



Australian Centre  
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# Establishing sustainable solutions to cassava disease in Mainland Southeast Asia

Dr Jonathan Newby  
Cassava Program Leader – Global  
ACIAR Project Final Review and Symposium

# Thank you

Tây Ninh People's Committee

Tây Ninh Department of Agriculture  
and Rural Development





# Cassava Program Mission Statement

To improve the livelihoods of cassava-growing smallholders and their communities, the Cassava Program will co-develop innovative solutions for specific regions, farming systems, and markets that boost farm productivity, enhance consumer benefits, and drive sustainability throughout the value chain.

# Project final review of ACIAR supported project AGB 2018/172

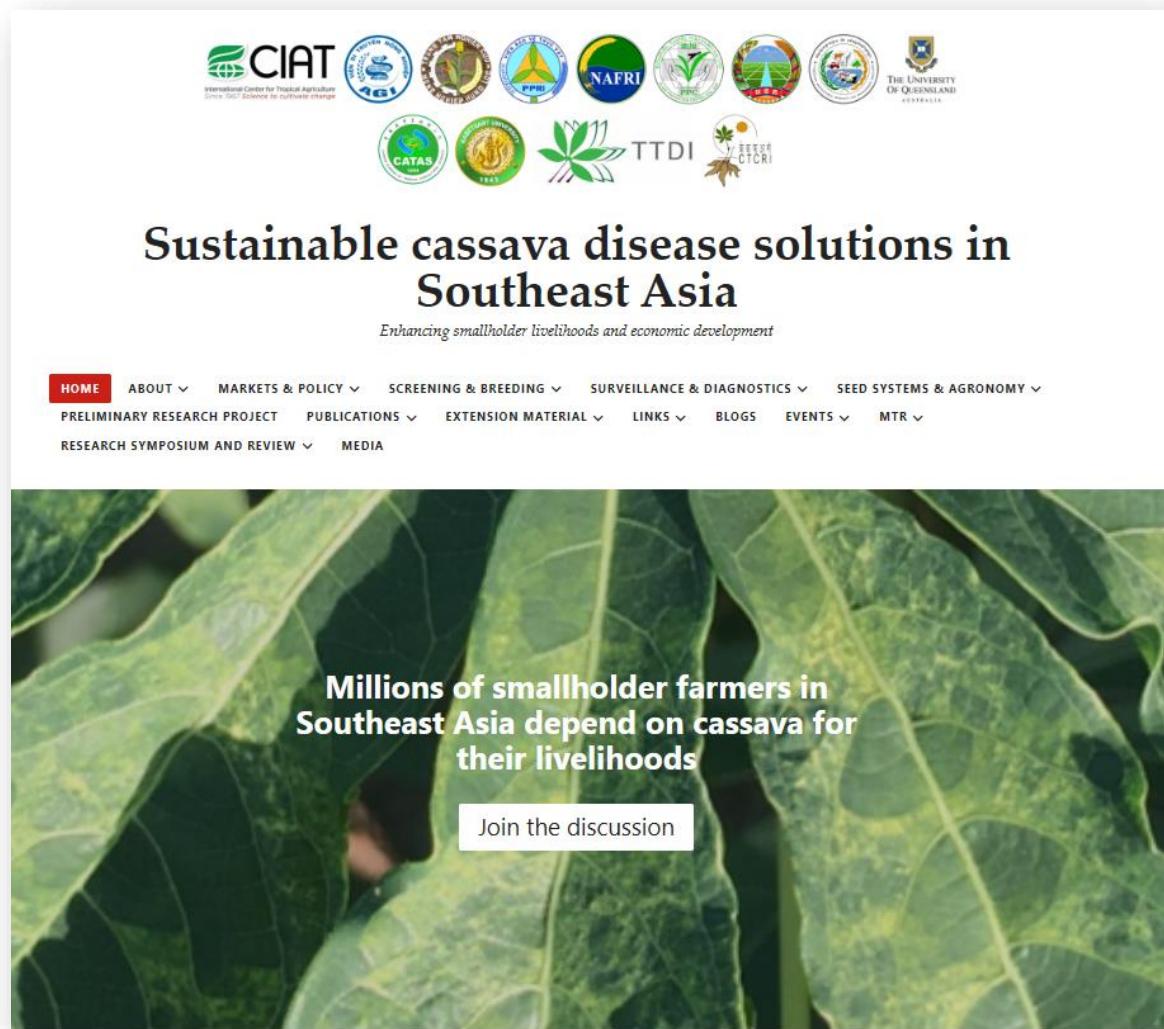
## Establishing sustainable solutions to cassava diseases in mainland South-East Asia



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# Outline of the review



The website features a header with logos of various partners: CIAT, AGRINET, PPRI, NAFRI, PGR, THE UNIVERSITY OF QUEENSLAND AUSTRALIA, CATAS, TTDI, and CTCRI. The main title is "Sustainable cassava disease solutions in Southeast Asia" with the subtitle "Enhancing smallholder livelihoods and economic development". The navigation menu includes: HOME (highlighted in red), ABOUT, MARKETS & POLICY, SCREENING & BREEDING, SURVEILLANCE & DIAGNOSTICS, SEED SYSTEMS & AGRONOMY, PRELIMINARY RESEARCH PROJECT, PUBLICATIONS, EXTENSION MATERIAL, LINKS, BLOGS, EVENTS, MTR, RESEARCH SYMPOSIUM AND REVIEW, and MEDIA. A large image of cassava leaves with yellow spots serves as the background for the main content area. Text overlaid on the image reads: "Millions of smallholder farmers in Southeast Asia depend on cassava for their livelihoods" and "Join the discussion".

