MARS
Cocoa Enterprise

(Superior Planting Material)

MARS COCOA DEVELOPMENT CENTER
SOCIAL . ECONOMIC . ENVIRONMENTAL
COCOA ACADEMY

06/02/2025


MULTICLONAL COCOA PLANTATION
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Learning Objectives

Participants will be able to;

1. Understand the purpose of Multiclonal concept.
2. Understand the level of compatibility between different clones.
3. Understand and apply methods rehabilitation for Multiclonal
4. Able to design multiclonal layout with Agroforestry concept.

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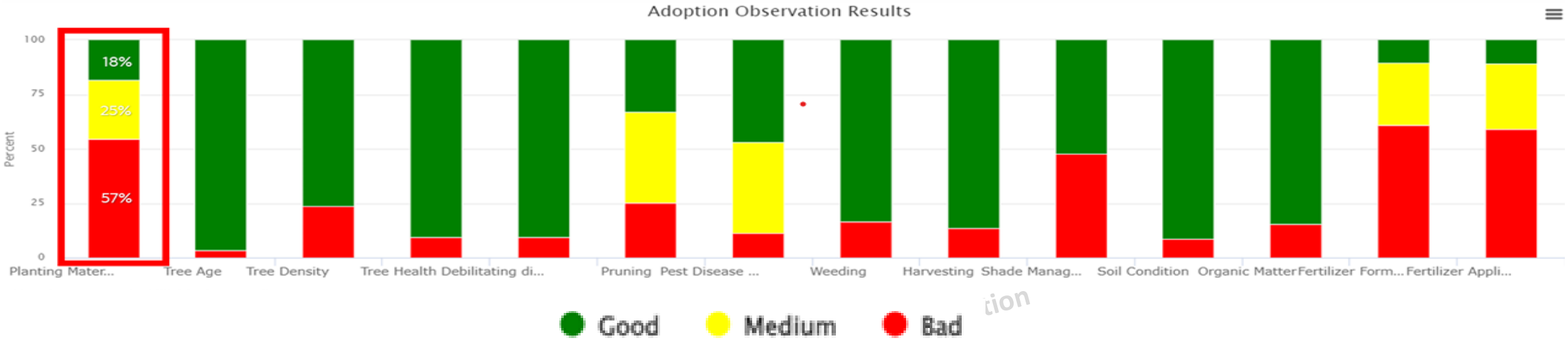
Planting Materials – KFI partners

PLANTING MATERIAL IS NOT SUITABLE FOR THE CROSS Pollinations



AO data shows that 57% of farmers are “Bad” in Planting Materials.

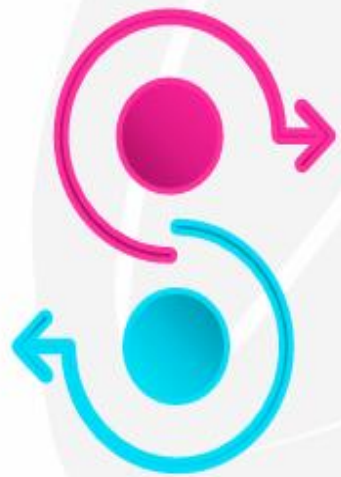
“Bad” PM define as;

1. <50% of PM in the farm not recommended by Government or yield did not reach 0.9 – 1.5 mt/ha
2. ≥70% of one single clone or hybrid
3. Use ≥2 clones or hybrid but not compatible.

Cocoa Cultivation Pattern

- **MONOCLONAL**
- **Cocoa cultivation using only one type of clone**

Opportunity



Challange

- **MULTICLONAL**
- **Cocoa cultivation using two to three types of compatible clones**

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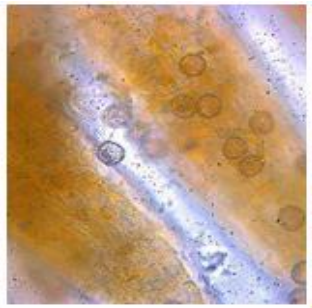
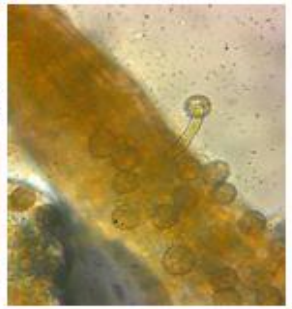
CLONES THAT HAVE BEEN CERTIFIED BY THE INDONESIAN MINISTRY OF AGRICULTURE HAVE BEEN TESTED IN THE FIELD AND SHOW VARIOUS LEVELS OF COMPATIBILITY

