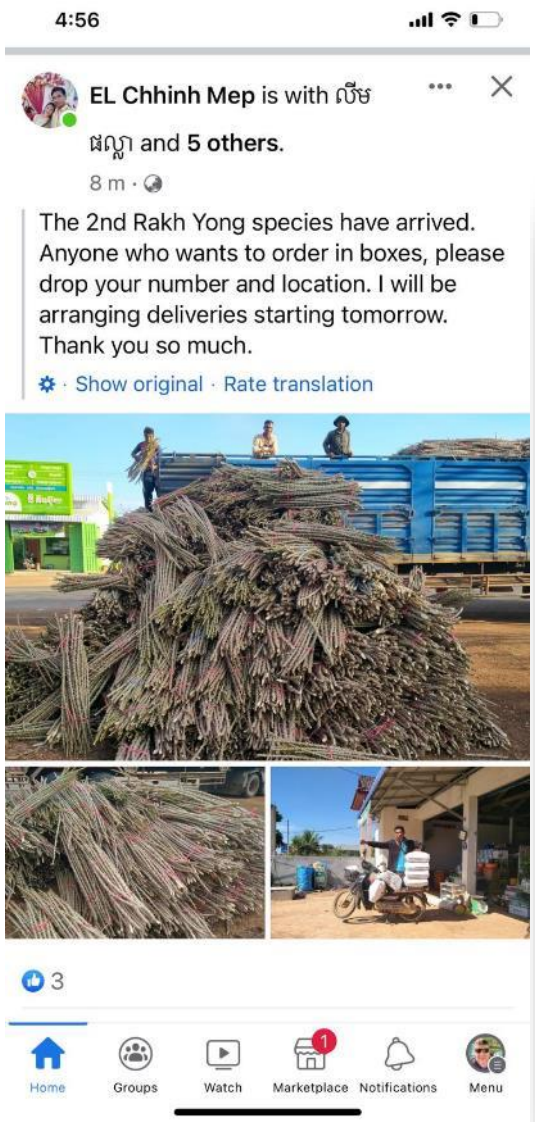
Once there is CMD resistance will things return to normal…..

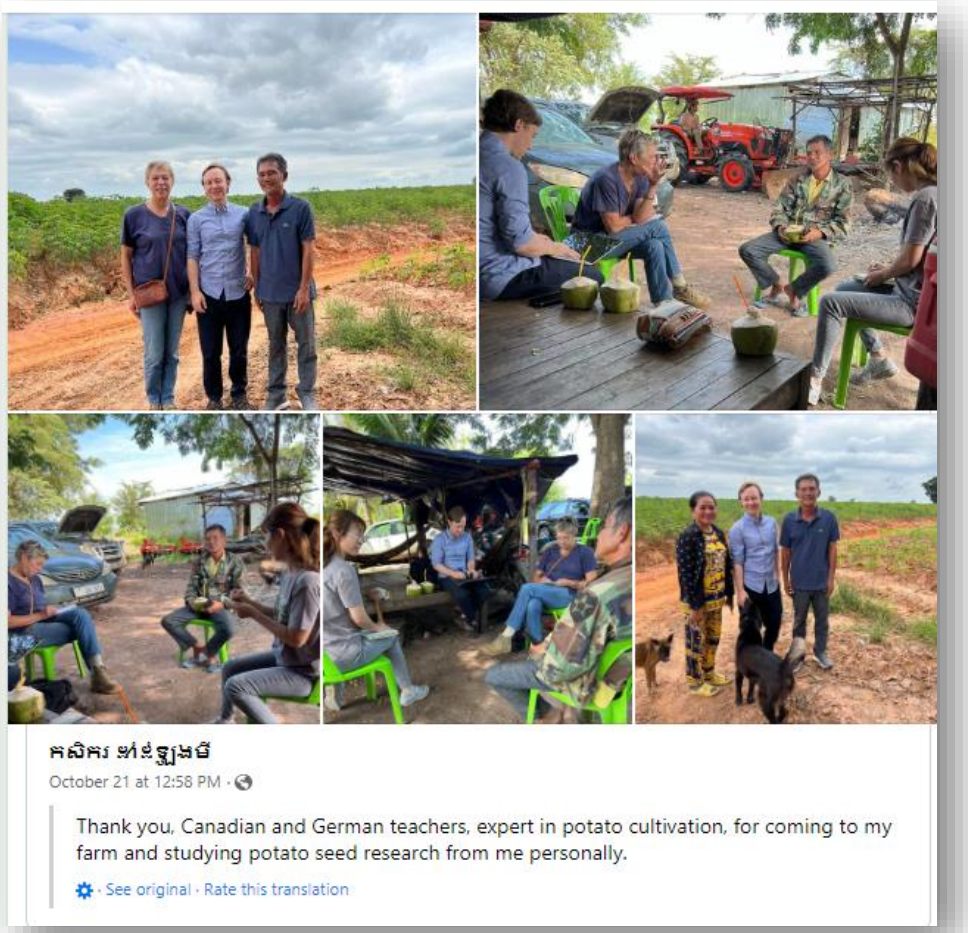
CWBD in breeding population 2022-23


Edit
Sustainable solutions to cassava diseases in mainland SE Asia
+ Invite
Discussion
Members
Media
Files
Reels
Write something...
Reel
Photo/video
Room
Featured
Add
Members won't see this section when it's empty.
About
The overall project aim is to enhance smallholder livelihoods and economic development in mainland SEA by improving the resilience of cassava pr... See more
Private
Only members can see who's in the group and what they post.
Visible
Anyone can find this group.


CIAT
NAFRI
TTDI
Sustainable cassava disease solutions in Southeast Asia
Enhancing smallholder livelihoods and economic development
HOME
ABOUT
MARKETS & POLICY
SCREENING & BREEDING
SURVEILLANCE & DIAGNOSTICS
SEED SYSTEMS & AGRONOMY
PRELIMINARY RESEARCH PROJECT
PUBLICATIONS
EXTENSION MATERIAL
LINKS
BLOGS
EVENTS
MEDIA
MTR
Millions of smallholder farmers in Southeast Asia depend on cassava for their livelihoods
Join the discussion

Understanding and harnessing informal networks





Have we learnt the lessons that SLCMV should have taught us?

Alliance

Bioversity International

CIAT
International Center for Tropical Agriculture
Since 1967 Science to cultivate change

CGIAR

Thanks!

Jonathan Newby

Cassava Program Leader

j.newby@cgiar.org