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International Center for Tropical Agriculture
Since 1967 Science to cultivate change

Establishing sustainable solutions to cassava disease in mainland Southeast Asia

And what has been left behind

Jonathan Newby

CGIAR

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Australian Government
Australian Centre for International Agricultural Research

CGIAR
RESEARCH PROGRAM ON Roots, Tubers and Bananas

Establishing sustainable solutions to cassava disease in mainland Southeast Asia

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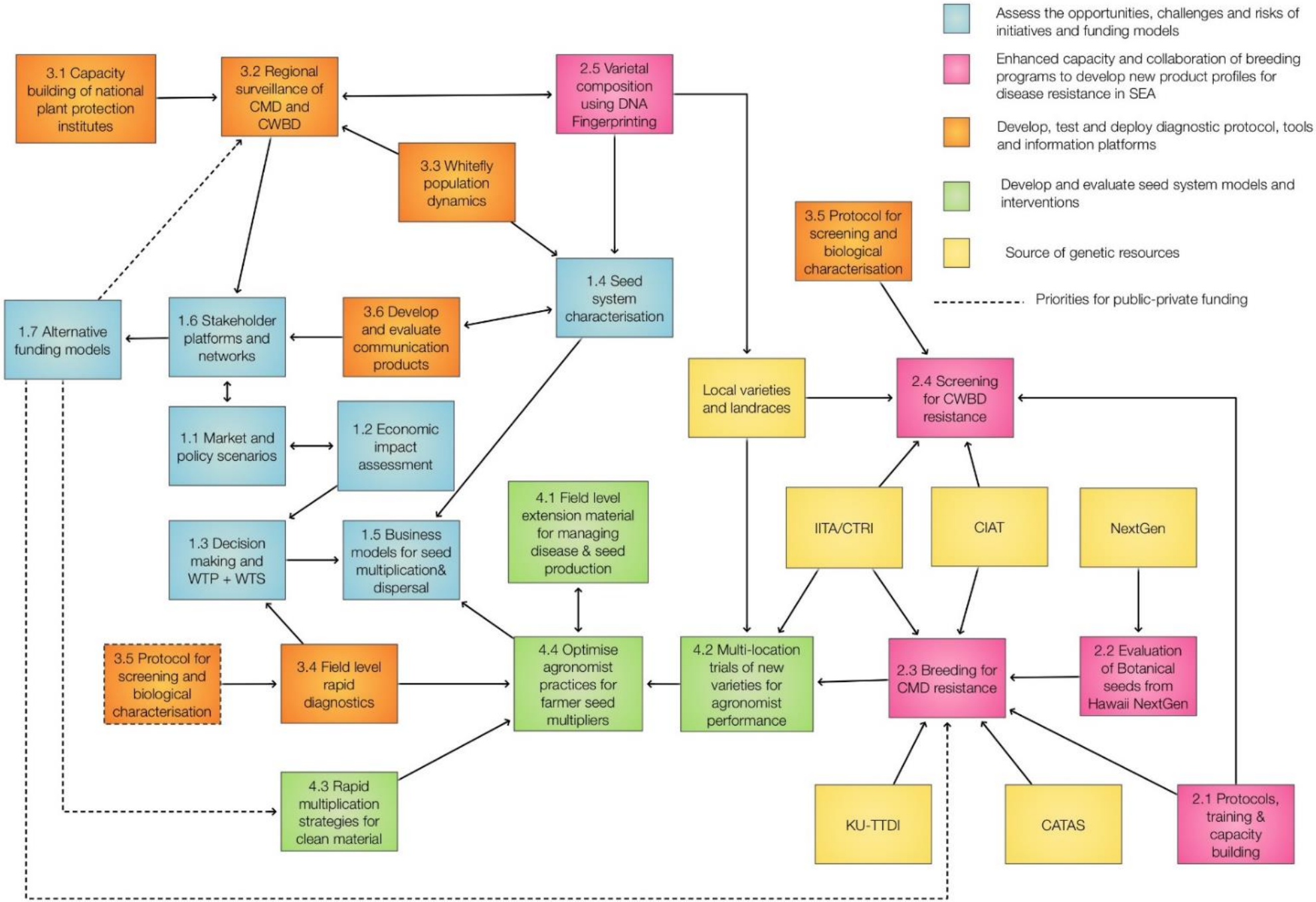
Objective 1