**Day 2 – Thursday 5<sup>th</sup> October**

8:00 Registration

Session 3: Enhance the capacity and collaboration between breeding programs in mainland Southeast Asia to develop new product profiles for commercially viable cassava varieties

**Discussion Padlet**

	3	1	2	
8:30-9:00	Overview of breeding activities, outputs & outcomes (30mins) Dr Xiaofei Zhang (CIAT)	Dr Xiaofei Zhang (CIAT)	Presentation – extended	Youtube – extended
9:00-9:30	Breeding and evaluation of CMD resistant varieties in Vietnam (30mins) Ms Pham Thi Nhan (HLARC)	Ms Pham Thi Nhan (HLARC)	Presentation	Youtube
9:30-9:45	Dr Anh Nguyen Hai (AGI)	Dr Anh Nguyen Hai (AGI)	Presentation	Youtube
9:45-10:00	Evaluation of CMD resistant varieties in Laos (15mins) Mr Laothao Youabee (CIAT)	Mr Laothao Youabee (CIAT)	Presentation	Youtube
10:00-10:20	Evaluation of CMD resistant varieties in Cambodia (15mins) Ms Kan Sophra (GDA)	Ms Kan Sophra (GDA)	Presentation	Youtube
10:20-10:40	Breeding and evaluation of CMD resistant varieties in Thailand (20mins) Dr Chalempol Phumichai (KU)	Dr Chalempol Phumichai (KU)	Presentation	Youtube
10:40-11:00	Q&A (20mins)			
11:00-11:15	Coffee			
11:15-11:30	CATAS germplasm exchange and evaluation within the Asia Pacific Region Dr Chen Songbi (CATAS)	Dr Chen Songbi (CATAS)		
	Cassava breeding for multiple pathogens and market segments in Africa Dr Elizabeth Parkes (IITA)	Dr Elizabeth Parkes (IITA)		

# What are 'sustainable' solutions?

## **What are we trying to sustain?**

- Practices
- Processes
- Partnerships

## **Which relies on**

- Capacity building and capacity sharing
- Alternative funding and collaboration models between research, government, NGOs, private sector
- Realistic plans and expectations based on specific practices, biophysical conditions and value chain context
- Trust, transparency and personal relationships between stakeholders

# Global knowledge exchange and partnership strengthening

- Reflect on the outcomes and lessons learnt from the CMD in Mainland Southeast Asia
- Prepare now for the movement of CMD into the rest of the Indo-Pacific region, where cassava remains an important food crop – market segments not currently being addressed.
- Prepare for future incursions of novel pathogens into Asia from Africa and Latin America
- Strengthen the global alliance of institutions working of cassava with contributions from Asia to other regions.
- Build the network of young cassava scientists working across the globe



RESEARCH  
PROGRAM ON  
Roots, Tubers  
and Bananas



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Zusammenarbeit (GIZ) GmbH



WAGENINGEN  
UNIVERSITY & RESEARCH



Leibniz Institute  
DSMZ-German Collection  
of Microorganisms  
and Cell Cultures GmbH



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# plant disease

Editor-in-Chief: Alison E. Robertson

Published by The American Phytopathological Society

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May 2016, Volume 100, Number 5

Page 1029

<http://dx.doi.org/10.1094/PDIS-10-15-1228-PDN>

## DISEASE NOTES

### First Report of *Sri Lankan cassava mosaic virus* Infecting Cassava in Cambodia

**H. L. Wang, X. Y. Cui, X. W. Wang, and S. S. Liu**, Institute of Insect Sciences, Zhejiang University, Hangzhou 310058, China; **Z. H. Zhang**, Holley Group CO., LTD, Hangzhou 310058, China; and **X. P. Zhou**, Institute of Biotechnology, Zhejiang University, Hangzhou 310058, China.

# Timeline I

## Surveillance and politics (3-year lag)

- ?? Import of material to Cambodia
- May 2015 - Outbreak sampling by Chinese Scientists on plantation
- December 2015 - Aware of preprint (RTB meeting Peru)
- January 2016 - GCP21 meeting (China)
- March 2016 - Online first publication
- May 2016 - First report published
- July 2016 - ACIAR SRA on surveillance
- July 2017 - ACIAR SRA closing workshop
- **September 2018 Phnom Penh Regional Meeting (ACIAR, GCP21, RTB)**



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RESEARCH  
PROGRAM ON  
Roots, Tubers  
and Bananas



# Timeline II

## Funding (1 year lag)

- **September 2018 Phnom Penh Regional Meeting (ACIAR, GCP21, RTB)**
- December 2018 – IITA Clones arrive in Hanoi (AGI)
- January 2019 – AR- CR lines arrive in Hanoi (AGI)
- **September 2019 - ACIAR Inception meeting**



***The import of germplasm to Vietnam after the Phnom Penh meeting prior to any funded project saved a year in the implementation of the project activities***

***But the ability to draw on past investments saved decades.....***

# Aim of the ACIAR project

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.



# Project objective

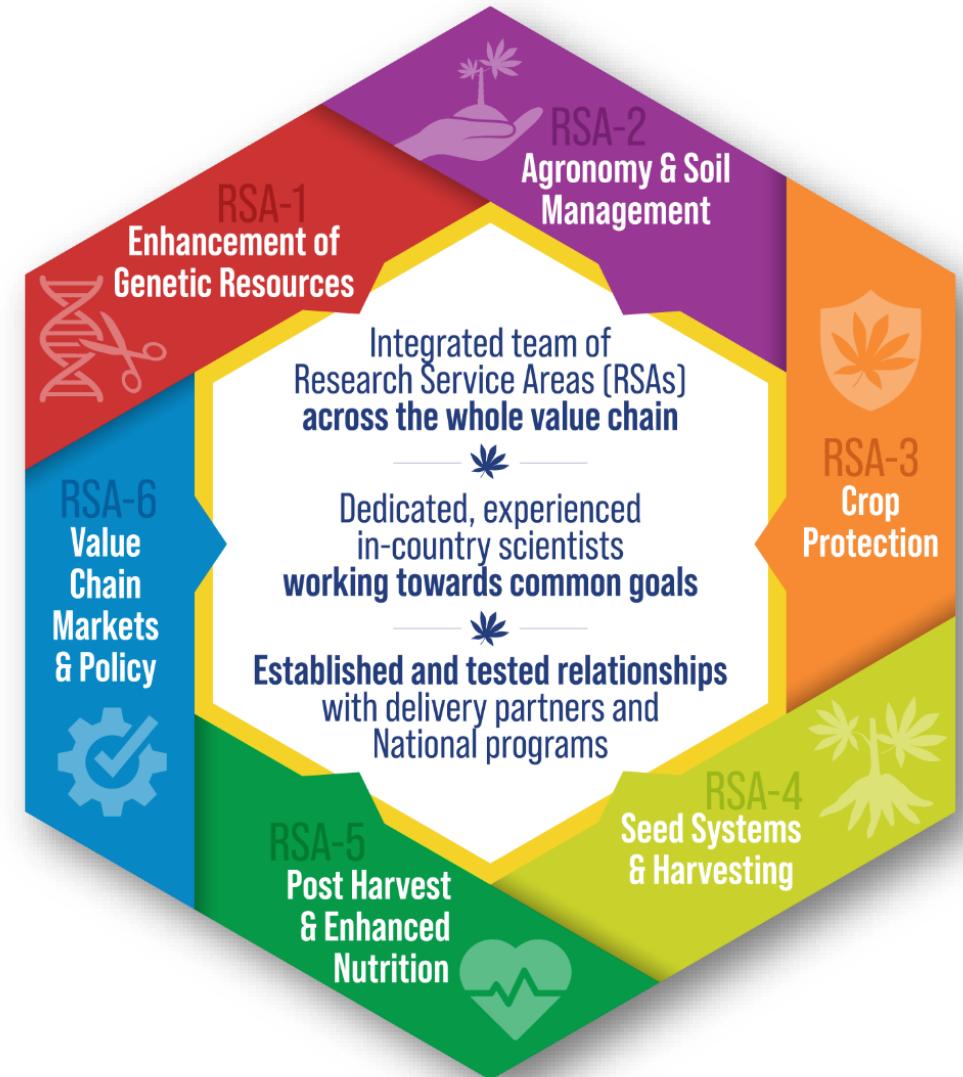
- **Objective 1:** Assess the opportunities, challenges and risks for the development of sustainable regional solutions for cassava disease management in mainland SEA including coordinated policy development, sustainable business and public-private funding models;
- **Objective 2:** Enhance the capacity 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.
- **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.*