Clone Compatibility

Clonal Diversification






Level Compatibility

UPDATE 09-Agu-23		MATERNAL (Mother)								
		JF22	ICCRI09	W10	M06	C45	PBC123	BR25	THR	UF 18
POLLEN DONOR (Father)	JF22	0%	51%	74%		59%	37%	52%	20%	26%
	ICCRI09	33%	0%	63%		31%	0%	54%	40%	
	W10	9%	32%	0%	5%	40%	44%	44%	49%	35%
	M06	3%	48%	24%	0%	31%	66%	64%	43%	
	C45	45%	63%	43%	32%	0%	51%	1%	0%	0%
	PBC123	24%	0%	50%		46%	3%	48%	38%	14%
	BR25	47%	46%	41%		0%	26%	2%		0%
	THR	39%	31%	62%	23%	0%	51%	0%	0%	
	UF 18	31%	58%	43%		1%	47%	0%		0%

Legend:

≥ 50%	*High Compatible Pollination*
30% - <50%	*Medium Compatible Pollination*
15% - <30%	*Low Compatible Pollination*
>0% - <15%	*Very Low Compatible Pollination*
0%	*Incompatible Pollination*
	[blank] / not yet tested

Notes:

Our cut line for recommendation multiclonal could be between group of:

- ***Recomended:*** Yellow and Green
- ***Not Recomended:*** Red, Dark Grey, and Black
- ***Unknown:*** Blank / white

Clone Combination

Common clones in the Philippines UF18, BR25, PBC123, W10, C45

		Father					Clone Combination
		UF18	BR25	PBC123	W10	C45	
Mother	UF18						UF18 - PBC123 - W10
	BR25						BR25 - PBC123 - W10
	PBC123						PBC123 - W10 - C45
	W10						W10 - UF18 - BR25 - PBC123 - C45
	C45						C45 - PBC123 - W10

Legend

- High Compatibility
- Medium Compatibility
- Low Compatibility
- Very Low Compatibility
- Incompatible

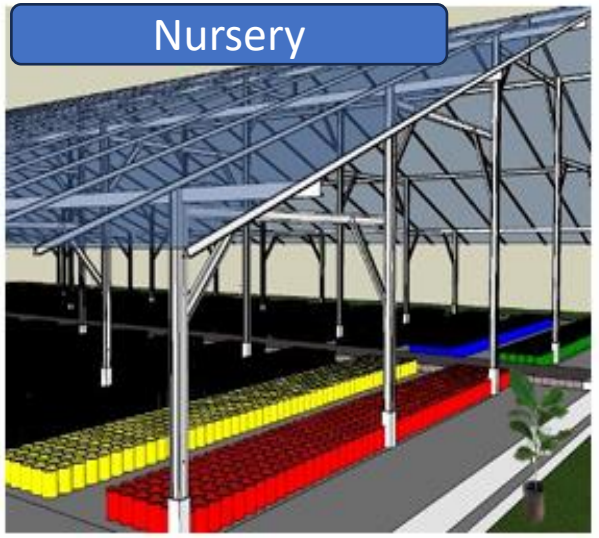
Farm Rehabilitation – Clonal Diversification

Characteristics \ Clone	BB1	MCC02	ICCRI 09	S1	S2
Yield (kg/dry/tree)	1,75 - 2,5	1,5 - 2	1,5 - 2	1,25 - 1,5	1,5 - 2
Pod Index (pod/kg/dry)	15,7 - 20	18,5 - 22	20 - 21,11	25 - 28	28 - 32
Bean Size (gram/dry/beans)	1,4	1,61	1,55	1,09	0,8
CPB	L - M	L - M	L - M	M	M
PPR	L - M	L - M	L - M	M - H	L - M
VSD	M	L - M	M	L - M	L - M
Tree Canker	VL	VL	VL	M - H	VL

N : Nil VL : Very light L : light M : Medium H : Heavy

Budwood Garden

Nursery



Side Grafting of Hybrid clones

Side Grafting of New clones

Chupon Grafting

New Plantings

Infilling

Criteria for Clonal Rehabilitation

Cacao Rehabilitation;

1. Tree age >20 years.
2. 60% of trees are still healthy and productive.
3. Existing trees are not compatible (Pollination).
4. Existing trees are not evenly distributed (poor layout).
5. Hybrid Clones