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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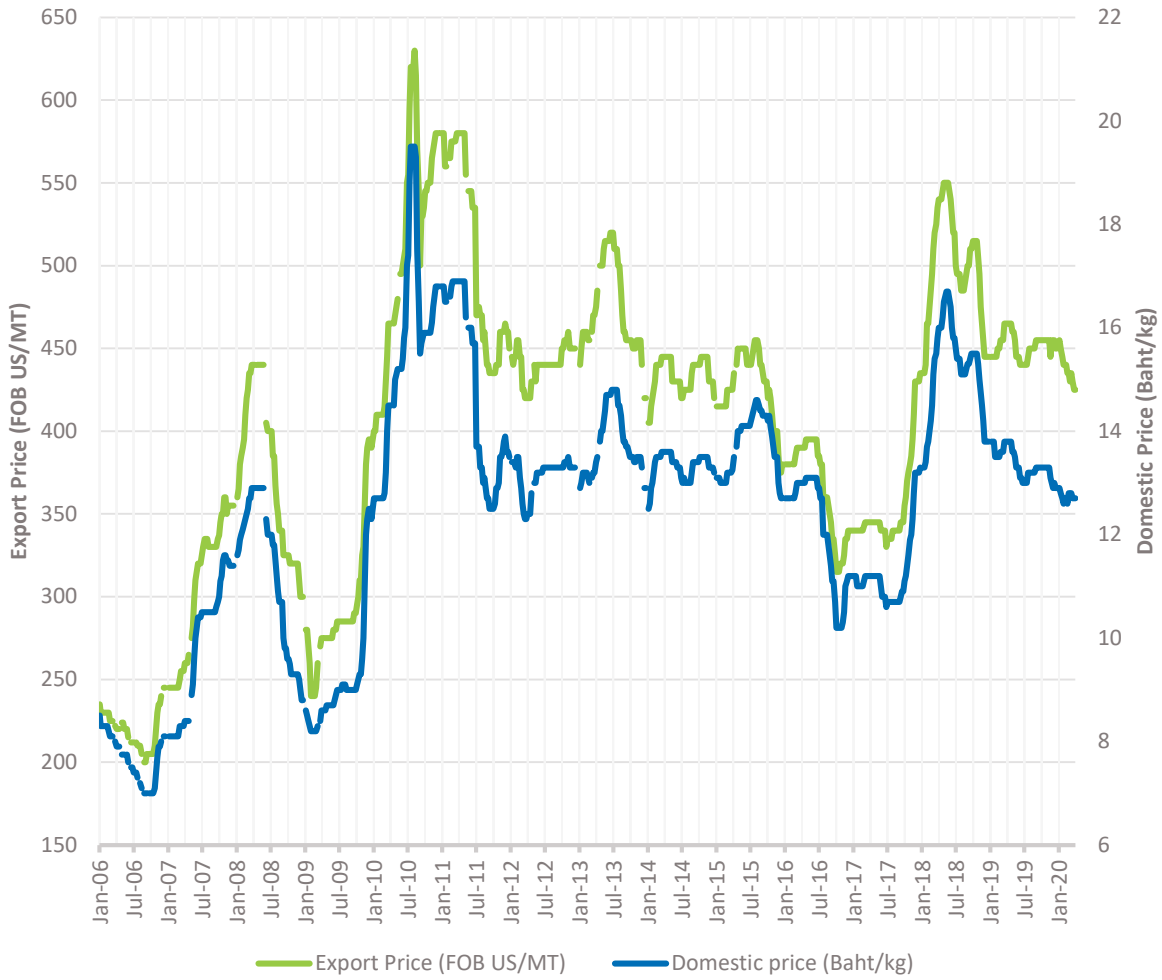
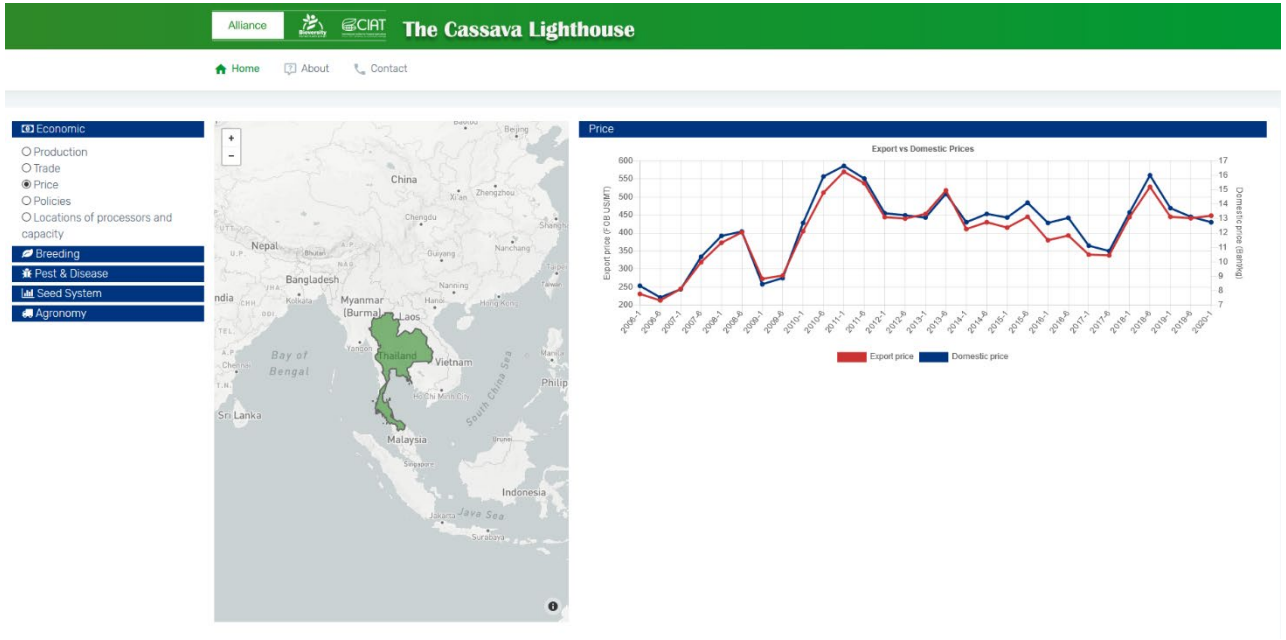
Market and policy update utilizing the “Cassava lighthouse platform”