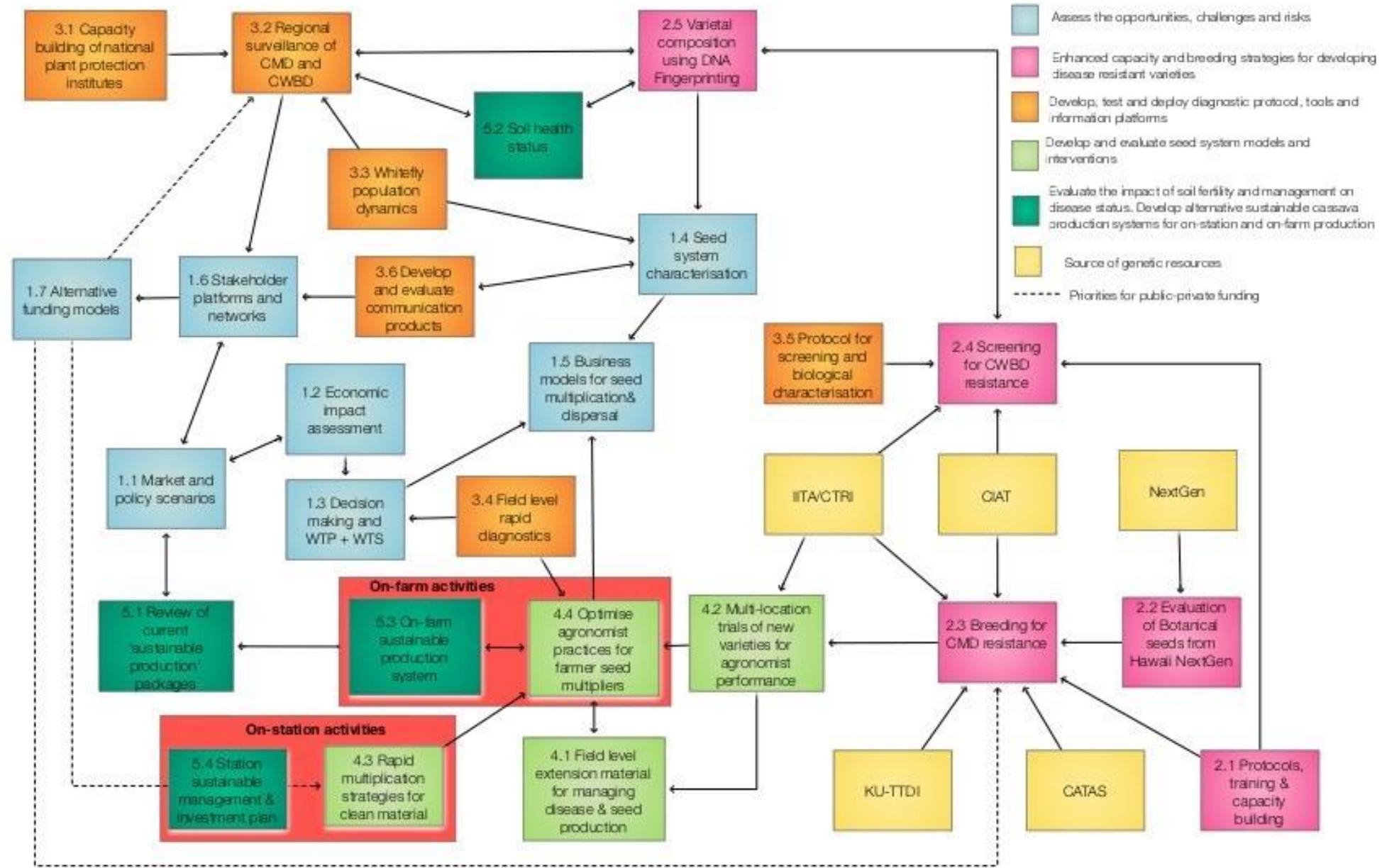
# Approach

Three key features of this project are:

1. **Transdisciplinary** research team and work packages;
2. **Engagement with value chain actors** (core actors - *farmers, traders, processors, exporters*, and supporting - *extension, input suppliers, credit etc*); and
3. **Regional scale** of the partnerships and networks developed.

All three elements are critical to maximising the research outputs and ensuring they are utilised by next users and rapidly scaled to target farmers across borders into the regional cassava economy.





# What were the planned outputs? (2019)

1. Commercially competitive and acceptable cassava varieties resistant to CMD or CWBD through a process of screening, breeding and selection;
2. Enhanced regional diagnostic protocols, tools and information platforms fit for purpose in monitoring, surveillance, and certification applications across scales;
3. Models for the development of economically sustainable cassava seed systems for the rapid dissemination of new varieties and clean planting material to farmers in different value chains.
4. Business models, policy recommendations and alternative funding models for sustainability of interventions across multiple scales.
5. *Cropping system options to mitigate the impacts of cassava disease and improve the productivity and sustainability of smallholder cassava cultivation.*

# COVID-19: Laos closes border gates

Laos recently ordered the temporary closure of 10 border gates with its neighbouring countries, including Vietnam, amid the rapid spread of the COVID-19 epidemic in the world.

