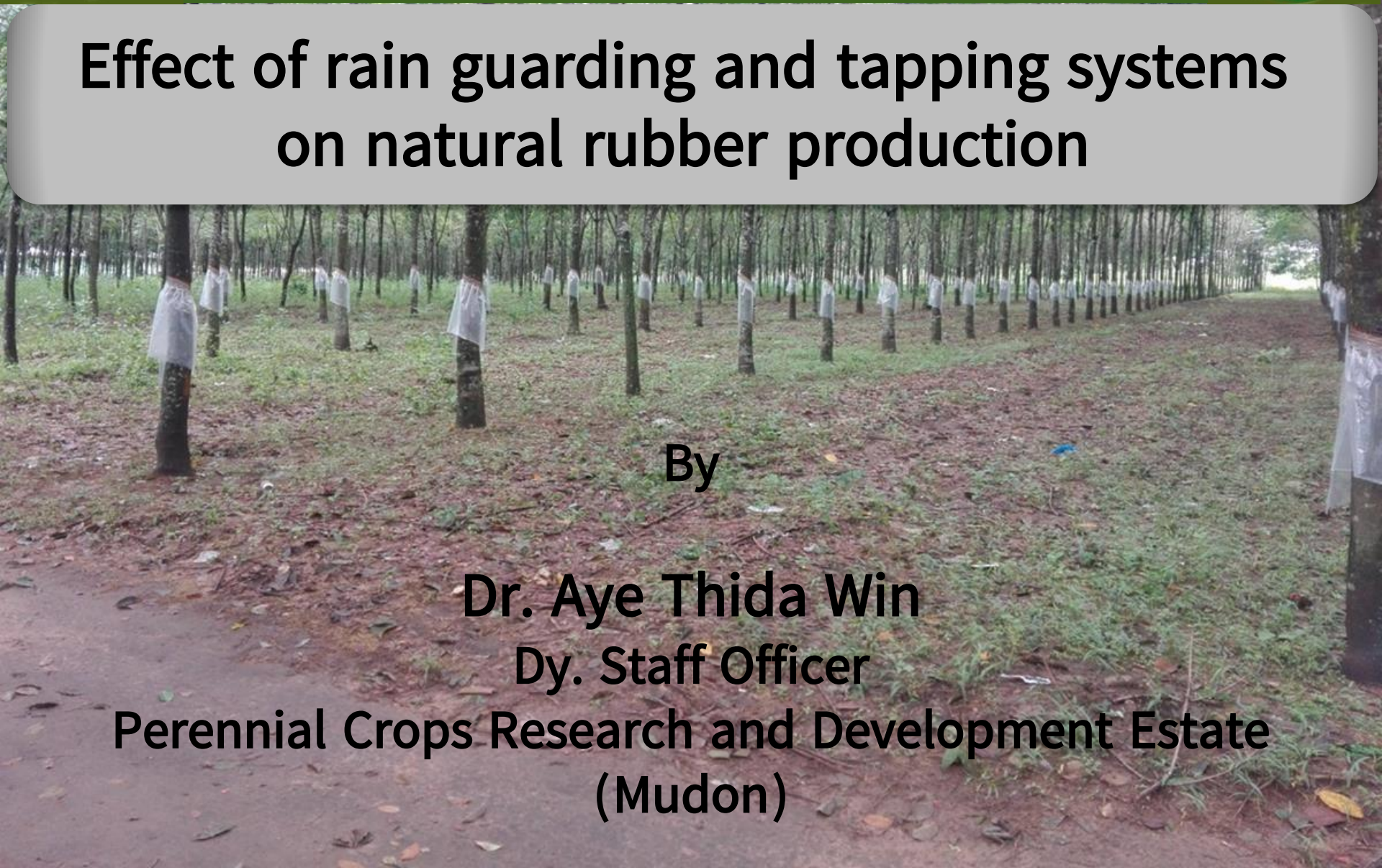
Ministry of Agriculture, Livestock and Irrigation