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Economic Impact

- Plot level impacts
- Household level impacts
- Industry impact
- National impact – trade data

Socioeconomic surveys and experimental auctions

Experimental auctions for cassava seed demand elicitation in Southeast Asia – methods and protocol

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[2]Wageningen University & Research

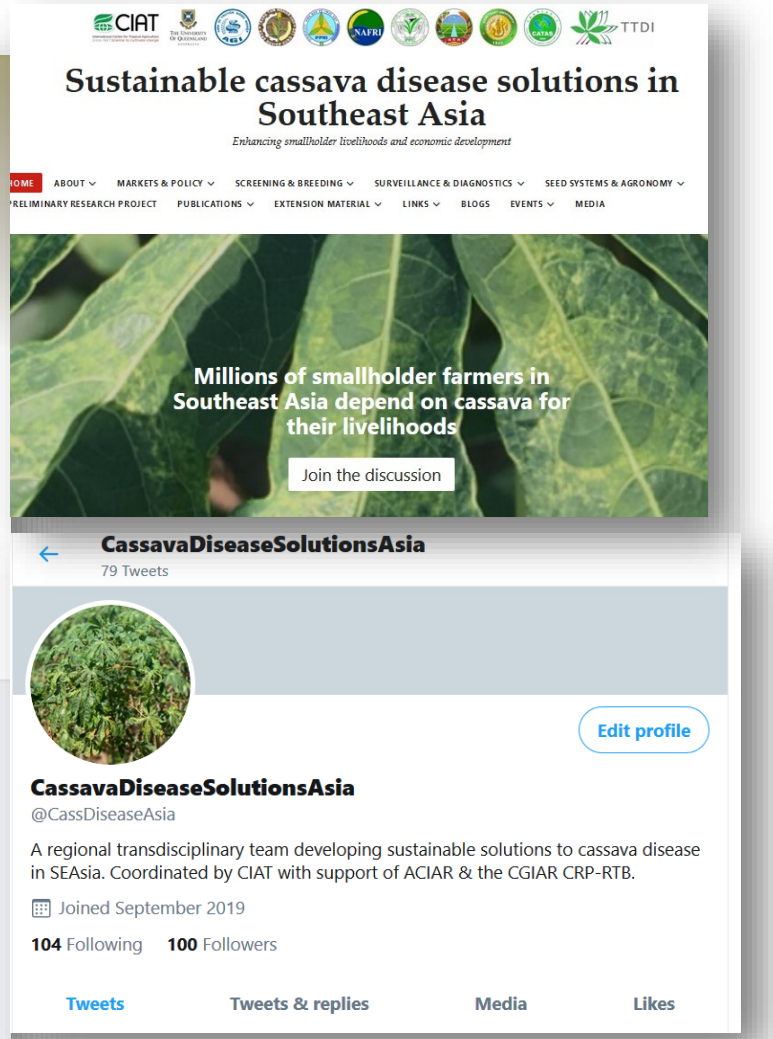
Introduction

Clean seed multiplication systems are being widely promoted in response to the evolving phytosanitary needs of vegetatively propagated crop production in Southeast Asia (SEA). These approaches involve marketing high quality seeds with a level of quality declaration, communicating the added value of the product to potential buyers. For such systems to be sustainable, farmers must attribute added value to their products, and this attribution must further translate into willingness to pay a premium price accounting at least for the additional costs incurred in the production of such materials. In practice, interventions in developing country contexts have tended to ignore local seed systems and diffusion channels, preferring to establish parallel, institutionalized structures which largely aim to achieve impact by complementing or supplanting 'informal' seed networks (Bentley et al., 2018). In practice, this often means a strong focus on production technologies (the supply side), and trying

Stakeholder platform

- Lao PDR – Multiple NGO, Lao Cassava Association
- Cambodia – CAVAC, GIZ, IFAD*
- Vietnam – Association, lead firms
- Myanmar - Association
- Thailand – TTSA, TTDI