VNA - Monday, March 16, 2020 16:25

 Like 0  Share

## RELATED NEWS

Laos cancels several regional high-level conferences

Saturday, March 14, 2020  
17:03

COVID-19: Big gatherings suspended in many ASEAN countries

Friday, March 13, 2020  
16:15

AEM Retreat issues joint statement on economic resilience to COVID-19

Wednesday, March 11, 2020 20:00



Passengers passing in front of a temperature screening camera at the arrivals area of Wattay International Airport in Vientiane - Illustrative image (Source: AFP)

## MOST POPULAR

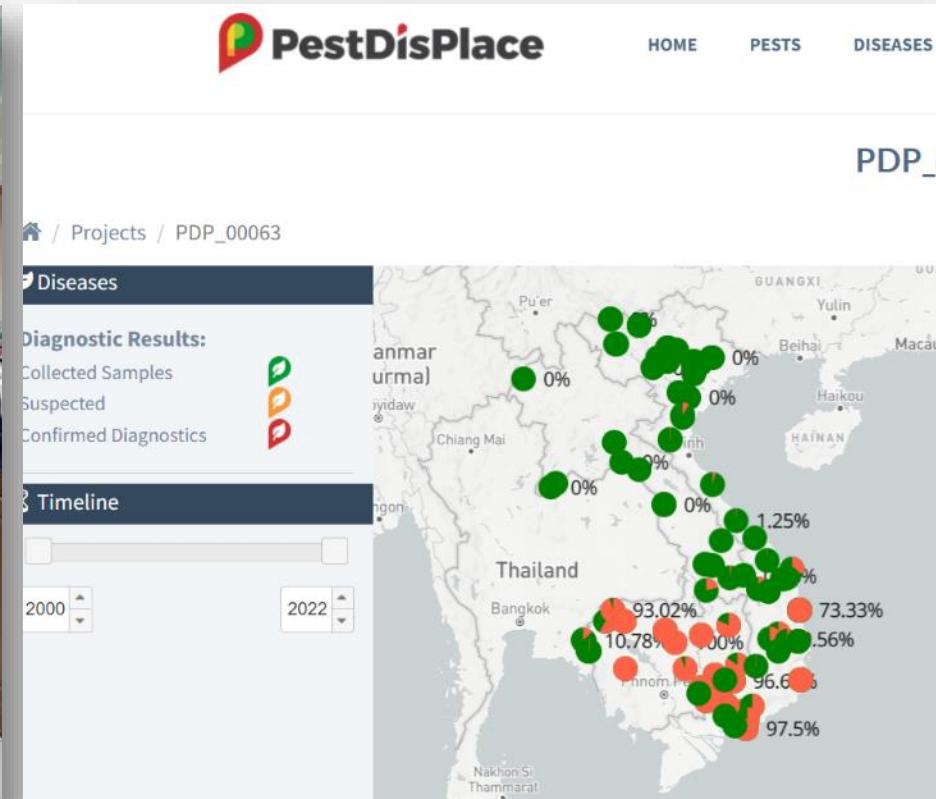


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- 2 [Thailand prepares response plans to flood-hit areas](#)
- 3 [ASEAN-Australia high-level dialogue on climate change, energy transition takes place in Hanoi](#)
- 4 [ASEAN businesses seek investment](#)



# Disease surveillance and diagnostics

# Standardizing protocols and sharing data





## Interventions in infected fields and destruction of infected stems made possible through rapid (1hr) in-field diagnostics



# Extension information co-developed with development projects and government



ພະຍາດໃບດ່າງມັນຕົ້ນ ຫຼື Cassava mosaic disease (CMD in Lao PDR)



# Linking to farmer and industry social networks – this is the future of extension: great opportunities and potential risks