Infilling

Side/Chupon Grafting

New Planting / Repalnting

1. Tree age: >25 years.
2. >40% of trees are unhealthy and cannot be repaired

New Planting/Replanting

Note:
The preparation and maintenance of the propagation of planting material must meet the standards of good cocoa plantation practice (GAP)

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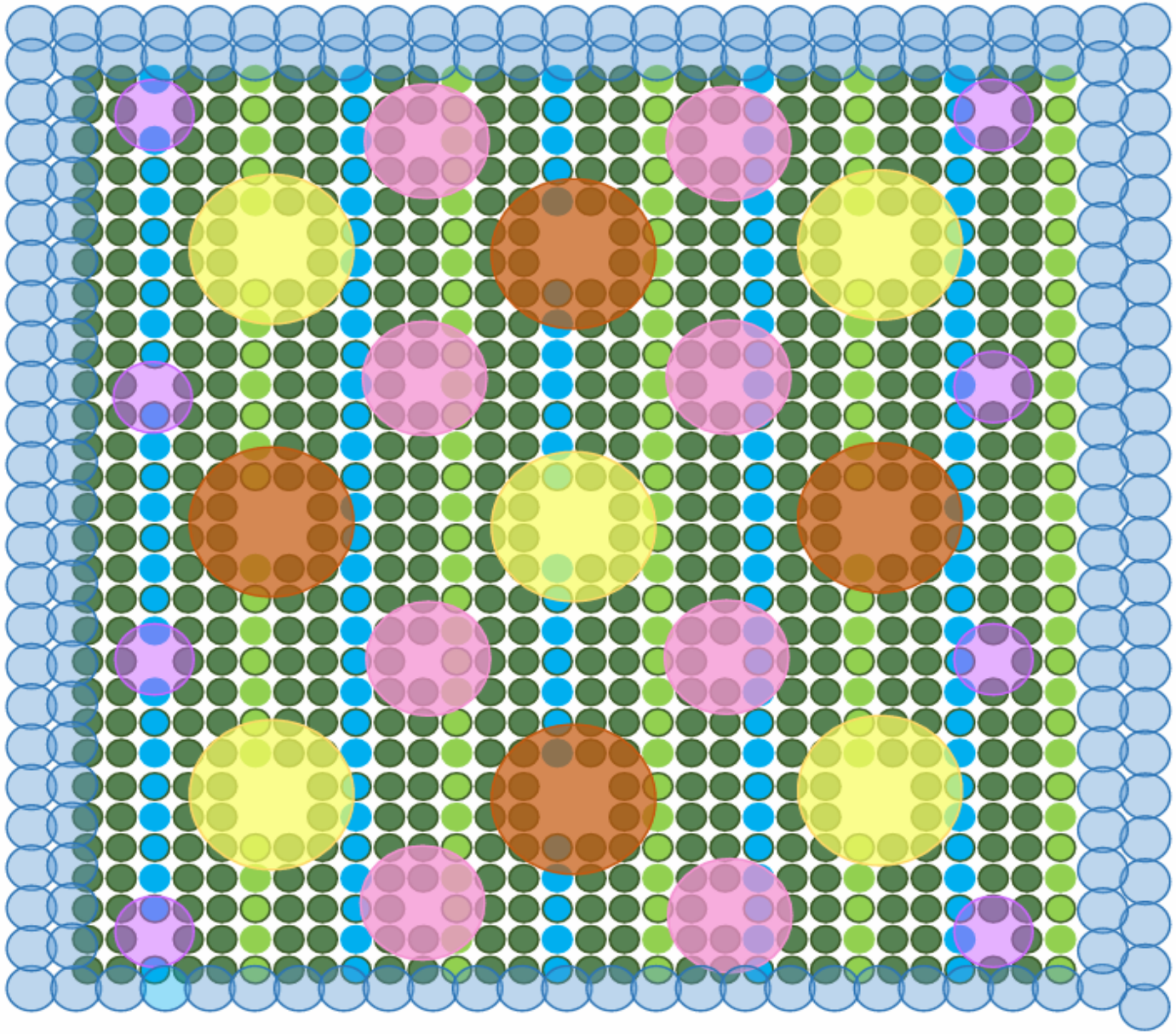
Clonal Diversification + Agroforestry



Contoh Layout Agroforestry Kakao Multiclonal

Kakao ~ 878 Pohon | *800 modelled*

MCC02 as the main clone. 500 trees (62%)