Similar outreach strategy



WordPress

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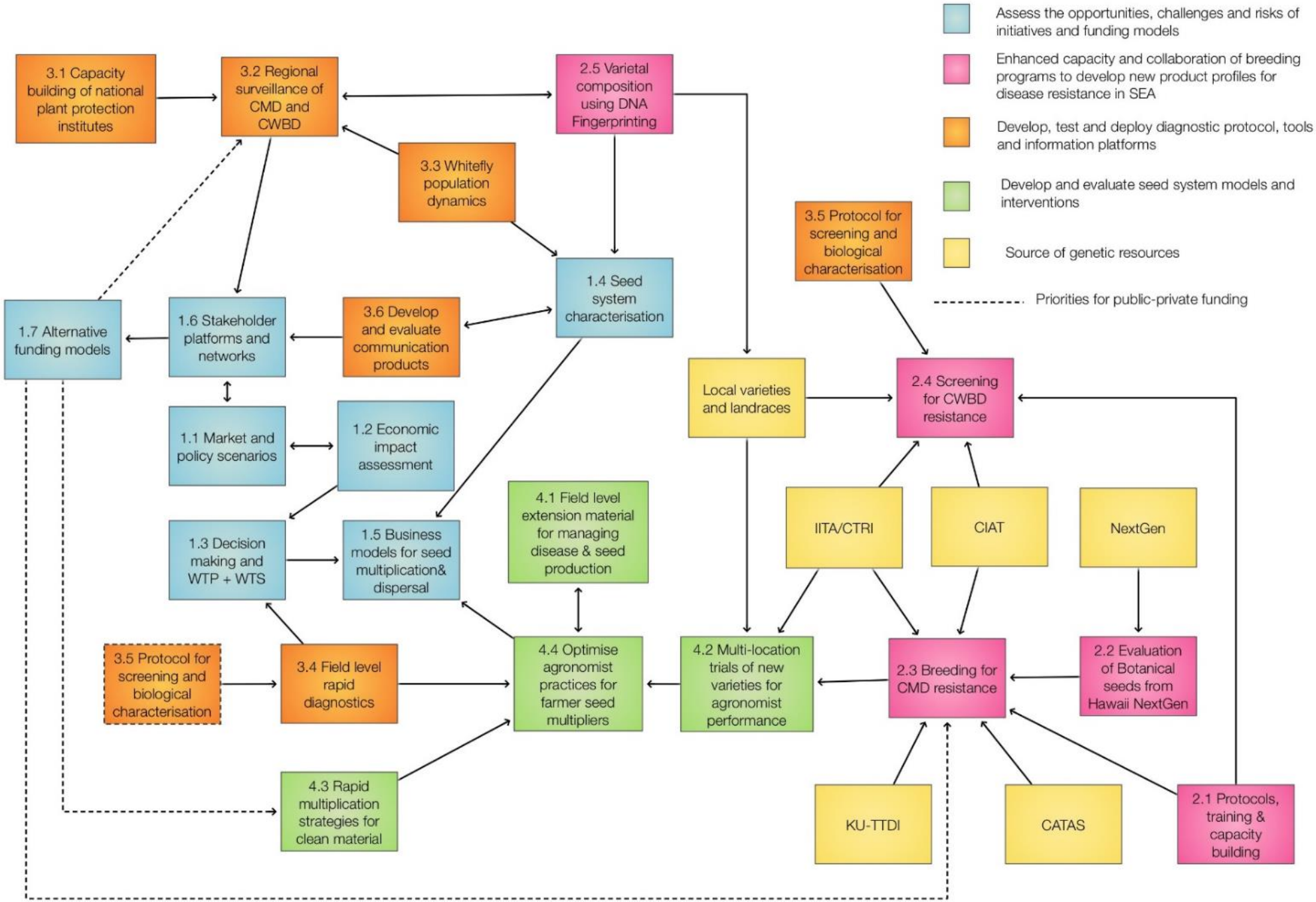
Breeding

