Progress of International Clone Exchange Program in Myanmar

By

Mr. San Yu Kyi

Staff Officer

Perennial Crops Research and Development Estate
Department of Agriculture

IRRDB
(International Rubber Research and Development Board)

1934 – The International Rubber Regulation Committee

1937 – The International Rubber Research Board was established to co-ordinate with International Rubber Development Committee

1960 – these two bodies were fused to create the IRRDB

- Today, the IRRDB covers all aspects of natural rubber, from the cultivation of Hevea to the development of new products.

https://www.theirrdb.org/irrdb/frontpage/index.php?menu=about

IRRDB member countries

1. Brazil
2. Cameroon
3. China
4. Vietnam
5. Cote-d-Ivore
6. France
7. Grabon
8. India
9. Indonesia
10. Malaysia
11. Mexico
12. Philippines
13. Sri Lanka
14. Thailand
15. Nigeria
16. Cambodia
17. Ethiopia
18. Guatemata
19. Myanmar

✓ Myanmar become a member of IRRDB in 2007.

International Clone Exchange Program

- The first International Clone Exchange Program set by IRRDB in 2014
- including 15 countries
- 49 clones will be exchanged among 12 Donors countries

- ✓ Myanmar will donate 2 clones (ARCPC 2 and ARCPC 6) to the member countries.
- ✓ Myanmar will receive 47 clones from the donor countries

World natural rubber production (tons)

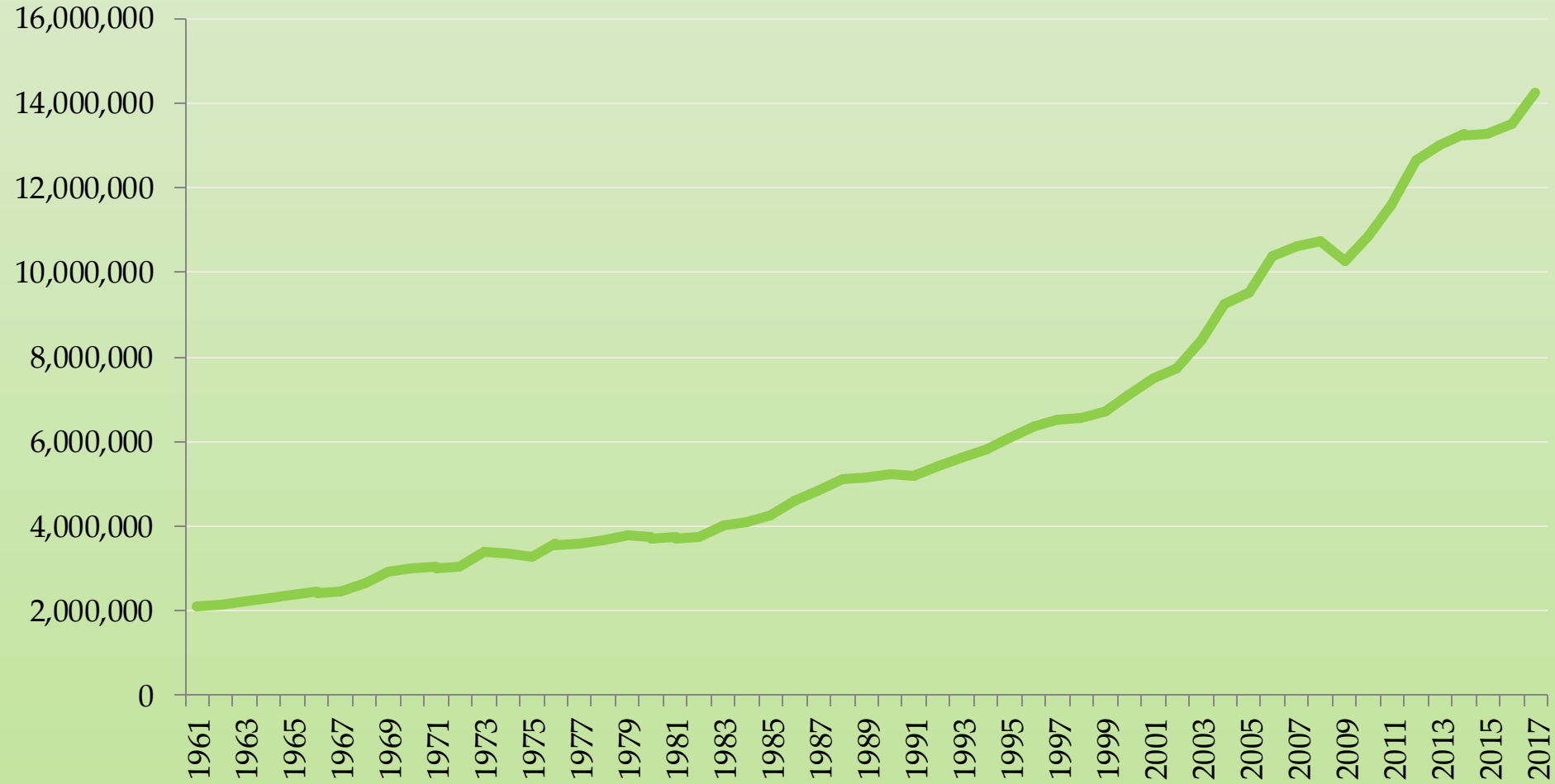


Fig. 1. World natural rubber production (Source: FAOSTAT)

