



Rapid multiplication of cassava stems in Lao PDR

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Why need rapid multiplication cassava stems?

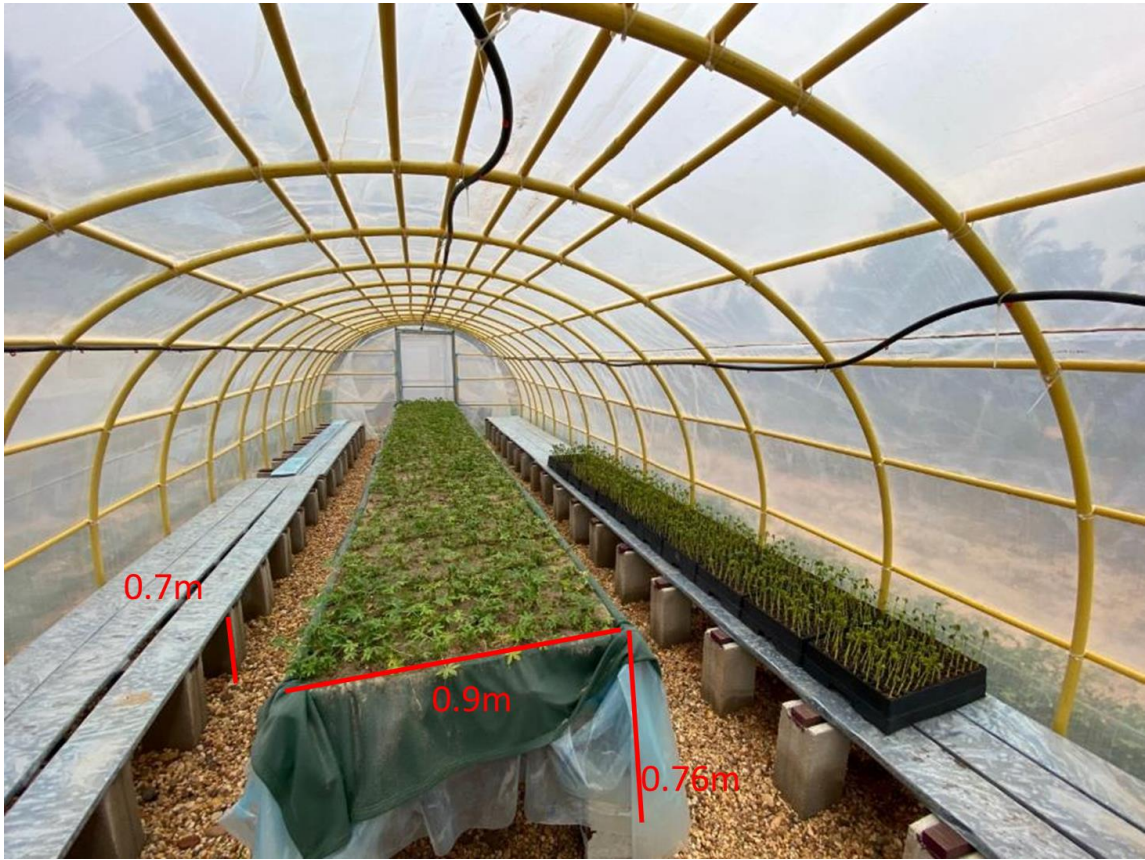
Rapid multiplication cassava stems can multiply the limited number of cassava stems, fast and with good quality.

This is especially important to multiply new varieties with resistance to diseases and pests, or when there is a problem of insufficient stems caused by drought, flood, or changes in planting area.