- Enhancing the capacity and collaboration of breeding programs to develop new product profiles for disease resistance in Southeast Asia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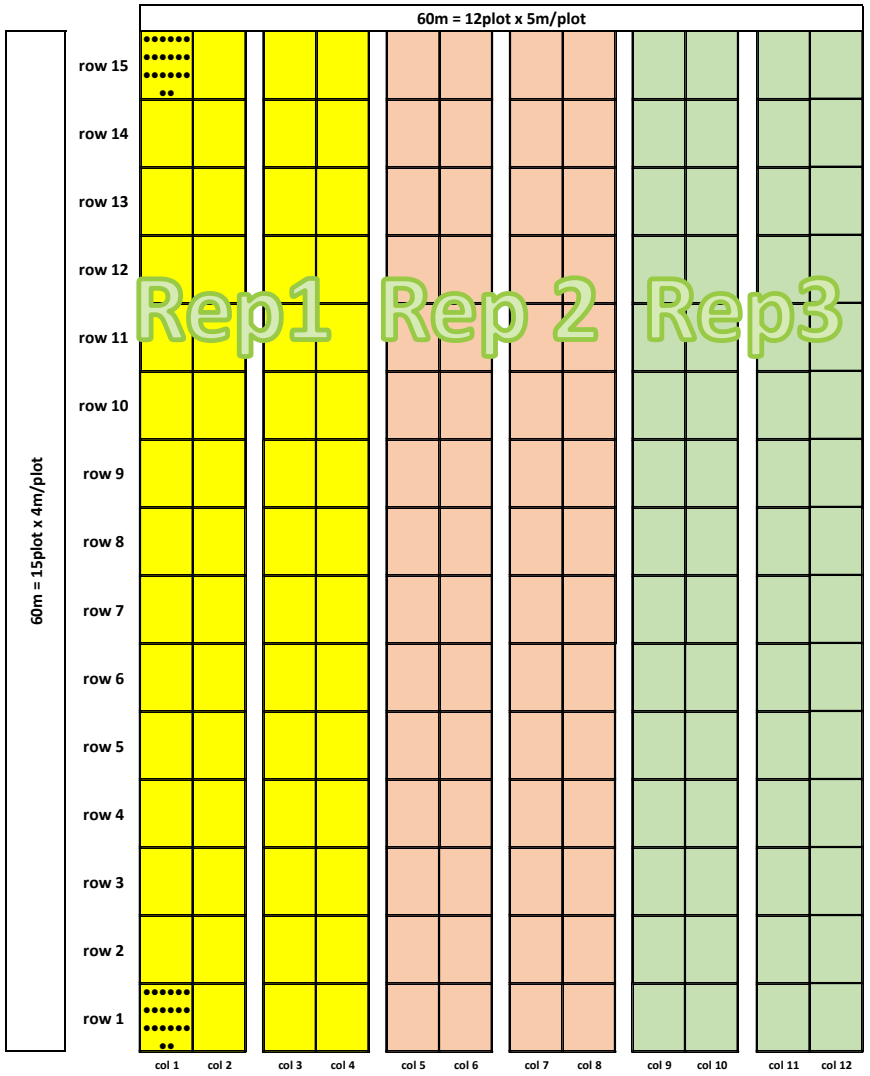
CMD resistant clones