World top natural rubber producing countries (2017)

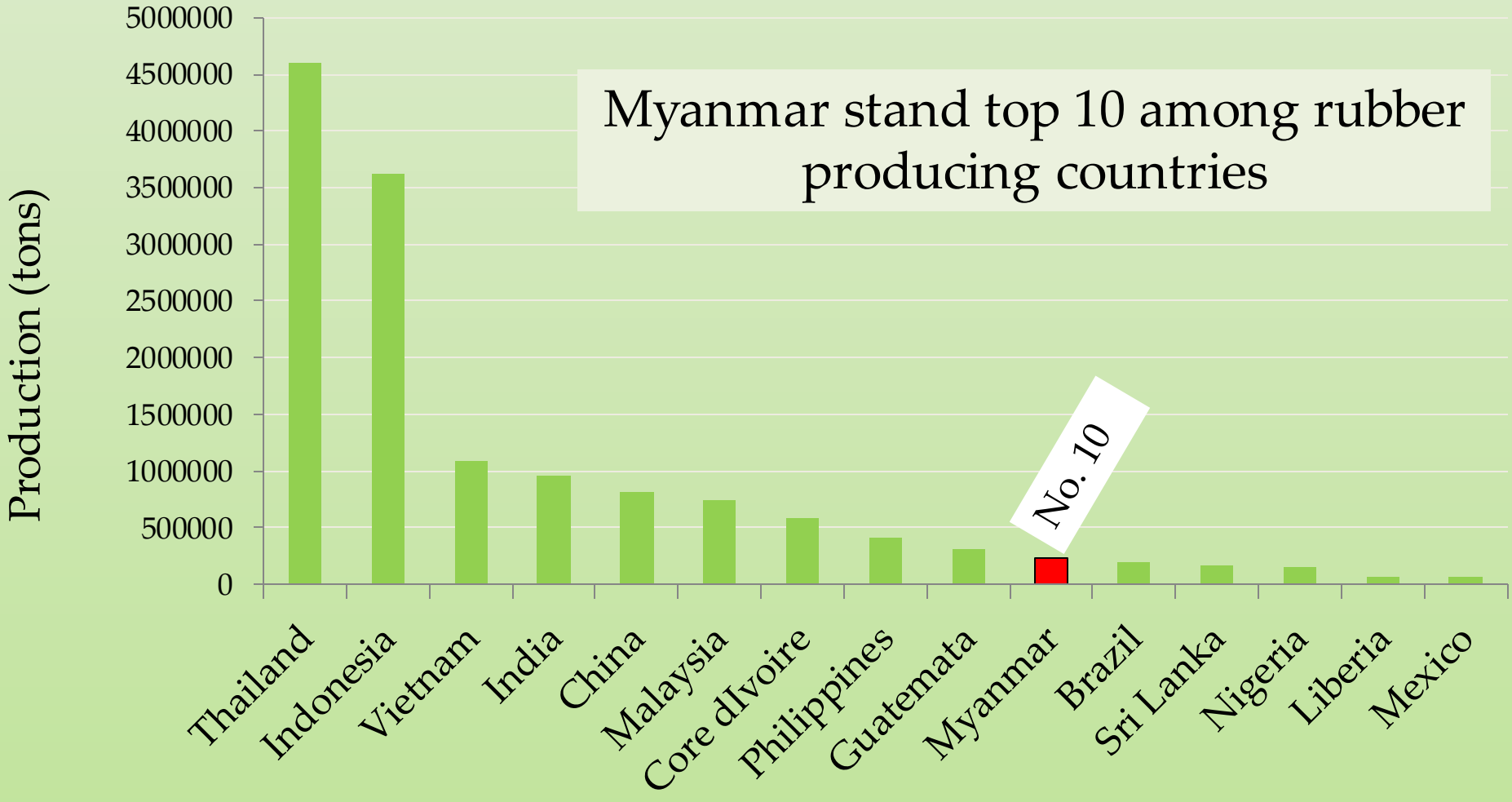


Fig. 2. World top natural rubber producing countries in 2017
Source: FAOSTAT

Rubber production in Myanmar

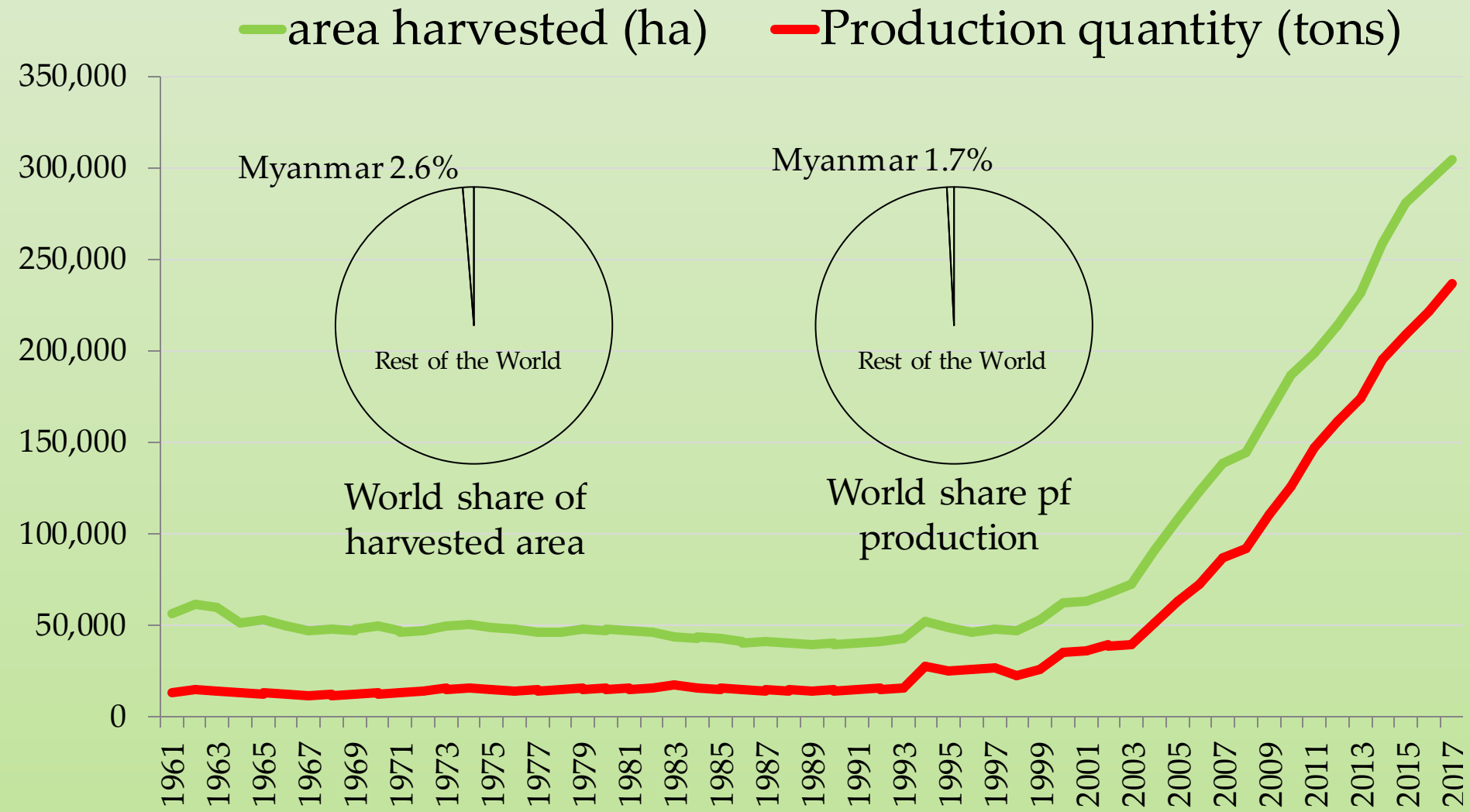


Fig. 3. Natural rubber area harvested and production quantity in Myanmar
Source: FAOSTAT