**Rapid
multiplication
facility “Future
Stems” at NAFRI,
Rice and Cash
Crop research
Center**

Dimension of the tunnels

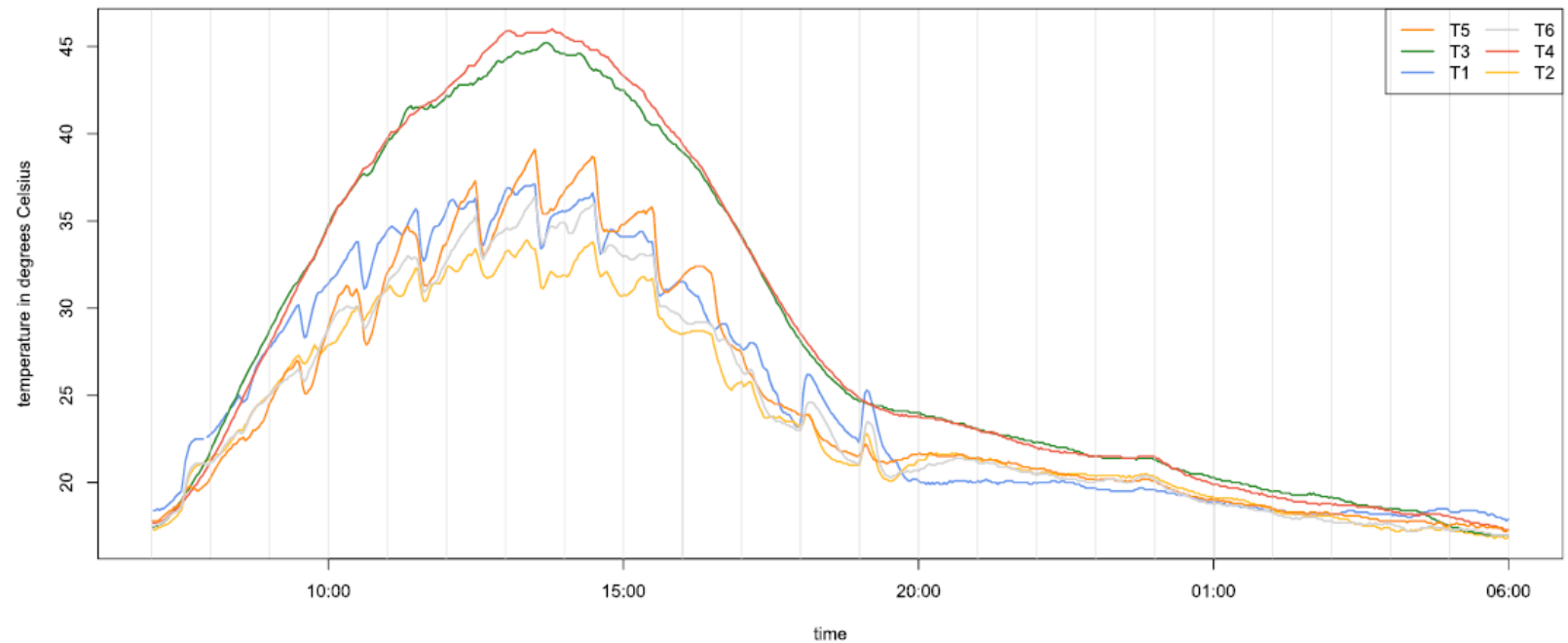
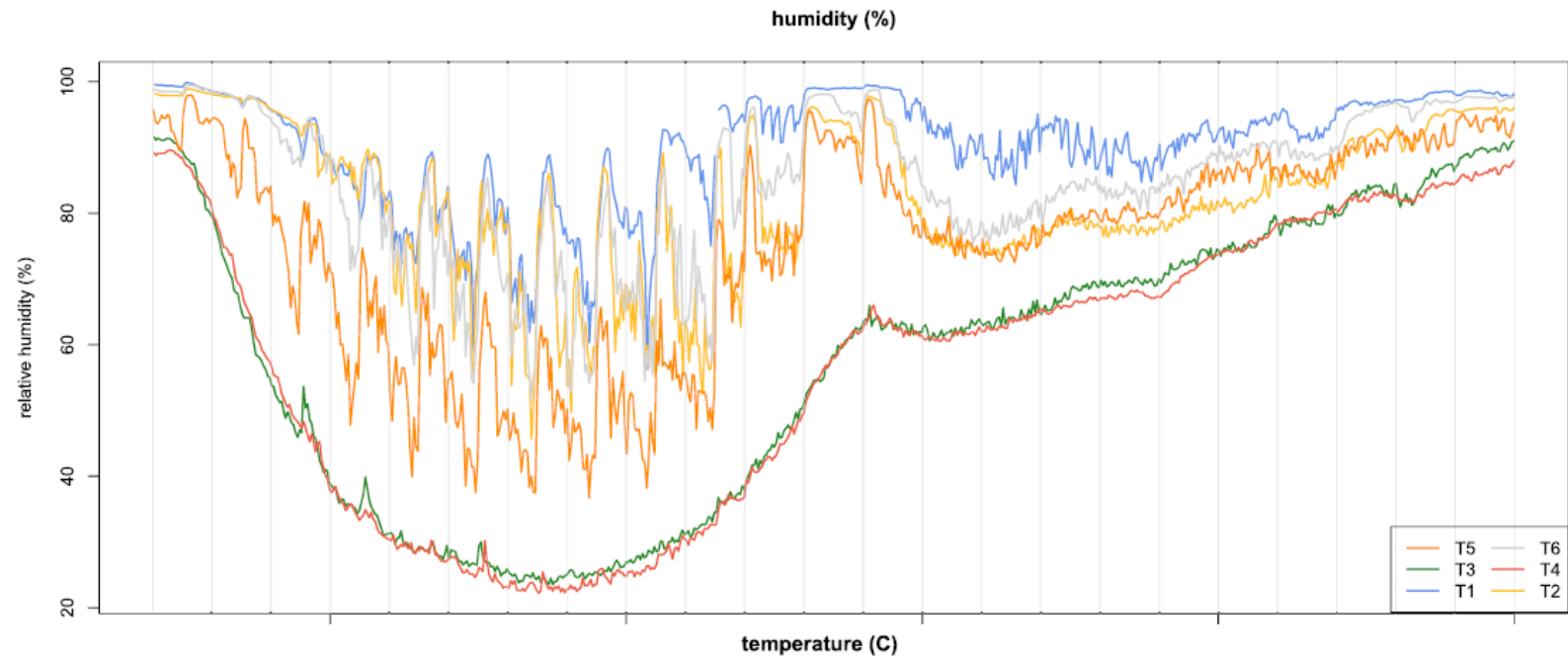


