

Office of the Project Director  
Community-based Forest Management and  
Livelihoods Improvement in Meghalaya

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Meghalaya Livelihood Improvement  
through Forest Enhancement



Meghalaya Basin  
Development Authority



Japan International  
Cooperation Agency

No. MBDA/JICA/2023/72/1559

Dated: Shillong, the 02<sup>nd</sup> March, 2024

### Office Order

Sub: Models for Agroforestry plantations for implementation at MegLIFE Project Villages


Agroforestry models along with cost norms with maintenance for 4 years are enclosed herewith for your information and necessary action. These norms are based on Minimum Wage rate for unskilled labour as notified by Labour Commissionerate, Govt. of Meghalaya vide Notice No. LBG 9/2023/5 dt.31<sup>st</sup> March, 2023 (i.e., Rs. 395/- per person day).

Village-wise agroforestry model-wise sanctions for 1<sup>st</sup> year creation for 2024 plantations and 2<sup>nd</sup> year maintenance along with SALT for 2023 plantations will be issued from SPMU. BPMs are asked to finalize village wise plot wise model in the Google sheet circulated by Manager, NRM, SPMU. Booking of expenditure in books of accounts of VPICs should be done after final/re-survey of agroforestry plots.

All BPMs are asked to discuss the cost norms with the VPICs and finalize labour list for works for the agroforestry plantation for the plantation year 2024 and also maintenance and SALT works for 2023 plots. Finalization of labour list and withdrawal of fund for agroforestry should be discussed in VPIC Executive Committee Meeting and resolution should be recorded properly in VPIC Minutes Register. Wages shall be paid to approved labours who was engaged for agroforestry works by VPIC entering details with signature/LTI in the muster rolls without fail. Failing to do this shall have serious consequences.

All DPMs to ensure adherence to the above-mentioned office order by all staff under their jurisdiction.

Encl- Approved Agroforestry Models for MegLIFE Project


  
(Shri. Gunanka DB/IFS)  
Joint Secretary to the Govt of Meghalaya  
Executive Director, MBDA  
Additional. Project Director  
MegLIFE, MBDA, Shillong

To:

1. All DPMs/BPMs, MegLIFE, MBDA

Copy to:

1. The Project Director, MegLIFE, MBDA, Main Secretariate Building, Shillong

  
Technical Specialist, Project Management  
MegLIFE, MBDA Shillong

# Agroforestry



MegLIFE Models

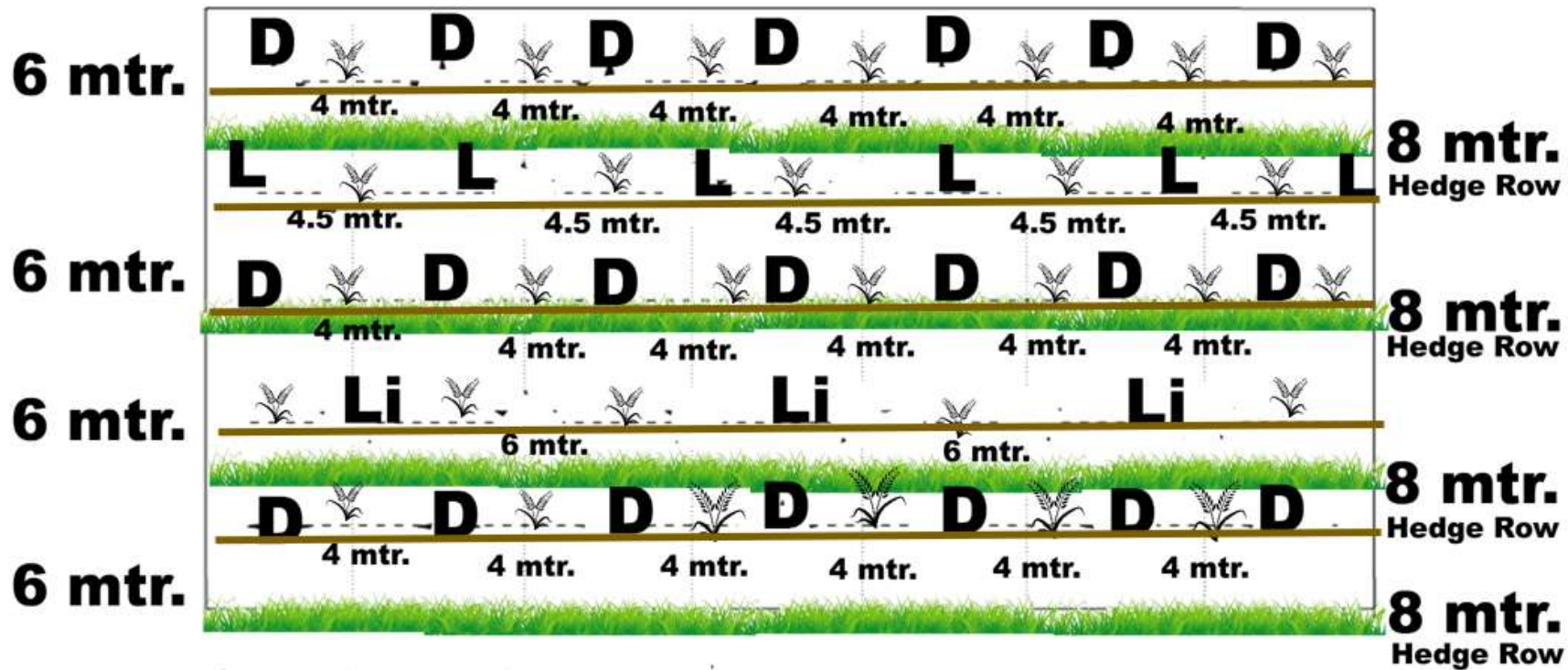
## Agro-forestry Achievements under the Project

<b>Plantation year</b>	<b>Achievements in Ha</b>
<b>2023</b>	<b>104.62</b>
<b>Plantation year</b>	<b>Area identified in Ha</b>
<b>2024</b>	<b>1346.64</b>

## **Model-1**

**Duabanga/Burmese Grape + Lemon/Orange + Litchi  
+ Turmeric + Maize**

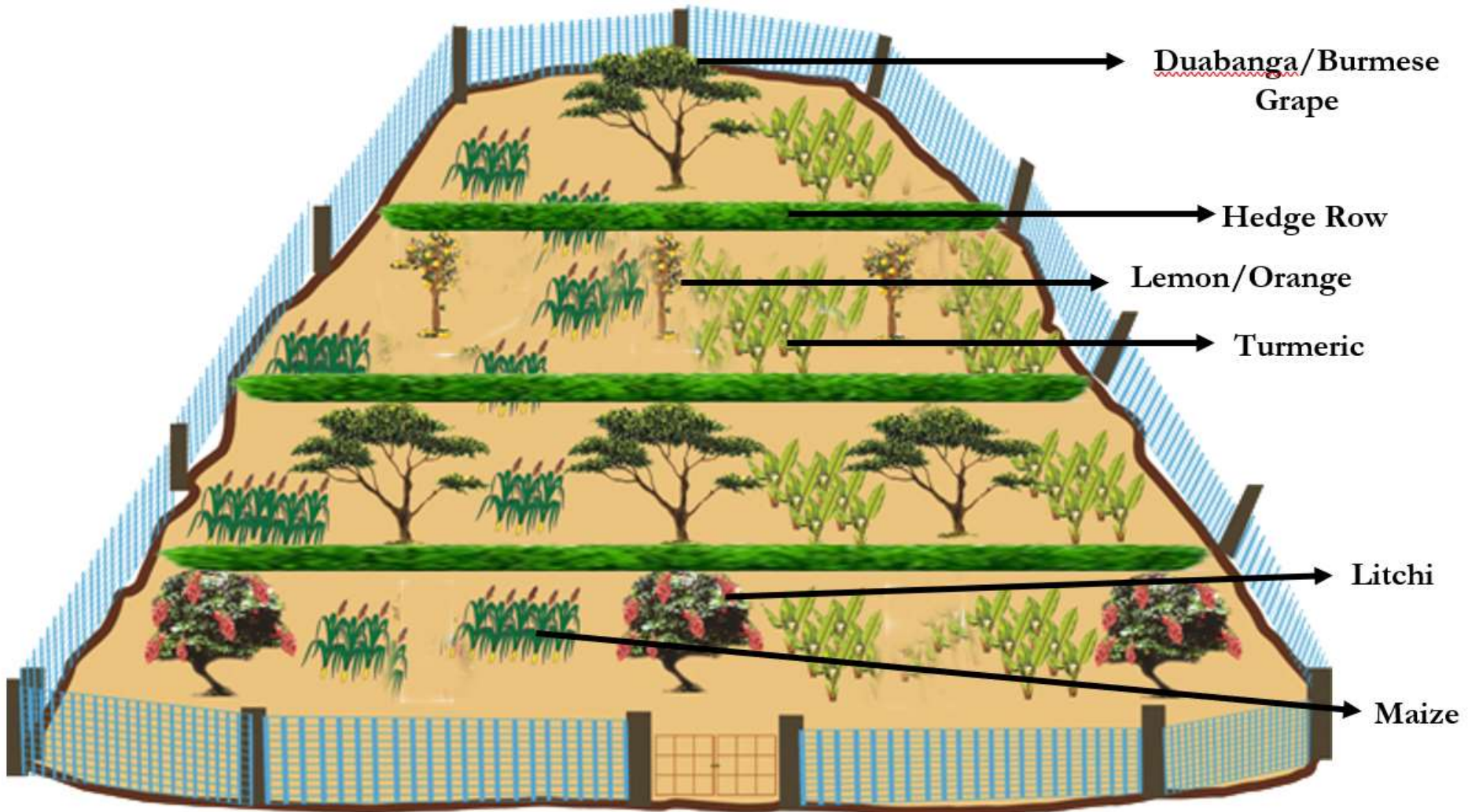




D= Duabanga/Burmese Grapes, L= Lemon/Orange, Li=Litchi



= Agriculture Crop (Maize/Turmeric)



Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Duabanga/Burmese Grapes	208	May-July	4	12	50 x 50 x 50
Litchi (Local Grafted)	70	April-June	6	24	45 x 45 x 45
Lemon (Assam lemon) /orange (Khasi Mandarin)	92	April-July	4.5	24	60 x 60 x 60
Turmeric	400 kg	May-June	0.20	0.60	In beds of 15 cm height and 1M width. 50 cm spacing between beds
Maize	8 kg	Khariff-Last wk June Rabi- last wk Oct Spr-I wk Feb	0.20	0.60	5-6 cm depth

# 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Duabanga/Burmese Grapes	208 nos.	15	3120
Litchi	70 nos.	20	1400
Lemon/Orange	92 nos.	20	1,840
Turmeric	300 kg	22	6600
Maize	8 kg	61	488
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>32156</b>



## 1<sup>st</sup> Year Cost –Labour Cost

<b>Jungle Clearing</b>	<b>5 MD</b>	<b>395</b>	<b>1975</b>
<b>Land Development</b>	<b>12 MD</b>	<b>395</b>	<b>4740</b>
<b>Layout</b>	<b>10 MD</b>	<b>395</b>	<b>3950</b>
<b>Pit digging</b>	<b>20 MD</b>	<b>395</b>	<b>7900</b>
<b>Transporting/Planting</b>	<b>20 MD</b>	<b>395</b>	<b>7900</b>
<b>Intercultural Operation (2 times/year)</b>	<b>30 MD</b>	<b>395</b>	<b>11850</b>
<b>Fencing Labour</b>	<b>12 MD</b>	<b>395</b>	<b>4740</b>
<b>SALT</b>			<b>19308</b>
<b>Sub-Total</b>			<b>62363</b>

