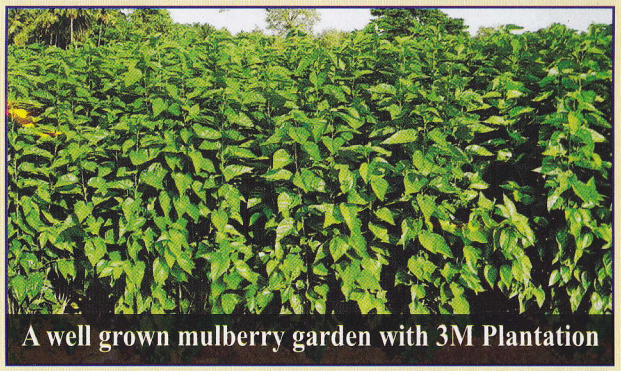
The 3M plantation is modification of 90x90 cm (3'x3') plantation where the movement of tractor operated machinery is not feasible. In 3M Plantation, the mulberry plants are placed in blocks where each block contains 9 plants. In each block the plants are spaced at 90 cm from each other as shown in the schematic diagram. The blocks are separated from each other by 120 cm. In 3M plantation each plant occupies an area of $1m^2$ ($10ft^2$) and there will be 10,000 plants/ha.



A well grown mulberry garden with 3M Plantation

In 3M plantations, 100% mechanization of intercultural operations, chemical operations, etc. is feasible. Hence, it well suits for large scale mulberry cultivation.

Cost of Intercultural Operations in Mulberry Gardens

Method of intercultural operation	Time/manpower required per hectare	Cost of Operation Rs./hectare
Manual weeding	45 mandays	9,000
Bullock ploughing	90 bullock plough hours + 20 man days for manual weeding	8,500
Power tiller/Power weeder	18 weeder hours + 30 bullock plough + 10 man days for manual weeding	8,900
Tractor operated cultivator in Paired Row Plantation	5 tractor hours + 45 bullock plough hours + 10 man days for manual digging/ weeding	6,100
Tractor operated cultivator in 3M Plantation	7 tractor hours	3,500

Rates :
Manual digging (6h/day) : Rs. 200/day
Bullock Ploughing (6h/day) : Rs. 300/day
Power Tiller : Rs. 300/h
Tractor : Rs. 500/h

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MULBERRY PLANTATIONS FOR MECHANIZED CULTIVATION

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Need for Mechanization in Mulberry Cultivation

Mulberry is cultivated in many parts of the country for rearing silkworms. In peninsular India, the mulberry is cultivated as low bush plantations. The tropical climate facilitates round the year production of the mulberry leaves. A mulberry crop takes 65-70 days. Hence, five crops can be taken in a year. Nowadays, many farmers are taking up large scale mulberry plantations due to high and assured returns from sericulture. The conventional practices of mulberry cultivation involve manual digging and intercultural operations with a country plough. The conventional mulberry cultivation inherits constraints like:

- Suitable for small gardens.
- Only shallow digging and ploughing is possible.
- Cost of cultivation is very high and intercultural operations are laborious and time consuming.

In conventional methods, almost, 50 % of the cost of silk cocoon production accounts for mulberry leaf. Nearly, 70-75% cost of mulberry leaf production accounts for intercultural operations, weeding, furrowing for irrigation, etc. In all, 35-40 % cost of silk cocoon production goes for maintenance of mulberry gardens. Hence, the farmers should go for mulberry plantation methods which facilitate mechanized intercultural and weeding operations, furrowing for irrigation, chemical application and harvesting of mulberry shoots to reduce the cost of mulberry cultivation and thus higher returns from cocoon crops.

CSRTI, Mysore has developed following plantation methods for mechanized cultivation of the mulberry.

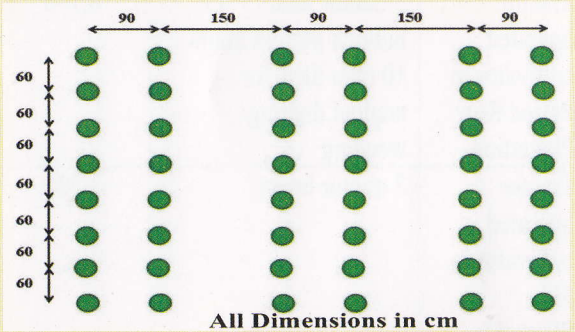
- **Paired Row Mulberry Plantation**
- **3M Mulberry Plantation**

These plantation methods have following advantages over conventional cultivation of mulberry.

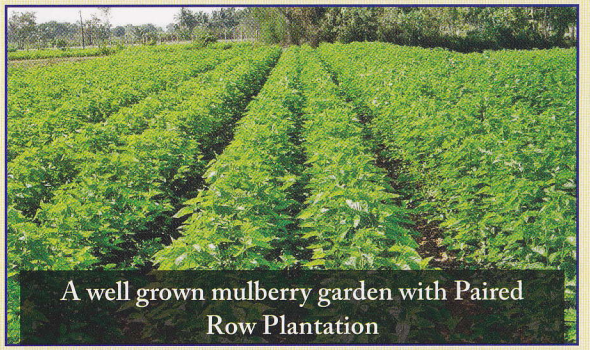
- Suitable for both small and large farmers.
- Deep cultivation is possible thus better utilization of fertilizers and water by plants.
- High water holding capacity of soil.
- Increase in quality and yield of mulberry leaf.
- Reduction in cost of production of mulberry leaf.
- Large scale cultivation of mulberry is feasible.

Paired Row Plantation

The following figure shows the schematic diagram of arrangement of the mulberry plants in a paired row plantation.



In Paired Row Plantation, the mulberry plants are placed in rows which are at distance of 90cm (3') from each other. A pair of rows is distanced by 150cm (5'). The plants are placed in each row at spacing of 60cm (2'). Here, each plant occupies 0.8 m^2 ($8ft^2$) and there are 12,500 plants/ha. The paired row gardens can be cultivated with tractor and power tilled operated machines.



A well grown mulberry garden with Paired Row Plantation

3M Plantation

The sole constraint of Paired row plantation is that tractor or power tiller movement is feasible only along the row and for cross ploughing manual digging or bullock plough have to be used. For cross ploughing with a tractor cultivator or power tiller, CSRTI, Mysore developed 3M plantation. The following figure shows the schematic diagram of arrangement of the mulberry plants in 3M plantation.