# Questioning assumptions to make progress: the CWBD story is a good example



KU50

Rayong11



# Variety development

# Safe introduction of exotic germplasm through official export and import permits.

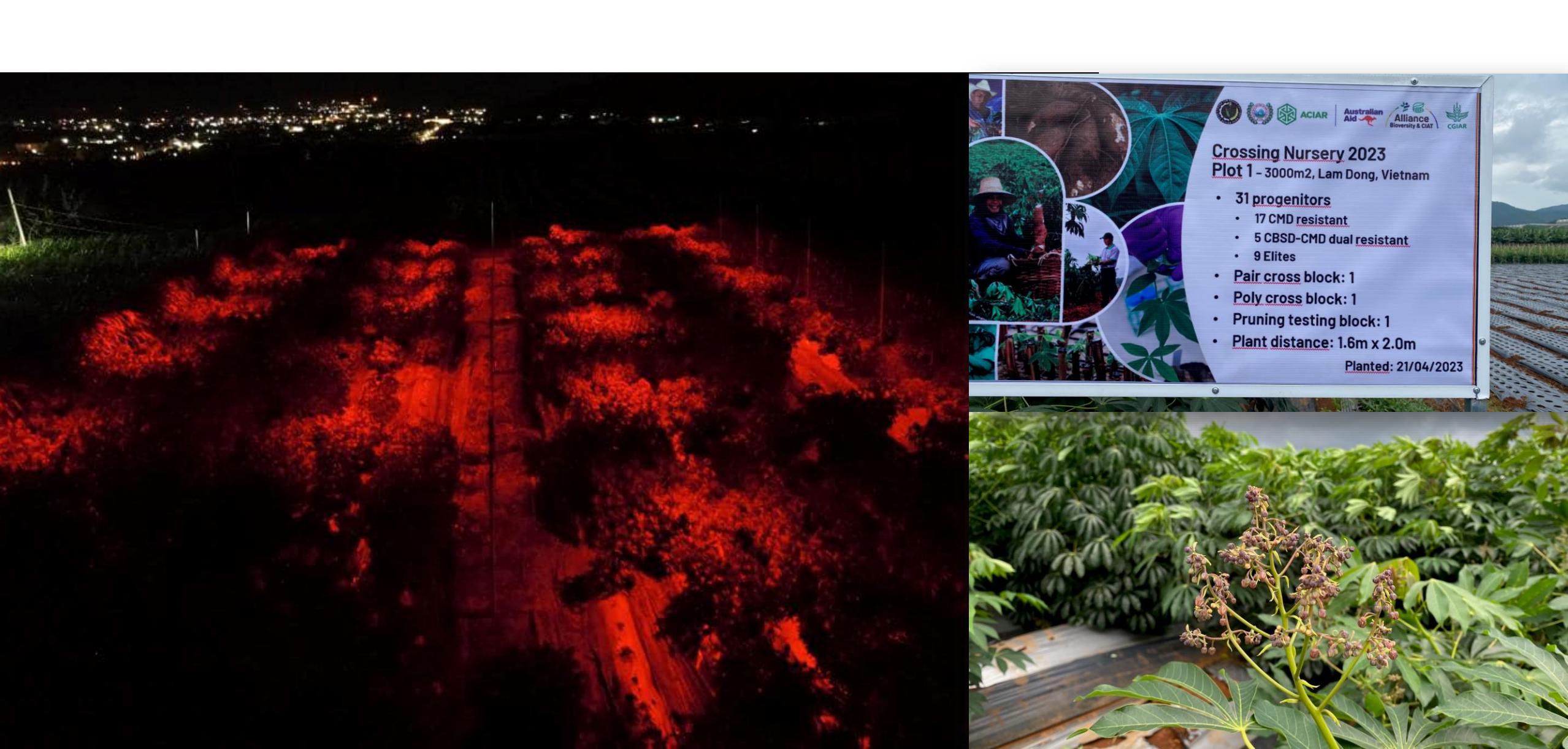
REPÚBLICA DE COLOMBIA REPUBLICA DE COLOMBIA		ID: 978777	
<b>ICA</b> Instituto Colombiano Agropecuario		<b>CERTIFICADO FITOSANITARIO</b> <b>PHYTOSANITARY CERTIFICATE</b>	
Agencia: CIAT		No. CCF-02-000125-20	
ORGANIZACIÓN DE PROTECCIÓN FITOSANITARIA PLANT PROTECTION ORGANIZATION			
DE: COLOMBIA OF: CIAT			
A: ORGANIZACIONES DE PROTECCIÓN FITOSANITARIA TO: PLANT PROTECTION ORGANIZATIONS			
DE: LAOS OF:			
<b>DESCRIPCIÓN DEL ENVÍO</b>		<b>DESCRIPTION OF CONSIGNMENT</b>	
NOMBRE Y DIRECCIÓN DEL EXPORTADOR Name and address of the Exporter		ESTADÍSTICO INTERNACIONAL DE AGRICULTURA TROPICAL - RECTA CALIFALMIRA, Kilómetro 17 A.A. 6713 - Bogotá, Colombia	
NOMBRE Y DIRECCIÓN DEL DESTINATARIO Name and address of consignee		National Agriculture Forestry and Rural Development Research (NAFR) Phontong Village, Xaythany District, Vientiane	
NÚMERO Y DESCRIPCIÓN DE LOS BULOS Number and description of packages		198 TUBOS DE ENVÍO.	1 PIEZAS Peces
MARCAS DISTINTIVAS Distinguishing marks		CIAT. Una caja que contiene 198 tubos con 990 peces en vitro (99 genotipos)	
LUGAR DE ORIGEN Place of origin		COLOMBIA - Palmira-Aeropuerto Alfonso Bonilla Aragón	
MEDIOS DE TRANSPORTE Mode of transport		Aéreo	
DESPACHO Despatch		Descentralizado	
PUERTO DE ENTRADA DECLARADO Declared port of entry		VIENTIANE	
NOMBRE DEL PRODUCTO, NOMBRE BOTÁNICO DE LAS PLANTAS Y CANTIDAD DECLARADA Name of product, botanical name of plants and quantity declared		Lease: NO BOUQUETS	
YUCA Maníto esculpido		PLANTAS IN VITRO	980 UNIDADES/ UNITS
DECLARACIÓN ADICIONAL ADDITIONAL INFORMATION			
XX			
<p>Por la presente se certifica que las plantas, productos vegetales u otros artículos reglamentados descritos aquí han sido inspeccionado y/o sometido a prueba de acuerdo con los procedimientos oficiales adecuados y se considera que están libres de plagas cuarentenarias específicas para el país importador y cumplen con los requerimientos fitosanitarios vigentes del país importador, incluidos los relativos a las plagas no comunes reglamentados.</p> <p><i>This is to certify that the plants, plants products or others regulated articles described here have been inspected and/or submitted to test according to the official appropriate procedures and are considered to be free from quarantine pests, specific to the importing country and agree with the current phytosanitary regulations of the importers country including the non-regulated quarantine pests.</i></p>			
TRATAMIENTO O DESINFESTACIÓN O DESINFECCIÓN		DESINFESTACIÓN O DESINFECCIÓN TREATMENT	
Fecha Date	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Tratamiento Treatment	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Producto Químico (Ingrediente activo) Chemical (active ingredients)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
Concentración (Concentration)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
Duración y temperatura (Duration and temperature)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
Información adicional (Additional information)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
Lugar y fecha de expedición Place and date of issue	02-dic-2020 Palmira-Aeropuerto Alfonso Bonilla Aragón	 <b>CLAUDIA PATRICIA VÉLEZ GARCIA</b> <b>CONVENIO CCF-02-000125-20</b> <b>FIRMA AUTÉNTICA</b>	
<p><i>El Grupo de Prevención de Riesgos Fitosanitarios del ICA, con fundación y representación, declara que el informe de fitosanidad es de su total responsabilidad y que no responde a la responsabilidad del destinatario. No tienen facultad para emitir certificados de fitosanidad.</i></p> <p><i>Please consult the CCF-02-000125-20 Certificate of Fitosanitary Prevention Group of the ICA or the CIAT for any representation.</i></p>			