Department of Agriculture

Effect of rain guarding and tapping systems on natural rubber production



By

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Introduction

Rubber Industry

1. Nursery

2. Immature stage

3. Tapping

4. Factory/Processing

http://www.lgm.gov.my/general/NRHistory.aspx

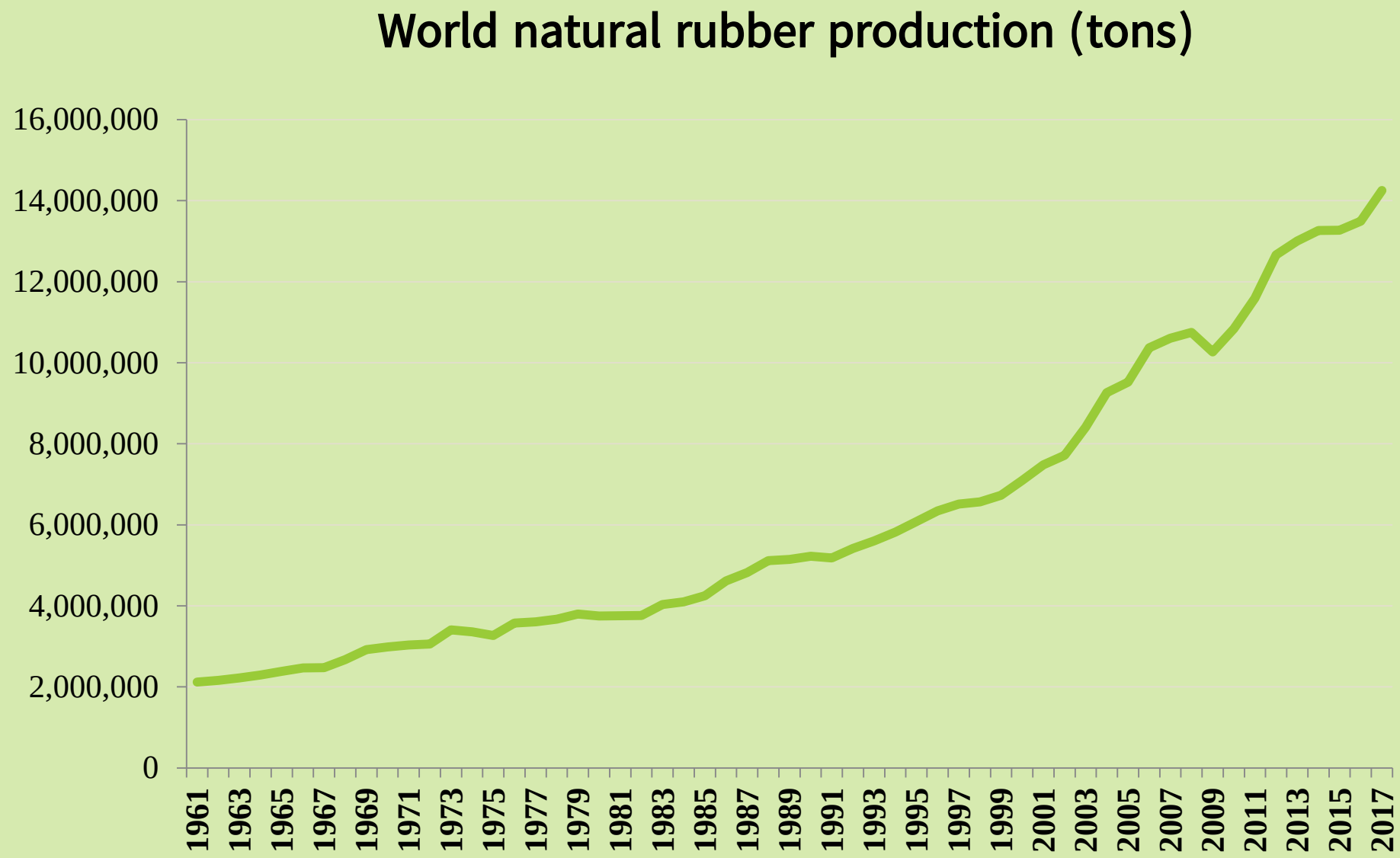

Fig. 1. World natural rubber production (Source: FAOSTAT)

