

## **SERICULTURE**

### **1. Introduction**

Silk fibre is protein produced from the silk glands of silkworms. The technique of silk production is known as sericulture. It is an agro industry and is playing an important role in the economic development of silk rearing pockets of rural India providing gainful occupation to 64 lakh persons. One hectare of Mulberry generates employment of about 12 man years and family members ranging in age between 18 to 60 years can engage themselves in various sericulture activities, such as, cultivation of food plants (Mulberry, castor etc., silkworm rearing, egg production, silk reeling, weaving etc. India is the second largest producer of silk in the world after China and has the distinction of producing all the four types of silk i.e. (a) Mulberry silk (91.7%); (b) Tasar silk (1.4%); (c) Eri silk (6.4%); and (d) Muga silk (.5%) which are produced by different species of silkworms.

Mulberry silk is produced extensively in the States of Karnataka, West Bengal and Jammu & Kashmir. Similarly, Tasar silk worms are reared traditionally by the tribes of Madhya Pradesh, Bihar and Orissa; Muga and Eri silk are produced exclusively in Assam. The food plant of silkworms is Mulberry for producing Mulberry silk. Tasar silk producing silkworms feed on *Terminalia tomentosa*, and *Terminalia arjuna*. Similarly, Muga silk producing silkworms feed on scalu or Som; Eri silk producing silkworms feed on castor (*Ricinus communis*).

### **2. Market potential**

The demand for silk has always been high for a variety of fabrics ranging from sarees to shirting etc. Natural silk faces competition from artificial silk which is imported but consumers having set preferences for natural silk are not easily weaned away by artificial silk. Besides indigenous demand, there is a huge export demand and Indian silk is popular all over the world. Silk earns considerable foreign exchange for the country. Total export earnings during 2000-01 was over Rs.1,400 crores. The Silk Board provides assistance for international marketing to those interested in export.

### **3. Technical details**

#### **(a) Soil and climate**

Mulberry can be grown on a wide range of soils upto 4,000 ft. above MSL. Flat land or gently sloppy or undulating land gives good crop. The ideal temperature for silkworm rearing are 26<sup>0</sup> C to 27<sup>0</sup> C and humidity conditions 70% to 90%.

**(b) Land preparation & planting**

Land is ploughed to a depth of 35 to 40 cms. The soil is well pulverized and 20 tonnes of compost per hectare is mixed thoroughly well in the soil. Commonly, mulberry is cultivated by propagation by planting 2 budded cuttings of well developed branches from at least 8 months old mulberry plants at the commencement of the rainy season.

**(c) Application of fertilisers & interculturing**

Scientific cultivation of mulberry is the basic need of sericulture. Timely application of fertilizers, irrigation, weeding, hoeing, irrigation, plant protection measures etc. are very important for better plant growth and leaf yield. Application of fertilizers depends on soil test results and availabilities of irrigation water. However, on an average 250:125:125 kgs. of NPK per hectare is applied per year. First dose is applied 2 to 2<sup>1/2</sup> months after planting, second dose in the fourth month and subsequent doses immediately after each pruning.

**(d) Pruning**

Pruning is done to ensure vigorous growth of plants and for production of good quality leaves. Pruning operation is taken up when plants attain a height of about 2 meters and the stems/branches have attained a girth of not less than 2 cms at the bottom.

**(e) Harvesting & yield**

Usually the first picking of leaves is undertaken six months after planting. After the first picking, subsequent pickings are done at an interval of about 8 weeks depending upon the correct stage of maturity of leaves. As regard yield under rain fed conditions, 10 to 15 tons of mulberry leaves per hectare per year can be expected. But under irrigated condition, the yield may be around 25 to 30 tons of leaves per hectare per year.

**(f) Rearing of silkworms**

Rearing of silkworms on scientific method is key to bumper cocoon harvest and to have quality silk production. Aspects to be especially taken care of are: Rearing houses and rearing equipments; feed material and feed preservatives; and rearing techniques.