Local varieties from Vietnam

Varieties from IITA

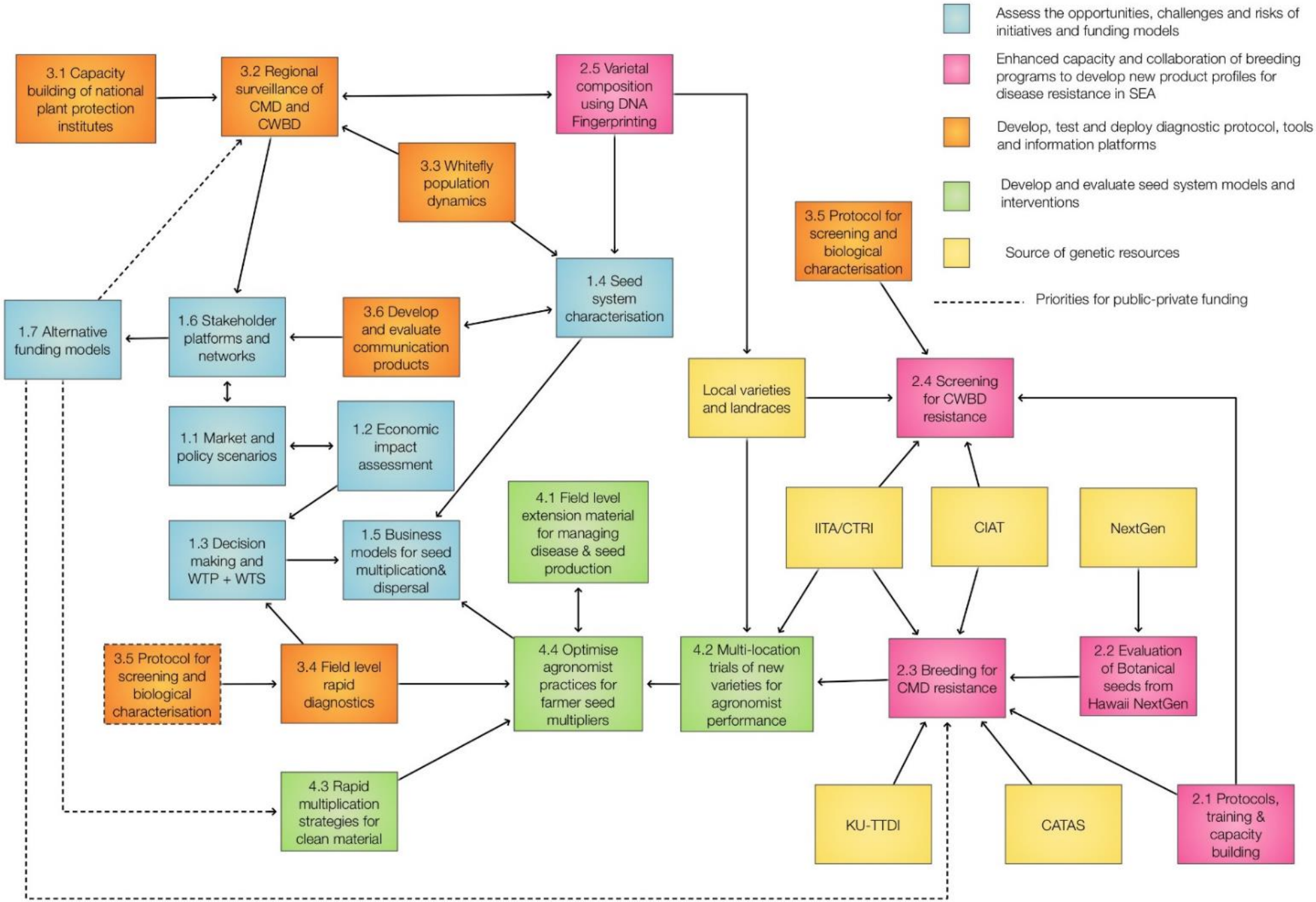
Conventional RCBD design



Establish crossing blocks and flower induction (North and Central Vietnam)

Diagnostics and surveillance

Develop, test and deploy diagnostic protocol, tools, and information platforms fit for purpose in monitoring, surveillance, and certification applications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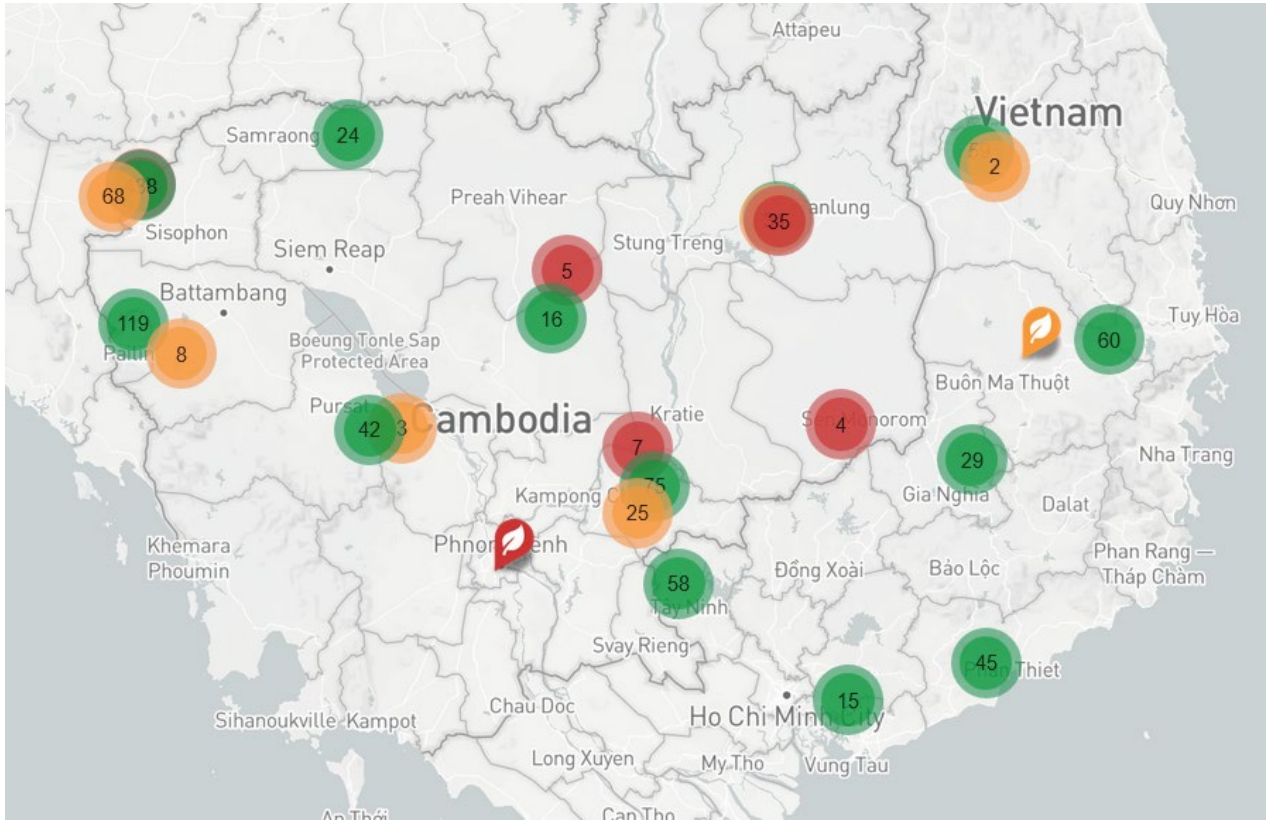
Grafting practice for CWBD screening prior to shipment of core collection from CIAT to Laos

Disease Surveillance

- Protocol develop and tested
- Surveillance to begin soon in conjunction with household surveys



