



GOVT OF JAMMU AND KASHMIR
DIRECTORATE
OF
SERICULTURE DEVELOPMENT DEPARTMENT
J&K

VISION 2030

VISION DOCUMENT AND ROADMAP

FOR

COCOON AND SILK PRODUCTION

IN

JAMMU & KASHMIR

FOR NEXT 15 YEARS

(2017-2018 TO 2030-2031)



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INTRODUCTION

Sericulture industry in Jammu & Kashmir State is of very old origin. There is mention of sericulture in the Chronicles of Mirza Hyder that sericulture was practiced in Kashmir during the reign of Zainul Aabdin, the Budshah 1420-1470. However, Sericulture got British Patronage during Dogra Rule and a number of initiatives were undertaken to develop silk industry in the State. The department of sericulture was created in the year 1889 under the monopolistic control of government to promote silk industry in the state. In this regard a very good infrastructure including mulberry nurseries, silkworm seed stations and silk reeling/weaving factories were established. Due to these efforts, Jammu and Kashmir became one of the leading silk producing states. During those days, sericulture was the only cash crop available to the people of the state. By 1940, about 52000 families were engaged in this activity and the production of cocoon was as high as 15.00 Lac kg. However the policies and activities of silk production could not keep pace with the changing socio-economic conditions. Sericulture and silk industry continued to remain a Govt. Monopoly and cocoon production as well as reeling and weaving activities in the state declined gradually.

The state of Jammu and Kashmir enjoys the best climate for Bivoltine silkworm rearing; particularly the temperate climate of Kashmir valley is very congenial for Bivoltine cocoon production. Jammu & Kashmir is famous for producing fine and beautiful silk fabric and silk products like export quality carpets, shawls, stools, curtains etc. Presently about 30300 families are engaged in silkworm rearing producing about 1000 MT (10 Lac kg) of cocoon. The raw silk production is about 145 MT. There are 14 functional silk reeling units under private sector in the state. In addition to one Govt. Silk Weaving Factory at Rajbagh Srinagar, there are many silk weaving units in private sector.

Most of cocoon growers belong to socially and economically weaker sections of society - SCs, STs, Women and others. These families do not have any other source of sustainable income and depend on sericulture for the same. For promotion of sericulture, there is need to provide a strong technical and financial support and ensure these families a sustainable livelihood security. Besides there is urgent need to develop and promote post cocoon sector (silk reeling, weaving, silk fabric and garment production) to create value addition and employment generation. **These interventions will help to realize the National Goal of poverty alleviation and inclusive growth.**

During the last few years, there has been improvement in cocoon production and cocoon quality resulting in good returns to growers. Although good quality bivoltine cocoons are produced in the state yet production and productivity is low. In spite of the fact that the climatic conditions are good and congenial for Bivoltine silkworm rearing and for raising two commercial crops, mostly one major cocoon crop is raised. Due to this reason, sericulture is only a part time occupation and the increase in production is slow. Therefore, there is need to formulate an effective and a sound strategy to make sericulture a profitable and sustainable enterprise, and also to improve the socio-economic condition of silkworm rearers, silk reelers and weavers.

Keeping in view this objective, a comprehensive package has been formulated which will be implemented during the next 15 years in collaboration with CSB.

A target of **280 MT** of raw silk for the year 2023 and **510 MT** for the year 2030 has been set. Strategies to realize these targets have been formulated.

VISION 2030

Transform sericulture into a profitable and sustainable enterprise - see Jammu and Kashmir a leading Bivoltine silk producing state.

MISSION

- Achieve Raw Silk Production of **280 MT** by 2023-24 and **510 MT** by 2030-31.
- Improve productivity and quality in all stages of silk production by adopting improved technologies
- Undertake vertical and horizontal expansion for production, productivity, quality and profitability.
- Create value addition and provide gainful employment opportunities.
- Work consistently to achieve sustainable development goals – inclusive growth, poverty alleviation, and socio-economic empowerment of women and other weaker sections of society.