## Maintenance Cost (4 years)

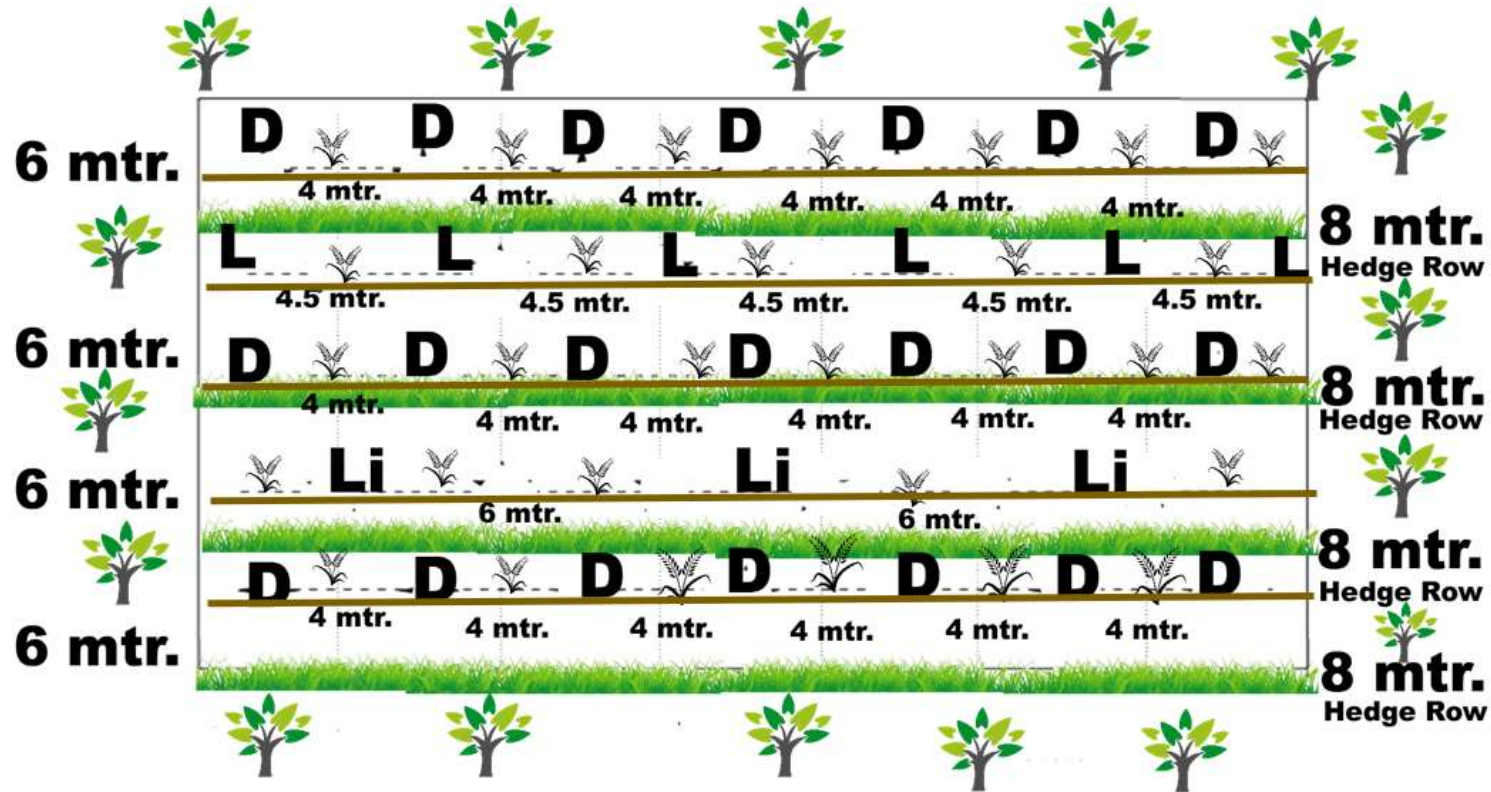
Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total of Model 1			1,31,859

## Cost Benefit Analysis

Year	Name of Crop					Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Duabanga	Litchi	Lemon/Orange	Turmeric	Maize			
1 <sup>st</sup> Year	--	--	--	--	55000	95,519	55000	-40,519
2 <sup>nd</sup> Year	--	--	--	30000	45000	9085	75000	65,915
3 <sup>rd</sup> Year	--	--	--	30000	35000	9085	65000	55,915
4 <sup>th</sup> Year	--	1,10,000	83000	30000	--	9085	2,23,000	2,13,915
5 <sup>th</sup> Year	--	1,32,000	90000	30000	--	9085	2,52,000	2,42,915
Total	--	2,42,000	1,73,000	1,20,000	1,35,000	1,31,859	6,70,000	5,38,141

## **Model-2**

**Duabanga/Champa/Toona/Gmelina + Lemon/Orange + Litchi + Turmeric + Maize**

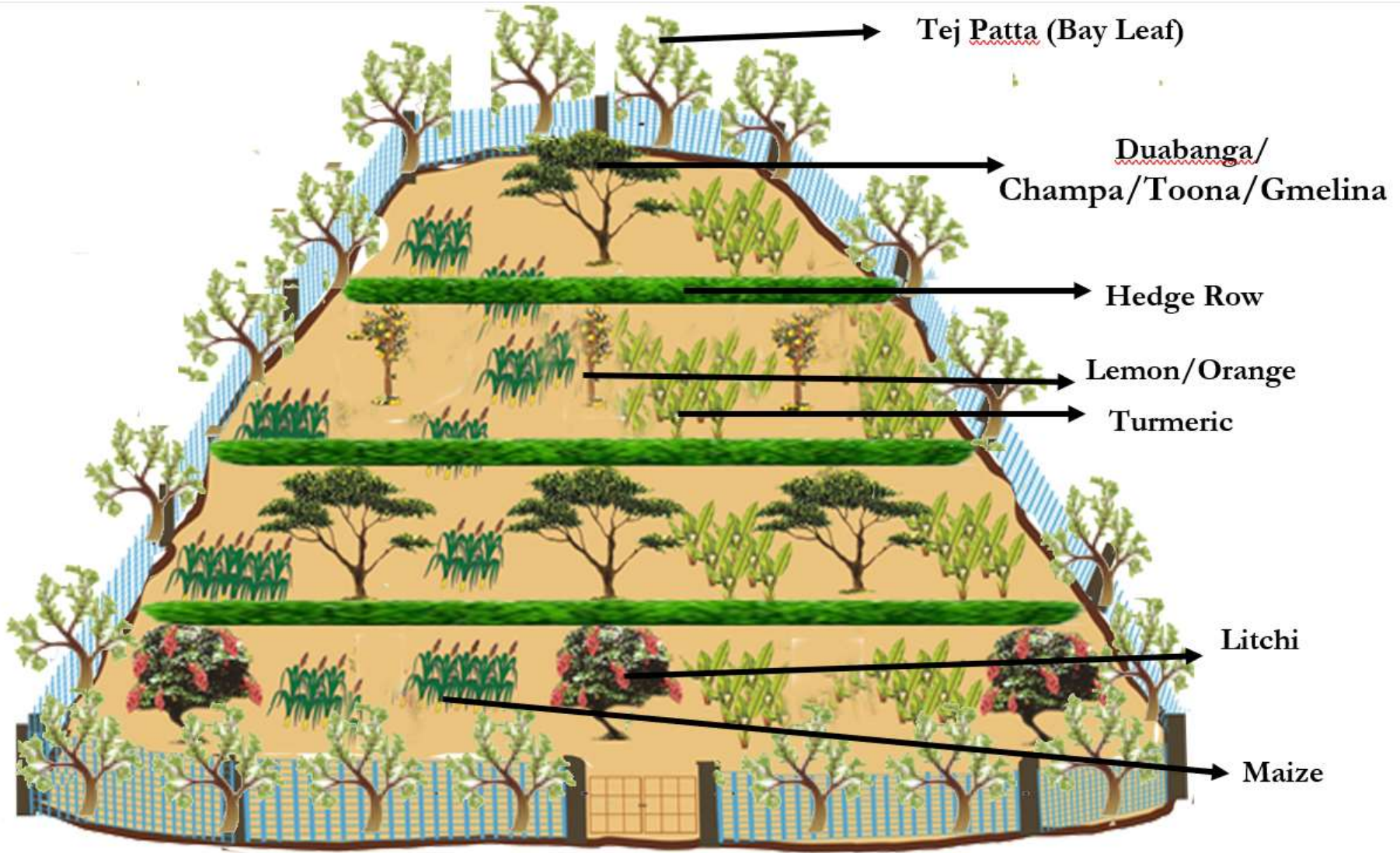


D= Duabanga/ Champa/Toona/Gmelina, L= Lemon/Orange,  
 Li=Litchi

 = Agriculture Crop (Maize/Turmeric)

 = Bay Leaf at Periphery





Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Duabanga/Champa/Toona/Gmelina	208	May-July	4	12	50 x 50 x 50
Litchi (Local Grafted)	70	May-July	6	24	45 x 45 x 45
Lemon (Assam lemon) /orange (Khasi Mandarin)	92	June-July	4.5	24	60 x 60 x 60
Turmeric	400 kg	April-May	0.20	0.60	In beds of 15 cm height and 1M width. 50 cm spacing between beds
Maize	8 kg	Khariff-Last wk June Rabi- last wk Oct Spr-I wk Feb	0.20	0.60	5-6 cm depth
Tej Patta	100	March-April	4	On periphery	30 x 30 x 30

# 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Duabanga/ Champa/Toona/Gmelina	208 nos.	15	3120
Litchi	70 nos.	20	1400
Lemon/Orange	92 nos.	20	1840
Turmeric	300 kg	22	6600
Maize	8 kg	61	488
Tej Patta	100	10	1000
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>33,156</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1975
Land Development	12 MD	395	4740
Layout	10 MD	395	3950
Pit digging	20 MD	395	7900
Transporting/Planting	20 MD	395	7900
Intercultural Operation (2 times/year)	30 MD	395	11850
Fencing Labour	12 MD	395	4740
SALT			19308
<b>Sub-Total</b>			<b>62363</b>



## Maintenance Cost (4 years)

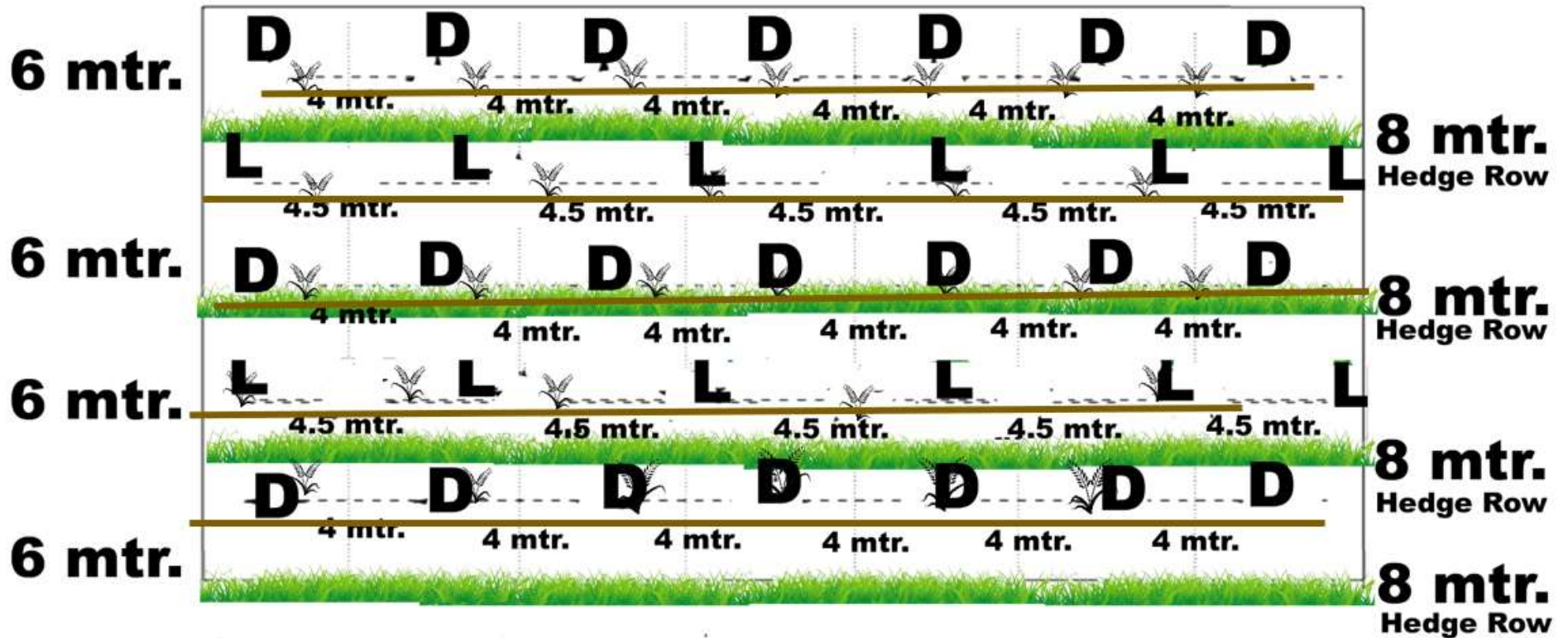
Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total			1,32,859