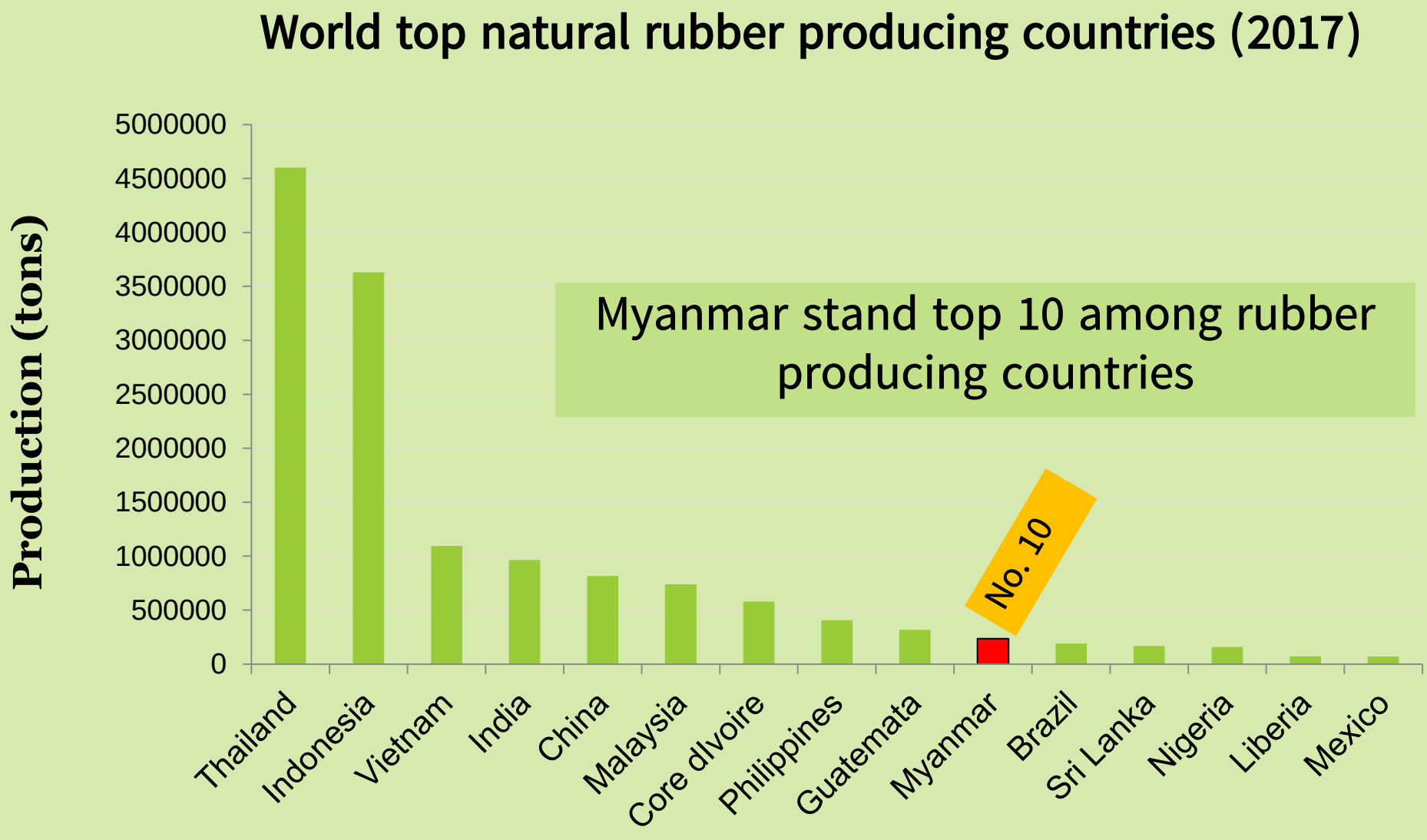

Fig. 2. World top natural rubber producing countries in 2017 Source: FAOSTAT

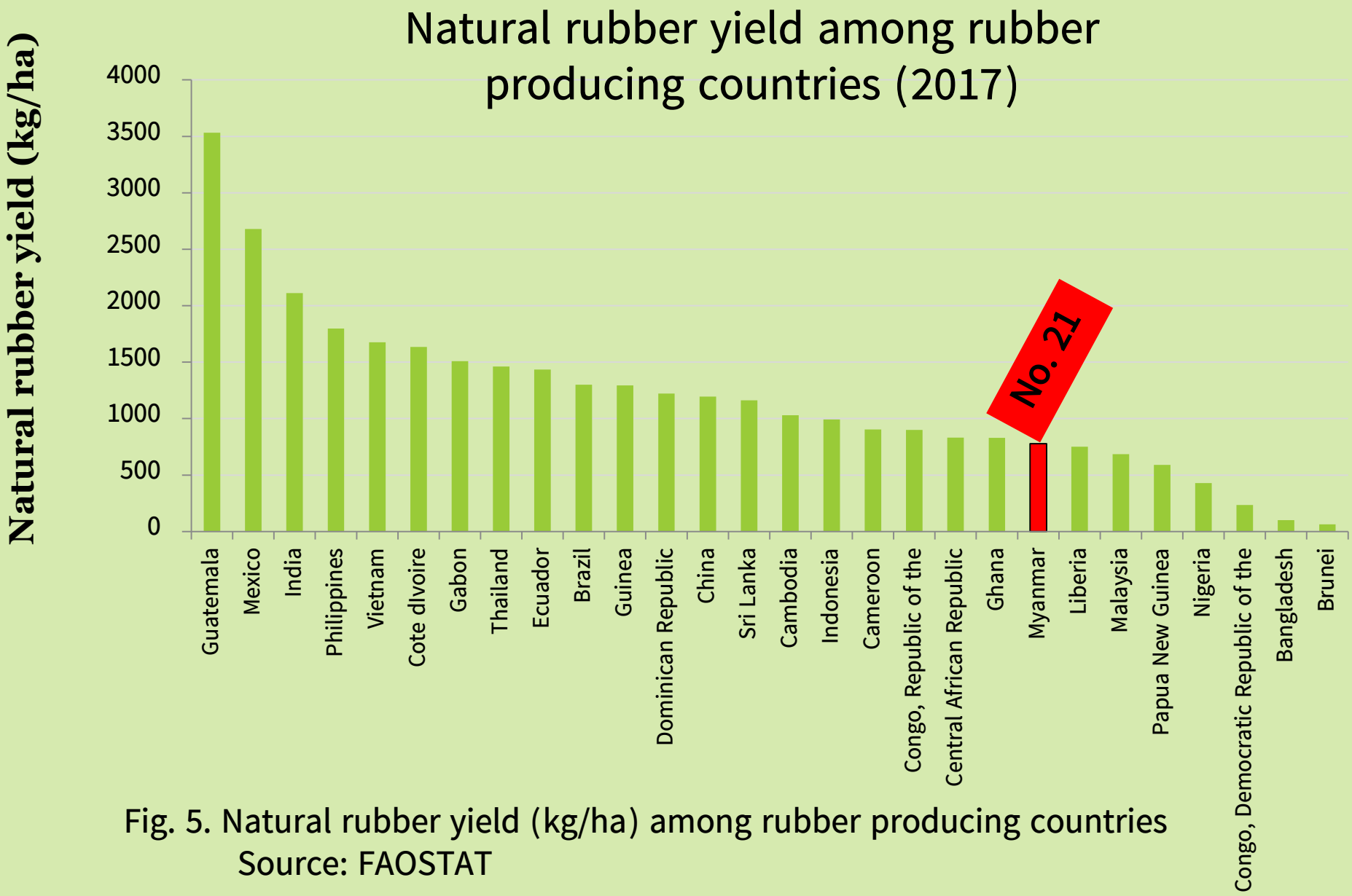

Fig. 5. Natural rubber yield (kg/ha) among rubber producing countries
Source: FAOSTAT

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
- High rainfall reducing tappable days
- So on…

Average rainfall, raining days in rubber producing countries (30 years)

Countries	Rainfall (mm)	Raining days	Reference
Myanmar	4331	141	
Thailand	1587	130	https://www.tmd.go.th/en/climate.php?FileID=7
India	2918	96	India Meteorological Department, www.imd.gov.in
China	1112	94	https://www.travelchinaguide.com/cityguides/yunnan/shangri-la/weather

- Higher rainfall and raining days is one of the reasons to reduce tapping days and rubber yield.

- **Rain guarding** can increase tapping days and yield???