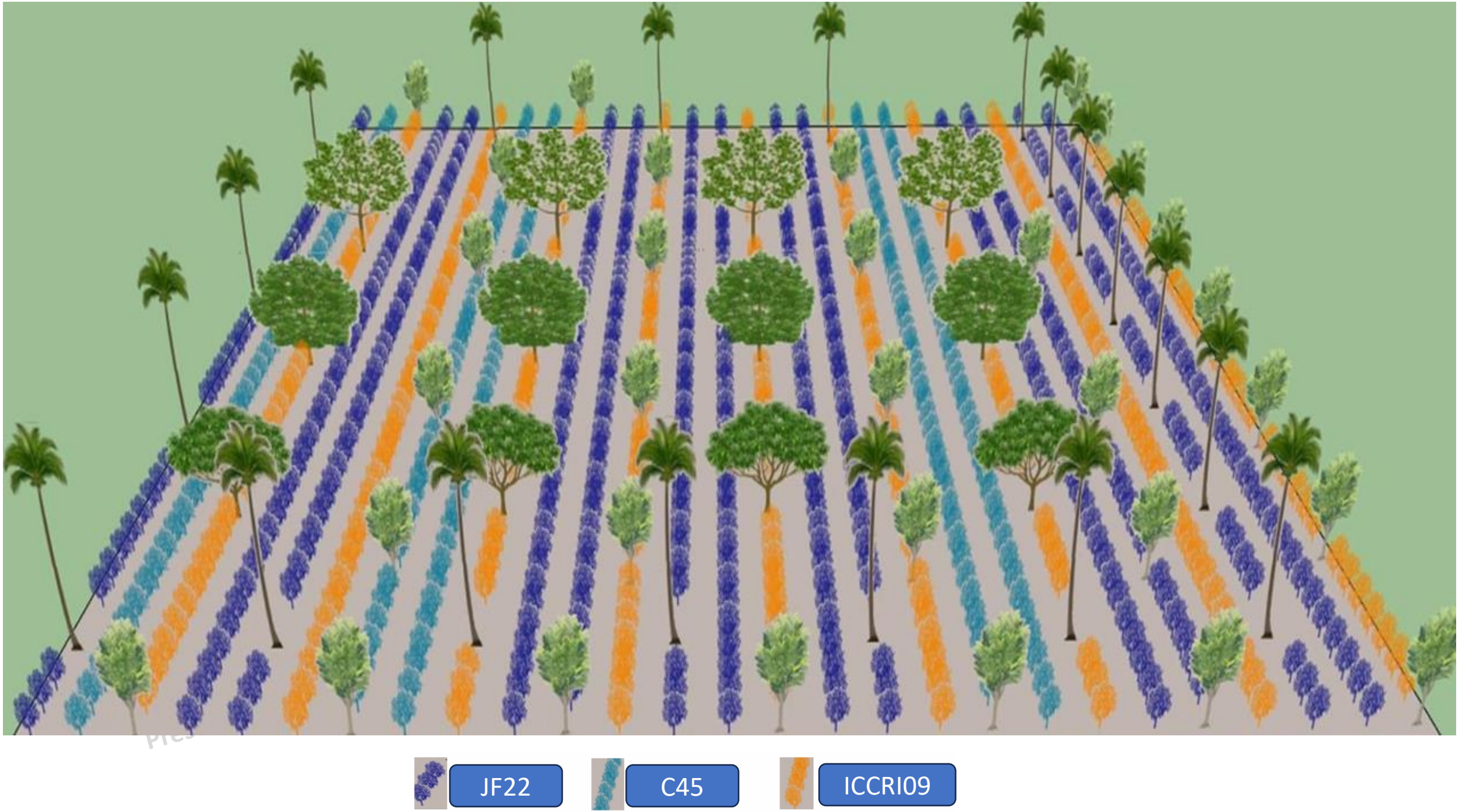
Clones BB01 – Clones with high pollination compatibility with the main clone – 150 trees (19%)

ICCRI09 clones – Clones with high pollination compatibility with the main clone – 150 trees (19%)

Wood plant species
* Planting distance 3-4m
* Canopy diameter ~3m, ~141 trees
* Planted a double row system on the edge of the garden
* For example, Teak, Bitti, Meranti

Low/medium strata fruit plants (5m – 29m)
* Planting distance ~ 27 x 27m
* Canopy diameter ~ 9-12 m
* 2 or more species, 16 trees
* For example, avocado (8), mango (8)

High strata fruit plants (29m – 45m)
* Planting distance 27 x 27m
* Canopy diameter ~ 15m
* 2 or more species, 9 trees
* For example, durian (5), petai (4)


JF22
C45
ICCRI09


Side Grafting


Replanting

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Terima kasih