## Cost Benefit Analysis

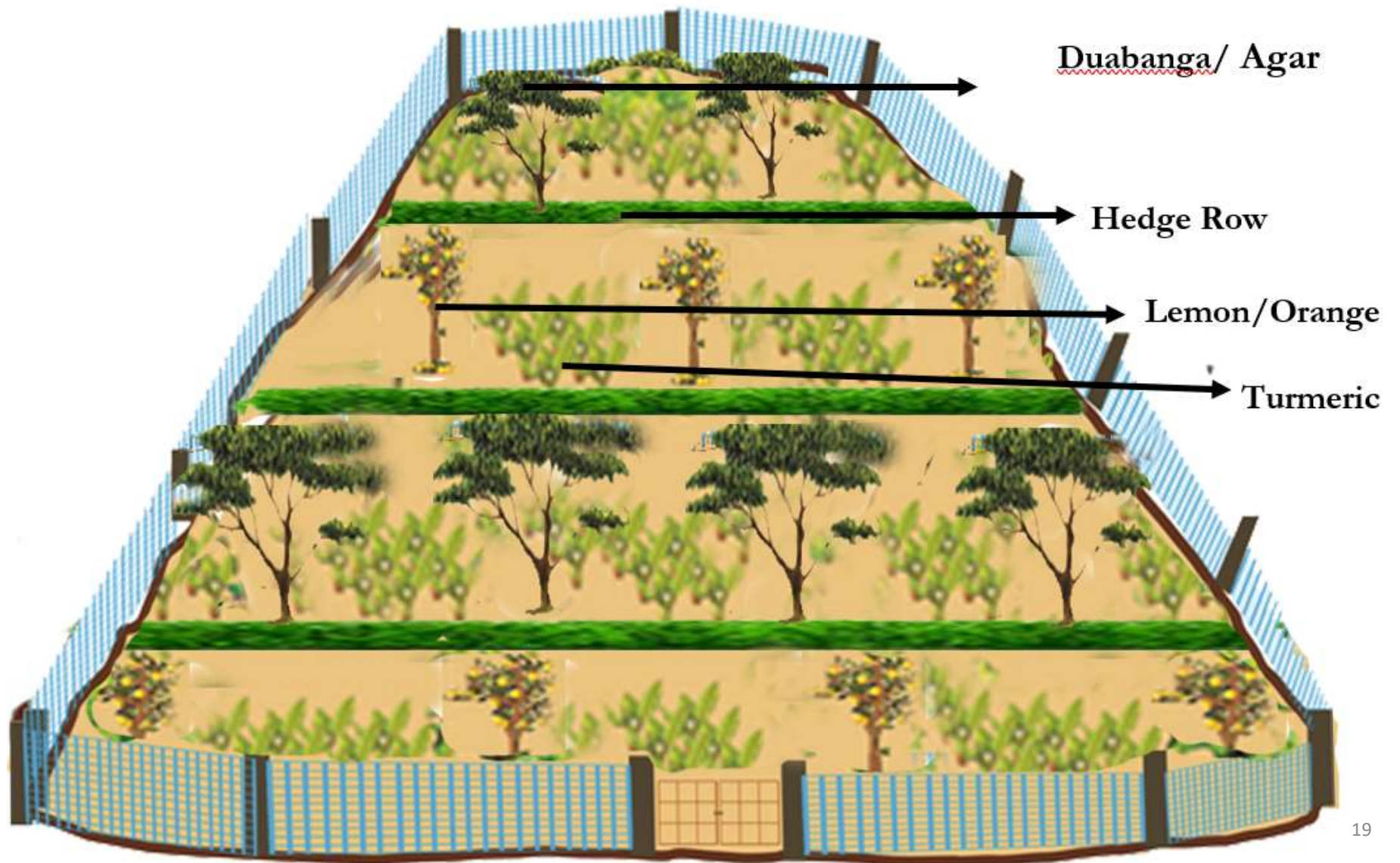
Year	Name of Crop						Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Duabanga	Litchi	Lemon/Orange	Turmeric	Maize	Bay Leaf			
1 <sup>st</sup> Year	--	--	--	--	55000	--	96,519	55000	-19,026
2 <sup>nd</sup> Year	--	--	--	30000	45000	--	9085	75000	65,915
3 <sup>rd</sup> Year	--	--	--	30000	35000	--	9085	65000	55,915
4 <sup>th</sup> Year	--	1,10,000	83000	30000	--	22500	9085	2,45,500	2,36,415
5 <sup>th</sup> Year	--	1,32,000	90000	30000	--	22500	9085	2,74,500	2,65,415
Total	--	2,42,000	1,73,000	1,20,000	1,35,000	45000	1,32,859	7,15,000	5,82,141

## **Model-3**

**Duabanga/Agar + Lemon + Turmeric**



D= Duabanga/Agar, L= Lemon/Orange,  
 = Agriculture Crop (Turmeric)





Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Duabanga/Agar	208	May-July	4	12	50 x 50 x 50
Lemon (Assam Lemon)	185	April-July	4.5	12	60 x 60 x 60
Turmeric	400 kg	April-May	0.20	0.60	In beds of 15 cm height and 1M width. 50 cm spacing between beds

## 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Duabanga/Agar	208 nos.	15	3120
Lemon	185 nos.	20	3700
Turmeric	300 kg	22	6600
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operations)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>32,128</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1975
Land Development	12 MD	395	4740
Layout	10 MD	395	3950
Pit digging	20 MD	395	7900
Transporting/Planting	20 MD	395	7900
Intercultural Operation (2 times/year)	30 MD	395	11850
Fencing Labour	12 MD	395	4740
SALT			19308
<b>Sub-Total</b>			<b>62363</b>

## Maintenance Cost (4 years)

Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total			1,30,831

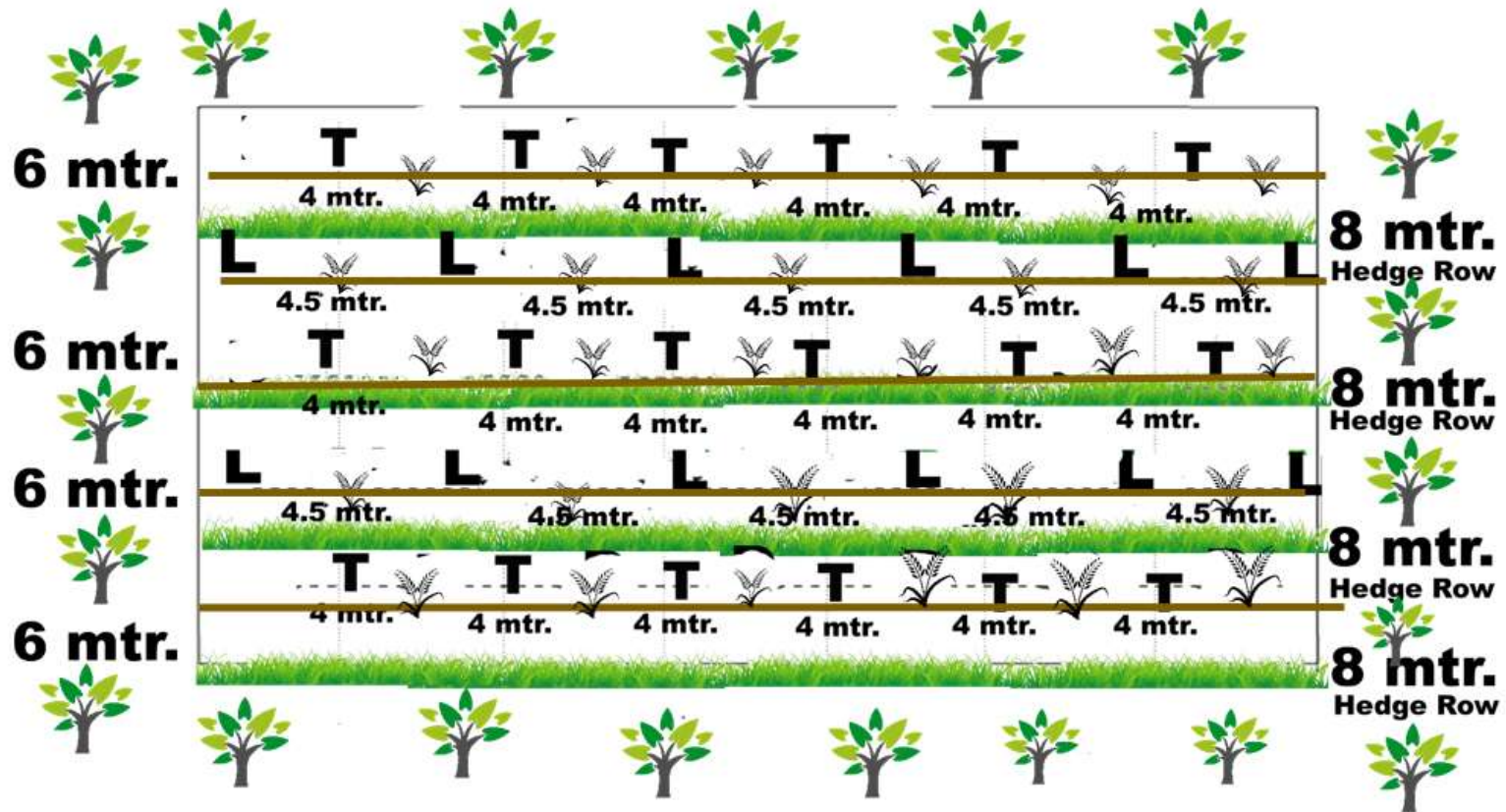
## Cost Benefit Analysis

Year	Name of Crop			Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Duabanga /Agar	Lemon	Turmeric			
1 <sup>st</sup> Year	--	--	--	94491	--	-94,491
2 <sup>nd</sup> Year	--	--	30000	9085	30000	20,915
3 <sup>rd</sup> Year	--	--	30000	9085	30000	20,915
4 <sup>th</sup> Year	--	83000	30000	9085	1,13,000	1,03,915
5 <sup>th</sup> Year	--	90000	30000	9085	1,20,000	1,10,915
<b>Total</b>	--	<b>1,73,000</b>	<b>1,20,000</b>	<b>1,30,831</b>	<b>2,93,000</b>	<b>1,62,169</b>

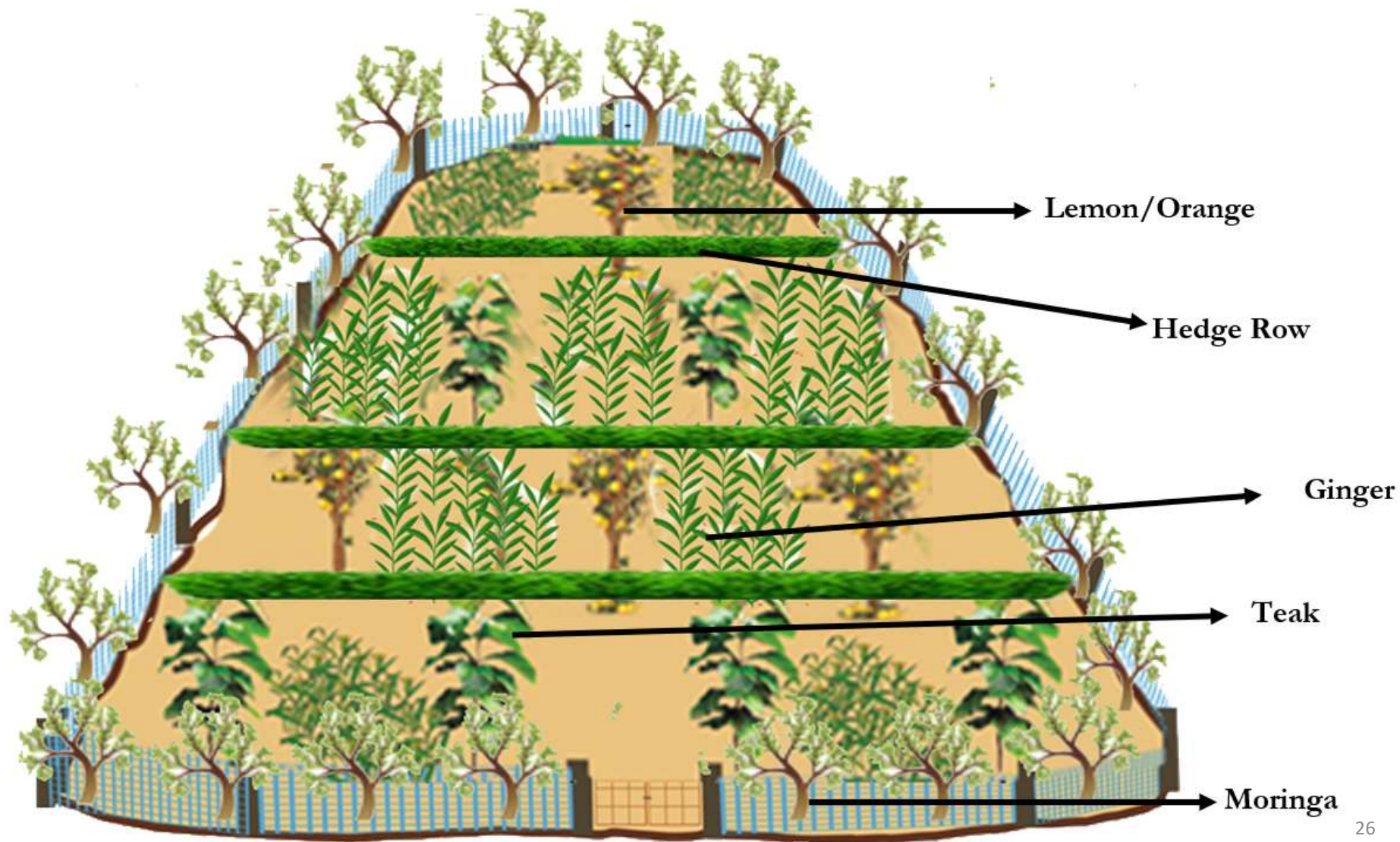
## **Model-4**

**Teak + Lemon + Ginger + Moringa (Periphery)**





T= Teak L= Lemon  
 = Agriculture Crop (Ginger)  = Moringa on periphery



Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Teak	208	May-July	4	12	50 x 50 x 50
Lemon (Assam)	185	April-July	4.5	12	60 x 60 x 60
Ginger	400 kg	May-June	0.35	0.45	5cm depth In beds of 15 cm height and 1M width. 50 cm spacing between beds
Moringa	100	April-July	4	On periphery	30 x 30 x 30