KINGDOM OF CAMBODIA															
Nation Religion King															
 <b>MINISTRY OF AGRICULTURE FORESTRY AND FISHERIES</b> <b>GENERAL DIRECTORATE OF AGRICULTURE</b> <b>PLANT PROTECTION SANITARY AND PHYTOSANITARY DEPARTMENT</b>															
<b>IMPORT CERTIFICATE FOR PLANT QUARANTINE MATERIAL No.000055/21</b>															
<p>Permit is hereby granted to Import Plant Quarantine Material in accordance with: the Sub-Degree on Phytosanitary Inspection, No. 15 Dr. Nor.Kro dated 13 March 2003 and Law on the Management of Quality and Safety of Products and Services dated 21 June 2000.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Name and Address of Importer</td> <td style="width: 50%;">Name and Address of Exporter</td> </tr> <tr> <td colspan="2"> <b>CAMBODIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE</b>            NATIONAL ROAD 3, PRATEAH LANG COMMUNE, KHAN KAMBOL, PHNOM PENH, CAMBODIA.         </td> </tr> <tr> <td colspan="2">           ALLIANCE OF BIODIVERSITY INTERNATIONAL AND CUCAT KM 17' RECTA CALI-PALMIRA   ZIP CODE 763637   A.A. 6713, CALI, COLOMBIA         </td> </tr> <tr> <td style="text-align: center;">Country of origin</td> <td style="text-align: center;">Entry point</td> </tr> <tr> <td style="text-align: center;"><b>COLOMBIA</b></td> <td style="text-align: center;"><b>PHNOM PENH INTERNATIONAL AIRPORT</b></td> </tr> <tr> <td style="text-align: center;">Botanical name</td> <td style="text-align: center;">Common name / Variety / Quantity (VN/No.)</td> </tr> <tr> <td style="text-align: center;"><i>Manihot esculenta Crantz</i></td> <td style="text-align: center;">CASSAVAVARIETIES AS APPEARED IN ATTACHMENT/400 TUBES.</td> </tr> </table>		Name and Address of Importer	Name and Address of Exporter	<b>CAMBODIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE</b> NATIONAL ROAD 3, PRATEAH LANG COMMUNE, KHAN KAMBOL, PHNOM PENH, CAMBODIA.		ALLIANCE OF BIODIVERSITY INTERNATIONAL AND CUCAT KM 17' RECTA CALI-PALMIRA   ZIP CODE 763637   A.A. 6713, CALI, COLOMBIA		Country of origin	Entry point	<b>COLOMBIA</b>	<b>PHNOM PENH INTERNATIONAL AIRPORT</b>	Botanical name	Common name / Variety / Quantity (VN/No.)	<i>Manihot esculenta Crantz</i>	CASSAVAVARIETIES AS APPEARED IN ATTACHMENT/400 TUBES.
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<b>CAMBODIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE</b> NATIONAL ROAD 3, PRATEAH LANG COMMUNE, KHAN KAMBOL, PHNOM PENH, CAMBODIA.															
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Country of origin	Entry point														
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<i>Manihot esculenta Crantz</i>	CASSAVAVARIETIES AS APPEARED IN ATTACHMENT/400 TUBES.														
<p><b>General Entry Conditions</b></p> <p>The Consignment of plants/seeds should be</p> <ul style="list-style-type: none"> <li>(i) Free from soil and weed seeds,</li> <li>(ii) Accompanied by an official Phytosanitary Certificate by the authorized officer at the country of origin.</li> <li>(iii) The seed must be declared Non-GMO.</li> </ul>															
<p><b>Special Entry Conditions</b></p> <ul style="list-style-type: none"> <li>-Apply for Phytosanitary inspection at checkpoint upon arrival.</li> <li>-The seeds import as permitted by this Certificate are not allowed to move or distribute to other area without permission from GDA, MAFF within the PEQ period.</li> </ul>															
<p><b>PEQ Requirements</b></p> <p>For a period of ..... 90 ..... Days</p>															
<p>Date of Issue : DEC 16, 2021 Place of Issue : PHNOM PENH</p>															
															
															
SLOM SOKHOM <b>GENERAL DIRECTOR GENERAL</b>															
KER MONTHIVUTH, Ph.D. <b>DIRECTOR</b>															
<p>Stamp, Signature &amp; Name of GDA Director General</p>															
<p>PO Stamp, Signature &amp; Name of PPMPSD Director</p>															

TRANSLATION								
Ministry of Agriculture & Rural Development			Socialist Republic of Vietnam					
<u>Department of Crop Production</u>			Independence – Freedom – Happiness					
No: 88.2022/GPNK-TT-CLT			Hanoi, November 28 <sup>th</sup> , 2022.					
<b>PLANT IMPORTATION PERMIT</b>								
Based on Decision No. 929/QD-BNN-TCCB, dated March 24 <sup>th</sup> , 2017 regulating functions, duties, powers and organizational structure of Department of Crop Production by Ministry of Agriculture and Rural Development; Decision No. 2472/QD-BNN-TCCB, dated June 27 <sup>th</sup> , 2019 regulating functions, duties, powers and organizational structure of Department of Crop Production, modified Clause 2, Article 3, Decision No. 929/QD-BNN-TCCB, dated March 24 <sup>th</sup> , 2017.								
In response to the request for importing crop varieties by National Key Laboratory for Plant Cell Biotechnology (NKLPCB) No. 01/PTNTD, November 17 <sup>th</sup> , 2022;								
Department of Crop Production allows NKLPCB to import the following varieties								
No.	Name	Science Name	Type	Quantity Unit Name	Quantity			
1	DSC 493	Manihot esculenta Crantz	Tissue culture	Plant	3			
2	DSC 673	Manihot esculenta Crantz	Tissue culture	Plant	3			
3	DSC 516	Manihot esculenta Crantz	Tissue culture	Plant	3			
4	DSC 525	Manihot esculenta Crantz	Tissue culture	Plant	3			
5	DSC 510	Manihot esculenta Crantz	Tissue culture	Plant	3			
6	DSC 457	Manihot esculenta Crantz	Tissue culture	Plant	3			
7	DSC 458	Manihot esculenta Crantz	Tissue culture	Plant	3			
8	DSC 310	Manihot esculenta	Tissue culture	Plant	3			

# Recommendation for farmers under different disease pressure scenarios

- Short-term - least susceptible existing Asian elite varieties that can be part of a clean seed system under low disease pressure; and which varieties to avoid
- Medium Term - best-bet CMD resistant clones from IITA and CIAT in different locations.
- Long term - progress on introgressing CMD resistance into elite Asian germplasm with the use of modern breeding tools and approaches



