

PROJECT MODEL - 1

LARGE SCALE PRODUCTION OF MULBERRY SAPLINGS THROUGH KISSAN NURSERY

Introduction

Mulberry is a vegetatively propagated perennial crop and in India propagation through cuttings is the most common method. Though mulberry plantation can be established by planting cuttings directly in the field, using saplings has got many advantages over direct plantation of cuttings. Saplings are the rooted cuttings, used as planting material.

Advantages of Planting Saplings

- High survival rate due to existing root system, hence lesser fail pits
- Higher area coverage due to better use of plant material
- Scope for removal of undesirable variety at nursery stage
- Quick and better establishment of garden
- Plants can be trained suitably
- Uniform development of the garden
- Saplings can be raised in time to take up timely plantation during monsoon

Realizing the importance of initial establishment of the garden by using saplings, more and more farmers are preferring saplings for the establishment of their mulberry gardens. To facilitate large scale production of saplings on a commercial scale as an economic enterprise, the Central Sericultural Research and Training Institute (CSRTI), Mysore has prepared a technology package.

Varieties of Mulberry

Improved varieties of mulberry recommended for irrigated and rainfed conditions and suitable for raising saplings are Victory -1, S-36, S-13 and M-5.

Victory-1 : It is also popularly known as V-1. It is a selection from cross-pollinated hybrids of S-30 and Ber. C-776. The variety is characterized by high, erect branches with grayish stem colour. Leaves are succulent, thick large, entire and ovate with truncate base. Leaves are smooth and glossy. It possesses good agronomical characters like high rooting ability, fast growth and high yield. Under irrigated

conditions with recommended package of practices, it yields more than 60 MT/ha/year with excellent leaf quality.

S-36 : The variety S-36 was evolved from Berhampore Local by chemical mutagenesis. It is characterized by short internodes, semi-erect and medium branching with grayish pink stem colour. Leaves are unlobed, glossy, pale green with smooth surface. It is recommended for assured irrigated conditions and especially for rearing chawki worms. With recommended package of practices, it yields

40-45 MT/ha/year. Because of high succulence and nutritive quality, it is more suitable for young age silkworm rearing.

S-13 : It is a selection from open pollinated hybrids of Kanva-2. The variety is characterized by short internodes and high branching. Leaves are thick and dark green, unlobed with smooth surface. This variety is recommended for rainfed areas with red loamy soils and also for water scarce areas of the State having high temperature. With recommended package of practices, it yields about 12 MT/ha/year under rainfed conditions and 35-40 MT/ha/year under semi-irrigated conditions.

M-5 : The M-5 or Kanva-2 is a an open pollinated hybrid selection from the seedling population of Mysore Local variety. It grows vigorously and responds well to agronomic inputs. It can be grown under varied agro-climatic conditions with suitable system of planting. Leaf yield is 10-12 MT/ha/year under rainfed conditions but an yield of 30-35 MT/ha/year can be obtained with assured agronomic inputs including irrigation once in 8-10 days. This variety is cultivated in almost all the Indian states and recently introduced to some South-East Asian countries like Sri Lanka, Bangladesh, Philippines, Thailand and Vietnam.

Suitable season

Though mulberry saplings can be raised throughout the year in the State, it is advisable to raise saplings 3-4 months prior to the planting season, i.e. February to April so that the saplings will be ready by June-August to take up plantation taking advantage of monsoon rains.

Selection of nursery site

The nursery site should be flat and elevated. Low lying and submersible areas must be avoided. Sandy loam to clay loam with light textured, good drainage with pH range of 6.5-7.5 and soil depth of 3' is considered ideal for establishing nursery. The nursery site should also be free from nematode and termite infestation. The site should have adequate irrigation facility, as irrigation is the most important component in the nursery activity.

land preparation

After selecting the site, the land must be ploughed with tractor drawn mould board plough at least two times. Depending upon the soil texture, sand at the rate of 10-12 MT per acre and well decomposed farm yard manure at the rate of 10 MT/acre must be applied, followed by ploughing with country plough for thorough mixing of FYM in the soil and also to bring the soil to a fine tilth. Later, the land should be leveled for easy facilitation of irrigation.

After leveling the land, prepare raised beds of convenient size, preferably of 3 m length, 1 m breadth and 10 cm height with irrigation channel all around the bed. It is advisable to irrigated beds 15 days prior to planting of cuttings to allow all the weed seeds to germinate. These weed seedlings should be removed by light hoeing just before planting the cuttings. In one acre, 1065 nursery beds of the above size can be prepared.

Selection of material for seed cuttings

The source of seed cuttings is very important. The stock plants from which the cutting material is obtained should be true to type and free from pests and diseases. The seed material should have an ample supply of stored food to nourish the developing roots and shoots until new plants become self sustaining. Hence, it is advisable to collect seed cuttings from exclusive seed gardens of 6-8 months growth after pruning. The shoots should be transported during cooler hours to avoid driage.

Planting in the nursery beds

The cuttings should be planted in the nursery beds as quickly as possible to avoid driage of cuttings. If the cuttings are to be preserved due to unavoidable conditions, they should be preserved under shade, covered with wet gunny cloth or green leaves.

Plant the cuttings in the nursery beds in a straight position, exposing only one bud above the surface of the soil, following row to row distance of 20 cm and cutting to cutting distance of 10 cm. A nursery bed of size 3.0 m x 1.0 m accommodates 150 cuttings. After planting, the soil around the cuttings must be pressed firmly, followed by irrigation.

Irrigation

Irrigation is one of the most important inputs in the nursery technique. The beds are to be irrigated once in 4-6 days depending on the soil texture and weather conditions.

Maintenance of nursery

Sprouting of cuttings starts after 10-12 days of planting. Though root initiation starts around 30 days after planting, root system develops only after 70-80 days of planting. From each planting, allow only one shoot to develop by removing all the smaller shoots. During the nursery period undertake weeding at least two times. The first weeding is carried out 35-40 days after planting and second weeding after 60 days of planting. To boost the growth of the saplings, apply urea at the rate of 20 g/sq.m after 60 days of planting after second weeding.

Control of pests and diseases

As a preventive measure after 30-40 days of planting, spray of 0.1% Bavistin to prevent foliar diseases and 0.1% DDVP to prevent pest infestation. However, appropriate measures must have to be taken to control any incidence of pests and diseases, if observed.

Uprooting and transportation

After 4 months of planting, the saplings will attain about 90-100 cm height and are ready for transplantation in the main field. Uproot the sapling carefully without damaging the bark of main roots. For easy uprooting of saplings, irrigate the nursery beds two days before uprooting.

For high rate of survival, the saplings should be planted as quickly as possible or should be preserved fresh by covering them with wet gunny cloth. Transportation of saplings for longer distance should preferably be done during cooler hours.

Before taking up the plantation, it is very much essential to check the saplings for root borne diseases like root rot and root knot infection and the infected saplings should be discarded by burning.

Economics

Raising of saplings through 'Kissan Nursery' programme can be taken up in small to large scale. The details of cost of production, economics of the activity for a one acre nursery area are furnished in **Module-7**. Assuming a success rate of 80% and a provision of 5% towards weak and damaged ones, 1,21,600 salable saplings can be produced from one acre gross area having 80% under beds. The total cost of production works out to Rs. 63,000 and the gross surplus of Rs. 32,600 can be realized from one acre in four months, assuming a sale price of Re. 0.80 each. Considering the short term nature of the activity, the required financial assistance can be availed as short term loan.