## 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Teak	208 nos.	12	2496
Lemon	185 nos.	20	3700
Ginger	400 kg	80	32000
Moringa	100 no.	15	1500
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>58,404</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1975
Land Development	12 MD	395	4740
Layout	10 MD	395	3950
Pit digging	20 MD	395	7900
Transporting/Planting	20 MD	395	7900
Intercultural Operation (2 times/year)	30 MD	395	11850
Fencing Labour	12 MD	395	4740
SALT			19308
<b>Sub-Total</b>			<b>62363</b>



## Maintenance Cost (4 years)

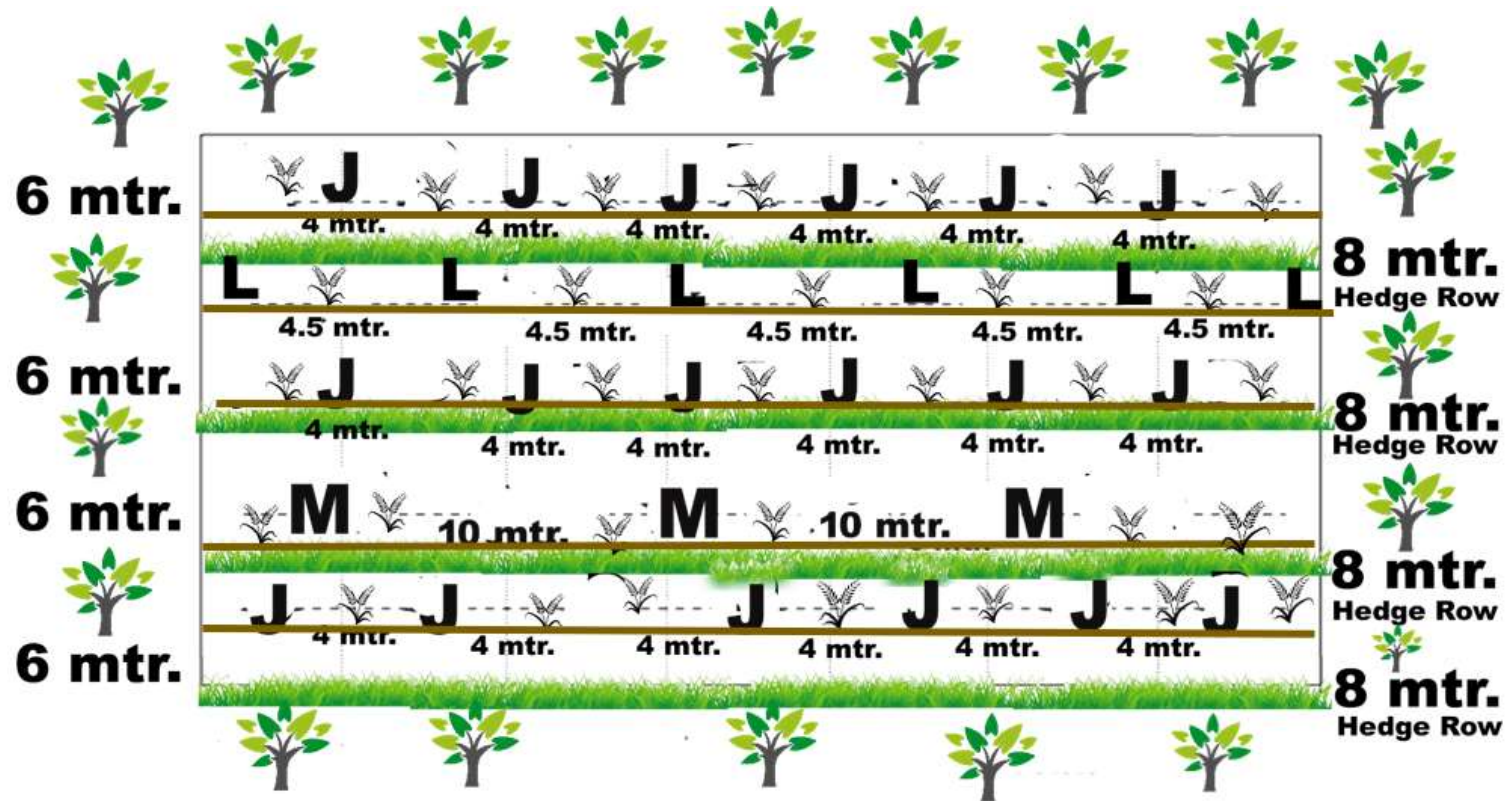
Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total			1,57,107



## Cost Benefit Analysis

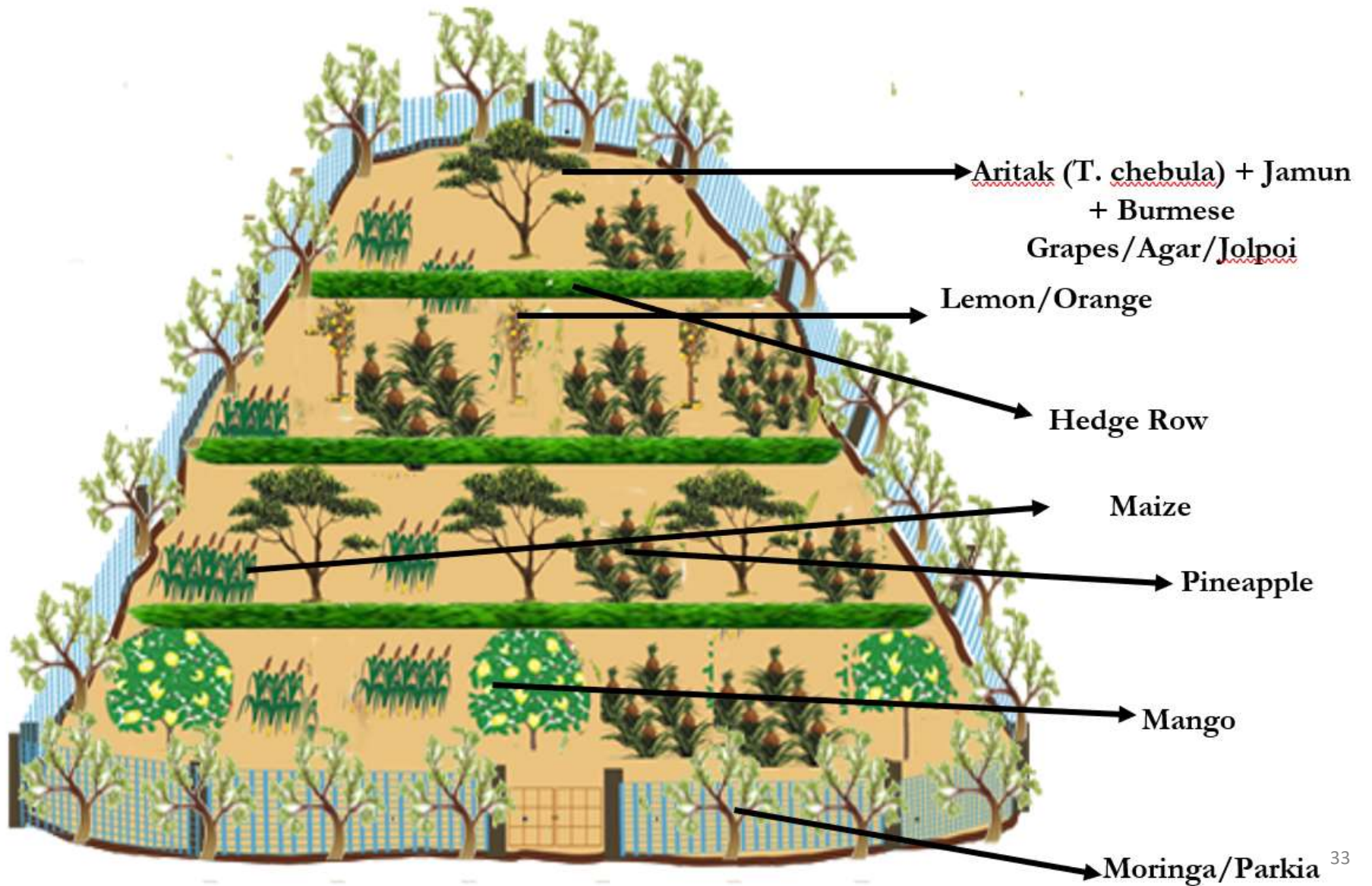
Year	Name of Crop				Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Teak	Lemon	Ginger	Moringa			
1 <sup>st</sup> Year	--	--	--	--	1,20,767	--	-1,20,767
2 <sup>nd</sup> Year	--	--	85000	43,750	9085	1,28,750	1,19,665
3 <sup>rd</sup> Year	--	--	95000	87,500	9085	1,82,500	1,73,415
4 <sup>th</sup> Year	--	83000	45000	87,500	9085	2,15,500	2,06,415
5 <sup>th</sup> Year	--	90000	--	87,500	9085	1,77,500	1,68,415
Total	--	1,73,000	2,25,000	3,06,250	1,57,107	7,04,250	5,47,143

## **Model-5**

**Aritak (T. chebula) /Jamun/Burmese Grapes/Agar/Jalpoi + Lemon/Orange + Mango  
+ Maize + Pineapple + Tej Patta/Parkia (Tree Bean)**



**J**= Aritak (T. chebula) + Jamun + Burmese Grapes/Agar/Jolpoi, **L**= Lemon/Orange,  
**M**=Mango  
 = Agriculture Crop (Maize/Pineapple)  
 = Bay Leaf / Parkia at Periphery



Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Aritak (T. chebula)/Jamun / Burmese Grapes/Agar/Jolpoi	208	May-July	4	12	50 x 50 x 50
Mango (Amprapali)	42	April-June	10	24	45 x 45 x 45
Lemon (Assam lemon) /orange (Khasi Mandarin)	92	April-July	4.5	24	60 x 60 x 60
Pineapple	8000 nos.	Sep-Oct	60	30	15 x 15 x 15
Maize	8 kg	Khariff-Last wk June Rabi- last wk Oct Spr-I wk Feb	0.20	0.60	5-6 cm depth
Tej Patta/Parkia	100	June-July	4	On periphery	30 x 30 x 30



# 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Aritak (T. chebula)/Jamun / Burmese Grapes/Agar/Jolpoi	208 nos.	15	3120
Mango	42 nos.	60	2550
Lemon/Orange	92 nos.	20	1,380
Pineapple	4000 nos. (sucker)	5	20000
Maize	8 kg	61	488
Tej Patta/Parkia	100	15	1500
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>47,746</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1975
Land Development	12 MD	395	4740
Layout	12 MD	395	4740
Pit digging	22 MD	395	8,690
Transporting/Planting	22MD	395	8,690
Intercultural Operation (2 times/year)	30 MD	395	11850
Fencing Labour	12 MD	395	4740
SALT			19308
Sub-Total			64733

## Maintenance Cost (4 years)

Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total			1,48,819

## Cost Benefit Analysis

Year	Name of Crop						Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Aritak (T. chebula)/ Jamun /Burmese Grapes/Agar /Jolpoi	Mango	Lemon/ Orange	Pineapple	Maize	Bay Leaf			
1 <sup>st</sup> Year	--	--	--	--	55000	--	1,12,479	55000	-57,479
2 <sup>nd</sup> Year	--	--	--	8500	45000	--	9085	53,500	44,415
3 <sup>rd</sup> Year	--	--	--	15000	35000	--	9085	50000	40,915
4 <sup>th</sup> Year	--	45,000	83000	20000	--	22500	9085	1,70,500	1,61,415
5 <sup>th</sup> Year	--	54,000	90000	25000	--	22500	9085	1,91,500	1,82,415
Total	--	99,000	1,73,000	68500	1,35,000	45000	1,48,819	5,20,500	3,71,681