PRESENT STATUS OF SERICULTURE IN JAMMU & KASHMIR

AN OVER VIEW

Areas of strength:

1. Ideal climatic conditions for quality bivoltine cocoon production.
2. Sericulture a traditional practice. Rearing, reeling and weaving have been a tradition.
3. Availability of basic infrastructure with the state sericulture department.
4. Low level of industrialization- availability of farm/family labor
5. Demand for quality silk

Areas of Weakness:

1. Silkworm rearing a part time occupation- mostly one single crop is raised.
2. Poor infrastructure and inadequate rearing space with farmers.
3. Huge yield gaps between lab and land.
4. Knowledge deficit among farmers
5. Inadequate human resource and weak extension
6. Lack of proper training among the basic extension workers
7. Lack of proper and timely marketing of cocoons
8. Lack of good post cocoon sector- production of low grade silk from good quality silk cocoons
9. Inadequate silk reeling facilities and infrastructure- 60% cocoon crop purchased by people from outside the state
10. Incomplete value addition with the absence of **strong forward linkages**
11. **Non-involvement of Private Sector** especially in Mulberry Sapling and Silkworm Seed Production.

Opportunities

India imports about 3500 MT of raw silk from China to cater its power looms – Jammu and Kashmir as a unique Bivoltine state can fill this gap and can become a leading silk producing state.

Threats

Dumping of Chinese silk and blending of artificial/synthetic silk with natural silk

Competition from other cash crops - horticulture, vegetables etc.

STATUS OF SERICULTURE IN J&K

A-MULBERRY SECTOR.

| | |
|---|------------------------------|
| Departmental Mulberry Nurseries | 173 |
| Total area of Mulberry Nurseries | 1021 Acres |
| Production capacity of Mulberry Saplings/Year | 30 Lac |
| Present Annual Sapling production in Departmental Nurseries | 12 Lac |
| Total available mulberry wealth(2015-16) | 120 Lac Trees (Area 8000 HA) |
| Total effective mulberry wealth(2015-16) | 75 Lac Trees (Area 5000 HA) |

B-SEED SECTOR

| | |
|---|--------|
| Commercial Silkworm Seed Production Centres | 6 |
| Basic Silkworm Seed Stations | 9 |
| Annual Silkworm Seed Production (DFLs) | 17 Lac |
| Annual Silkworm Seed Consumption (DFLs) | 29 Lac |

C- SILKWORM REARING & COCOON PRODUCTION

| | |
|-------------------------------|--------|
| Silkworm Rearers | 30,296 |
| Annual Cocoon Production (MT) | 973 |
| Average Productivity/Oz(kg) | 40 |
| Average rate/Kg(Dry)(Rs) | 667 |

D-POST COCOON SECTOR

| | |
|--|-------------------|
| Cocoon Hot Air Dryer (100 Kg capacity) | 103 |
| Cocoon Auction Market Shed | 8 |
| Cocoon Ware Houses (stores) | 7 |
| Silk Reeling Units | 34(14 functional) |

Cocoon and Raw Silk Production during last few years

| Year | Cocoon Production (MT) | Productivity per oz of seed (28 g) (Kg) | Avg. Price for “A” grade (Rs.) | Raw silk production | Rearers population (No.) |
|---------|---------------------------|---|--------------------------------------|------------------------|--------------------------------|
| 2008-09 | 738 | 32.00 | 192.00 | 82 | 19700 |
| 2009-10 | 810 | 35.00 | 300.00 | 90 | 22800 |
| 2010-11 | 860 | 35.00 | 410.00 | 107 | 25500 |
| 2011-12 | 917 | 37.00 | 350.00 | 116 | 27000 |
| 2012-13 | 901 | 37.00 | 397.00 | 112 | 28000 |
| 2013-14 | 1022 | 40.00 | 650.00 | 136 | 30000 |
| 2014-15 | 1032 | 37.00 | 625.00 | 147 | 30894 |
| 2015-16 | 944 | 37.00 | 582.00 | 135 | 30630 |
| 2016-17 | 973 | 40.00 | 667.00 | 145 | 30296 |

CONSTRAINTS IN COCOON/SILK PRODUCTION

- INADEQUATE FACILITY OF COMPOSITE CHAWKI REARING CENTERS
- SHORTAGE OF REARING HOUSES
- POOR REARING CONDITIONS
- LACK OF TRAINING AMONG FARMERS
- INADEQUATE HUMAN RESOURCE AND WEAK EXTENSION
- SLOW ADOPTION OF TECHNOLOGY
- SMALL LAND HOLDING
- INADEQUATE POST COCOON FACILITIES/ SECTOR

MANPOWER AVAILABLE WITH THE DEPARTMENT

| CADRE | SANCTIONED | VACANT |
|----------------------|------------|--------|
| GAZETTED | 37 | 18 |
| N GAZETTED (CLASS-3) | 660 | 206 |
| N GAZETTED (CLASS-4) | 1826 | 435 |
| TOTAL | 2523 | 659 |

