



Alliance



Australian Government

Australian Centre for
International Agricultural Research

Establishing sustainable solutions to cassava diseases in mainland Southeast Asia

Results of Multiplication in Tunnels (2020-2023)

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I. Tunnel location



Overview of tunnels location

Planting material for multiplication



Receiving virus free mother planting materials
from NAFRI (Laos)

- Oct 2021 (KU50) (GDA & CARDI)
- Jan 2022 (KU50) (GDA & ST)
- May 2022 (KU50)
- Sept 2022 (R72 &KU50) (GDA, ST & BMC)

Taking from multiplication
field

Preparation for multiplication



Bed preparation



Treatment with
fungicide

Activity in Tunnels



Planting in beds
and germination



Taking care and
cutting plantlets

Plantlets produce from Tunnels



	1 st Batch (Oct 21)		2nd Batch (Jan 22)		3rd Batch (Nov 22)		4th Bath (Jun 23)		Total	
	Plantlets cuts	Plantlets planted	Plantlets cuts	Plantlets planted	Plantlets cuts	Plantlets planted	Plantlets cuts	Plantlets planted	Plantlets cuts	Plantlets planted
Tunnel 1	96	0	3730	1992	1033	56	238	196	5097	2244
Tunnel 2	96	0	2359	1281	1392	57	528	376	4375	1714
Tunnel 3	96	0	2590	1192	1730	526	480	460	4896	2178
Tunnel 4	96	0	2782	1194	920	697	325	238	4123	2129
Total	384	0	11461	5659	5075	1336	1571	1270	18491	8265

days cutting and planting of plantlets



Economic Analyses

No.	Description	Unit	Unit price (\$)	Total price (\$)
I	Two nodes planting on bed			80
1	Two nodes cutting cost	4	10	40
2	Labor cost of planting 2 nodes	4	10	40
II	1st Cutting plantlets (4 tunnels)			210
3	Coconut ball (1box=1000 ball)	3	50	150
4	Labor cost of 1st cutting plantlets (2688)	6	10	60
III	2nd Cutting plantlets (4 tunnes)			400
5	Tray cost (1tray = 96 hole)	40	3	120
6	Coconut ball (1box=1000 ball)	4	50	200
7	Labor cost of 1st cutting plantlets (3072)	8	10	80
IV	3rd cutting plantlets (4 tunnesl)			237
8	Tray cost (1tray = 96 hole)	24	3	72
9	Coconut ball (1box=1000 ball)	2.5	50	125
10	Labor cost of 1st cutting plantlets (2304)	4	10	40
V	4th Cutting plantlets (4 tunnels)			200
11	Tray cost (1tray = 96 hole)	20	3	60
12	Coconut ball (1box=1000 ball)	2	50	100
13	Labor cost of 1st cutting plantlets (1920)	4	10	40
VI	Tunnel activity management			1800
14	Electricity	10	30	300
15	Taking care tunnel activities	10	150	1500
Total cost (I+II+III+IV+V+VI)				2,927

Challenges



- Low germination rate
- Ground water quality (sand or lime block sprinklers)
- Watering in tunnel need to manage properly
- High temperature inside tunnel (more than 45 °C)
- Low survival rate in seed trays
- Termites destroy plantlets in field
- Too much rain in rainy seasons
- Dry season need irrigation
- When temperature is high, population of mealy bug and red spider increase rapidly

Lesson Learns



- Irrigation duration and times can affect mother stake germination rate and quality of plantlets
- Hand mix substrate without paper cover in trays can affect the survival rate of plantlets in field if they were not carefully took out from trays
- Keeping plantlets on bed too long leads to low survival rate
- Keeping plantlets too long in trays cause plantlets weak and high dying rate in open field

Thank You !