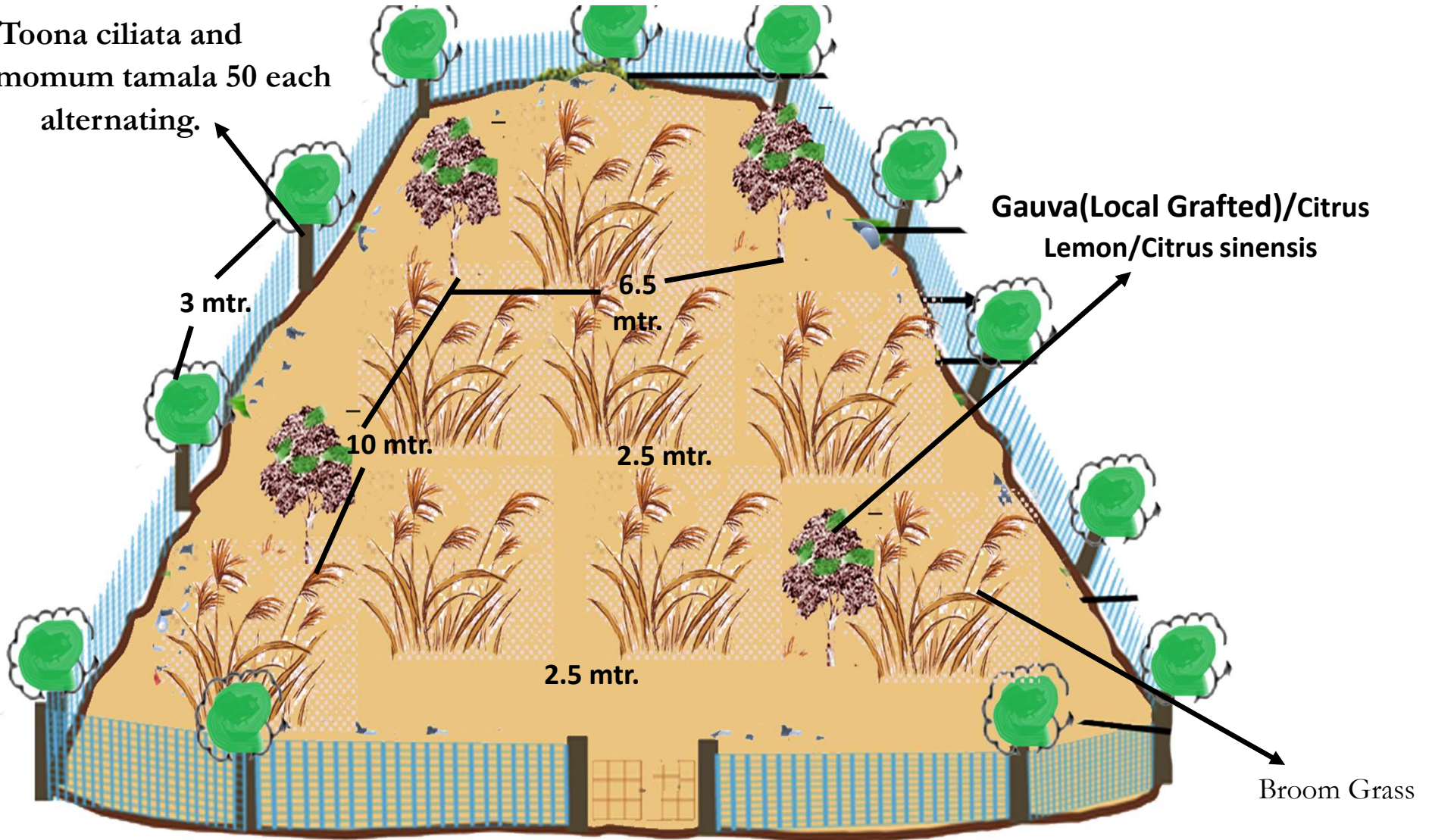
## **Model-6**

**Exbucklandia populnea/Toona ciliata and Cinnamomum tamala on the periphery  
Psidium guajava and Citrus sinensis/Citrus limon (C. jambhiri) grown along with broom grass in the middle.**

Crop	No of seedling/seed/Ha	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Toona ciliata and Cinnamomum tamala 50 each alternating.	100	May-July	3	Along the boundary	50 x 50 x 50
Gauva(Local Grafted)/Citrus Lemon/Citrus sinensis.	154	June-august	6.5	10	45 x 45 x 45
Broom grass	1600 rhizome	June-July	2.5	2.5	45x45x45  In March-April rizophomes with 2-3 culms are uprooted and the upper portion is cut 12-15 cm long having bud sorouts. Culms should be cut with rhizome portion and raised in nursery polybags of soil sand and Fym mix in proportion of 1:2:1 or can be directly planted in the field.



*Toona ciliata* and  
*Cinnamomum tamala* 50 each  
alternating.



# 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Toona ciliata	50 nos.	15	750
Cinnamomum tamala	50 nos.	15	750
Gauva (Local Grafted)/Lemon/orange	154 nos.	70	10,780
Broom	1600 rhizome	5	8000
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>38988</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1,975
Land Development	12 MD	395	4,740
Layout	10 MD	395	3950
Pit digging	20 MD	395	7900
Transporting/Planting	20 MD	395	7900
Intercultural Operation (2 times/year)	30 MD	395	11,850
Fencing Labour	12 MD	395	4740
<b>Sub-Total</b>			<b>43055</b>

## Maintenance Cost (4 years)

Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total of Model 1			1,18,383

## Cost Benefit Analysis (Lemon/Orange)

Year	Name of Crop				Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Toona	Tez Patta	Lemon/Orange	Broom			
1 <sup>st</sup> Year	--	--	--	--	82,043	--	-82,043
2 <sup>nd</sup> Year	--	--	--	--	9,085	--	-9,085
3 <sup>rd</sup> Year	--	--	--	25875	9,085	25875	16,790
4 <sup>th</sup> Year	--	11,250	1,38,935	25875	9,085	1,76,060	1,66,975
5 <sup>th</sup> Year	--	11,250	1,50,652	20,700	9,085	1,73,839	1,64,754
Total	--	22,500	2,89,587	72,450	1,18,383	3,75,774	2,57,391

## Cost Benefit Analysis (Guava grafted)

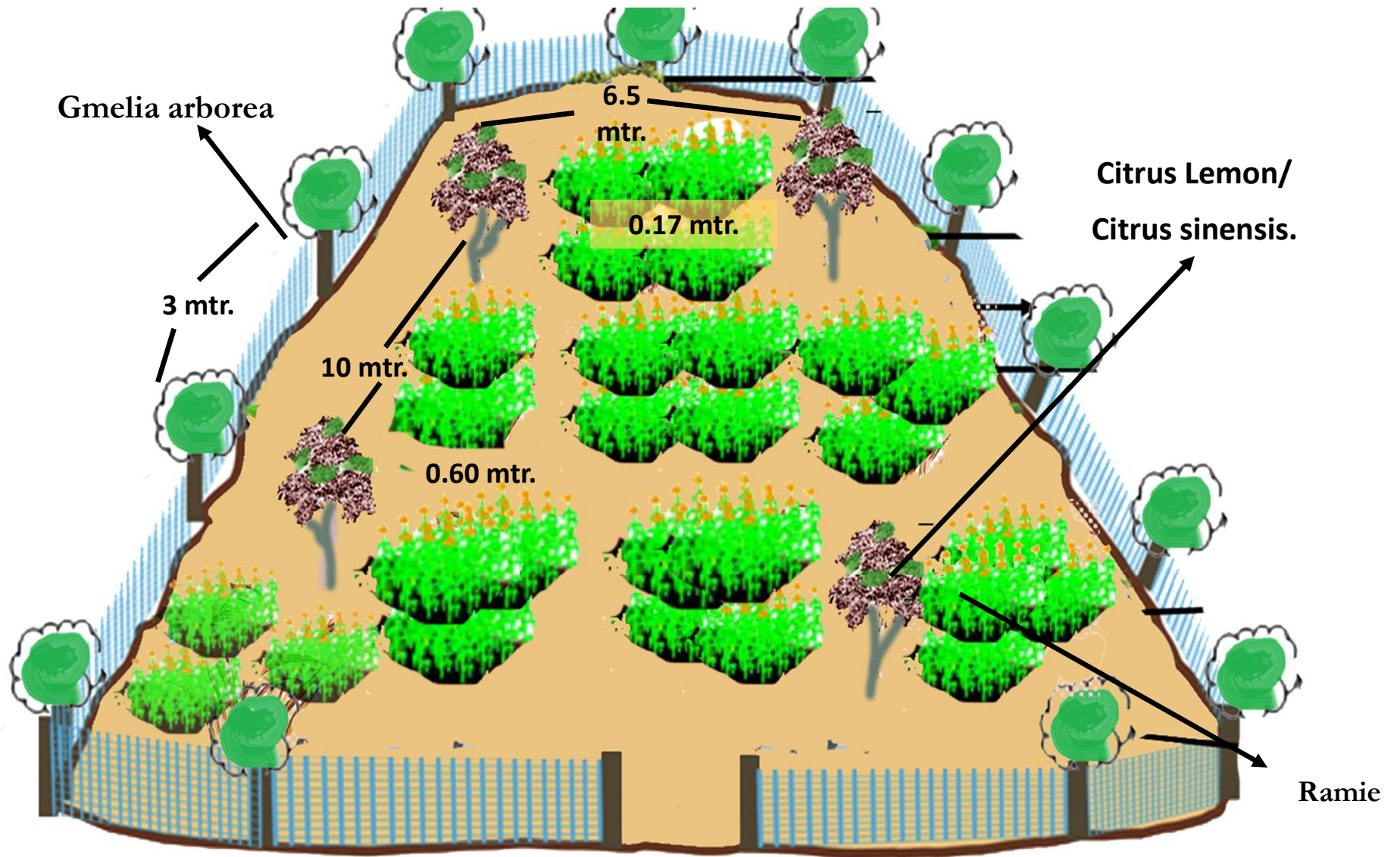
Year	Name of Crop				Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Toona	Tez Patta	Guava	Broom			
1 <sup>st</sup> Year	--	--	--	--	82,043	--	-82,043
2 <sup>nd</sup> Year	--	--	--	--	9,085	--	-9,085
3 <sup>rd</sup> Year	--	--	4,62,000	25875	9,085	4,87,875	4,78,790
4 <sup>th</sup> Year	--	11,250	4,62,000	25875	9,085	4,99,125	4,90,040
5 <sup>th</sup> Year	--	11,250	6,93,000	20,700	9,085	7,24,950	7,15,865
<b>Total</b>	--	22,500	16.17,000	72,450	1,18,383	17,11,950	15,93,567

## **Model-7**

**Gmelia arborea (Gamari) on the periphery  
Citrus sinensis/Citrus limon (C. jambhiri) grown along with ramie grass in the middle.**



Crop	No of seedling/seed /Ha	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Gmelia arborea	100	May-July	3	Along the boundary	50 x 50 x 50
Citrus Lemon/Citrus sinensis.	154	June-august	6.5	10	45 x 45 x 45
Ramie grass	4 qunt.	June-July	0.30	0.60	45 x 45 x 45



## 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Gmelia arborea	100 nos.	15	1500
Lemon/orange	154 nos.	70	10,780
Ramie	4 qutl.	6000	24,000
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Farm Yard Manure & Bio Pesticide	LS	-	31,000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>74,888</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1975
Land Development	10 MD	395	3950
Layout	10 MD	395	3950
Pit digging	10 MD	395	3950
Transporting/Planting	40 MD	395	15800
Intercultural Operation (2 times/year)	30 MD	395	11,850
Fencing Labour	12 MD	395	4,740
<b>Sub-Total</b>			<b>46,215</b>

## Maintenance Cost (4 years)

Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total of Model 1			1,57,443

## Cost Benefit Analysis (Ramie fibre degummed)

Year	Name of Crop			Project Cost (Rs.)	Beneficiary Contribution (Rs.)	Total Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Gamari	Lemon/ Orange	Ramie					
1 <sup>st</sup> Year	--	--	1,05,000	1,21,103	18,900	1,40,003	1,05,000	-35003
2 <sup>nd</sup> Year	--	--	2,10,000	9,085	45,250	54,335	2,10,000	1,55,665
3 <sup>rd</sup> Year	--	--	7,65,000	9,085	68,700	77,785	7,65,000	6,87,215
4 <sup>th</sup> Year	--	1,38,935	3,15,000	9,085	68,700	77,785	4,53,935	3,76,150
5 <sup>th</sup> Year	--	1,50,652	3,15,000	9,085	68,700	77,785	4,65,652	3,87,867
<b>Total</b>	--	2,89,587		1,57,443	2,70,250	4,27,693	19,99,587	15,71,894