Allocation under different schemes during last 5 year (Lac Rs)

| # | SCHEME/ SECTOR | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 |
|----|--------------------|---------|---------|----------|---------|--------------------|
| | | Outlay | Outlay | Outlay | Outlay | Outlay (Tentative) |
| 1. | STATE PLAN SCHEMES | 338.57 | 239.68 | 239.68 | 239.68 | 162.50 |
| 2. | RKVY (CSS) | 95.60 | 65.00 | 40.00 | 17.90 | 62.97 |
| 3. | ATMA (CSS) | 27.00 | 39.15 | Nil | 12.00 | 65.89 |
| 4. | PMKSY (CSS) | Nil | Nil | Nil | 5.00 | 50.00 |
| 5. | CDP/CSS | 1606.38 | 1456.91 | 1458.358 | 241.00 | 400.00 |

Vision 2030: Long Term Plan:

In line with the Vision and Mission and focused approach in critical areas, vision to produce **510** MT of bivoltine raw silk by 2030 is projected as per the anticipated demand. Accordingly following targets are fixed with respect to area expansion and seed distribution. It is expected that the raw silk production will increase from 145 MT (2016-17) to 510 MT by 2030 -31.

| Year | Mulberry area (Ha) | Seed distribution (Lac DFLs) | Cocoon production (MT) | Cocoon productivity (Kg/oz) | Raw silk (MT) | Renditta |
|----------------|--------------------|------------------------------|------------------------|-----------------------------|---------------|-------------|
| 2016-17 | 8250 | 25.00 | 1000 | 40 | 145 | 7.00 |
| 2017-18 | 8375 | 27.00 | 1110 | 41 | 160 | 7.00 |
| 2018-19 | 8530 | 29.00 | 1220 | 42 | 175 | 7.00 |
| 2019-20 | 8700 | 31.00 | 1330 | 43 | 190 | 7.00 |
| 2020-21 | 8875 | 33.00 | 1450 | 44 | 210 | 7.00 |
| 2021-22 | 9050 | 35.00 | 1575 | 45 | 235 | 6.75 |
| 2022-23 | 9320 | 37.00 | 1740 | 47 | 260 | 6.75 |
| 2023-24 | 9620 | 39.50 | 1900 | 48 | 280 | 6.75 |
| 2024-25 | 9920 | 42.00 | 2100 | 50 | 310 | 6.75 |
| 2025-26 | 10220 | 44.50 | 2270 | 51 | 335 | 6.75 |
| 2026-27 | 10500 | 47.00 | 2450 | 52 | 360 | 6.75 |
| 2027-28 | 10800 | 49.00 | 2645 | 54 | 405 | 6.50 |
| 2028-29 | 11100 | 51.00 | 2855 | 56 | 440 | 6.50 |
| 2029-30 | 11400 | 53.00 | 3075 | 58 | 475 | 6.50 |
| 2030-31 | 11700 | 55.00 | 3300 | 60 | 510 | 6.50 |

STRATEGIES FOR FUTURE

INTERVENTIONS TO ENHANCE PRODUCTIVITY AND PROFITABILITY

A complete and comprehensive approach is needed so that all critical issues in both Pre- and Post Cocoon sectors are addressed simultaneously. There has to be a complete value chain from leaf production to cocoon fabric and garment production. A viable support system with technology intervention for each subsector has to be created and executed as all **subsectors are interrelated**. Emphasis on both **horizontal and vertical** expansion is needed. In order to realize the targets projected in the vision document and transform sericulture and silk industry into a Profitable, & Sustainable Enterprise, following strategies need to be adopted.

REQUIREMENT FOR FIRST 3 YEARS (2017 to 2019)

- IMPROVEMENT IN COCOON AND SILK MARKETING – MARKET SUPPORT SYSTEM TO BE DEvised
- ENHANCEMENT IN COCOON BANK REVOLVING FUND
- OPERATION OF SILK EXCHANGE AND FUND TO OPERATE IT
- INCENTIVE ON COCOON AND SILK PRODUCTION
- INFRASTRUCTURE UP GRADATION IN SILKWORM SEED PRODUCTION SYSTEM AND ADOPTED SEED COCOON REARERS
- UP GRADATION OF 173 NURSERIES/FARMS TO IMPROVE MULBERRY SAPLINGS AND LEAF PRODUCTION

