

## MBM- CARI-V

### Black pepper cultivation on hedgerows and *Gliricidia* standards

#### Rationale

Black pepper (*Piper nigrum*), called as the king of spices is one of the oldest and best-known spice in the world. In India there are only few states like Kerala, Karnataka, Tamil Nadu and Andaman and Nicobar islands that produce black pepper. Though, Kerala ranks the first in its production, the Andaman Islands are known for its quality. The black pepper has earned a high market, local, national and international as well because of its wide use in pharmaceuticals, flavouring industries and household consumption as a spice. According to the State Tourism Department of A & N islands, around 2,00,000 tourists visit Andaman Islands annually, but they do not get spices as the local vendors purchase them from farmers and export to mainland India.

Farmers of the Andaman and Nicobar islands are organic growers of spices, including black pepper, by default as they do not provide fertilizer or compost to spice trees in their homegardens. Total of 29000 ha (25000 ha coconut + 4000 ha arecanut) of arable lands (50, 000 ha) in the islands are under plantation crops which provide suitable environment for the spice production. In addition 3000 ha sloppy lands are under vegetable cultivation. If one-fourth of the coconut and arecanut plantation and sloppy lands are utilized for organic cultivation of black pepper, it is estimated to produce 2020 MT annually. Two technologies are developed for black pepper cultivation which make the cultivation efficient. They are described below:

#### Design of double hedgerows technology of black pepper cultivation

1. *Gliricidia* (stem cutting) plant to plant distance in a hedgerow : 0.50m
2. The hedgerow to hedgerow distance in double hedgerows : 1m
3. Double hedgerow to double hedgerow distance : 6m or more

#### Investment

Sl. No.	Activities	No.ha <sup>-1</sup>	Rate (Rs.)	Amount Rs.ha <sup>-1</sup>
<b>I Year</b>				
1.	Stem cutting of <i>Gliricidia</i>	2600	3per cutting	7800

Sl. No.	Activities	No.ha <sup>-1</sup>	Rate (Rs.)	Amount Rs.ha <sup>-1</sup>
2.	Black pepper seedlings	2600	2per seedling	5200
3.	Bordeaux mixture (1%)	-	-	5000
4.	<b>Labour</b>			
	Pit making and planting stem cutting	50	130per day per labour	6500
	Pruning of hedgerows	80	- do -	10,400
	Bordeaux spraying	10	- do -	1300
<b>Total</b>				<b>36,200</b>
<b>II Year</b>				
1.	Labour for pruning of hedgerows	80	130per day per labour	10,400
2.	Labour for Bordeaux spraying	10	- do -	1300
3.	Bordeaux (1%)	-	-	5000
<b>Total</b>				<b>16,700</b>
<b>III Year</b>				
1.	Labour for pruning of hedgerows	40	130per day per labour	5200
2.	Labour for Bordeaux spraying	10	- do -	1300
3.	Bordeaux (1%)	-	-	5000
<b>Total</b>				<b>11,500</b>
<b>IV Year</b>				
1.	Labour for pruning of hedgerows	10	130per day per labour	1300
2.	Labour for Bordeaux spraying	10	- do -	1300
3.	Bordeaux (1%)	-	-	5000
<b>Total</b>				<b>7,600</b>
<b>V Year</b>				
1.	Labour for pruning of hedgerows	10	130per day per labour	1300
2.	Labour for Bordeaux spraying	10	- do -	1300
3.	Bordeaux (1%)	-	-	5000
<b>Total</b>				<b>7,600</b>

Sl. No.	Activities	No.ha <sup>-1</sup>	Rate (Rs.)	Amount Rs.ha <sup>-1</sup>
<b>VI year to XX</b>				
1.	Labour for pruning of hedgerows	10	130per day per labour	1300
2.	Labour for Bordeaux spraying	10	-do-	1300
3.	Bordeaux (1%)	-	-	5000
<b>Total</b>				<b>7,600</b>

### Production (t ha<sup>-1</sup>) of different crops in double hedgerows technology of black pepper cultivation

Crop	Year						Rate Rs.kg <sup>-1</sup>
	I	II	III	IV	V	VI-XX	
Black pepper	0	0	0.15	1.67	1.90	1.90	150
Maize	5.0	2.8	2.4	2.23	2.23	2.23	8
Okra	3.43	3.09	3.02	3.0	3.0	3.0	15