Natural rubber yield in Myanmar

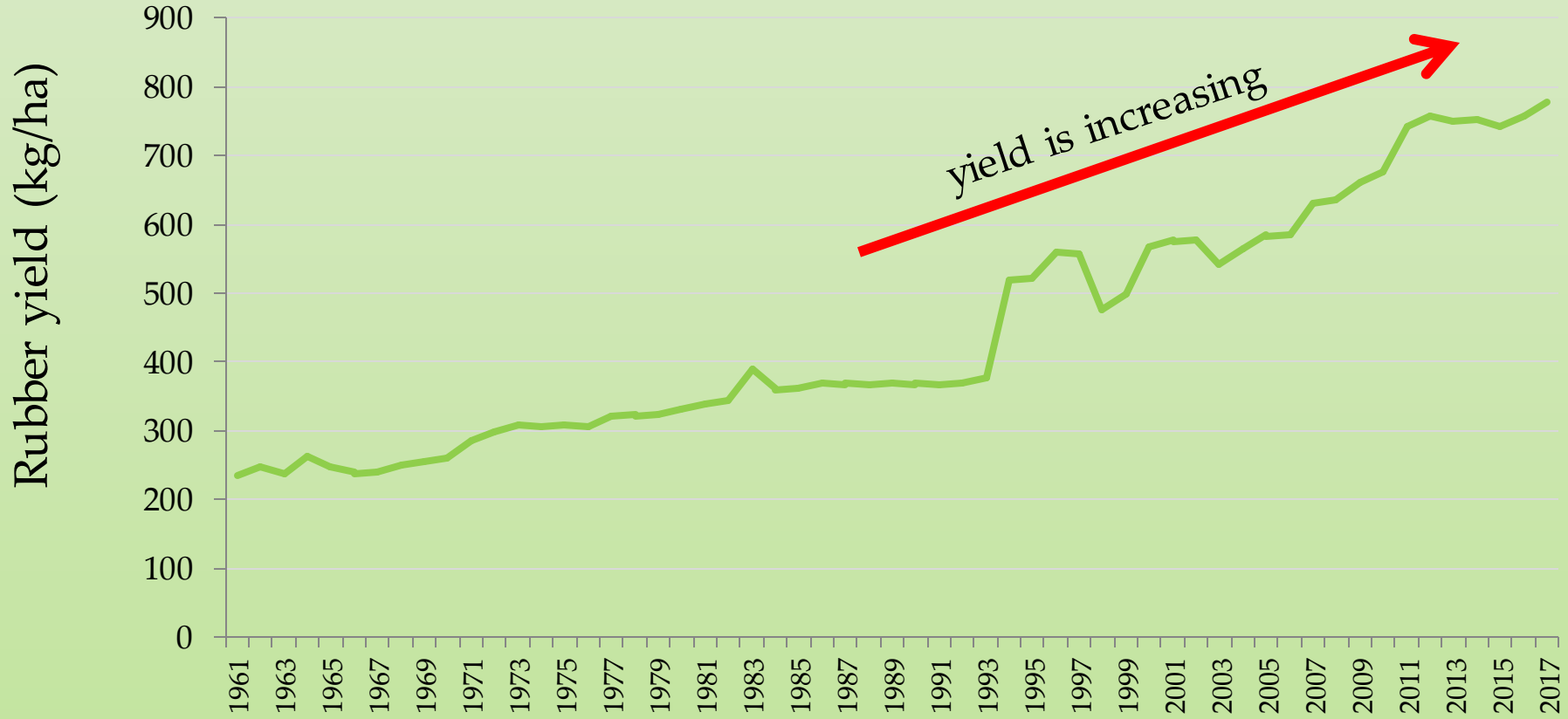


Fig. 4. Natural rubber yield (kg/ha) in Myanmar
Source: FAOSTAT

Natural rubber yield among rubber producing countries (2017)

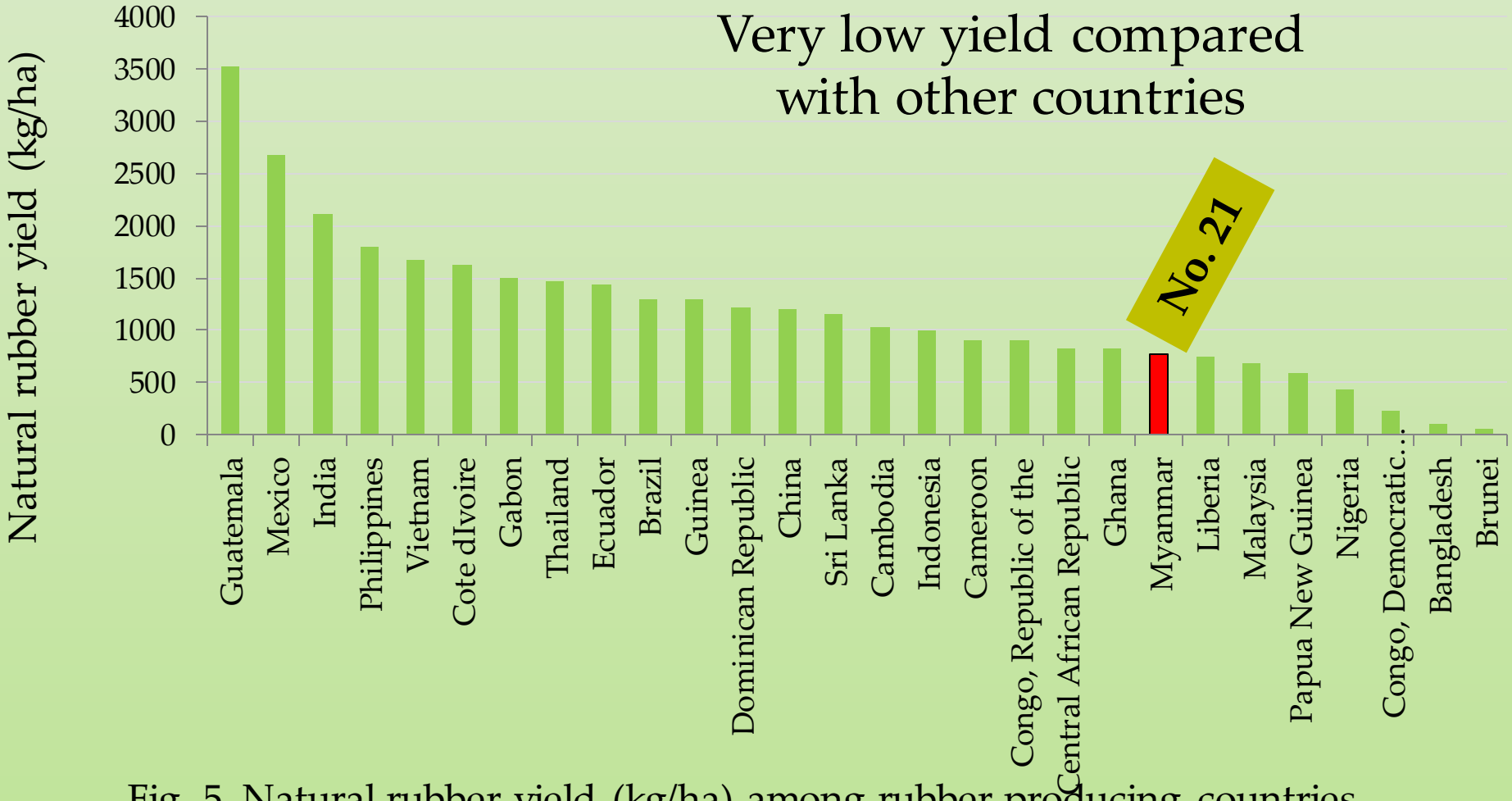


Fig. 5. Natural rubber yield (kg/ha) among rubber producing countries
Source: FAOSTAT

Major Constraints of Low Productivity in Myanmar

- Lack of certified planting materials
- Lack of laws and regulations
- Low adoption rate for GAP
- Unavailability of skill labors
- Application of insufficient amount of chemical fertilizer
- Unavailability of high yielding clones
- So on…

We believe that "International clone exchange program" can support our necessity to improve yield and productivity, by introducing adaptable high yielding clones and progeny.