# Model 8

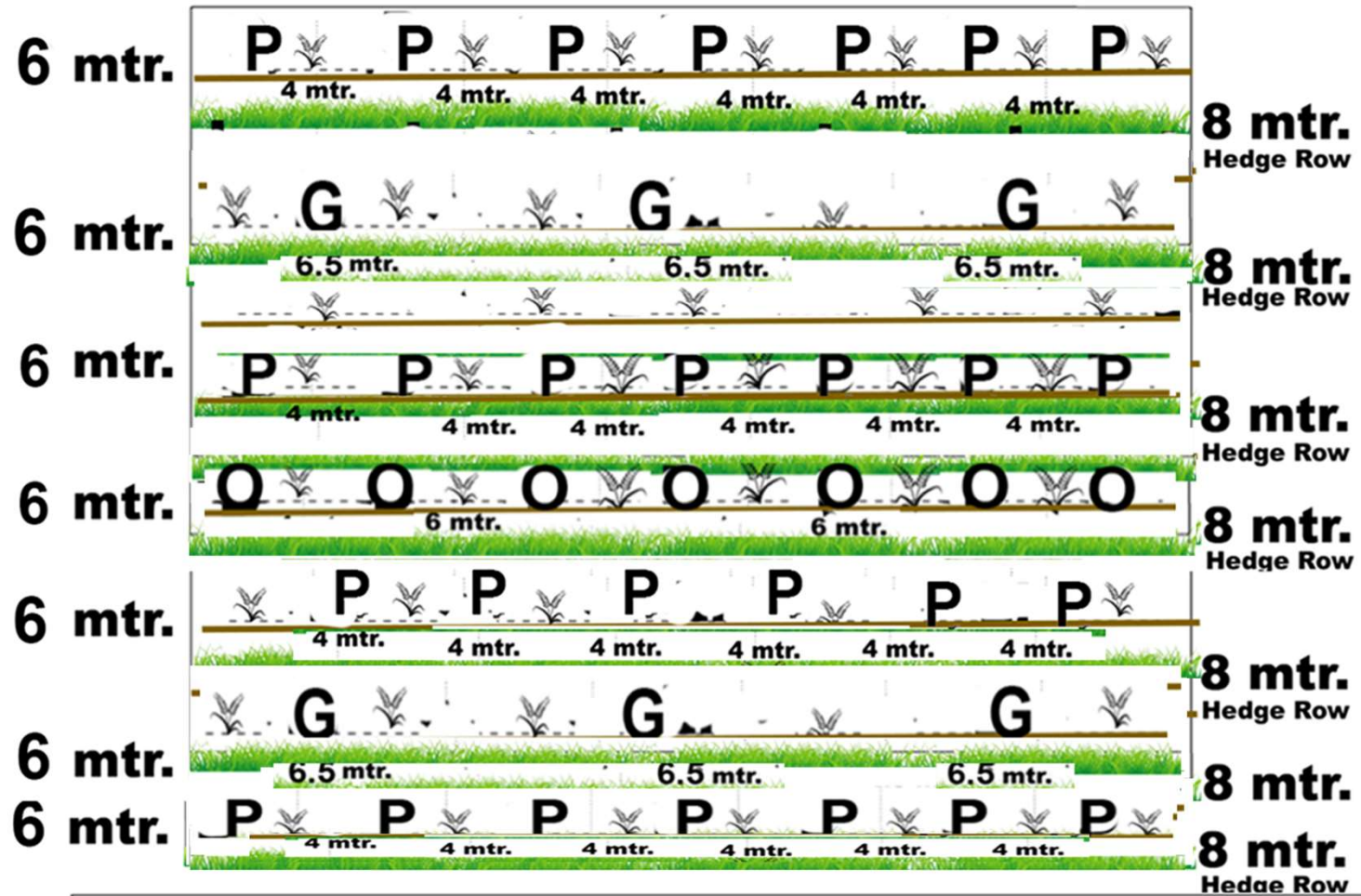
*Toona ciliata* (Poma)/*Michelia champaka* (champa)

*Citrus sinensis* (Sweet Orange)/ *Psidium gaujava*

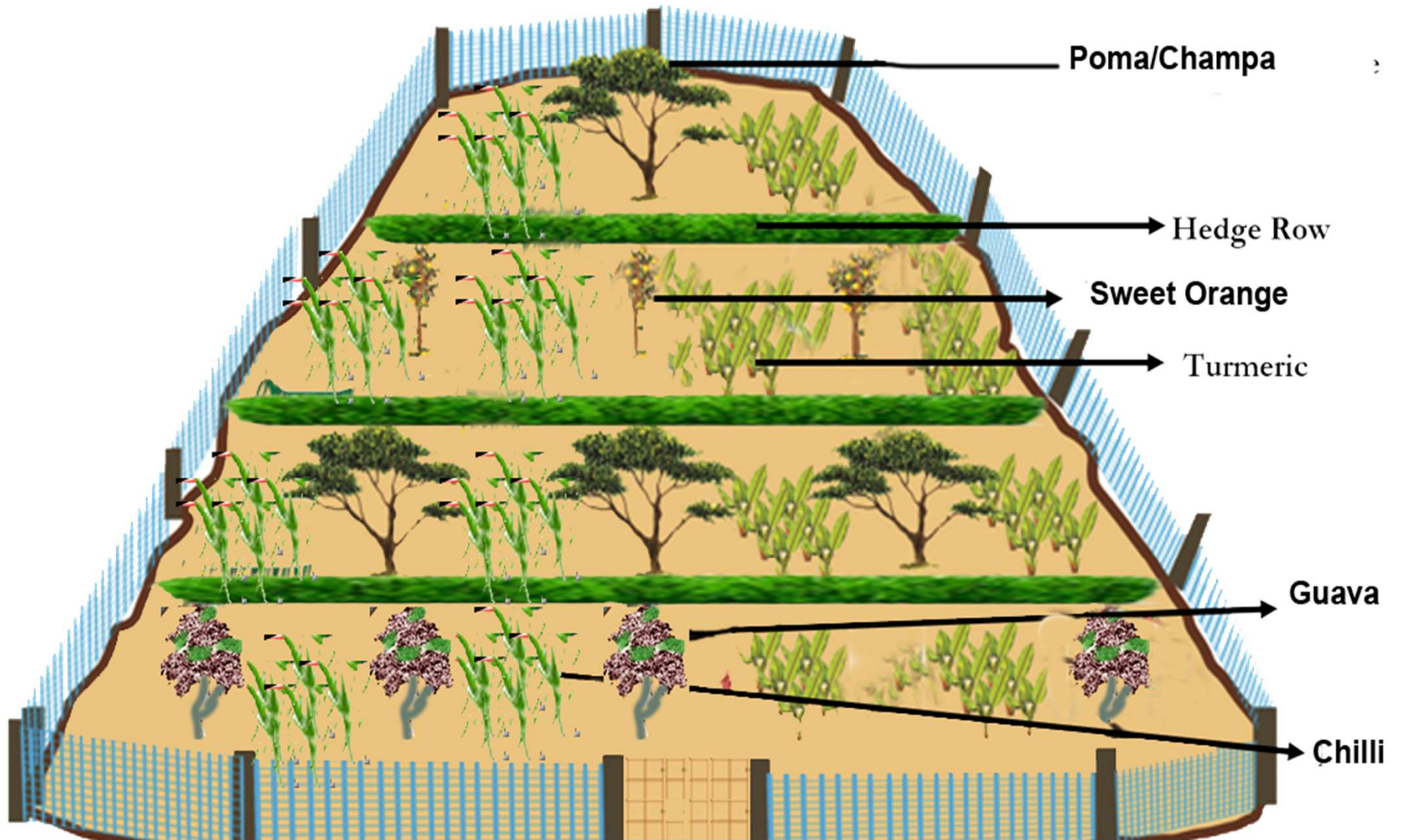
Turmeric (Lakadong)/Chilli



Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Poma/Champa	208	May-July	4	12	50 x 50 x 50
Guava(Local Grafted)	64	May-July	6.5	24	45 x 45 x 45
Sweet Orange (Citrus sinensis)	70	June-July	6	24	45 x 45 x 45
Turmeric	400 kg	April-May	0.20	0.60	In beds of 15 cm height and 1M width. 50 cm spacing between beds
Chilli	600 g/ha	Oct-Nov-nursery	0.60	0.60	0.15M to 0.20 M pits for planting



**P** = Poma/Champa    **O** = Orange    **G** = Guava  
 = Agriculture Crop (.Chilli/Turmeric)



# 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Toona ciliata	208 nos.	15	3120
Guava (Local Grafted)	64 nos.	70	4480
Sweet Orange	70 nos.	70	4900
Chilli	600 gm	100/gm	60000
Turmeric	300 kg	22	6600
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>97,808</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1975
Land Development	12 MD	395	4740
Layout	10 MD	395	3950
Pit digging	20 MD	395	7900
Transporting/Planting	20 MD	395	7900
Intercultural Operation (2 times/year)	30 MD	395	11850
Fencing Labour	12 MD	395	4740
SALT			19308
<b>Sub-Total</b>			<b>62363</b>



## Maintenance Cost (4 years)

Cost of Chilli Seeds for 2 years	60000 x2	-	1,20,000
Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
<b>Grand Total</b>			<b>3,16,511</b>

## Cost Benefit Analysis

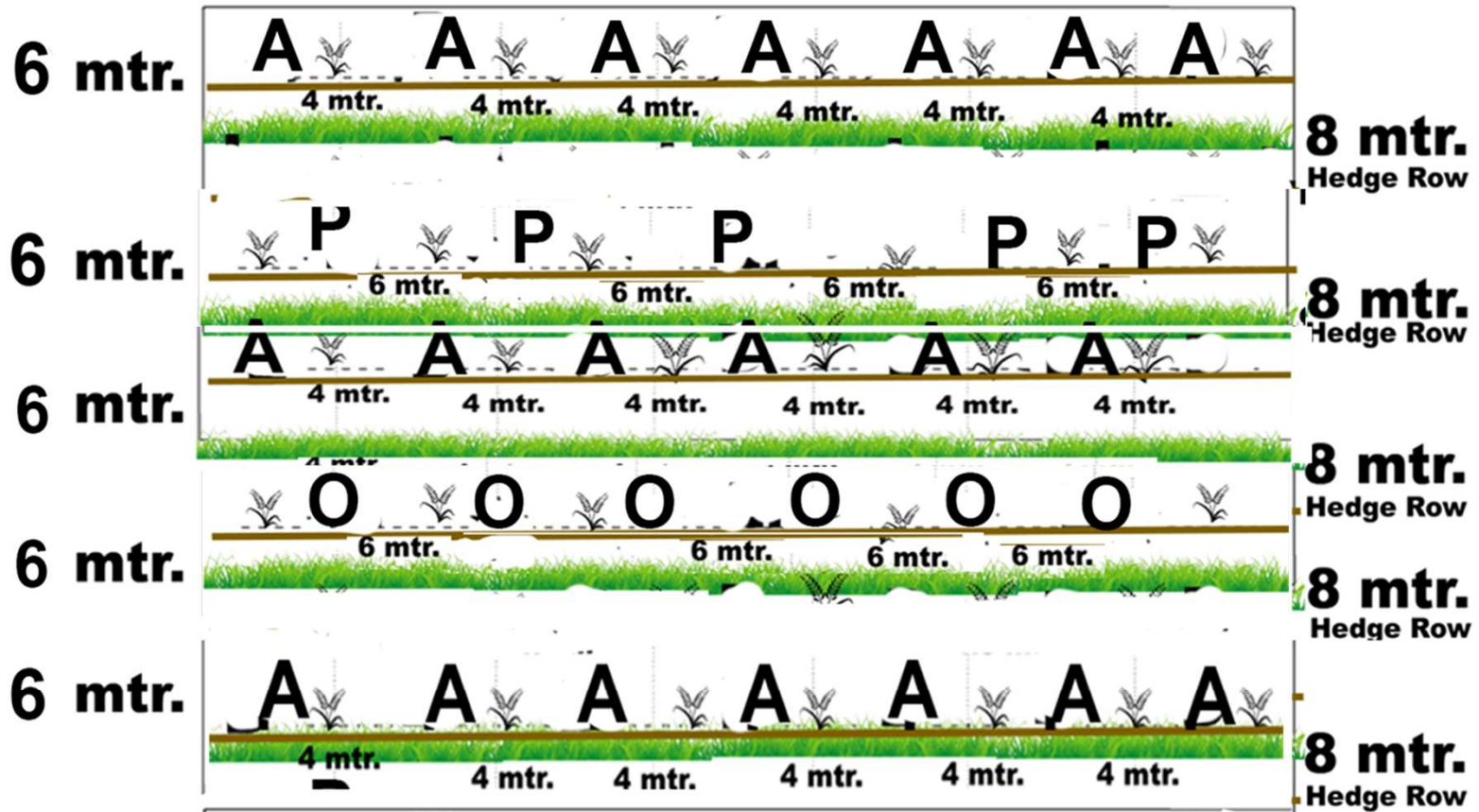
Year	Name of Crop					Project Cost (Rs.)	Beneficiary Contribution (Rs.)	Total Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Toona	Guava	Chilli	Turmeric	Orange					
1 <sup>st</sup> Year	--		6,00,000	--	--	1,00,171	60,000	1,60,116	6,00,000	4,39,884
2 <sup>nd</sup> Year	--		6,00,000	30000	--	9085	60,000	69,085	6,30,000	5,60,915
3 <sup>rd</sup> Year	--	2,10,000	6,00,000	30000	--	9085	60,000	69,085	8,40,000	7,70,915
4 <sup>th</sup> Year	--	2,10,000	--	30000	63,152	9085	--	9085	3,03,152	2,94,067
5 <sup>th</sup> Year	--	3,15,000	--	30000	68,478	9085	--	9085	4,13,478	4,04,393
<b>Total</b>	--	7,35,000	30,00,000	1,20,000	1,31,630	1,36,511	1,80,000	3,16,511	27,86,630	24,70,174




