Intercropping

It is recommended to grow green manure crop as intercropping two times in a year @ 10 kg seeds/acre/crop, preferably at the onset of monsoon. Sunhemp (*Crotalaria juncea*) is recommended for red soils, while Dhaincha (*Sesbania aculeata*) is recommended for black soils. The green manure crops have to be mulched after 30-45 days of sowing, prior to flowering. After the establishment of garden, intercropping with short duration crops (ragi, groundnut, cowpea, horse gram, spinach, maize, *etc.*) can be taken up for augmentation of farmers' income. Avoid intercropping of ginger and chilli.

Tips

- Plantation with 8-9 months old saplings
- Maintain the single main shoot by removing the side branches
- Maintain the crown height at 4-5 feet from the ground level
- Apply FYM @ 15 kg (2 splits)+ NPK @ 258:103:103 g/plant/year (5 splits)
- Permit to grow 40-50 healthy shoots for higher leaf yield

- Irrigate the garden through drip system for effective water management
- Green manuring with leguminous plants during monsoon to improve soil fertility
- Leaf/shoot can be harvested -5times in a year

Techno-economics

The techno-economics for tree mulberry cultivation vis-à-vis paired row system of cultivation is worked out and found that B:C ratio is 1:3.71 in tree cultivation against 1:2.88 in paired row system of cultivation.

Particulars	Paired row system	Tree cultivation
Total leaf production cost (Rs.)	3,22,886.4	2,07,628.3
Average annual leaf yield (kg/ha)	55,000	51,000
Leaf production cost (Per kg)	5.87	4.07
Total cost of cocoon production	4,34,767.7	3,12,798.5
Total cocoon production (kg)	1,787.5	1,657.5
Gross returns (Rs.)	1,251,250	1,160,250
Net Returns (Rs.)	8,16,482.3	8,47,451.5
B: C Ratio	2.88	3.71

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TREE MULBERRY CULTIVATION

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Tree Mulberry Cultivation

Being a perennial woody plant with reasonably drought tolerance capacity, mulberry can be cultivated as a small tree. Adopting suitable spacing between the plants and maintaining specific crown height can sustain the leaf production under water limited conditions. It has been observed that tree mulberry cultivation can overcome moisture stress conditions. The cultivation of mulberry as tree type is getting widely accepted in the Southern India for mechanization and also to address the water limited conditions.

Advantages

- Low cost of cultivation and easy maintenance
- Withstand water deficit conditions and provides sustainable leaf yield
- Develop the root system more extensively and deeper into the soil which leads to better uptake
- Tree cultivation with wider spacing enables the farmers to utilize land more effectively by cultivating seasonal intercrops
- As the crown is being maintained with specific height, the quality of leaf is ensured by proper aeration and sufficient sunlight.

Establishment of Tree mulberry plantations

Mulberry is a hardy plant and it can be raised in different topographies, including sloppy terrains. The soils with pH of 6.5 to 7.5 are considered as optimum for mulberry growth. The land should be thoroughly ploughed after receiving one or two pre-monsoon showers. The plantation should be raised as block plantation with a spacing of 8 ft × 8 ft (680 plants/acre) or 10 ft × 10 ft (436 plants/acre).

After land preparation, FYM/seri-compost/ vermi-compost can be applied @ 10 MT/acre and mixed with soil. Soil moisture conservation practices must be followed by raising wide bunds all along the boundaries of plantation to avoid run-offs and allow rain water percolation into the planted area. The plantation should be carried out in pit system. Based on the spacing adopted, pits should be dug with 4' × 4' × 4' (LBD) size. Watering should be ensured at least once in a week till the establishment of garden. The crown height should be maintained at 4-5 ft above the ground level.

Garden Maintenance

Training of trees is the most crucial phase for establishment of tree mulberry plantation. The productivity of mulberry plantations depends mainly on number of branches per plant. Care should be taken to develop proper growth of main stem and crown with 40-50 healthy strong shoots per plant, which yields quality leaves.

The first apical cut to the sapling should be given at 4-5 ft height from the ground level, immediately after planting. All the undesirable buds sprouting from lower part of the stem should be removed and 3-4 branches on the top only should be allowed to grow during the first 9 months. The second pruning is done at a crown height of 4-5ft with 3-4 branches, each having 3-4 buds. Avoid leaf plucking during the first year of establishment. After 3 months, conduct the third pruning by selecting 5-6 shoots and prune above the previous cut, leaving 2-3 buds. Again after 3 months go for the fourth pruning by selecting 10-12 shoots in the similar way by leaving 2-3 buds.

Fifth pruning can be taken up after 3 months by selecting 20-24 shoots by leaving 2-3 buds at the bottom of each branch. This appropriate height facilitates easy maintenance of around 40-50 shoots and thereby harvest the quality leaf.

Nutrient Management

During the establishment period, FYM @ 8kg and NPK @ 86:35:35 g/plant/year are to be applied in two splits after making the basins. Proper irrigation should be provided during the establishment period through drip system or pot watering. After the establishment apply 15 kg FYM + N:P:K @258:103:103 g/plant/year for sustainable leaf production and also to maintain the soil fertility.

Proper irrigation to be provided either through drip system or furrow irrigation depending upon the water availability and soil condition. By adopting drip irrigation system, it can save about 70% of water when compared to conventional practice.

It is expected an average leaf yield ranging from 4 - 6 kg/plant/crop after the establishment of garden by adopting the above nutrient management practices. The mulberry leaf yield may vary depending upon the spacing adopted for mulberry cultivation. However, depending upon the availability of water for irrigation, 5 crops can be harvested annually in irrigated conditions whereas 4 crops are possible in rainfed conditions.