Temperature and humidity inside tunnel



Temperature and humidity inside tunnel at NAFRI in Lao PDR

- Average temperatures of approximately 35° C
- Relative humidity of approximately 60%



Small stakes preparation

- Selection healthy planting material and cutting to two nodes
- Soaking pesticide and fungicide before planting to tunnel



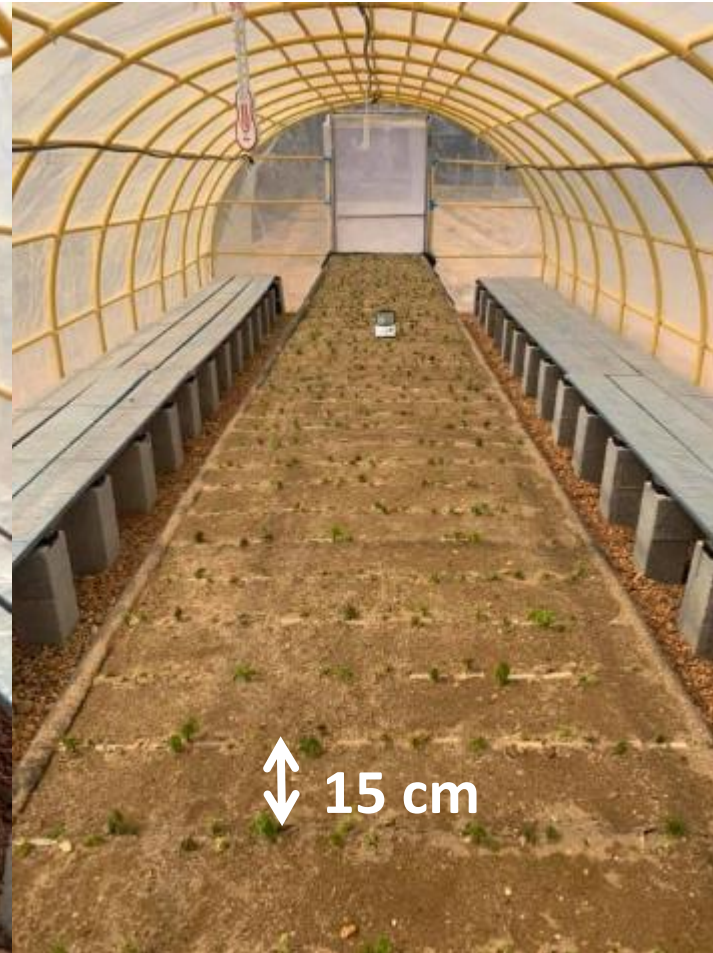
Pesticide



Fungicide



Planting in tunnel



Planted 700-840 stakes per tunnel and between row space is 15 cm

Maintain the plant in the tunnel

- Irrigation is very important to keep the temperature down and humidity up
- Fertilizer: $\text{NP}_2\text{O}_5\text{K}_2\text{O}$ (15-15-15) 25 Kg/ha and Urea 25 Kg/ha. First fertilizer application - after planting 2 week and then every 10 days/time