PestDisPlace

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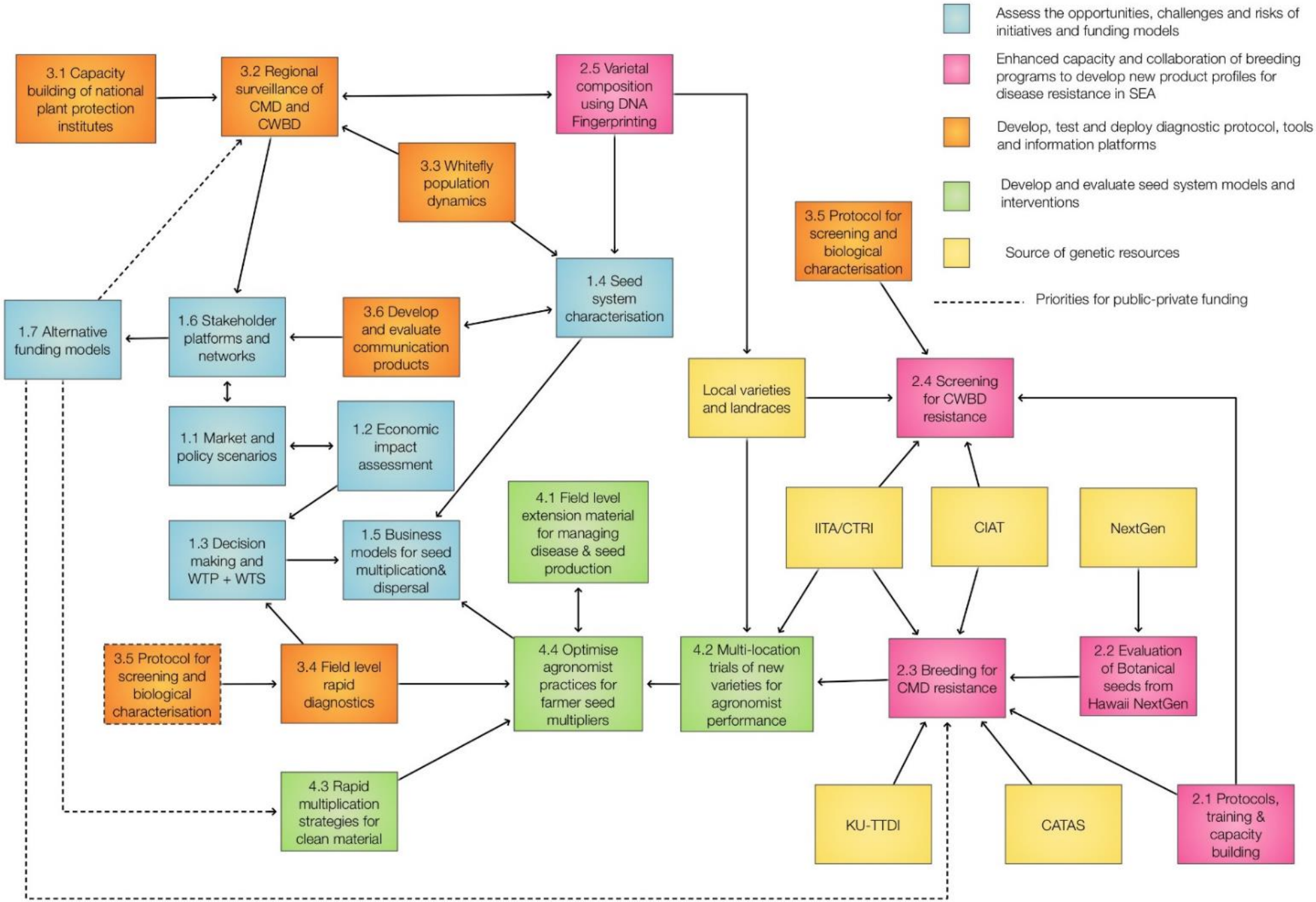
Agronomy and seed systems

- Develop and evaluate technically feasible and economic sustainable cassava seed system models for rapid dissemination of new varieties and clean planting material to smallholder farmers in different production systems and value chains.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MGTCL Molecular Genetics and Tissue Culture Laboratory

CIAT'S CASSAVA SEED SYSTEM APPROACH

1 **Implementation of relevant technologies for different scales**
- Industrial level
- Small farmer associations

2 **Simplified protocol to achieve low-cost design with adaptable equipment.**

3 **High throughput platform to integrate with multiple crops.**


In vitro methodologies


Scaling up: Hardening & macro propagation


To end-users

TRAINING AND CAPACITY BUILDING


1 Conventional in vitro culture **2** Biorreactores **3** Synthetic seeds **4** Rural TC laboratory **5** Rural schools initiatives


1 Hardening phase of in vitro culture **2** Tunnels system & sprouting rooting **3** Mature and immature cuttings **4** Pellets