# Movement of disease-free stems within the region



		<b>KINGDOM OF CAMBODIA</b> Nation Religion King	
<b>MINISTRY OF AGRICULTURE FORESTRY AND FISHERIES</b> <b>GENERAL DIRECTORATE OF AGRICULTURE</b> <b>PLANT PROTECTION SANITARY AND PHYSIOTAXONOMIC DEPARTMENT</b>			
<b>IMPORT CERTIFICATE FOR PLANT QUARANTINE MATERIAL</b> No.00006121			
<p>Permission is hereby granted to Import Plant Quarantine Material in accordance with the Sub-Decree on Phytosanitary Inspection, No. 15 On. Cr. No. 00006121 March 2003 and Law on the Management of Quality and Safety of Products and Services dated 21 June 2000.</p>			
Name and Address of Importer		Name and Address of Exporter	
<b>GENERAL DIRECTORATE OF AGRICULTURE</b> NO. 54001, ST 100, PHNOM PENH, PHNOM PENH, CAMBODIA KHAN TUOL KOOK, PHNOM PENH, CAMBODIA TEL: (855) 23 882 462, FAX: (855) 23 883 267 ATTN: MAM SORIN		ROOT CROP RESEARCH UNIT, MAIZÉ AND CASH CROP RESEARCH INSTITUTE NAFIC P.O.BOX 7021, VIENTIANE, LAOS PDR. PHONE NUMBER: 866-36-4088651, FAX: 866-21-779882 ATTN: SATHYONG OUCHTHACH	
Country of origin		Entry point	
<b>LAOS</b>		<b>STENG TRENG, CAMBODIA</b>	
Botanical name		Common name / Variety / Quantity (Wt/HQ)	
<b>CASSAVA STEM ( 8 ROOTS)</b>		<b>NET WEIGHT 1.96 KGS</b>	
Marshal executive Credit			
<b>General Entry Conditions:</b> <p>The Consignment of plant/seedstuffs should be:</p> <ul style="list-style-type: none"> <li>(i) Free from soil and weed seeds.</li> <li>(ii) Accompanied by an official Phytosanitary Certificate by the authorized officer at the country of origin.</li> <li>(iii) Free from Cambodian Plant Quarantine Pest.</li> </ul>			
<b>Social Entry Conditions:</b> <p>-Apply to be officially registered at Phnom Penh (upon arrival).</p> <p>-The seeds import as permitted by this Certificate are not allowed to move or distribute in other areas without permission from GDA/MAFF within the P502 period.</p>			
<b>PEQ Requirements:</b> <p>For a period of ..... 06 ..... Days</p>			
Date of Issue : DEC 20, 2011		Place of Issue : PHNOM PENH	
		Validity date : MAR 22, 2012	
SAKUN SOKHOM DEPUTY DIRECTOR GENERAL			
Name, Address & Name of GDA Director General		P.O. Name, Signature & Name of PPS/PPS/CSU Director	



# Maintain the regional spirit of collaboration once new resistant Asian varieties are developed to share germplasm and data

**Southeast Asia's best cassava breeders form network**

ON October 19, 2015

A network of Southeast Asia's cassava breeders, who have achieved some of the best progress in breeding history worldwide, met in Hanoi, Vietnam on October 9<sup>th</sup> and 10<sup>th</sup> to discuss research milestones and next steps.

Around two million hectares of cassava are planted to Southeast Asia's breeding programs, said Dr. Clair Hershey, CIAT's cassava program leader in his opening remarks.

Significant impact has been achieved, with high returns on investment in breeding, he noted. Market demand has been very robust for cassava, and since the 1980s, members of the network have improved the genetic diversity of cassava so that more varieties are now available for farmers throughout the region.

"The regional exchange of germplasm wasn't just one way, but within the region there was an informal interchange of varieties, and now we have an opportunity to make that interchange more formal," he said.

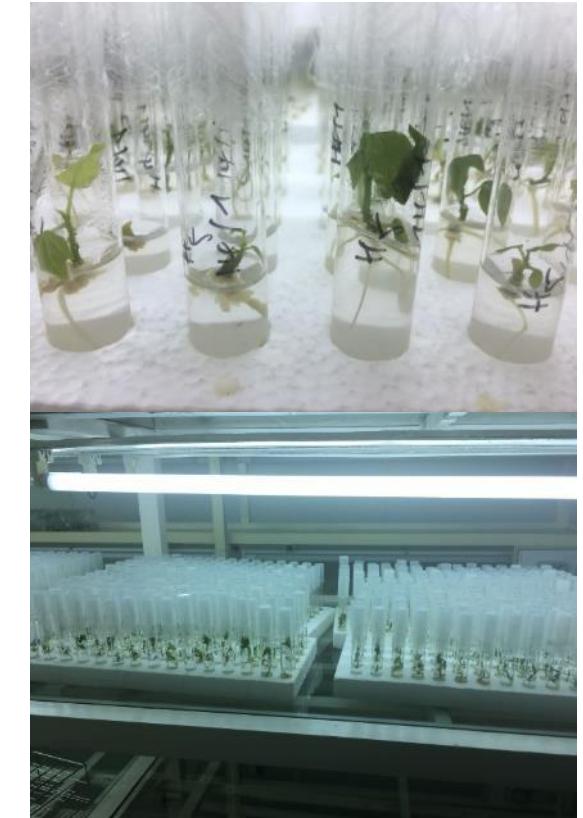
Demand for cassava in Southeast Asia remains high. But with competition from other sources of carbohydrates such as maize, there is still a great need to increase yield, efficiency, sustainability and profitability for regional farmers, which is what the network

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[S](#)  
[M](#)  
[L](#)



# Seed system development

# Enhanced capacity in tissue culture labs and strengthen network between the national labs



# Opening of 'FutureStems' & High-level engagement



# Public and Private multiplication partnerships

National government



Provincial government



Universities



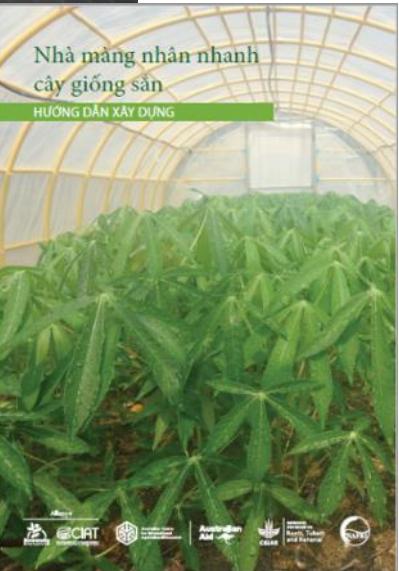
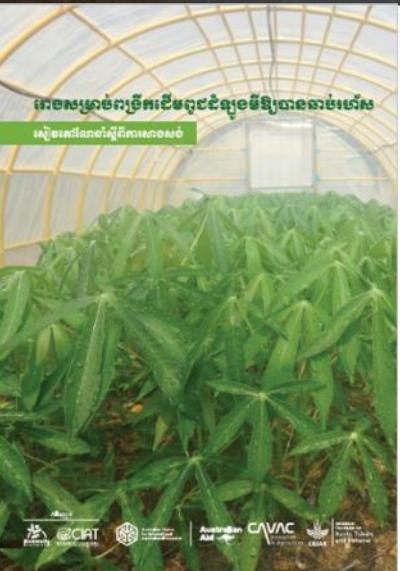
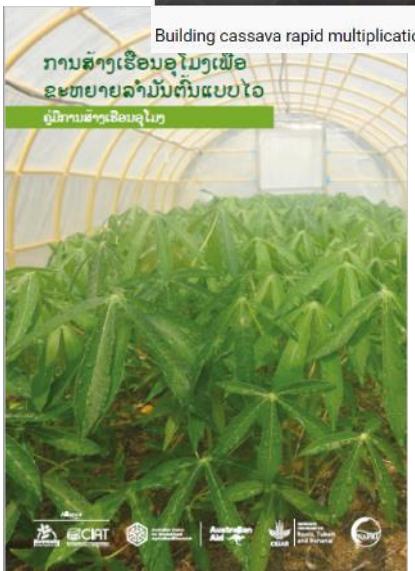
Private sector traders