The condition of International Clone Exchange Program in Myanmar

Number of receiving clones from the donor countries

Table 1. Number of receiving clones with the available buds from donor countries

No.	Receiving date	Clones	Donor country	Number of bud sticks	Number of buds	Condition and Remarks
1	24.8.2016	U.S.M 1	Philippines	1 m x 5 sticks	100	
2	7.9.2016	RRII 414	India	1 m x 5 sticks	103	
3	7.9.2016	RRII 417	India	1 m x 5 sticks	90	
4	7.9.2016	RRII 422	India	1 m x 5 sticks	105	
5	7.9.2016	RRII 429	India	1 m x 5 sticks	100	
6	7.9.2016	RRII 430	India	1 m x 5 sticks	90	
7	13.6.2017	RRIT 226	Thai	1 m x 5 sticks	76	
8	13.6.2017	RRIT 3604	Thai	1 m x 5 sticks	53	
9	13.6.2017	RRIT 408	Thai	1 m x 5 sticks	34	
10	13.6.2017	RRIT 3904	Thai	1 m x 5 sticks	29	
11	13.6.2017	RRIT 251	Thai	1 m x 5 sticks	49	
12	17.8.2017	FDR 5788	Ghana	1 m x 5 sticks	22	
13	17.8.2017	CDC 312	Ghana	1 m x 5 sticks	28	
14	17.8.2017	FDR 5665	Ghana	1 m x 5 sticks	29	

continued:

Table 1. Number of receiving clones with the available buds from donor countries

No.	Receiving date	Clones	Donor country	Number of bud sticks	Number of buds	Condition and Remarks
15	17.8.2017	FDR 4575	Ghana	1 m x 5 sticks	64	
16	17.8.2017	PMD 1	Ghana	1 m x 5 sticks	52	
17	24.1.2018	RRISL 2001	Sri Lanka	1 m x 5 sticks	153	
18	24.1.2018	RRISL 211	Sri Lanka	1 m x 5 sticks	152	
19	24.1.2018	RRISL 219	Sri Lanka	1 m x 5 sticks	86	
20	24.1.2018	RRISL 208	Sri Lanka	1 m x 5 sticks	134	
21	24.1.2018	RRISL 203	Sri Lanka	1 m x 5 sticks	121	
22	17.11.2018	IRCA 825	Ivory Coast	1 m x 5 sticks	221	
23	17.11.2018	IRCA 317	Ivory Coast	1 m x 5 sticks	157	
24	17.11.2018	IRCA 230	Ivory Coast	1 m x 5 sticks	156	
25	17.11.2018	IRCA 41	Ivory Coast	1 m x 5 sticks	160	
26	17.11.2018	IRCA 231	Ivory Coast	1 m x 5 sticks	150	

Production of planting materials from the exchanged clones

Table 2. The condition of budding and successful planting materials in the first stage

No.	Clones	Number of bud inserted plants	Budding successful plants	Successful planting materials	Condition and Remarks
1	U.S.M 1	100	3	**3**	dry wound
2	RRII 414	103	15	**14**	
3	RRII 417	90	13	**4**	
4	RRII 422	105	38	**19**	
5	RRII 429	100	51	**32**	
6	RRII 430	90	14	**13**	
7	RRIT 226	76	25	**9**	
8	RRIT 3604	53	31	**31**	
9	RRIT 408	34	18	**18**	
10	RRIT 3904	29	22	**22**	
11	RRIT 251	49	23	**23**	
12	FDR 5788	22	5	**5**	wet wound
13	CDC 312	28	6	**6**	wet wound

Table 2. The condition of budding and successful planting materials in the first stage

No.	Clones	Number of bud inserted plants	Budding successful plants	Successful planting materials	Condition and Remarks
14	FDR 5665	29	3	**3**	wet wound
15	FDR 4575	64	1	**1**	wet wound
16	PMD 1	52	2	**2**	wet wound
17	RRISL 2001	153	107	**36**	
18	RRISL 211	152	70	**44**	
19	RRISL 219	86	55	**35**	
20	RRISL 208	134	85	**47**	
21	RRISL 203	121	100	**40**	
22	IRCA 825	121	19	**13**	
23	IRCA 317	157	80	**56**	
24	IRCA 230	156	32	**22**	
25	IRCA 41	160	24	**16**	
26	IRCA 231	150	67	**48**	

