WELCOME

S.Y.B.Sc. STUDENTS

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Cultivation of mulberry (Moriculture) :

a) Varieties for cultivation,

b) Rain fed and irrigated mulberry cultivation-

Fertilizer schedule,

Pruning methods and

leaf yield.

Cultivation of mulberry (Moriculture) :

Cultivation and harvesting of mulberry plants is called as Moriculture.

1. Selection of Mulberry Variety:

- There are over 20 species of mulberry of which four are more common.
- These are *Morus alba, Morus indica, Morus serrata* and *Morus latifolia*
- The local species *Morus indica* offers certain good features i.e. quick growing, hardness, remaining fresh throughout year but its yield is rather low.
- Mulberry is a hardy perennial tree species grown in temperate, trophical and subtrophical regions of the world.
- The leaves of mulberry from the specific food for the Bombyx mori.
- The mulberry alone contributes about 90% of raw silk productions of the world.
- It has been shown that about 75% of the protein directly derived from mulberry leaf is the primary source for the silkworm for bio-synthesis of its silk.

2. Propagation:

- Mulberry is propagated either through seeds or vegetatively.
- The vegetative method is most common.
- The mulberry propagating is through cuttings in multivoltine regions like Karnataka and West Bengal.
- Exotic varieties are propagated through root grafts.
- In univoltine areas like Kashmir, the mulberry is propagated through seedlings.

3. Climate :

a) Temperature:

- Mulberry requires temperature ranging from 24°C to 28°C for better growth and leaf yield.
- If temperature is below 13°C and above 38°C the growth and sprouting of buds cannot be obtained.
- In temperate regions mulberry leaves are available for rearing purpose only during May to October.
- In the trophic region growth of mulberry is continuous throughout the year.

b) Rainfall:

- Mulberry requires rainfall ranging from 600 mm to 2500 mm.
- On an average 50 mm once in 10 days is considered ideal for mulberry.

c) Humidity:

- The ideal humidity for mulberry leaf yielding is ranging in between 65% to 80%
- The quality of leaf produced during the rainy season is better than other season.

d) Sunshine:

- It is important climatic factor which regulate the growth of mulberry.
- In trophic region it grows well with a sunshine range of 9.0 to 13.0 hours a day.

e) Elevation:

- In India mulberry is cultivated at altitudes between 300 to 800 m above MSL.
- However upto 700 m is ideal for good growth of mulberry.

4. Soils:

- Mulberry can be grown in all types of soil which maintain the mulberry plants for sustained maximum productivity of quality leaves.
- The mulberry is a deep rooted, perennial, long standing, hardy and monoculture crop.
- The ideal range of **soil** pH is 6.2 to 6.8. Mulberry can be grown in saline, alkaline and acidic soils after suitably amending the soils
- So soil should be deep, fertile, well drained, clay loam to loam in texture, friable, porous and with good moisture holding capacity. It has to supply –

a) The essential major and minor plant nutrients
b) Oxygen for root respiration
c) Mechanical support or anchorage
d) As a storehouse for water

5. Planting:

a) Location and Topography:

- Mulberry plantation should be established near the rearing house.
- It is convenient for quick transport and immediate use of leaves for feeding after harvesting.
- It also prevent the wastage of leaves and economic loss of farmers.

b) Preparation of Land:

- When once the land is selected for mulberry cultivation the field has to be levelled & the fertility level improved.
- Levelling of land depends upon its topography such as flat, incline and terrace type of fields.
- The land should be free from weeds at the time of mulberry planting.

c) Planting Season:

- Early spring and late autumn seasons are best suitable for mulberry plantations.
- In Karnataka mulberry planting is during July-August. In West-Bengal planting is during rainy season.

d) Direction of Planting:

- In temperate regions the direction of the rows of planting is important.
- Depending upon light intensity and wind direction. Planting direction should North-South or East-West.
- Rows should be parallel. In trophic region mulberry rows can be planted in any direction.

e) Planting Distance:

- The planting distance depends upon sunshine, temperature, soil fertility, intensity of cultivation practices adopted including the training and harvesting methods.
- There are two systems are as

	Spacing between rows	Spacing between plants
1. Pit System (Rainfall mulberry)	**0.9 to 0.75 m**	**0.9 to 0.45 m**
2. Row System (Irrigated)	**0.45 to 0.60 m (0.3 to 0.45 m)**	**0.45 to .60 m (0.15 m)**

- The general pattern under rainfall condition is known as Pit system of cultivation and under irrigation the row planting is known as Kolar system.
- Where rainfall is heavy, a close planting called Strip system.

Pit System

Row System

f) Selection of Planting Material:

- Stem cuttings are obtained from 6-8 months old branches.
- Fully grown thick main stems and branches which are free from insects and diseases should be selected.
- These should be generally one and a half centimeter thick.
- The stem is cut into pieces with 3 to 5 buds of about 20 cm long. The cutting should clean cut at angle of 45°

g) Planting Method:

- Planting cuttings directly in the field
- Raising saplings in the nursery and planting in the field
- Raising saplings in the plastic bags and transplanting
- After preparation of land, pits of size of 40 cm width, 40 to 50 cm depth are made where interplanting distance is over 1.2 meter, trenches of 45 cm X 45 cm are opened in the planting row.
- Good quality compost should apply. Chemical fertilizers at the rate of 80 kg N, 100 kg P_2O_5 and 50 kg K_2O per hectare are also applied.