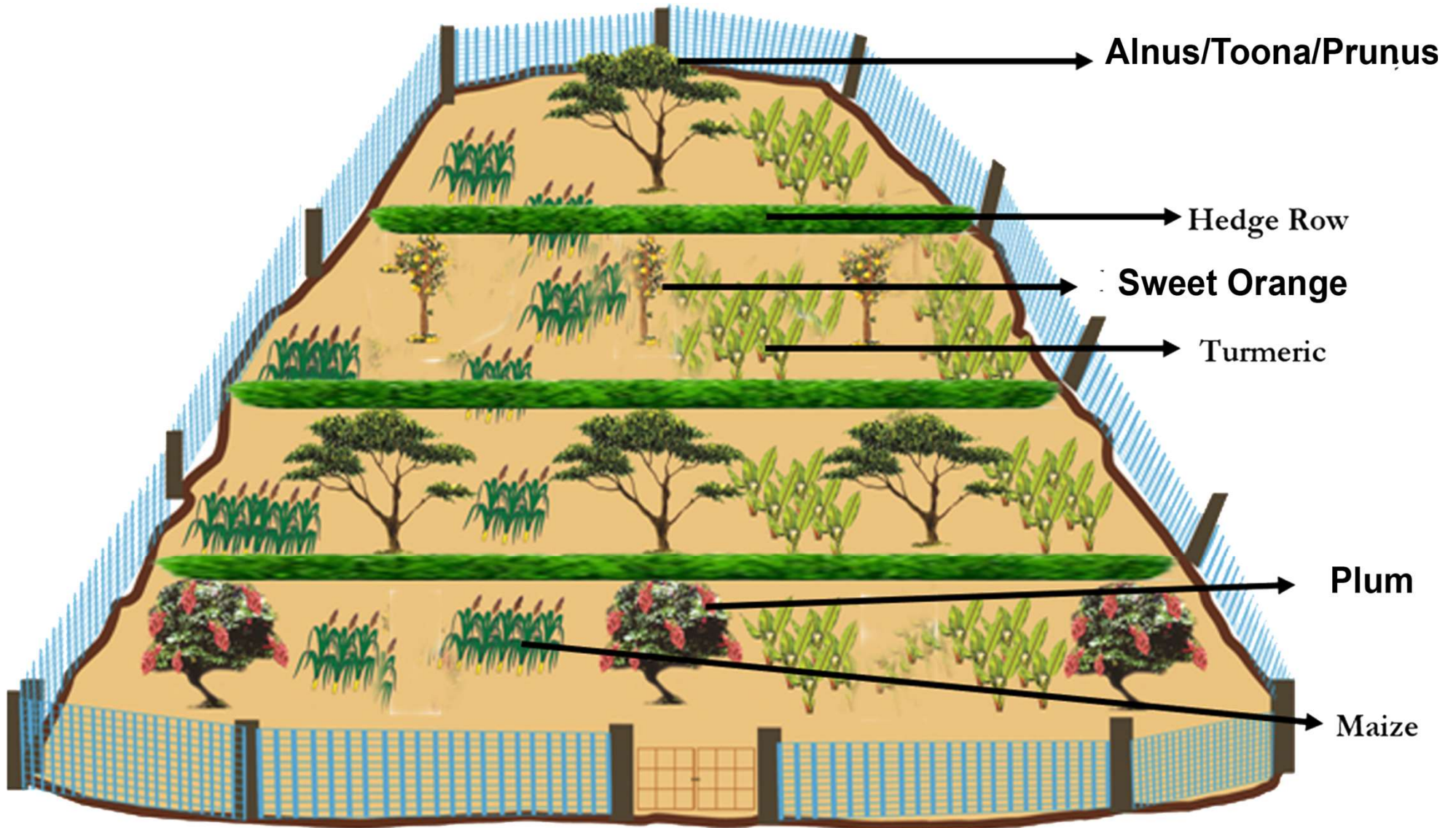
## Model-9

**Prunus ceratoides (Wild Himalayan Cherry)/Toona ciliata/Alnus nepalensis +  
Citrus sinensis (Orange)/Assam Lemon/Prunus domestica +  
Turmeric + Maize**

Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Alnus nepalensis/Toona ciliata/Prunus ceratoides	208	May-July	4	12	50 x 50 x 50
Citrus sinensis (Sweet orange)	70	April-June	6	24	45 x 45 x 45
Prunus domestica (Plum)	70	July-Oct	6	24	45x 45 x 45
Turmeric	400 kg	May-June	0.20	0.60	In beds of 15 cm height and 1M width. 50 cm spacing between beds
Maize	8 kg	Khariff-Last wk June Rabi- last wk Oct Spr-I wk Feb	0.20	0.60	5-6 cm depth



**A = Alnus/Toona/Prunus** **O = Sweet Orange**  
 = Agriculture Crop (Maize/Turmeric) **P = Plum**



# 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Alnus nepalensis/Toona ciliata/Prunus ceratoides	208 nos.	15	3120
Plum (Grafted)	70 nos.	42	2,940
Sweet Orange	70 nos.	70	4900
Turmeric	300 kg	22	6600
Maize	8 kg	61	488
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>36,756</b>

## 1<sup>st</sup> Year Cost –Labour Cost

Jungle Clearing	5 MD	395	1975
Land Development	12 MD	395	4740
Layout	10 MD	395	3950
Pit digging	20 MD	395	7900
Transporting/Planting	20 MD	395	7900
Intercultural Operation (2 times/year)	30 MD	395	11850
Fencing Labour	12 MD	395	4740
SALT			19308
<b>Sub-Total</b>			<b>62363</b>



## Maintenance Cost (4 years)

Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total			1,35,459

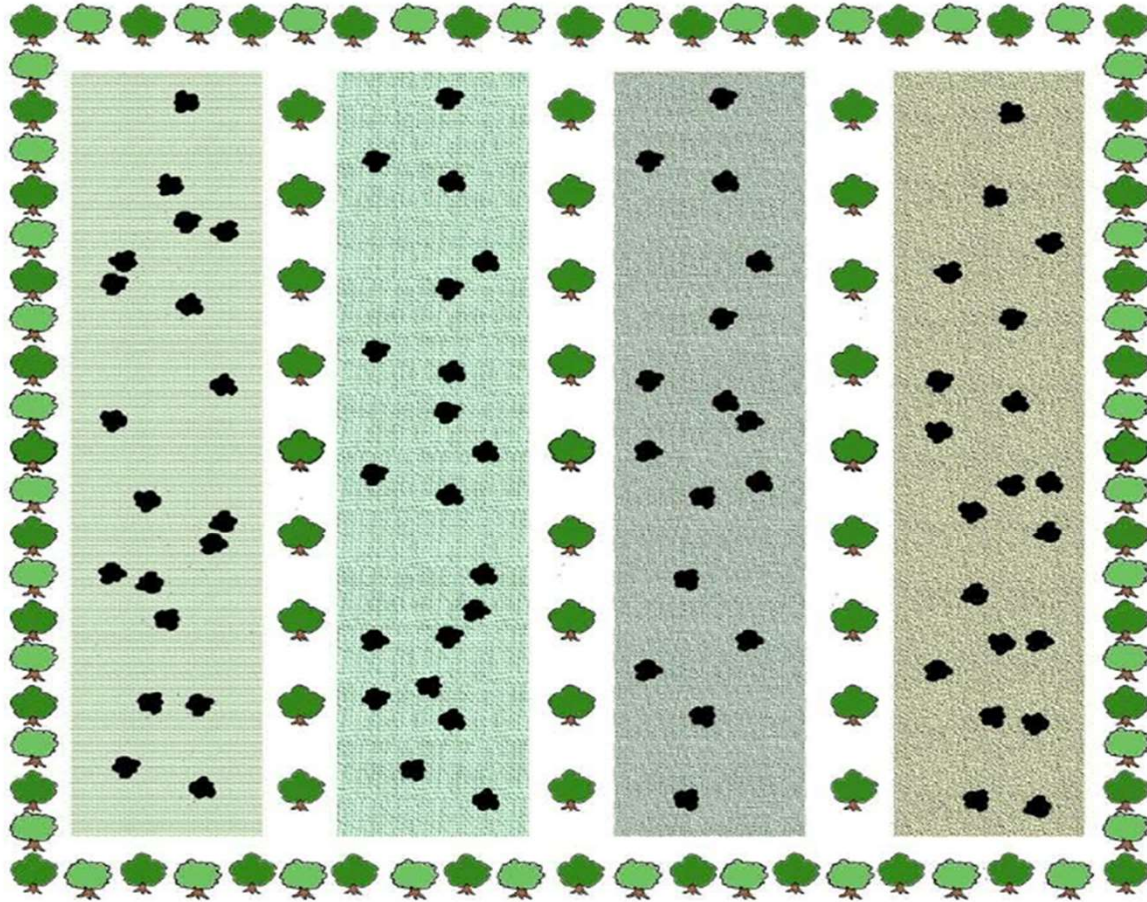
## Cost Benefit Analysis

Year	Name of Crop					Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Toona/Alnus/Prunus	Plum	Maize	Turmeric	Orange			
1 <sup>st</sup> Year	--	--	55000	--	--	99,119	55,000	-44119
2 <sup>nd</sup> Year	--	--	45000	30000	--	9085	75,000	65,915
3 <sup>rd</sup> Year	--	--	35000	30000	--	9085	65,000	55,915
4 <sup>th</sup> Year	--	2,03,000	--	30000	63,152	9085	2,96,152	2,87,067
5 <sup>th</sup> Year	--	2,03,000	--	30000	68,478	9085	3,01,478	2,92,393
Total	--	4,06,000	1,35,000	1,20,000	1,31,630	1,35,459	7,92,630	6,57,171







Model-10

Alnus + Orange + Potato





**KEY:**

 Alnus	 Khasi Mandarin
   	Potato

Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
<b>Alnus nepalensis</b> (On the periphery)	100	<b>May-July</b>	4	4	<b>50 x 50 x 50</b>
<b>Citrus sinensis</b> (Sweet orange)	153	<b>April-June</b>	<b>6.5</b>	<b>10</b>	<b>45 x 45 x 45</b>
<b>Potato</b>	18 to 22 Quintals/ Hectare	2 crops Summer Winter	0.15	0.45	Sowing Depth 6-7 cm Bed width 72 cm Bed height 30 cm Bed to Bed spacing 45 cm

## 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Alnus	100 nos.	15	1500
Sweet Orange	153 nos.	25	3,825
Potato	18 quintal x 2 times	40/kg	1,44,000
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Urea (Basal+ Interculture Operation)	150 kg	7	1050
Rock Phosphate	150 kg	7	1050
MOP	100 kg	15	1500
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>1,68,033</b>

## 1<sup>st</sup> Year Cost –Labour Cost

<b>Jungle Clearing</b>	<b>5 MD</b>	<b>395</b>	<b>1975</b>
<b>Land Development</b>	<b>12 MD</b>	<b>395</b>	<b>4740</b>
<b>Layout</b>	<b>10 MD</b>	<b>395</b>	<b>3950</b>
<b>Pit digging</b>	<b>20 MD</b>	<b>395</b>	<b>7900</b>
<b>Transporting/Planting</b>	<b>20 MD</b>	<b>395</b>	<b>7900</b>
<b>Intercultural Operation (2 times/year)</b>	<b>30 MD</b>	<b>395</b>	<b>11850</b>
<b>Fencing Labour</b>	<b>12 MD</b>	<b>395</b>	<b>4740</b>
<b>Sub-Total</b>			<b>43,055</b>



## Maintenance Cost (4 years)

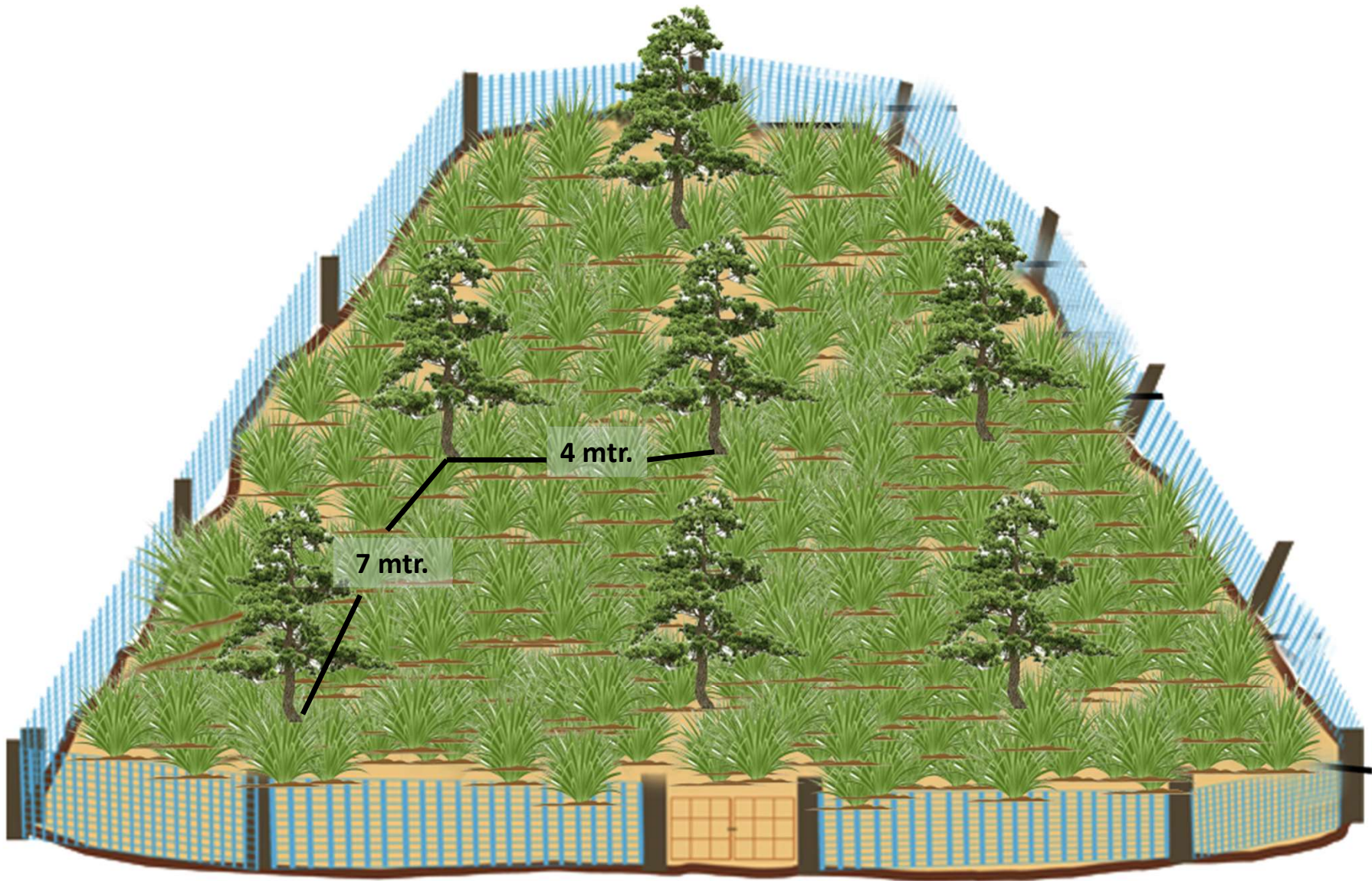
Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Potato seed cost	4 years	1,44,000/-	5,76,000
<b>Grand Total</b>			<b>8,23,428</b>