Propagation of planting materials

Table 3. The propagation of planting materials from step by step

No.	Clones	Successful planting materials in the 1st stage	Successful planting materials in the 2nd stage	Successful planting materials in the 3rd stage	Successful planting materials in the 4th stage
1	U.S.M 1	3	38		188
2	RRII 414	14	139	540	410
3	RRII 417	4	54	107	75
4	RRII 422	19	134	395	516
5	RRII 429	32	121	1080	1340
6	RRII 430	13	106	330	295
7	RRIT 226	9	54	141	77
8	RRIT 3604	31	56	114	268
9	RRIT 408	18	52	146	109
10	RRIT 3904	22	60	150	206
11	RRIT 251	23	24	109	167
12	FDR 5788	5	10		
13	CDC 312	6	32		

Propagation of planting materials

Table 3. The propagation of planting materials from step by step

No.	Clones	Successful planting materials in the 1st stage	Successful planting materials in the 2nd stage	Successful planting materials in the 3rd stage	Successful planting materials in the 4th stage
14	FDR 5665	3	10		
15	FDR 4575	1	5		
16	PMD 1	2	6		
17	RRISL 2001	36			
18	RRISL 211	44			
19	RRISL 219	35			
20	RRISL 208	47			
21	RRISL 203	40			
22	IRCA 825	13			
23	IRCA 317	56			
24	IRCA 230	22			
25	IRCA 41	16			
26	IRCA 231	48			

Establishment of the Exchanged Clones in Myanmar

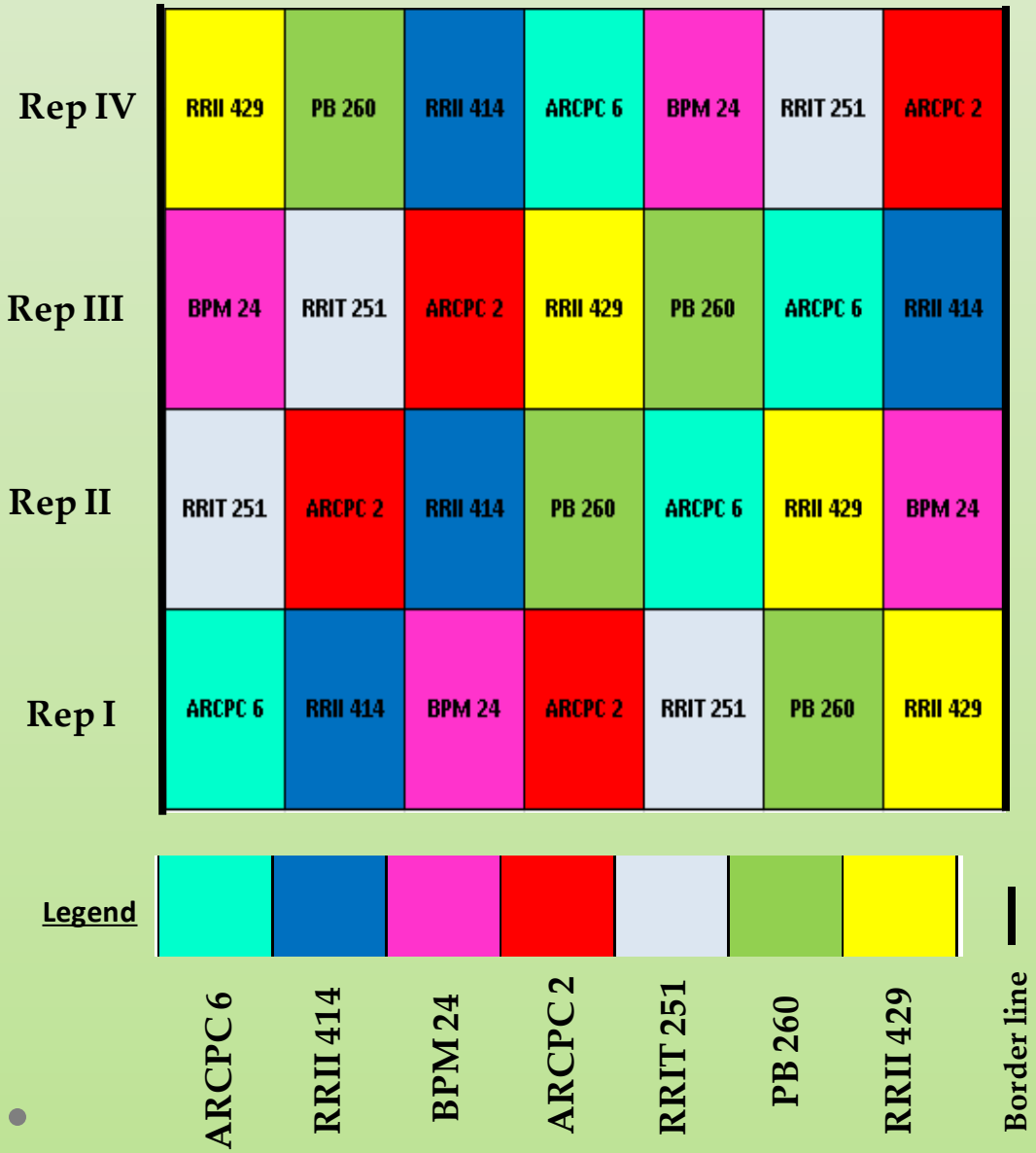
The following clone trials have been carried out;

Table 4. Clone trials

No.	Year	Clones	Description	Area	Condition and Remarks
1	2018	RRII 429, RRII 414, RRIT 251, ARCPC 2, ARCPC 6, PB 260, BPM 24	Clone trial	10 acre	
2	2019	RRII 414, RRII 429, RRII 430, RRII 422, RRIT 251, PB 260	Clone trial	6.1 acre	

On 14.12.2018, the representatives from IRRDB came to investigate the clone trial condition.