### Economics of black pepper cultivation on double hedgerows of *Gliricidia* Values are Rs.ha<sup>-1</sup>

Crop	Year					
	I	II	III	IV	V	VI-XX
<b>Black pepper</b>						
Total out put	36,200	16,700	11,500	7,600	7,600	7,600
Input	0	0	22,500	2,50,500	2,85,000	2,85,000
Net income	-36,200	-16,700	-11,000	+2,42,900	+2,77,400	+2,77,400
<b>Maize</b>						
Total out put	40,000	22,400	-	-	-	-
Input	17,386	17,237	-	-	-	-
Net income	+22,614	+5,163	-	-	-	-
<b>Okra</b>						
Total out put	51,450	46,350	45,300	45,000	45,000	45,000
Input	26,626	26,520	31,229	31,330	31,800	31,800
Net income	+24,824	+19,830	+14,071	+13,670	+13,200	+13,200
<b>Total Net income Rs. ha<sup>-1</sup></b>	<b>+11,238</b>	<b>+8,293</b>	<b>+3,071</b>	<b>+2,56,570</b>	<b>+2,90,600</b>	<b>+2,90,600</b>

Inputs for maize and Okra included cost of seeds and fertilizers; tilling preparation, labour for seed sowing, weeding, fertilizer application, harvesting

and post harvest operations. Maize cultivation should be dropped from 3<sup>rd</sup> year onward as the productivity is reduced and it becomes uneconomical.

### Design of black pepper cultivation on *Gliricidia* standards in homegarden/coconut plantation

<b>Design</b>	
Coconut	7.5 m x 7.5 m spacing
<i>Gliricidia</i> stem cutting (1m length; 5cm dia )	7.5 m x 7.5 m spacing, 7.5 x 3.75 m
Black pepper	Panniyur-5

### Investment

Sl. No.	Activities	No. ha <sup>-1</sup>	Rs. Rate	Amount (Rs.ha <sup>-1</sup> )
<b>I Year</b>				
1.	No. of <i>Gliricidia</i> stem cutting 7.5 x7.5 = 177 7.5 x 3.75 = 355 Total = 532	532	3per cutting	1,596
2.	Black pepper seedling	532	Rs.2 per seedling	1,064
3.	Bordeaux (1%)	-	-	5,000
4.	Labour	100	130 per labour per day	13,000
	<b>Total</b>			<b>20,660</b>
<b>II Year</b>				
1.	Labour for pruning of <i>Gliricidia</i> standards	50	do	6,500
2.	Bordeaux	-	-	5,000
	<b>Total</b>			<b>11,500</b>
<b>III Year</b>				
1.	Labour for pruning of <i>Gliricidia</i> standards	30	Do	3,900
2.	Bordeaux	-	-	5,000
	<b>Total</b>			<b>8,900</b>

Sl. No.	Activities	No. ha <sup>-1</sup>	Rs. Rate	Amount (Rs.ha <sup>-1</sup> )
<b>IV Year</b>				
1.	Labour for pruning of <i>Gliricidia</i> standards	30	Do	3,900
2.	Bordeaux	-	-	5,000
	<b>Total</b>			<b>8,900</b>
<b>V Year</b>				
1.	Labour for pruning of <i>Gliricidia</i> standards	30	Do	3,900
2.	Bordeaux	-	-	5,000
	<b>Total</b>			<b>8,900</b>
<b>VI-XX Year</b>				
1.	Labour for pruning of <i>Gliricidia</i> standards	30	Do	3,900
2.	Bordeaux	-	-	5,000
	<b>Total</b>			<b>8,900</b>

### Black pepper production (t ha<sup>-1</sup>) on *Gliricidia* standards

Crop	Year						Rate Rs.kg <sup>-1</sup>
	I	II	III	IV	V	VI-XX	
Black pepper	0	0	0.05	0.5	1.06	1.06	150

### Economics of black pepper cultivation on *Gliricidia* standards

Crop	Year					
	I	II	III	IV	V	VI-XX
<b>Black pepper</b>						
Total out put	0	0	7,500	75,000	1,59,000	1,59,000
Input	20,660	11,500	8,900	8,900	8,900	8,900
Net income per annum	-20,660	-11,500	-1,400	+66,100	+1,50,100	+1,50,100
Cumulative income	-20,660	-32,160	-33,560	+32,540	+1,82,640	+3,32,740

\* Thus by fourth year, the expenditure is recovered back.