

Field day report

Cambodian cassava stakeholder field day for rapid cassava seed multiplication, clean seed production and CMD resistant varieties

Report on a field day demonstration held on Wednesday December 6th, 2022

Chamkar Leu district, Kampong Cham Province, Cambodia

By CIAT Asia cassava program (in alphabetical order):

Cu Thi Le Thuy, Erik Delaquis, Imran Malik, Jonathan C. Newby, Sok Sophearith, Laothao Youabee

Edited by: Erik Delaquis

Pictures by: Sok Sophearith

Funded by OneCGIAR Initiative Seed Equal & GIZ Cambodia



Supported by ACIAR-funded CIAT-led project 'Establishing sustainable solutions to cassava diseases in mainland South-East Asia', and GIZ Cambodia



Participating organization / project	Acronym
Agricultural Genetics Institute (Vietnam)	AGI
Battambang Cassava Association (Cambodia)	
Cambodia-Australia Partnership for Resilient Economic Development	CAPRED
Cambodian Agricultural Research and Development Institute	CARDI
Cambodia Agricultural Sector Diversification Project	CASDP
Cambodia Cassava Association	
Cambodia's General Directorate of Agriculture (Cambodia)	GDA
Centre Internationale de Recherches en Agriculture et Developpement	CIRAD
Center of Excellence for Sustainable Agricultural Intensification and Nutrition (Cambodia)	CE SAIN
Deutsche Gesellschaft für Internationale Zusammenarbeit	GIZ
Department of Industrial Crops (Cambodia)	DoIC
Hung Loc Agricultural Research Center (Vietnam)	HLARC
International Center for Tropical Agriculture	CIAT
Japanese International Development Agency	JICA
Kampong Thom Cassava Association (Cambodia)	
National Agriculture and Forestry Research Institute (Lao PDR)	NAFRI
National University of Battambang (Cambodia)	UBB
Provincial Department of Agriculture, Forestry, and Fisheries (Cambodia)	PDAFF
Tay Nguyen University (Vietnam)	TNU
University of Kratie (Cambodia)	

Contents

Attendees.....	3
Field day rationale and agenda.....	3
Field day activity narrative	4
Next steps	7
Annex I. Field day participant list.....	8
Annex II. Field day agenda.....	9

Attendees

The event was attended by 54 participants representing organizations, projects, farmers organizations and stem traders from Cambodia, Lao PDR, Vietnam, and Thailand, representing 48 male and 6 female participants. The full list of participants and their affiliations is available in Annex I.

Field day rationale and agenda

The Cassava Mosaic Disease (CMD) epidemic continues to spread across Southeast Asia and to increase in severity in some regions. CIAT's work has conducted varietal evaluations and determined current best-bet varieties, in addition to the introduction of 11 CMD resistant clones to Cambodia. Breeding efforts to introgress CMD resistance into elite Asian varieties continue in Vietnam and Thailand.

In addition to resistant varieties, CIAT is continuing evaluations of farmer practices like fertilization and positive/negative selection of planting materials to mitigate CMD impacts.

Besides CMD, the region has struggled with unpredictable and sometimes very high levels of cassava witches broom (CWB). This poorly understood disease causes serious damage to farmers' production across the region. Cambodia is often particularly badly impacted.

As further studies are conducted, spreading awareness about existing options is critical to safeguard farmer livelihoods. The field day at Chamkar Leu was a chance for farmers, stem multipliers/traders, and representatives from NGOs, government organizations, development projects, and farmer associations to gain exposure to some of the practices being evaluated for CMD control and to inspect resistant materials under field conditions.

The participants in the field day discussed these issues and some of the pragmatic work ongoing in partnership between GDA and CIAT to address them (Fig. 1).



Figure 1. Field day participants during the keynote speech of the field day at Chamkar Leu.

Field day activity narrative

Dr. Ny Vuthy introduced the day with a keynote stressing the need to continue developing solutions for the CMD epidemic. He noted cassava's status as the 2nd most important crop in Cambodia after rice. On behalf of GDA he stressed the full support for expansion of the tunnel-based rapid multiplication system in Cambodia.

Dr. Jonathan Newby delivered an introductory message orienting the participants on the day's structure and the links with the experiments at the experimental station and the wider CMD and CWB epidemics.

The first visit was to the rapid cassava multiplication tunnel facility constructed on the GDA farm, consisting of 2 repurposed screenhouses and 4 large size rapid multiplication tunnels (Fig. 2). Participants learned the principles behind tunnel operations, and asked questions about the time, labor investment, and multiplication rates achievable by the system. Standards for retaining phytosanitary control inside the tunnels was discussed, and a demonstration of the mature stem planting and seedling harvesting and transplanting was carried out.



Figure 2. GDA leading the discussion in front of the rapid stem multiplication tunnels in Chamkar Leu.

The next visit was to the adjacent field multiplication multilocation trial for determining the performance of the newly introduced CMD resistant clones. The trial contains 5 introduced CMD-resistant clones with KU50 as a local variety check. Participants examined the blocks and discussed the agronomic traits of the clones (Fig. 3). Because the field day took place in December, ahead of the harvest period, participants were not able to evaluate the root yields. This will be conducted in a follow-up workshop in the coming year.



Figure 3. Participants evaluating CMD resistant clones in the multilocation trial.

Participants expressed great interest in the new varieties. They were pleased to note the lack of CMD symptoms on the leaves of most clones, and low incidences on the remainder. However several traits were also identified that do not match well with Southeast Asian intensive cultivation practices. These were:

- Sprawling plant type, when compared to the highly erect elite Asian cultivars.
- Proliferate branching, which complicates field operations by making walking between rows difficult. Cambodia suffered historic flooding in the previous months of 2022, which may be partly to blame for the unusually high expression of this trait.
- Late bulking, which is particularly problematic in Cambodia, where pressure from processors is leading to earlier and earlier harvest dates.
- Starch yield is the ultimate factor of importance in acceptance fo commercial varieties in Asia. During harvest time, a following field day will assess this. All participants echoed the primary importance of this trait.