- **S/2 2d3** can increase tapping days and yield???

What is rain guard?

Any suitable device, fixed above the tapping panel to keep the panel, and the collection cup dry during the rainy season.

Different types of rain guarding

1. Shade type
2. Polythene skirt type
3. Modified ready to use skirt type

Objectives

- ✓ To know the effect of rain guarding on rubber production
- ✓ To examine the effect of tapping system on rubber production
- ✓ To evaluate the cost and benefit of these systems

Materials and Methods

Study site : PCRDE, Mudon, Mon State

Treatments: **Main treatment**

T1 – No rain guard (Control)

T2 – Rain guard

Sub treatment

F1 – S/2 d2

F2 – S/2 2d3

Design: Split plot on RCB

Replication: 3

Plot size: 44 trees/treat

Data collect: 15 trees/treat

Rubber clone: PB 260

Plant spacing: 22' x 9'

Plant age: 9 years

Total area: 3.5 acres

Measurement parameters

- Rubber yield
- Bark consumption
- Cost and Benefit

Study duration: (7.5 months)

June, 2019 – Jan, 2020

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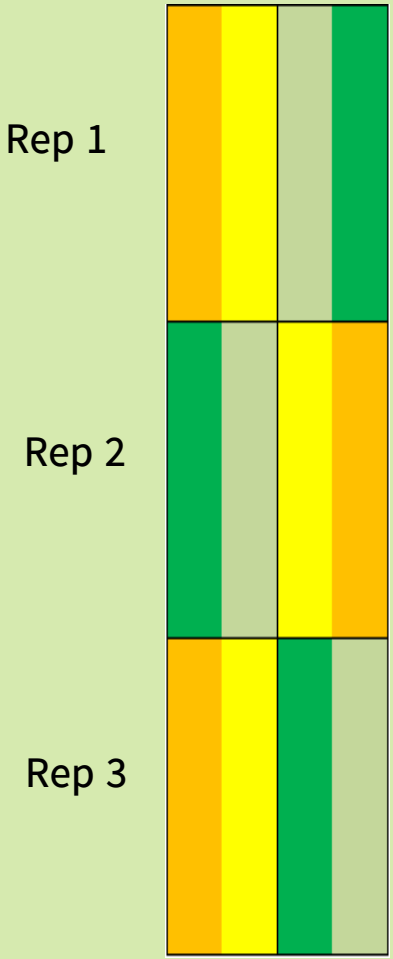
E

Experimental layout of Rain guarding and tapping systems trial



Legend

- No Rain Guard + S2 d2
- No Rain Guard + S2 2d3
- Rain Guard + S2 d2
- Rain Guard + S2 2d3

Experimental site	– Plot No. 1
Experimental area	– 3.5 acres
Treatment	– 4
Replication	– 3
Design	– Split Plot on RCB
Spacing	– 22' x 9'
Plot size	– 44 trees
Total plants	– 536 trees
Planted year	– 2010