Irrigation



Simple manual irrigation, minimum three to four times a day



Automated irrigation system help to keep the temperature down and humidity up



All plants ready for cutting

T1 = KU50



T2 = Rayong11



Cutting the plantlets

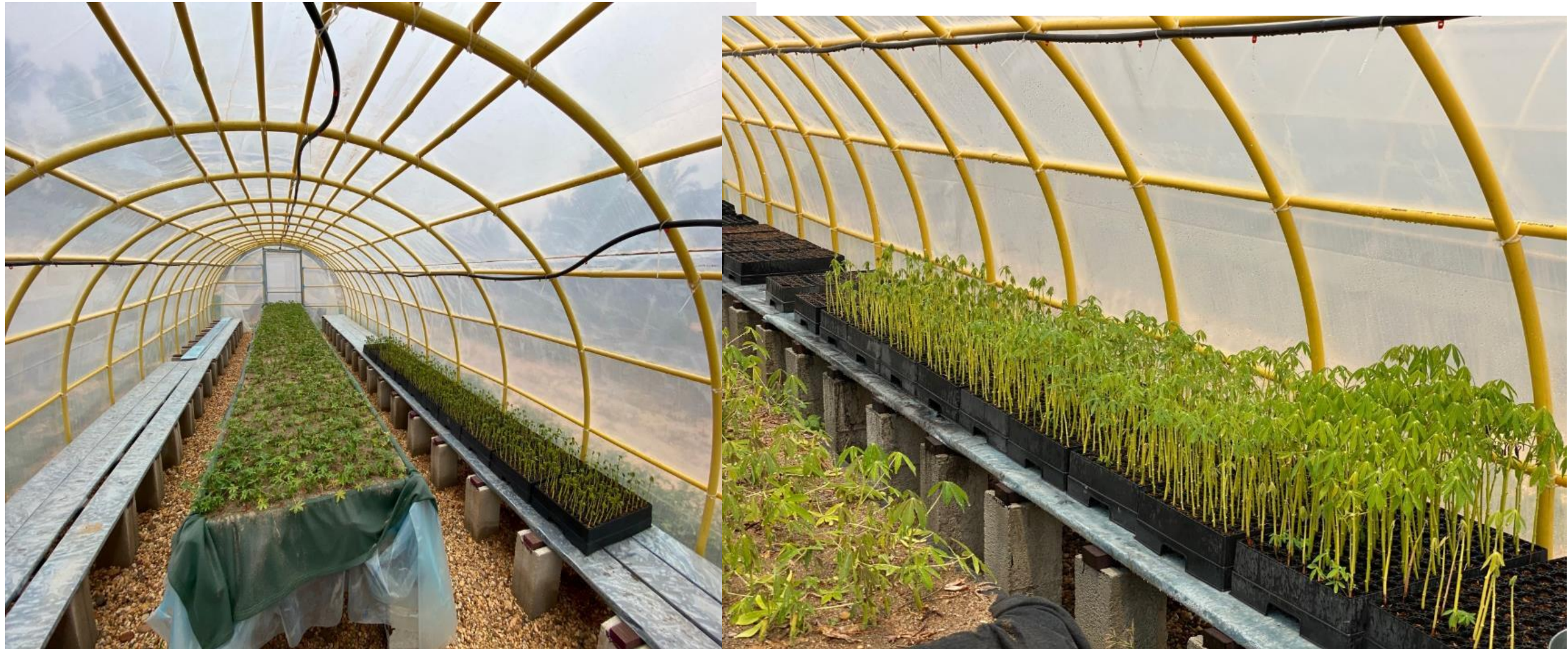
- After planting 45 days with 5 to 6 nodes
- Got at least 384 plantlets/tunnel
- Sometime got 1,248 plantlets/tunnel
- Average 659 plantlet/tunnel



Total plantlets from Tunnel to clean field at RCRC 2020-23

Tunnel	Variety/Year	Total cutting				Total planting on the field			
		2020	2021	2022	2023	2020	2021	2022	2023
No. 1	KU50	3,840	1,056	960	1031	2,690	380		656
	TMEB419 (H1)			480				198	
	Rayong 11		960	672					
No. 2	Rayong 11	5,040	1,728		2,208	4,210	700		954
	SM 2775-2		288				270		
	KU50		384	672	288		364		
	Rayong 72			1,824					
No. 3	Rayong 72			1,152					
	KU50		2016				588		
	TMEB419 (H1)		192				63		
	IBA920057 (H2)		338				42	290	
	IBA972205 (H3)		192				63		
	IBA980505 (H4)		203				63		
	IBA980581 (H5)		216				42	139	
	CM9912-167				960				
No. 4	SM 2775-2	384				90			
	KU50				672				
	Rayong 72				864				
	Rayong11		2,208	1,728					
No. 5	Rayong72		672		576		600		287
	IBA980505 (H4)				672				569
	KU50		960	1,248			844	650	2,466
No. 6	Rayong72		1,632				730		
	KU50		480	1,344	348			481	

Keeping the tray in the tunnel



Keeping the tray in the screen house



Screen house to field



Rooted seedlings ready for planting in the field



Dry season need irrigation for the plantlets at planting for couple of weeks



Maintain the field similar with normal stake planting



Lesson Learnt/Constraint in the tunnel system

- Low germination in rainy season (Very hot)
- Not planting on time, all plantlets will have more problems with red mite, cassava mealybug



Other activities relate to cassava rapid multiplication

Introduction and testing of 'FibreCell' System in Laos



Providing training tunnel construction and also provide clean stems to Lao Cassava Association and Khousub company



Transferring disease free (tunnel multiplied) planting material to Cambodia





Thank you for your
attention

