

# MULBERRY PRODUCTION



**Dr. P. K. Yadav**  
**Professor and Head**

# INTRODUCTION

- Botanical Name : *Morus alba*
- Family : Moraceae
- Chromosome No. :  $2n: 308$
- Origin : China
- Inflorescence: Catkin
- Fruit Type : Sorosis
- Edible Part: Mesocarp



## Cont....

- Cultivation and harvesting of mulberry plants is called Moriculture.
- Mulberry basically a temperate fruit crop but some species also grown in, tropical and subtropical regions of the world.
- The leaves of mulberry form the specific food for the silkworm, *Bombyx mori* L.



# Benefits of mulberry

- Rich in antioxidant
- Aid in prevent cancer
- Boost immune system
- Improve digestive health
- Boost heart health and body metabolism
- Reduce appearance of blemishes and age spots



# Species of Mulberry

- Over 20 Sp. of mulberry four species are more useful:
- ***Morus alba***: Cultivated as wild tree in Punjab and North-West Himalaya. It is cultivated for fruit and timber purpose.
- ***M. indica***: Almost all Indian varieties coming under this species. It is cultivated in Sub Himalaya tracts from Kashmir to Sikkim and other part of country like West Bengal, Assam, Karnataka and Tamil Nadu.
- ***M. serrata***: Commonly grown in Himalayas.
- ***M. laevigata***: Cultivated species found in tropical and subtropical region of India.

# Varieties

- Central Silk Board Developed high yielding variety
- Kanva-2, S-30 and S- 54 (suited for Karnataka, A.P. &Tamil-Nadu State)
- S-162, S-519, S-633 (suited for Punjab, J&K, U.P. and W. Bengal State)
- Tr-10, Chinese White and Chak Majra (suited for Western North India, Jammu and Western Himachal Pradesh)



# Soil and Climate

- **Soil:** Mulberry grows well in deep, fertile, well drained soil, having pH 6.2 to 6.8.
- **Climate:** Mulberry can grow under temperate and tropical condition.
- a) Atmospheric Temperature: Mulberry required temperature ranging from 24°C to 37°C.
- b) Rainfall: Mulberry can be grown in places with rainfall ranging from 600 mm to 2500 mm.

# Preparation of the Land

- Once land is selected for cultivation, the field has to be levelled.
- After levelling deep ploughing is required to remove the weeds and the soil has to be made into a fine tilth before the pits are prepared for planting.
- Pits (35 cm cube) are excavated a month before planting.
- On an average, a spacing of 6m is satisfactory, close spacing 4m also give good yield.



# Propagation

- Mulberry is propagated through- seeds, vegetative stem cutting, grafting and layering.
- Stem cutting are highly popular in India.
- Stem cutting of 6-8 month old and 17-22 cm length containing 4-5 active buds can be transplanted directly in field or may be use in nursery for sapling preparation.
- 6 month saplings are ready to transplant in pits.

# Planting Time

- Early spring and late autumn seasons are best suitable for mulberry plantations.
- Planting in winter and summer should be avoided.
- Planting should not be delayed in spring, if delayed the sprouted buds fall off and the plants do not grow well.
- In India, Planting season varies in different parts. In Karnataka: Mulberry planted July- August In West-Bengal, cutting planted during November (late autumn)

# Application of Manuring

- Increase water retention capacity.
- Improves the texture of soil helping in good rooting.
- Increases microbial population.
- Supplies micro-nutrients in addition to macro-nutrients.
- Organic manures are used- Neem cake, ground nut cake and compost.
- In irrigated condition 20 MT/ha and in rainfed 10 MT /ha FYM or compost have been recommended.

# Fertilizer requirement

- In irrigated condition 169 kg N, 180 kg P and 112 kg K, apply in equal split doses in the month of July and October.
- Use of *Azotobacter chroococcum* for nitrogen fixation and VAM for phosphate mobilisation can help to curtail down the requirement of N and P fertilizer by 50% and 80% respectively.
- Micronutrient like Mn, B, Fe ,Cu, Zn and S also influence satisfactory growth and yield.

# Weeding

- 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 nitrification.
- First weeding is required 30 days after planting.
- Inter cultivation should be done at least 3-4 times a year.

# Irrigation

- In south India irrigation apply at 10 days interval and in North India irrigation apply at 7 days interval.
- Methods of irrigation
  - a) Furrow method
  - b) Flat bed method
  - c) Basin method
  - d) Overhead or sprinkler



# Training and Pruning

- Pruning is a judicious removal of undesirable branches of mulberry plant.
- Training require to give the plant a proper shape and size.
- Annual pruning essential for rejuvenating the growth and metabolic processes of mulberry plant.
- Pruning is done after harvesting of fruits (June- July) in Eastern India.

# Flowering and Fruiting

- Mulberry flower during late winter or beginning of spring.
- In South India mulberry flower twice Aug.- Sep. and May- June.
- The flower born on axil of leaves.
- The fruits are sorosis – a number of syncarp are enclosed in a fleshy perianth.
- Average size of fruit is 5 cm.



# Harvesting of Leaves

- Harvesting method or collecting method of mulberry leaves can be broadly classified into three types.
- Branch Cutting Method
- Leaf Cutting method
- Bud Plucking Method



# Fruit harvesting and Yield

- Fruit mature and ripe 2-2.5 months after pollination.
- The lateral fruits mature first.
- Fruits are not mature simultaneously so number of picking is require.
- In temperate region 7-10 kg fruits may be harvested from full grown plant.
- Yield: 4-7 Q/ha from full grown plant.

# Diseases

## Leaf Spot

- **Pathogen** : *Cercospora moricola*
- **Symptoms** : Brownish necrotic, irregular spots appear on the leaf surface. Spots enlarge, extend and join together leaving characteristic 'shot hole'. Leaves become yellow and wither off as disease becomes severe.
- **Control measures**
- Spraying of 0.2 % Bavistin (Carbendazim 50% WP) solution on the leaves.



## Powdery Mildew

- **Pathogen** : *Phyllactinia corylea*
- **Symptoms** : White powdery patches appear on the lower surface of the leaves. When severe, the white powdery patches turn to brownish-black, the leaves become yellow, coarse and loose their nutritive value.
- **Control measures:**
  - Spraying of 0.2 % Karathane (Dinocap 30% EC) / Bavistin on the leaves.
  - Or spray Sulfex (80WP) 0.2%.
- **Other diseases:**
  - Leaf rust
  - Sooty Mould
  - Root Knot
  - Root Rot



# Pest

## **Pink Mealy bug** *Maconellicoccus hirsutus*

- **Symptom** : Pink mealybug, causes deformity symptom in mulberry which is popularly called as Tukra. Leaves become dark green, wrinkled & thickened with shortened inter nodal distance resulting in bunchy top appearance/resetting of leaves.

### **Control measures**

- Clip off the infested portion by secateur, collect in a polythene bag and destroy by burning. This will help in reducing the chances of recurrence of pest.
- **Chemical control:** Spray 0.2% DDVP 76% EC (@ 2.63 ml/lit water) 15–20 days after pruning.
- **Biological control:**
- Release predatory lady bird beetles *Cryptolaemus montrouzieri* @ 250 adult beetles or *Scymnus coccivora* @ 500 adult beetles in two equal splits at an interval of 6 months.



# Other pest



Papaya mealy  
bug



Mulberry Leaf  
roller



Bihar Hairy  
Caterpillar



Thrips



White fly

# Thank You