Results and Discussion

Table 1. Total tapping days among the treatments

No Rain guard		Rain guard	
S/2 d2	S/2 2d3	S/2 d2	S/2 2d3
62	81	105	141

More tapping days could be obtained by rain guarding and S/2 2d3

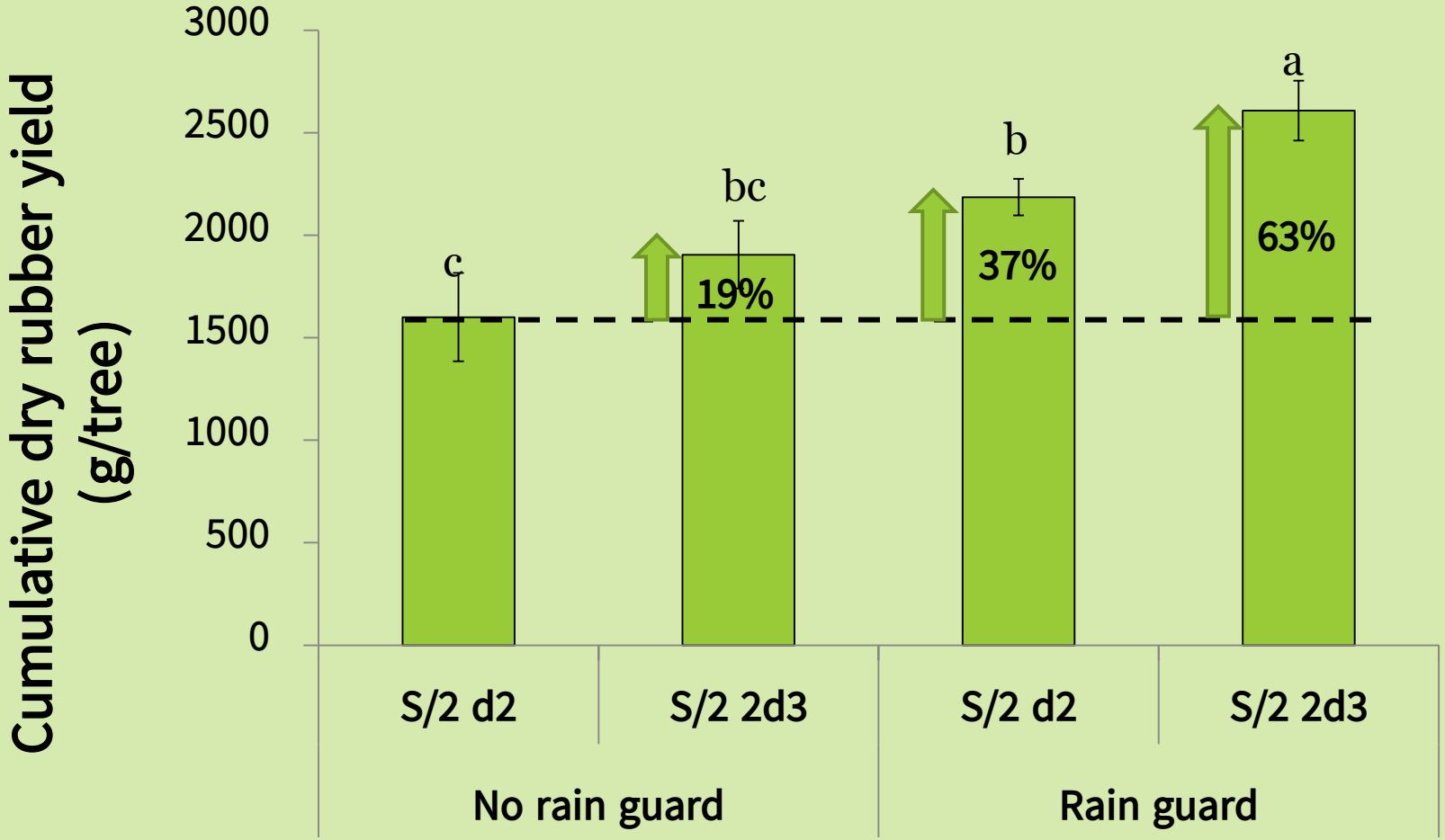


Fig 6. Total dry rubber yield among the treatments during 7 months period

✓ **Higher yield could be obtained by rain guarding and S/2 2d3**

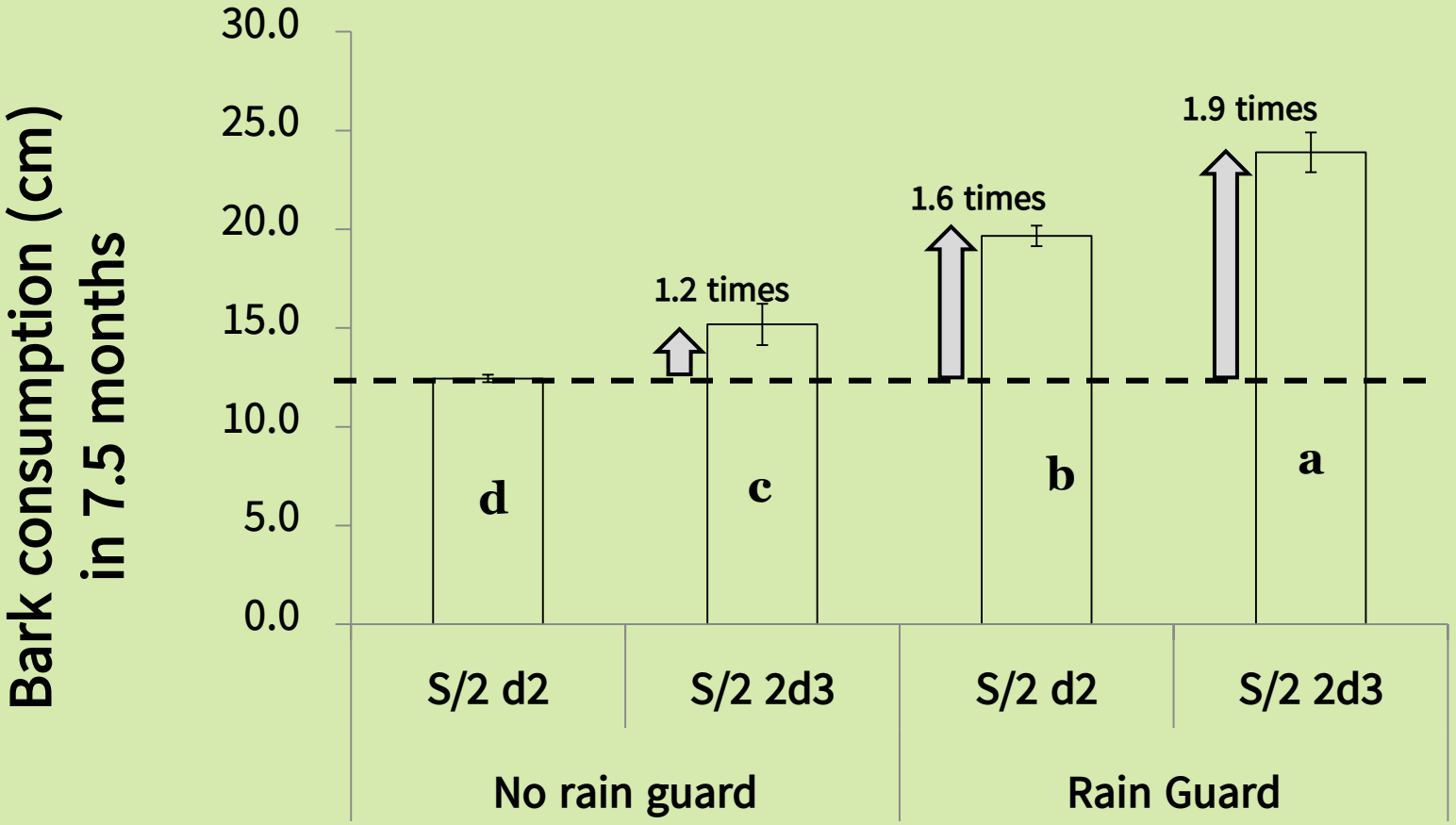


Fig 7. Bark consumption among the treatments during 7 months period

More tapping days cause higher bark consumption.