Associations



# Scaling rapid multiplication tunnels





សមាគម អធីករទំនុងមិខោ Khmer Farmer Cassava Association  
4d . 

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See more

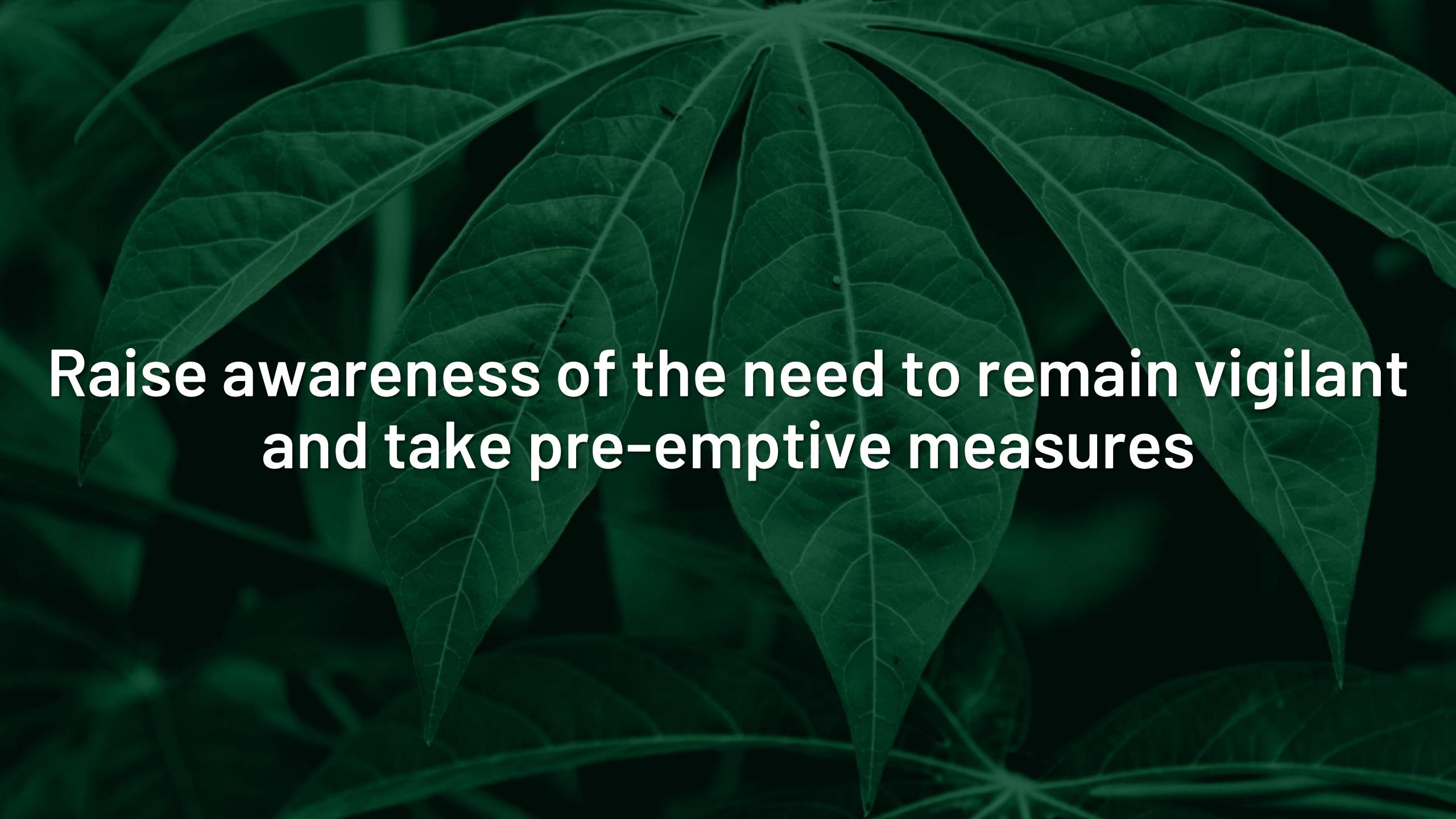
Very exciting to see the update from our scaling partner in southern Laos. The U.S. Department of Agriculture funded CLEAN project implemented by #DOA and Winrock International is scaling the clean seed system together with the Lao Cassava Association (LCA).





# Test sale of disease-free stems in an outbreak area as management response if done quickly





**Raise awareness of the need to remain vigilant  
and take pre-emptive measures**

# Pre-emptive research on potential threats:

## Cassava Browns streak disease (Africa); Cassava Frogskin Disease (South America); Additional strains of cassava mosaic disease (Africa, India); SLCMV to the Indo-Pacific





RESEARCH  
PROGRAM ON  
Roots, Tubers  
and Bananas



Australian Government

Australian Centre for  
International Agricultural Research



NEXTGEN  
CASSAVA



UF|IFAS  
UNIVERSITY of FLORIDA



CAVAC  
Innovation in Agriculture



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Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH



WAGENINGEN  
UNIVERSITY & RESEARCH



Leibniz Institute  
DSMZ-German Collection  
of Microorganisms  
and Cell Cultures GmbH



ບໍລິການ-ສິ່ງເສີມກະສິກຳຮອບດ້ານ  
LURAS Lao Upland  
Rural Advisory Service



Mekong Timber  
Plantations Ltd





# Thanks!



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