6. Nursery:

- At least 3 to 5 months before the pits are ready for nursery.
- Nursery bed must be prepared before the cuttings are ready.
- The nursery bed should be 4-5 meters x 1.5-2 meters and about 30 cm above the ground level.
- While planting cuttings in the nursery bed a distance of 15-20 cm from cutting to cutting and 10-15 cm from row to row should maintain.
- Plastic bags are more beneficial than raising in nursery bed.
- The plastic bags of 20 cm and 25 cm size must be used with mixture of red soil, sand and manure is filled.
- Due to this the root system is not affected during transplantation and plants will be well established.

Mulberry nursery

7. Manuring:

- Its for increased productivity and improved quality of mulberry leaves.
- It is fully realized that the native soil fertility is not sufficient alone so application of manures and fertilizers is must.
- The proper application of manures are as ---
  1. Increase water retention capacity.
  2. Improves the texture of soil helping in good rooting.
  3. Increases microbial populations.
  4. Supplies micro-nutrients in addition to macro-nutrients.

8. Interculture:

- This is done to control weeds and simultaneously make the soil porous so as to allow water to soak deep in the soil and to ensure better aeration and enhance nitrification.
- To remove weeds ploughing of inter space between the rows periodically to depth of 15 cm is necessary.
- To conserve moisture and nutrients.
- Intercultivation should be done atleast 3-4 times a year.

9. Water Management / Irrigation : Water is the most important single input which controls agriculture productions. There are several methods.

a) Furrow Method: In this method the field is laid out into series of ridges and furrows. The basal part of the furrows is made wet by the flowing water and ridge is moistened by the capillary movement of the water. The advantages of this methods are as—

1. It is suitable for wide spread as well as close spaced mulberry plantation.
2. Evaporation from the soil surface is relatively less
3. The ridges carrying the plant root system are freely aerable helping root development.
4. Furrows serve as a drainage channel during heavy rains and thus water stagnation is avoided.

b) Flat Bed Method: The field is divided into rectangular beds with bunds all around and channels on the sides. The bed size vary from 3.5 x 2.0 m to 4.0 x 6.0 m. The benefits are ---

1. It is suited for most soil types.
2. It is economic in use of water , there is low wastage of water due to run off.
3. The soil is not eroded.
4. Irrigation is quicker.

c) Basin Method:

It is suitable mostly for tree plantations.

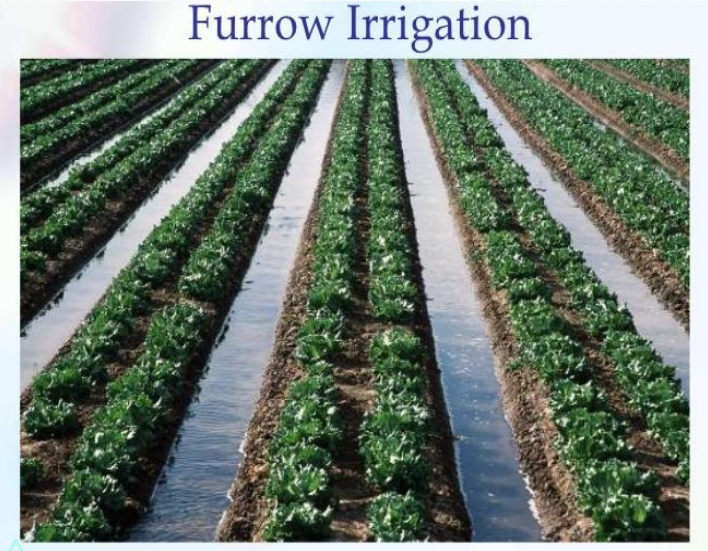
In this method irrigation water from the supply source is laid into the basin around the trunk.

The diameter of the basin may vary according to age size of tree from 1.0 to 1.5 m.

d) Overhead or Sprinkler:

This method can practiced in undulating lands where low and high bushes are cultivated. The advantages are as ---

1. Economically most efficient for use of water
2. There is uniform distribution of water on the foliage.
3. It avoids percolation
4. Most suitable for emergency irrigation.



10. Pruning:

It is a removal of undesirable branches of mulberry plant with following objectives.

- The first pruning will be in May/June after the commencement of rains and it will be at 60 cm from the soil level.
- The second pruning will be in October/November after taking 2 or 3 successive leaf harvest. It will be at 90-100 cm from the soil level.

1. To give the plant a proper shape and size.
2. To improve the leaf yield.
3. To improve the quality of leaves.
4. To adjust the leaf production with requirement for rearing.
5. To facilitate easy leaf harvest and Intercultivation.

11. Quality of Leaves:

- The leaf which is dark green, turgid, soft, thick with good moisture content and high percentage of protein is considered to be excellent.
- Such quality leaves will yield better silk.

THANKS

STAY HOME AND STAY SAFE