Finally, the group visited a field experiment designed to assess impacts in the field of positive selection, planting material health and other farmer practices on the severity of disease pressures and ultimately yields (Fig. 4). Participants held a lengthy discussion here led by GDA and farmer multiplier participants who discussed the importance of improved strategies for clean seed. The association of heavy CWB symptoms with root rots was noted. All participants noted experiencing yield-limiting disease pressures in their area.



Figure 4. Participants observing cassava witches broom (CWB) symptoms at the disease management trial.

Next steps

The next steps include scheduling a harvest field day for participatory assessment of yields and elements including root shape, ease of harvest, quality, and starch content. As the assessment of the field trials continue, regular updates from the project on the results can continue to guide the development of best practices for disease mitigation and control in the region.

Annex I. Field day participant list

No.	Name	Institution / project	Sex
1	Mr. Kuy Hout	DDG-GDA	M
2	Dr. Ny Vuthy	DDG-GDA	M
3	Dr. Mak Chanratana	Deputy director, Department of Crop Seed-GDA	M
4	Mr.Thiv Vanthy	Director of DoIC-GDA	M
5	Mrs.Kan Sopha	DoIC-GDA	F
6	Mr. Meng Rithea	DoIC-GDA	M
7	Mrs.Din Lami	DoIC-GDA	F
8	Mr.Soung Soth	Station manager-GDA	M
9	Mrs.Kouy Sinoun	Station deputy manager-GDA	F
10	Mr.Pork Kimsan	Station deputy manager-GDA	M
11	Mr.Nit Ti	PPSP-GDA	M
12	Mr. Lor Bunna	Director of CARDI	M
13	Mr.Run Sophannara	Deputy director BMC-PDAFF	M
14	Mr.Eang Thorgun	Officer, BMC-PDAFF	M
15	Mr.Taing Chipheng	Stung Treng-PDAFF	M
16	Mr.Chhem That	Preah Vihear-PDAFF	M
17	Mr.Dok Savooun	Tboung Khmum-PDAFF	M
18	Mr.Sim Thavirak	Director, Kampong Cham-PDAFF	M
19	Mr.Sok Lyda	Otdar Meanchey-PDAFF	M
20	Mr.In Sovanmony	Deputy director, Battambang-PDAFF	M
21	Mr.Kao Samphors	Pailin-PDAFF	M
22	Mr.Chou Chansethya	Kratie-PDAFF	M
23	Mr.Chho Bengkung	Deputy director, Kampong Thom-PDAFF	M
24	Mr.Soeung Phousana	CAPRED	M
25	Mr.Kang Phalla	GIZ-KH	M
26	Mr.Pak Kealy	GIZ-KH	M
27	Mr. Kak Bros	CARDEC project officer, CIRAD	M
28	Mr.Leng Leanghak	CARDEC project officer, CIRAD	M
29	Ms. Nhan Pham	HLARC	F
30	Mr. Tung	HLARC	M
31	Mr. Ngọc Tuấn Lê	AGI	M
32	Dr.Nguyen Van Minh	Tay Nguyen University	M
33	Ms. Cu Thi Le Thuy	CIAT	F
34	Mr. LaoThao	CIAT	M
35	Mr. Saythong Oudthachit	NAFRI	M
36	Dr. Jonathan Newby	CIAT	M
37	Mr. Erik Delaquis	CIAT	M
38	Mr. Sok Sophearith	CIAT	M
39	Mr. Khlot Chhiang Y	Secretary Cassava association Battambang	M
40	Mr. Heng Try	President, Kampong Thom, Cassava Association	M
41	Mr. Sam Thok Yann	Stem Trader, Banteay Meanchey, Cambodia	M
42	Mr.Chhoeng Menghung	Stem Trader, Banteay Meanchey, Cambodia	M
43	Mr.El Chhinh	Farmer, OtdorMeanchey	M
44	Mr.Chheang Sovanney	Farmer, OtdorMeanchey	M
45	Mr.Kreouy Saren	Multiplication farmer BMC	M
46	Mr. Seong Sokhane	Key farmer (Multiplication farmer in Kratie)	M
47	Mr. Ly Kimsuy	Key farmer (Multiplication farmer in Kampong Thom)	M
48	Mr.Van Nareth	Cassava multiplicaiton farmer in Otdor Meanchey	M
49	Ms. Rong Sareoub	Cassava multiplicaiton farmer in Otdor Meanchey	F
50	Mr. Sao Sokun	Trader of cassava planting material in Stung Treng	M
51	Mr.Kong Chanthoeurn	Farmer in Kampong Cham	M
52	Mr.Chheang Leav	Farmer in Kampong Cham	M
53	Mr.Phorn Hour	Farmer in Kampong Cham	M
54	Mr.Tob Vandy	Farmer in Kampong Cham	M

Annex II. Field day agenda.

Time	Activity	Responsible/facilitator
6th Dec Tues	Field day at research station, Chamkar Leu GDA	
10:00 – 10:15	Keynote	Dr. Ny Vuthy, Deputy Director General of General Directorate of Agriculture
10:15 – 10:30	Introduction	Dr. Jonathan Newby (CIAT)
10:15 – 12:00	Visit to tunnel multiplication facility Disease resistant material multilocation trial Visit disease impact field experiment	Mr. Sok Sophearith (CIAT)
12:30 – 13:00	Plenary discussion and impressions	