Layout of Clone Exchanged Trial (2018)



Treatments	– 7
Replications	– 4
Design	- RCB
Plot size	– 50 plants
Total area	– 7 acre
Total plants	-1950 plants
Planting date	– 28.8.2018

Result

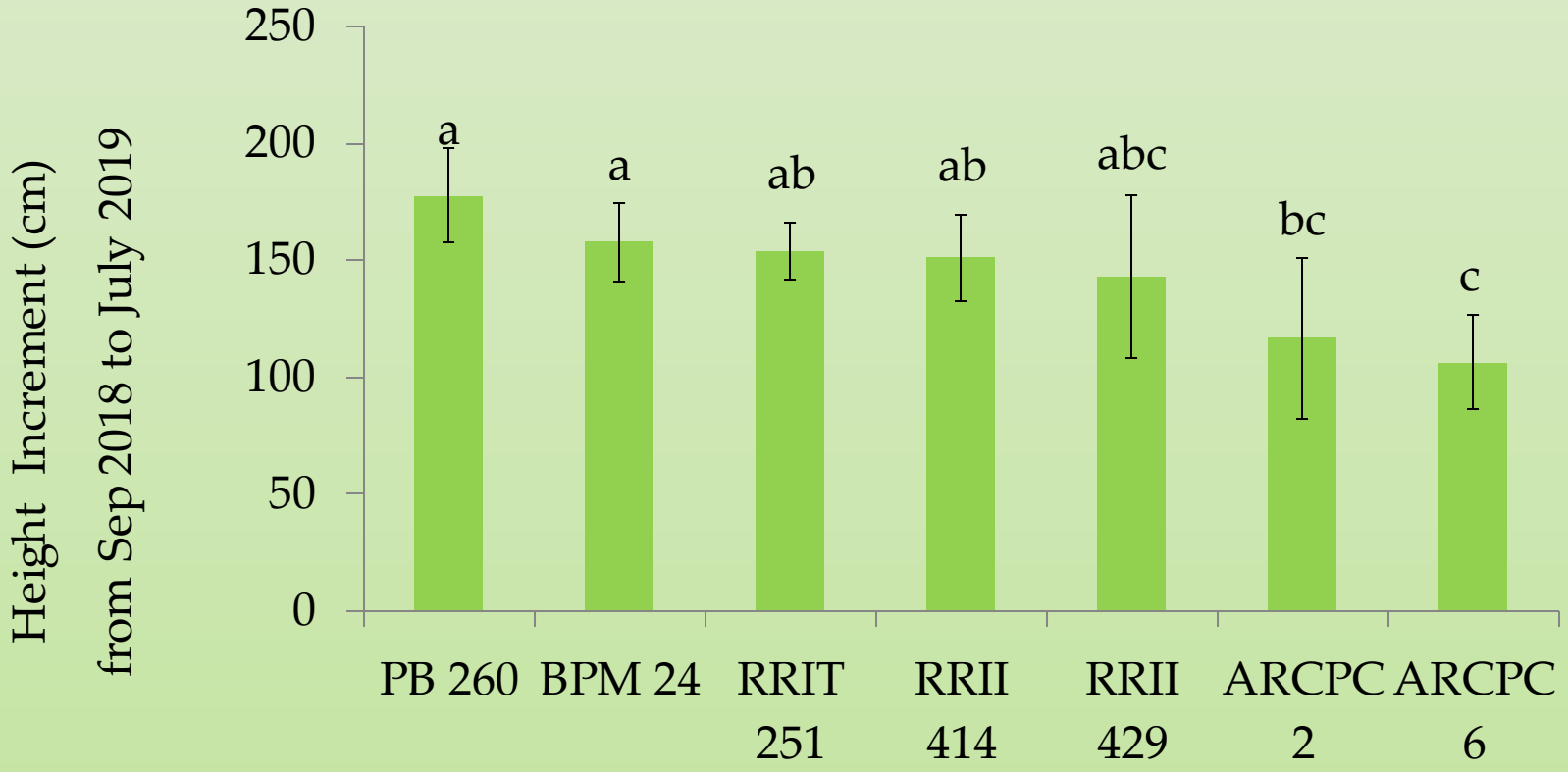
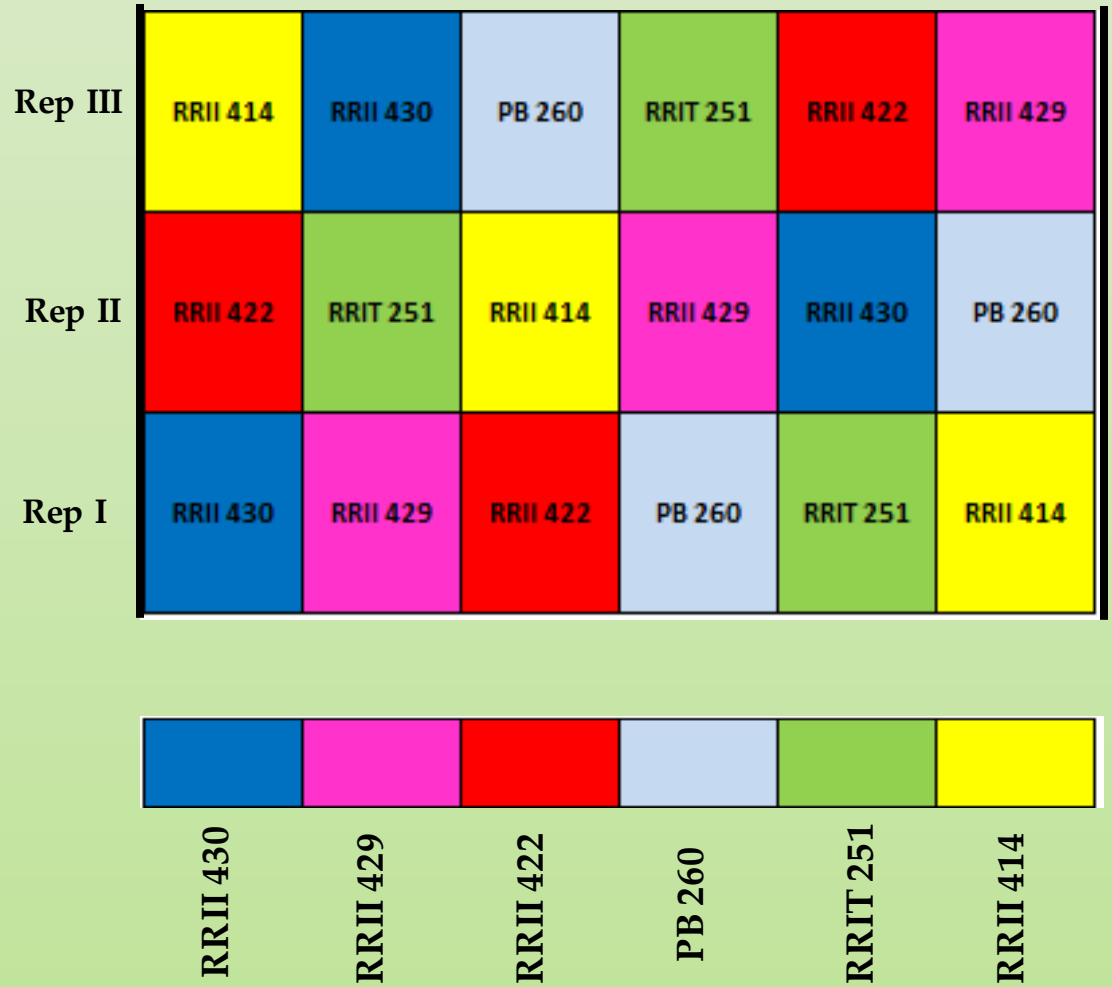


