



## Optimizing Moriculture: Advanced Planting Systems for Mulberry Cultivation

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Moriculture, or the cultivation of mulberry plants, is crucial for sericulture as mulberry leaves are the primary food for silkworms. Optimal mulberry growth requires loam soil with a neutral pH, and cultivation can be done using seeds or stem cuttings. Effective moriculture is vital, accounting for about two-thirds of sericulture costs.

### Major Planting Systems

Several planting systems are employed in moriculture to optimize growth conditions, each suited to different environments and offering unique benefits:

#### 1. Pit System:

- **Ideal Conditions:** Suitable for rain-fed areas where wider spacing is required.
- **Method:** Instead of traditional ploughing, pits of  $30 \times 30 \times 30$  cm<sup>3</sup> or  $35$  cm<sup>3</sup> are dug and filled with a mixture of organic manure, red soil, and sand. Three cuttings are planted in a triangular arrangement in each pit.
- **Spacing:** Typically,  $90 \times 90$  cm<sup>2</sup>, allowing for 12,345 plants per hectare.
- **Establishment:** Pits are prepared and left for a month before filling and planting. Trenches of  $35 \times 35$  cm<sup>2</sup> can also be used. It is preferable to start planting during the rainy season.
- **Maintenance:** Cuttings that do not sprout within 4-5 weeks are replaced to maintain proper plant density.

#### 2. Paired Row System:

- **Ideal Conditions:** Best for irrigated areas.
- **Method:** Developed by CSRTI, Mysore in 1995. Ridges and furrows are created, and cuttings are planted at equal distances, facilitating bush-type growth.
- **Spacing:** Common spacing is 90 cm between paired rows and 150 cm between pairs, with 60 cm between plants in a row. This system accommodates 13,437 plants per hectare.
- **Advantages:** Facilitates mechanized cultivation, reducing dependence on manual labour. Improves leaf quality and reduces inter-cultural operation costs by half. Allows the use of power tillers and tractors for easier management.

#### 3. 3M Plantation System:

- **Ideal Conditions:** Suitable for large-scale mechanized farming.
- **Method:** Developed by CSRTI, Mysore in 2005. This system allows complete mechanization, including cross-ploughing. Plants are spaced in blocks of 9, with each block separated by 120 cm.

- **Spacing:** Each plant is 90 cm apart within a block, with blocks separated by 120 cm, totalling 9,677 plants per hectare.
  - **Advantages:** Enables full mechanization of intercultural operations, chemical treatments, and other processes. Improves soil aeration, plant growth, and leaf quality. Reduces labour costs and is highly efficient for large-scale cultivation.
4. **Kolar System:**
- **Ideal Conditions:** Specific to Kolar district, Karnataka.
  - **Method:** A modified row system where the distance between rows is 30-45 cm, and between plants within a row is 10-15 cm.
  - **Advantages:** Provides efficient use of space and resources, making it suitable for intensive cultivation.
5. **Strip System:**
- **Ideal Conditions:** Used predominantly in West Bengal.
  - **Method:** Mulberry is grown in strips of 2-3 rows, with 15 cm spacing between plants and rows. Each strip is separated by a wide distance.
  - **Advantages:** Facilitates close planting and efficient use of space, allowing for high-density planting and easy management.
6. **Angular System:**
- **Ideal Conditions:** Commonly used in the hill regions, such as the Nilgiris.
  - **Method:** Plants are arranged in a triangular pattern to conserve soil and moisture.
  - **Advantages:** Allows more plants per unit area, enhances soil and water conservation, and increases leaf production. Suitable for sloped terrains.

### Planting and Sowing Guidelines

- **Time:** The optimal planting season is during the rainy season (July-August). Nurseries are prepared in June-July to ensure healthy saplings.
- **Spacing:** A standard spacing of 90 cm × 90 cm is recommended for most planting systems.
- **Depth:** Planting depth is typically 60 cm in pits, with well-rooted saplings planted at a depth of 15-20 cm.
- **Method:** Propagation is usually done using well-rooted saplings or stem cuttings.

### Benefits of Modern Planting Methods

Modern planting systems, such as the paired row and 3M plantation, offer several advantages over traditional methods:

- **Flexibility:** Suitable for both small-scale and large-scale farmers.
- **Soil Health:** Deep cultivation improves soil aeration and nutrient uptake.
- **Resource Efficiency:** Better utilization of water and fertilizers leads to healthier plants.
- **Leaf Quality:** Increased yield and quality of mulberry leaves, which are essential for silkworms.
- **Cost Reduction:** Lower production costs due to mechanization, reduced labour, and efficient management practices.
- **Scalability:** Feasible for large-scale mulberry cultivation, enhancing productivity and profitability.

### Conclusion

Modern planting systems enhance the efficiency and productivity of mulberry cultivation, making sericulture more sustainable and economically viable. By adopting these advanced techniques, farmers can significantly improve their yield and quality of mulberry leaves, ensuring a steady and high-quality food source for silkworms. This not only supports the

sericulture industry but also promotes the growth and development of sustainable agricultural practices.

### Reference

1. Ganga, G. and Chetty, J. S. 2019. An Introduction to Sericulture in India (2<sup>nd</sup> ed.). Oxford and IBH Publishing Co. PVT. LTD., New Delhi, India. 328 p.