1. Host plant cultivation/ quality leaf production:

Quality mulberry leaf in sufficient quantity is the most important factor for successful and productive cocoon crop. Therefore attempts to expand mulberry plantation across the state will be made. At present many cocoon rearers do not have their own mulberry plantations and depend on leaf harvested from scattered unmaintained mulberry trees existing on public land. This leaf is deficient in nutrients. Also due to low survival of mulberry saplings in the field, leaf production level shows marginal increase. This is primarily because farmers do not adhere to the recommended cultivation techniques. The recommended production packages and cultural operations are not followed resulting in nutrient deficient leaf. The quality of leaf fed to the worms is poor resulting in poor cocoon yield.

Rearers need to be encouraged and supported to raise their own mulberry plantations. Only high yielding mulberry varieties need to be propagated and recommended agronomic and pruning schedules need to be adopted to enhance leaf production so that quality leaf is available for second commercial rearing also. Kisan Nurseries in private sector need to be established for production of mulberry saplings. In addition department has 173 mulberry nurseries/farms covering an area of 1021 acre. As of now 8-9 Lac quality mulberry saplings are produced from only a portion of these nurseries and supplied to cocoon farmers, rest of the area is covered under mulberry plantation from where land less families take leaf for silkworm rearing. Recently CRCs and Chawki gardens have been established in some farms under Catalytic Development Program. **But most of these nurseries remain under developed and their full potential is not realized. The infrastructure of these nurseries/farms has to be upgraded. This intervention will increase leaf yield, enhance supply of Chawki reared worms and cocoon yield. State Govt. or Central Silk Board has to support mulberry plantation as was being provided under Catalytic Development Program.**

Action plan for production of mulberry saplings

| Year | Activity | Quantity (Lac No.) | Cost (Lac Rs.) |
|--------------------|-------------------|--------------------|--------------------------------------|
| 2017-18 to 2023-24 | Plant propagation | 70.00 | 1400.00 @ Rs20/sapling |
| 2024-25 to 2030-31 | Plant Propagation | 80.00 | 2400.00@Rs30/sapling |
| Total | | 150.00 | 3800.00 |

Action plan for mulberry plantation by farmers/departmental farms

| Year | Activity | Quantity (Lac No.) | Allocation needed (Lac Rs.) |
|---------------------|---------------------|------------------------------------|-----------------------------|
| 20 17-18 to 2023-24 | Mulberry plantation | 70.00 (4667 ha - 9 × 8 ft spacing) | 1400.00 |
| 2024-25 to 2030-31 | Mulberry plantation | 80.00 (5333 ha- 9 × 8 ft spacing) | 2400.00 |

| | | | |
|--|--------------|--------------------------|----------------|
| | Total | 150.00 (10000 ha) | 3800.00 |
|--|--------------|--------------------------|----------------|

1.1. OUTSOURCING OF MULBERRY SAPLING PRODUCTION

In order to meet the demand of mulberry plants and generate employment in private sector mulberry plant production could be outsourced by establishing Kisan Nurseries. Department of Sericulture will purchase well grown quality saplings from Kisan Nurseries and supply to cocoon farmers for plantation. The tentative modal of establishment of Kisan Nurseries under temperate conditions is chalked out as under:

ESTABLISHMENT OF KISSAN NURSERIES:

Land Holding- 2 KANAL (0.25 ac)

| Activity | Expenditure (Rs Lac) |
|---|-----------------------------|
| Cost for establishment of Poly House | 0.50 |
| Plant Production per year (NO) | 3000 |
| Production cost for 2 years @Rs 12/Plant | 0.36 |
| Returns after sale of 3000 Plants @Rs25/Plant: | 0.75 |
| Net earnings from 1 Kanal of land (2yrs) | 0.39 |

ESTABLISHMENT OF KISSAN NURSERIES:

Land Holding- 4 KANAL (0.50 ac)

| Activity | Expenditure (Rs Lac) |
|---|-----------------------------|
| Cost for establishment of Poly House | 1.0 |
| Plant Production per year (NO) | 6000 |
| Production cost for 2 years @Rs 12/Plant | 0.72 |
| Returns after sale of 6000 Plants @Rs25/Plant: | 1.50 |
| Net earnings from 2 Kanals of land (2yrs) | 0.78 |