## Cost Benefit Analysis

Year1	Name of Crop			Project Cost (Rs.)	Beneficiary Contribution /Convergence	Return (Rs.)	Net Profit (Rs.)
	Alnus	Lemon/Orange	Potato				
1 <sup>st</sup> Year	--	--	2,85,000	67,088	1,44,000	2,85,000	73,912
2 <sup>nd</sup> Year	--	--	2,85,000	9085	1,44,000	2,85,000	1,31,915
3 <sup>rd</sup> Year	--	--	2,85,000	9085	1,44,000	2,85,000	1,31,915
4 <sup>th</sup> Year	--	1,38,033	2,85,000	9085	1,44,000	2,85,000	2,69,948
5 <sup>th</sup> Year	--	1,49,674	2,85,000	9085	1,44,000	2,85,000	2,81,589
<b>Total</b>	--	<b>2,87,707</b>	<b>14,25,000</b>	<b>1,03,428</b>	<b>7,20,000</b>	<b>14,25,000</b>	<b>8,89,279</b>

Model-11

Aroma grass & Pine tree



Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Pinus kesiya (On the periphery)	357	May-July	4	7	50 x 50 x 50
Citronella	50,000 slips				

# Cost Estimate

Sl No.	Item of works	Man-days/no.	Amount
1 <sup>st</sup> Year	Survey of site using GPS	2	790
	Marking of boundaries at strategic points	LS	1000
	Seedling cost	357nos. @22	7864
	Transportation	2.7	1071
	Digging of pits of size 45cm*45 cm*45 cm 357 nos	16	6,320
	Land development & Planting	220	86900
	Cost of Planting material	50000 slips	62,500
	Transportation	LS	5,000
	Trimming	14	5,530
	Gap filling	14	5,530
	Weeding	30	11,850
	Harvesting	84	33,180
	Fuel wood	-	15000
	Water/ Electric charges	-	3000
	Distillation charge	42	16,590
<b>Total</b>			<b>2,62,125</b>

Sl No.	Item of works	Mandays/qty.	Amount
2 <sup>nd</sup> year	Harvesting	84	33,180
	Fuel wood	-	15000
	Water/ Electric charges	-	3000
	Distillation charge	42	16,590
	Vacancy Filling	7	2765
	Fire watcher and fireline	15	5,925
	<b>Total</b>		
3 <sup>rd</sup> year	Harvesting	84	33,180
	Fuel wood	-	15000
	Water/ Electric charges	-	3000
	Distillation charge	42	16,590
	Vacancy Filling	7	2765
	Fire watcher and fireline	15	5,925
	<b>Total</b>		



<b>Sl No.</b>	<b>Item of works</b>	<b>mandays</b>	<b>Amount</b>
<b>4<sup>th</sup> year</b>	Harvesting	84	33,180
	Fuel wood	-	15000
	Water/ Electric charges	-	3000
	Distillation charge	42	16,590
	Vacancy Filling	7	2765
	Fire watcher and fireline	15	5,925
<b>Total</b>			<b>76,460</b>

## Cost Benefit Analysis (Citronella)

Year	Name of Crop		Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Pine	Citronella			
1 <sup>st</sup> Year	--	1,80,000	2,62,125	1,80,000	-82,125
2 <sup>nd</sup> Year	--	2,00,000	76,460	2,00,000	1,23,540
3 <sup>rd</sup> Year	--	2,00,000	76,460	2,00,000	1,23,540
4 <sup>th</sup> Year	--	1,60,000	76,460	1,60,000	1,23,540
<b>Total</b>	--	<b>7,40,000</b>	<b>4,91,505</b>	<b>7,40,000</b>	<b>2,48,495</b>

Additional income can be generated from sale of planting materials.

## Cost Benefit Analysis (Lemon Grass)

Year	Name of Crop		Cost (Rs.)	Return (Rs.)	Net Profit (Rs.)
	Pine	Lemon Grass			
1 <sup>st</sup> Year	--	1,62,000	2,62,125	1,62,000	-1,00,125
2 <sup>nd</sup> Year	--	1,80,000	76,460	1,80,000	1,03,540
3 <sup>rd</sup> Year	--	1,80,000	76,460	1,80,000	1,03,540
4 <sup>th</sup> Year	--	1,44,000	76,460	1,44,000	67,540
<b>Total</b>	--	<b>6,66,000</b>	<b>4,91,505</b>	<b>6,66,000</b>	<b>1,74,495</b>

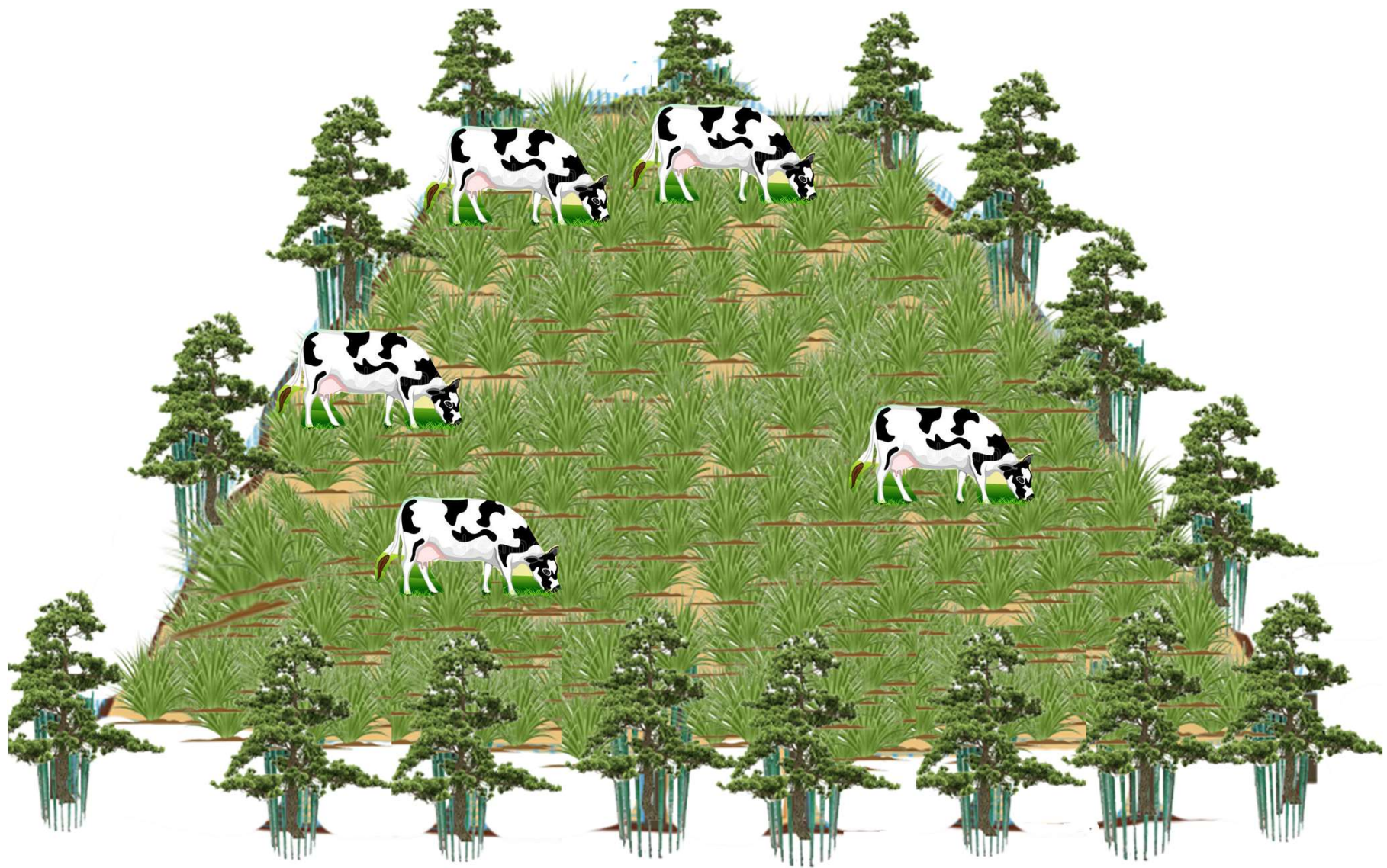
Additional income can be generated from sale of planting materials.

## Model-12

### Silvi Pastoral Agroforestry

Alnus/Pine + Dinanath Grass + Livestock (Cattle)

This applies only to those land owners who are already rearing cattle and grazing in existing plantation areas and nursery area are an issue in the villages due to this, as the Project will not provide support for buying cattle



Crop	No of seedling/seed	Time of planting	Spacing (in m)		Pit Size (in cm)
			Plant to plant	Row to Row	
Alnus/Pine	100	May-July	3 m	Along boundary	50 x 50 x 50
Deenanath Grass (Desho Grass) Variety Jawahar Pennisetum-12; Bundel-1; Bundel-2 (soil binder)	5 kg	Onset of Monsoon	35cm	10 cm	<p><b>Hoeing and weeding on the 30<sup>th</sup> day after sowing</b></p> <p><b>Upland with well drained soil</b></p> <p>Pellet the seed with DAP at 60 g/kg and arappu leaf (Albizia amara) powder at 500g/kg-1 of seed to enable easy handling of seed during sowing and also for better establishment.</p> <p>Water: Soil should be a bit moist.</p>



## 1<sup>st</sup> Year Cost -Material Cost

Particulars	Quantity	Rate (in Rs.)	Amount (in Rs.)
<b>1<sup>st</sup> Year Material Cost</b>			
Pine/Alnus	100 nos.	15	1500
Dinanath Grass	5 Kg	150	750
Fencing	400 mtr.	LS	5,258
Fencing pole	400 no.	4	1600
Compost	10 MT	550	5500
Carbofuran	20 kg	100	2000
Chloropyriphos	3 lit.	250	750
<b>Sub Total</b>			<b>17,358</b>

## 1<sup>st</sup> Year Cost –Labour Cost

<b>Jungle Clearing</b>	<b>5 MD</b>	<b>395</b>	<b>1975</b>
<b>Land Development</b>	<b>12 MD</b>	<b>395</b>	<b>4740</b>
<b>Layout</b>	<b>10 MD</b>	<b>395</b>	<b>3950</b>
<b>Pit digging</b>	<b>20 MD</b>	<b>395</b>	<b>7900</b>
<b>Transporting/Planting</b>	<b>20 MD</b>	<b>395</b>	<b>7900</b>
<b>Intercultural Operation (2 times/year)</b>	<b>30 MD</b>	<b>395</b>	<b>11850</b>
<b>Fencing Labour</b>	<b>12 MD</b>	<b>395</b>	<b>4740</b>
<b>Sub-Total</b>			<b>43,055</b>

## Maintenance Cost (4 years)

Follow up Maintenance (material 6 MD + Intercultural operation 17 MD) (4 yrs.)	23 MD x 4 years	395	36,340
Grand Total of Model 1			96,753

## Cost Benefit Analysis

Year	Name of Crop		Cattle to get fodder	Cost (Rs.)	Return (Rs.)
	Pine/Alnus	Dinanath Grass harvesting could be done 3 times in a year			
1 <sup>st</sup> Year	--	55000 kg green fodder	25	60,413	54615/- per cattle
2 <sup>nd</sup> Year	--	60000 kg	27	9085	
3 <sup>rd</sup> Year	--	100000 kg	45	9085	
4 <sup>th</sup> Year	--	100000 kg	45	9085	
5 <sup>th</sup> Year	--	100000 kg	45	9085	
Total	--	3,15,000 kg	187	96,753	21