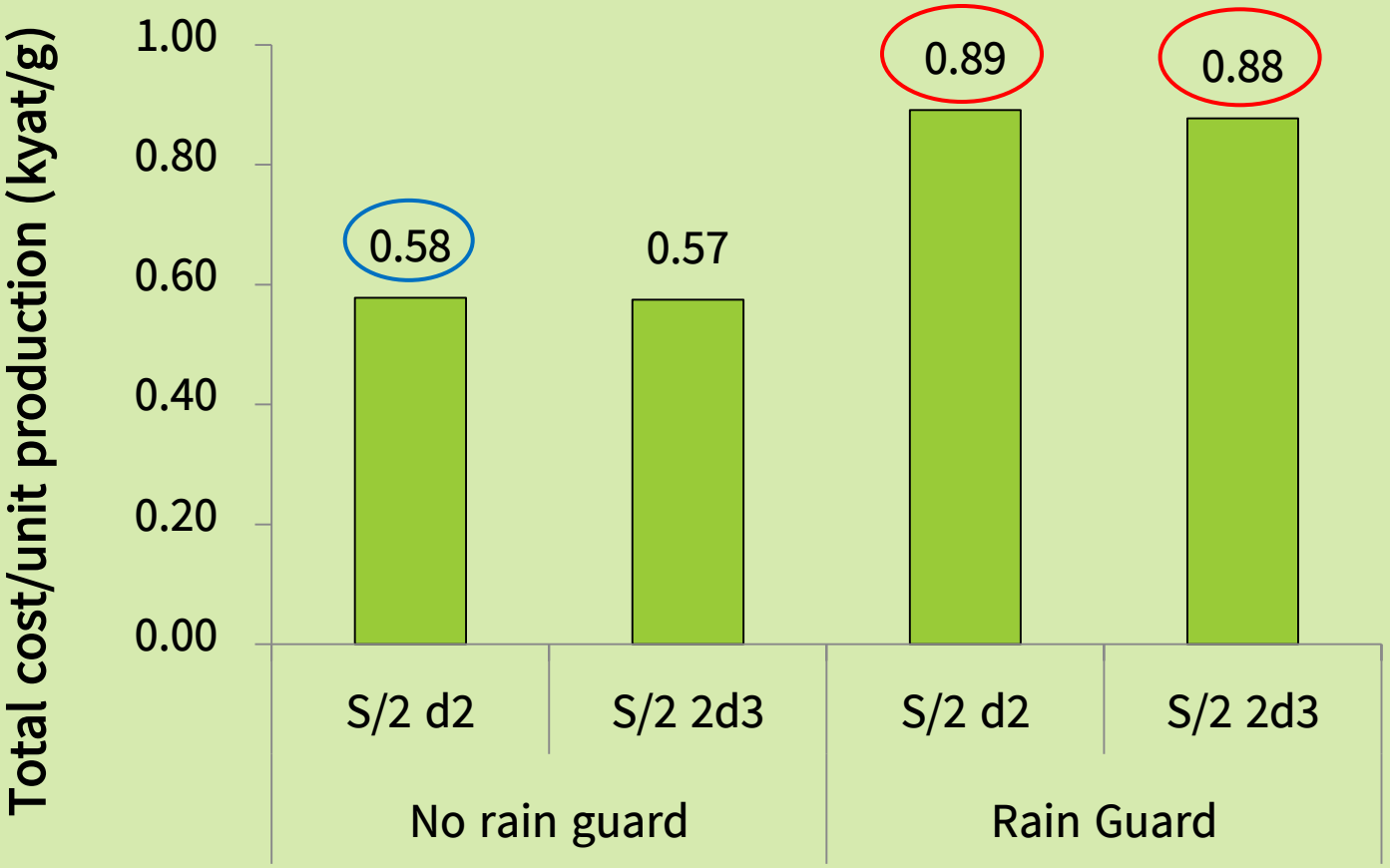


Fig 8. Cost per unit production among the treatments

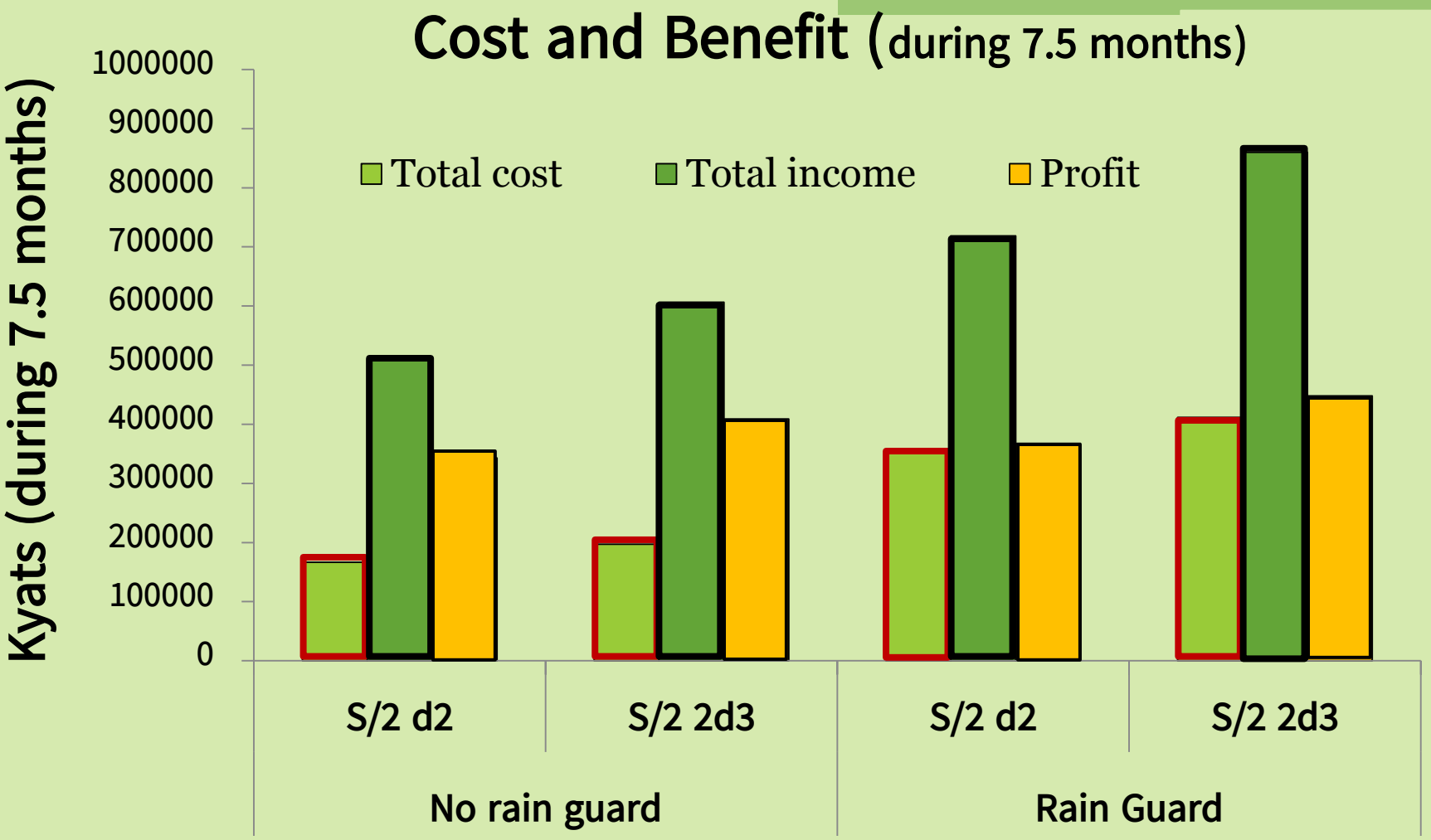


Fig 9. Cost per unit production among the treatments

✓ Higher cost and income in rain guarding and S/2 2d3

Net Profit during 7.5 months period

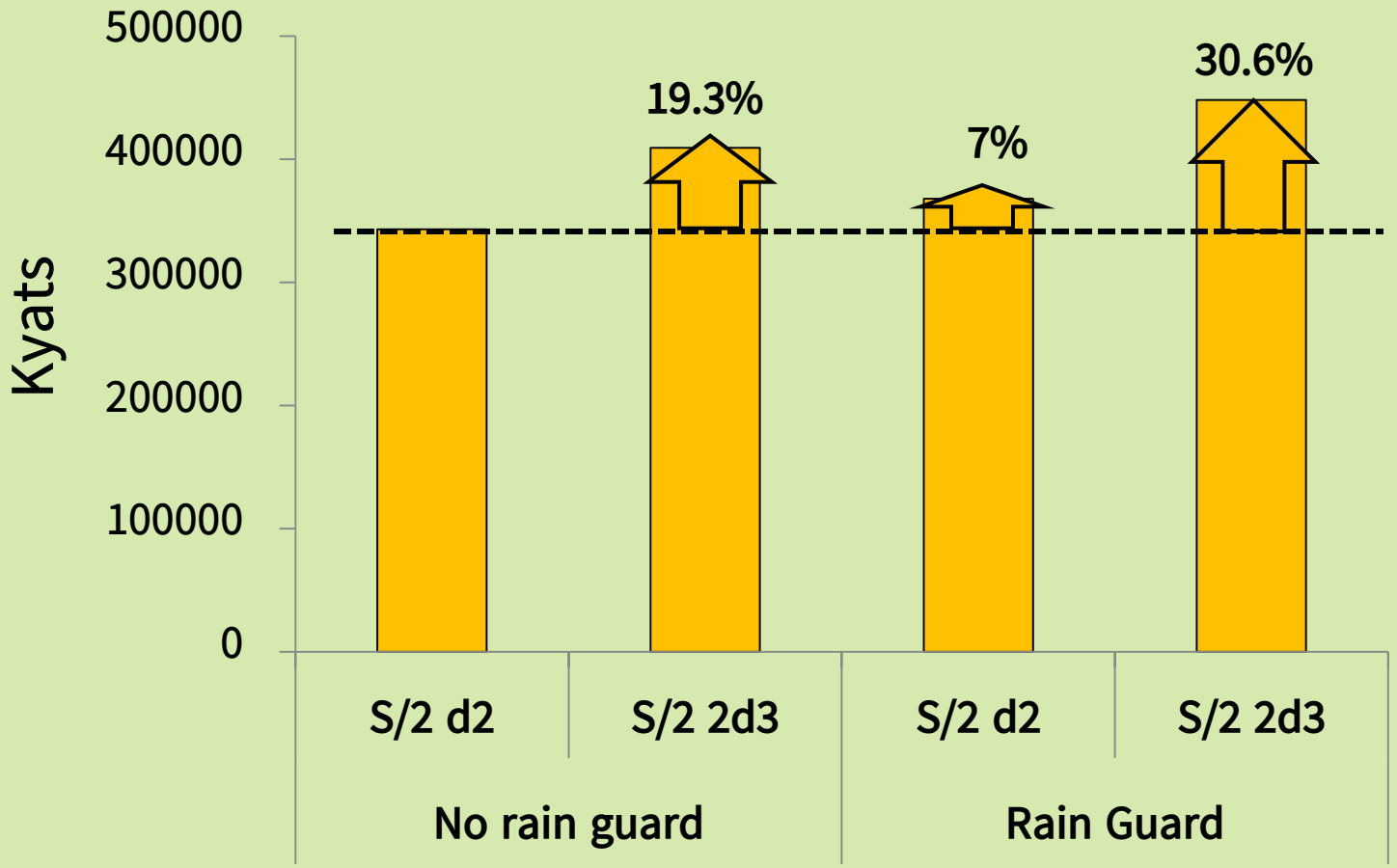
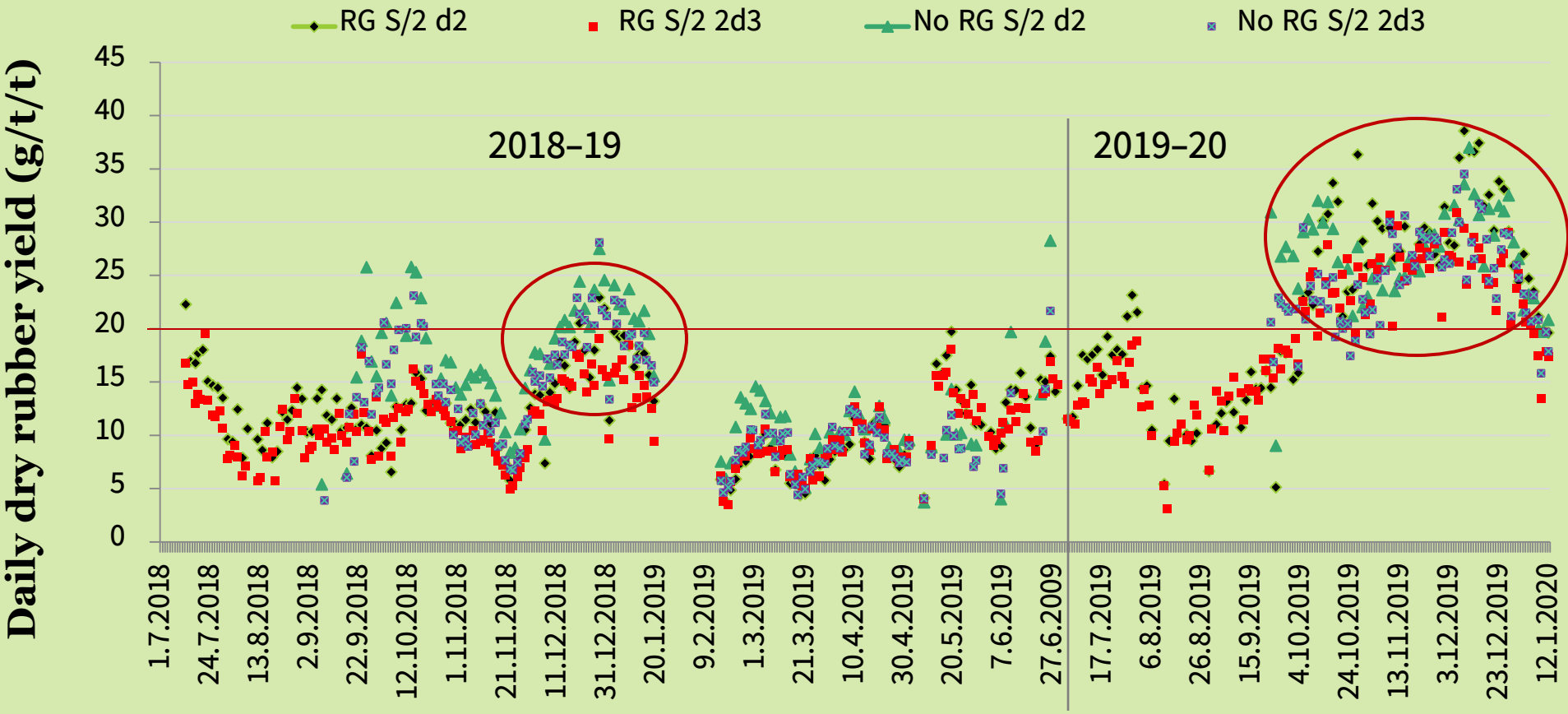


Fig 10. Amount of net profit among the treatments

✓ **Higher profit in rain guarding and S/2 2d3 system**

Daily rubber yield (g/t/t) in 2018 and 2019



- **Clone PB 260 produces low yield in the 1st year and increase to the next years (Hoong C. W. 1997)**

Cost and Benefit (last year and this year)

		No Rain guard		Rain guard	
		S/2 d2	S/2 2d3	S/2 d2	S/2 2d3
Total yield (g/tree)	2018–19 (one year)	1644	1840	1953	2361
	2019–20 (7.5 months)	1600	1905	2185	2607

- **Thus, high yielding clone should be used in rain guard tapping.**

Conclusion

- More tapping days, higher yield and profit can be obtained by rain guarding.
- S/2 2d3 system gives higher yield and profit than S/2 d2 although it caused higher bark consumption.
- High yielding clone should be selected to get better profit.
- Rain guarding can solve tapper shortage problem.

Future Plan

- This trial will be continued until June 2020 (one year round).
- may be continued to one more year (until 2020–2021).


Thank you for your kind attention!!!