1 Farmers associations **2** Industrial company **3** NGO´s **4** NAR´s **5** School projects

NAFRI - Tissue culture

Training

Shipment = 500 plantlets

Subculture = ~2000 plantlets March

Tissue culture at CARDI (not funded by ACIAR)

Involving CARDI through other funding
CAVAC agreed to build screen house
ADB proposal under review that includes CARDI

30 March 2020

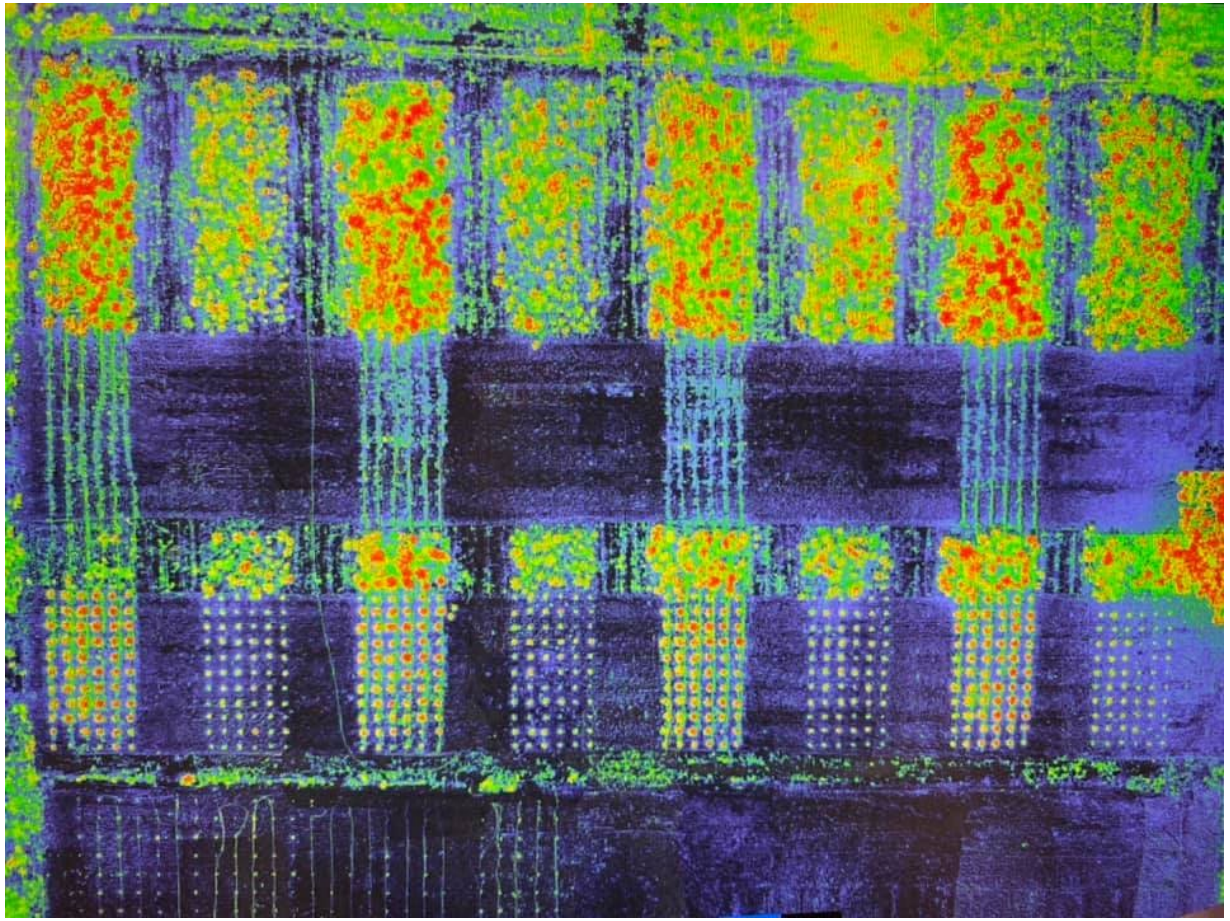
T1 = KU50

T2 = Rayong11

T3 = Advanced clones

Screen house to field

Agronomy trials in Vietnam, Cambodia and Laos established



What activities are being left behind

Some things to consider

1. Indonesia with links to Pacific and Philippines
   - CMD and CWBD likely to reach or expand these areas
   - Seed system development required for distribution of current and new varieties
   - A stronger focus on eating varieties (nutrition, drought tolerance, disease resistance)
   - Small scale processing
   - New market segments with closer links to processing and application research
2. Soil and systems management – not necessary to be focused on cassava alone
   - Sloping land management and transitions
   - Rotations and cropping system in new context (labour availability, mechanisation)
3. On-farm/household utilisation (food and livestock)
   - Interest in the role of roots and tubers in food security and nutrition
4. Developing innovative partnerships to nudge change practices
   - Stronger links with financial institutions and NGOs with resources to test strategies – risk free savings, pre-purchase, free delivery of fertiliser.

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