Fig 1. Increment of plant height among the clones at 10 months after planting

Layout of Clone Exchanged Trial (2019)



Treatments	– 6
Replications	–3
Design	- RCB
Plot size	– 60 plants
Total area	– 7 acre
Total plants	- 1170 plants
Planting date	– June, 2019

The following bud-wood nurseries have been established;

Table 4. Bud wood nurseries

No.	Year	Clones	Description	Area	Condition and Remarks
1	2017	Philippines, India, Thailand, Myanmar	Bud wood nursery	1 acre	
2	2019	26 exchanged clones received from 6 countries	Bud wood nursery	3 acre	

Future Plan

for clone exchange program

Table 5. Future trials for the exchanged clones

No.	Year	Clones	Description	Area	Condition and Remarks
1	2019	RRIM 414, RRIM 422, RRIM 429, RRIT 3904, RRIT 251, ARCPC 2, ARCPC 6, BPM 24	Clone trial	7 acre	
2	2020	FDR 5188, FDR 5665, FDR 4575, CDC 312, PBM 1, ARCPC 2, ARCPC 6, BPM 24	Clone trial	8 acre	
3	2021	RRSL 2001, RRSL 211, RRSL 219, RRSL 208, RRSL 203, ARCPC 2, ARCPC 6, BPM 24	Clone trial	7 acre	
4	2022	IRCA 85, IRCA 317, IRCA 230, IRCA 41, IRCA 331, ARCPC 2, ARCPC 6, BPM 24	Clone trial	7 acre	
5	2023	All 29 clones (small scale)	Clone trial	22 acre	
6	2033	All 29 clones (Large scale)	Clone trial	72 acre	
7	2025	Clone trials in four divisions			

In 2025, depending on the availability of planting materials, clone trials will be established also in other regions such as Kachin State, Kayin State, Bago Division and Tanintharyi Division.

- Preparation and plan will also be drawn for the next coming clones from the remaining countries.
- Data collection will be done in the clones trials and the characters will also be recorded for the respective clones.
- These characters will be checked back with the origin of the donor countries.

Conclusion

- Opportunity to introduce the new foreign clones in five different regions of Myanmar
- Opportunity to obtain the most suitable and high yielding latex timber clones
- Promoting the farmer's life and national productivity by growing high yielding clones
- Supporting the rubber breeding program in Myanmar

Thank you very much for your donation of new clones!!!