**4. Details of equipment**

| S. No. | Items                                                 | Quantity | Rate | Value (Rs.) |
|--------|-------------------------------------------------------|----------|------|-------------|
| 1.     | Farm Implements<br>(Spade, Hoe, Khurpi; Baskets etc.) | LS       | LS   | 5,000.00    |
| 2.     | Planting                                              | -        | -    | 1,500.00    |
| 3.     | Misc.                                                 | -        | -    | 1,500.00    |
| TOTAL  |                                                       |          |      | 8,000.00    |

## 5. Working capital requirement

| S. No. | Items                                                 | Amount (in Rs.)  |
|--------|-------------------------------------------------------|------------------|
| 1.     | Compost                                               | 3,000.00         |
| 2.     | Fertilisers                                           | 1,500.00         |
| 3.     | Irrigation for 2 crops                                | 2,000.00         |
| 4.     | Interculturing & plant protection for 2 crop Rs.500x2 | 1,000.00         |
| 5.     | Harvesting of leaves and feeding – 2 crops            | 2,000.00         |
| 6.     | Cost of laying – 2 crops                              | 4,000.00         |
| 7.     | Pruning & misc. costs/expenses                        | 1,500.00         |
|        | <b>TOTAL</b>                                          | <b>15,000.00</b> |

## 6. Cost of project

| S. No. | Items                                     | Total cost (in Rs.) |
|--------|-------------------------------------------|---------------------|
| 1.     | Land (Owned) preparation & cost of plants | 2,000.00            |
| 2.     | Cost of equipments                        | 8,000.00            |
| 3.     | Contingencies, misc. & insurance etc.     | 5,000.00            |
| 5.     | Working capital                           | 15,000.00           |
|        | <b>TOTAL</b>                              | <b>30,000.00</b>    |

## 7. Means of finance

| S. No. | Particulars             | Total cost (in Rs.) | %age          |
|--------|-------------------------|---------------------|---------------|
| 1.     | Promoter's contribution | -                   | -             |
| 2.     | NSTFDC - Term Loan      | 27,000.00           | 90.00         |
| 3.     | SCA – Term Loan/Subsidy | 3,000.00            | 10.00         |
|        | <b>TOTAL</b>            | <b>30,000.00</b>    | <b>100.00</b> |

**Note:** The State Channelising Agencies shall arrange to provide subsidy to beneficiary(ies) as per norms of their Corporation. Further, SCAs may also make efforts to avail incentive/subsidy from other centrally sponsored schemes.

## 8. Project economics

| I.    | FIRST YEAR                                          | Per annum/unit Amount (in Rs.) |
|-------|-----------------------------------------------------|--------------------------------|
| A.    | EXPENDITURE                                         |                                |
| (I)   | Crop Expenses                                       |                                |
| (a)   | First crop                                          |                                |
| (i)   | Land preparation                                    | 500.00                         |
| (ii)  | Application of 20 tons of compost @ Rs. 150 per ton | 3,000.00                       |
| (iii) | Planting                                            | 1,500.00                       |