2. Strengthening silkworm seed production system/supply of quality seed:

Silkworm seed being the sheet anchor of sericulture, therefore silkworm seed maintenance and multiplication system need to be strengthened. The basic silkworm seed stations will be upgraded and necessary equipment will be installed to facilitate quality seed production. Similarly the commercial Silkworm Seed Production Centers (SSPC) will be upgraded and modernized and new Seed Production Centers need to be established. These centers will **be linked to Adopted Seed Rearers (ASRs) who are to be supported by upgrading their infrastructure**. Seed testing labs will be developed. Only quality silkworm seed in required quantity will be supplied. Possibilities of seed production under **PPP mode** will be explored by providing infrastructure available with the department to enterprising young people who have a sericulture background after following prescribed guidelines and procedures. **Central Silk Board has to provide financial support to create new infrastructure so that the total quantity of about 55 Lac DFLs (annual requirement) of seed is produced within the state by 2030.**

PRODUCTION OF PARENT SEED

As per the projection a huge quantity of commercial seed is to be produced and for the production chain, the production of **Parent/Basic** seed has to be accordingly enhanced. Production of parent seed will always be the **domain of the department** and for this a sound, scientific and systematic silkworm seed multiplication program has to be adopted and implemented.

Action plan for production of basic silkworm seed

| Year | QUANTITY OF SEED (Lac DFLs) | FIANCIAL INVOLVEMENT (Lac Rs) |
|--------------------|--------------------------------|-------------------------------|
| 2017-18 to 2023-24 | 2.33 | 23.30 |
| 2024-25 to 2030-31 | 3.83 | 45.30 |
| | 6.16 | 68.60 |

Action plan for production of commercial silkworm seed

| Year | Quantity (Lac DFLs) | Financial involvement (Lac Rs.) |
|--------------------|------------------------|---------------------------------|
| 2017-18 to 2023-24 | 233 | 1398.00 @ Rs 6/DFL |
| 2024-25 to 2030-31 | 383 | 3064.00 @ Rs 8/DFL |
| Total | | 4462.00 |

2.1. OUTSOURCING SILKWORM SEED PRODUCTION

As per the plan chalked out for next 15 years there will be need of about **55 Lac DFLs** of silkworm seed, at the end of 15th plan (2031-32) which is not possible to produce at the departmental level as the department does not have sufficient manpower and infrastructure to meet out the demand. After full up gradation of Silkworm Seed Production Centers, department can only produce about **30-40 Lac** DFLs of seed. Department has the option to procure silkworm seed from CSB which is becoming costly year after year. To fulfill the requirement, silkworm seed production could be outsourced through **Licensed Seed Producers (LSP's)** as the practice is in vogue in other parts of the country. The production cost of seed by the department is already high as compared to private sector and department must outsource silkworm seed production and provide infrastructure and technology support to private entrepreneurs for seed production with check on **quality standards**. This will also **generate employment in private sector**. Seed production can be undertaken under PPP mode after following proper procedures.

ESTABLISHMENT OF SMALL SCALE SEED HOUSE IN PRIVATE SECTOR

| | |
|---|------------------|
| Construction of Seed House | 3.00 Lac |
| Equipment | 1.00 Lac. |
| Total cost (One time) | 4.00 Lac. |
| Procurement of 400 kg of seed cocoons for the production of 800 oz of hybrid silkworm seed | 1.0 Lac |
| Labor requirement for production of 800 oz of seed @ 1.0 M.D./oz | 1.20 Lac |
| Disinfectants /waste paper/craft paper etc | 0.20 Lac |
| PRODUCTION COST for 800 oz(Rs 300/oz) | 2.40 Lac |
| Sale of 800 oz of Hybrid silkworm seed @450/oz | 3.60 Lac. |
| Net earnings from 800 oz of Seed (Rs 150/oz.) | 1.20 Lac |

3. Chawki rearing and establishment of CRCs and Chawki gardens:

The concept of Chawki rearing and development of Chawki gardens is not fully established. Because of this the cocoon yield is significantly less than the actual potential. The distribution of well reared, robust and disease free Chawki worms plays a major role in successful cocoon crop. Only about 50% worms are distributed after Chawki rearing. This adversely affects the cocoon yield.

Only well reared and disease free Chawki worms need to be distributed among farmers. Chawki worms need to be reared and raised only in departmental farms with well-maintained chawki gardens. Cooperative CRCs could also be encouraged by providing technical guidance and infrastructure support. This process can be accomplished in a phased manner. Chawki gardens with recommended mulberry variety for highly nutritious leaf need to be established.