|              |                                                                                             |                  |
|--------------|---------------------------------------------------------------------------------------------|------------------|
| (iv)         | Application of fertilizers                                                                  | 1,500.00         |
| (v)          | Irrigation (15 irrigations @ Rs. 100/irrigation)                                            | 1,500.00         |
| (vi)         | Interculturing & Plant protection measures                                                  | 500.00           |
| (vii)        | Harvesting of leaves and feeding                                                            | 1,500.00         |
| (viii)       | Cost of laying @ 1000 layings per crop per hectare @ Rs.2/- laying                          | 2,000.00         |
|              | <b>Total (a)</b>                                                                            | <b>12,000.00</b> |
| <b>(b)</b>   | <b>Second crop</b>                                                                          |                  |
| (i)          | Pruning                                                                                     | 500.00           |
| (ii)         | Application of fertilizers                                                                  | 1,000.00         |
| (iii)        | Irrigation (8 irrigations @ Rs. 100/- irrigation)                                           | 800.00           |
| (iv)         | Interculturing & Plant protection measures                                                  | 500.00           |
| (v)          | Harvesting of leaves and feeding                                                            | 1,200.00         |
| (vi)         | Cost of laying @ 1000 layings @ Rs.2/- laying                                               | 2,000.00         |
|              | <b>Total (b)</b>                                                                            | <b>6,000.00</b>  |
| <b>(c)</b>   | <b>Third crop (same as second crop)</b>                                                     | <b>6,000.00</b>  |
| <b>(d)</b>   | <b>Fourth crop (same as second crop)</b>                                                    | <b>6,000.00</b>  |
| <b>(e)</b>   | <b>Total expenditure for first year (four crops) before interest for the year [a+b+c+d]</b> | <b>30,000.00</b> |
| <b>(II)</b>  | <b>Sustenance for beneficiary/family</b>                                                    | <b>24,000.00</b> |
| <b>(III)</b> | <b>Interest for the year</b>                                                                | <b>2,000.00</b>  |
|              | <b>Total expenditure</b>                                                                    | <b>56,000.00</b> |
|              | <b>Sales realisation</b>                                                                    |                  |
|              | Value of 1500 kgs of cocoons from four crops (375 kgs per crop) @ Rs.70 per kg              | 1,05,000.00      |
|              | Less expenditure for first year                                                             | 56,000.00        |
|              | <b>Net return for First Year</b>                                                            | <b>49,000.00</b> |
|              |                                                                                             |                  |
| <b>II.</b>   | <b>SECOND YEAR</b>                                                                          |                  |
| <b>A.</b>    | <b>EXPENDIRURE</b>                                                                          |                  |
| (i)          | First crop (as shown earlier)                                                               | 12,000.00        |
| (ii)         | Second crop (as shown earlier)                                                              | 6,000.00         |
| (iii)        | Third crop (as shown earlier)                                                               | 6,000.00         |
| (iv)         | Fourth crop (as shown earlier)                                                              | 6,000.00         |
| (v)          | Fifth crop (as shown earlier)                                                               | 6,000.00         |
| (vi)         | Interest                                                                                    | 2,000.00         |
| (vii)        | Sustenance for beneficiary/family                                                           | 24,000.00        |
|              | <b>Total expenditure for the second year for five crops</b>                                 | <b>62,000.00</b> |
|              | <b>Sales realisation</b>                                                                    |                  |
| (i)          | Value of 1875 kgs of cocoons from 5 crops (375 kgs per crop) @ Rs.70 per kg                 | 1,31,250.00      |
| (ii)         | Less expenditure during 2nd year                                                            | 62,000.00        |
|              | <b>Net return for Second Year onwards</b>                                                   | <b>69,250.00</b> |

From second year onwards, the farmer is likely to get a net annual return of Rs.69,000/- per hectare upto 12 years. Thereafter, the mulberry plants are replanted. However, part planting is shown every year in the project to provide tender leaves which are largely available from young plants.

**9. Interest, moratorium & repayment period for beneficiaries**

- (a) Interest : 6% p.a. on NSTFDC term loan.
- (b) Moratorium period : 10 months from date of release of final installment by SCA.
- (c) Repayment period : 5 years excluding moratorium period.

**10. Assumptions/parameters**

- ❑ If land is uneven or sloppy expense on terracing shall be higher and needs adjustment.
- ❑ Technical and marketing assistance can be had from the Silk Board and Central Silk Research Institute.
- ❑ No extra cost is assigned to land as it is assumed to be available within the family or provided by a welfare organization.
- ❑ Cost of project may vary in different States & Regions.
- ❑ It is assumed that the products/services have demand in the project area and beneficiaries are having the relevant experience.