Action plan for setting-up of incubation cum chawki rearing centers

| Year | Activity | Quantity (Lac DFLs) | CRCs to be setup | Execution Cost (Lac Rs.) |
|--------------------|----------------------|---------------------|------------------|--------------------------|
| 2017-18 to 2023-24 | Seed to be incubated | 233.00 | 4660 | 699.00 |
| 2024-25 to 2030-31 | Seed to be incubated | 383.00 | 8083 | 1212.00 |
| | Total Cost | 686.00 | 12743 | 1911.00 |

ESTABLISHMENT OF CRC'S IN PRIVATE SECTOR

| | |
|---|-----------------|
| Construction of Chawki Rearing House | 3.00 Lac |
| Equipment for CRC | 1.00 Lac |
| Establishment of Chawki Rearing Garden of 2 kanal with 730 Plants (Plant Spacing 5 x 3 ft) | 0.25 Lac |
| Total Expenditure (one time) | 4.25 Lac |
| Production cost for 10000DFLs of Chawki reared worms (Rs 550/100 DFLs of Seed including cost of seed Rs 450/100 DFLs) | 0.55 Lac |
| Sale of 10000DFLs of Chawki reared worms @ Rs 850/DFLs | 0.85 Lac |
| Net earnings from 10000DFLs of Chawki worms | 0.30 Lac |

4. Silkworm Rearing infrastructure:

The rearing space and infrastructure available with the cocoon rearer is poor. Cocoon farmers rear their worms in rooms where they live. These rooms are not well ventilated and do not have concrete surface so that proper disinfection could be done. It is not possible to maintain proper temperature and humidity in these rooms. In addition to non availability of proper rearing space, farmers do not have necessary rearing equipment. Due to this farmer is not able to conduct silkworm rearing properly. Proper mounting material is not available. With the result, there is worm loss during mounting and the reeling quality of cocoon is poor. Rearing infrastructure, space and appliances available with the farmer need to be upgraded. **Financial support to upgrade and modernise rearing infrastructure of cocoon farmer has to be continued.**

5. Mass disinfection /Disease monitoring and management:

Cocoon farmers need to be taught the importance of proper and perfect disinfection and hygiene. Proper disinfection of Chawki and rearing rooms, rearing building, surroundings and all equipments, appliances at farmer's level will be ensured. **Seri-Polyclinics** need to be established within cocoon producing areas with an aim to provide technical guidance and disinfectants to cocoon farmers. **Service providers** to carry disinfection on larger scale and in a professional way need to be provided. There should be proper monitoring of silkworm diseases in the field. Disease monitoring teams need to be constituted so that proper assessment is carried out and diseases are kept in check.

6. Strengthening of Post Cocoon Sector:

Even though **post** cocoon sector has been privatized yet a sound post cocoon sector has not been established so far with the result more than 60% cocoon is purchased by people from outside the state on lower rates. With a concrete support system and technological interventions in critical areas post cocoon sector has to be made more attractive. Silk reelers claim low returns. **Composite units** with reeling, twisting and weaving under one roof need to be established so that profit margins increase. Non-availability of skilled manpower in post cocoon sector is yet another constraint. **Skill development programs** need to be initiated for training and capacity building. Scientific drying of cocoons for better silk recovery has to be ensured. The **cocoon bank facility/revolving fund** for cocoon market should be enhanced as the cocoon prices during last two years have increased. The incentive given to reelers for the quantity of reeled silk has to be increased. **Silk exchange** should be activated so that the sale of reeled silk is facilitated and reelers are benefited. **Improved cocoon drying** and reeling equipment has to be installed in private sector. A comprehensive package for post cocoon sector and value addition need to be evolved.

Silk Weaving has to be added at a unit cost of Rs. 4.50 Lac per Loom - 4 Looms per Multiend Reeling Unit. **Market linkage** for cocoon, silk yarn and silk fabric to be developed with the silk hubs of the country.

Establishment of Reeling and weaving units during next 15 years

| Particulars | Unit | At the end of 2023-24 (after 7years) | At the end of 2030-31 (after 15 years) |
|---|-----------------|--|---|
| Estimated Cocoon Production | MT | 1900 | 3600 |
| No. of Reeling units to be established for projected cocoon production | No. | 88-14=74 (14 units functional at present) | 120-88=32 |
| Estimated Raw Silk Production | MT | 330/375 | 600/708 |
| Expected income generation from Raw Silk | Lac Rs. | 11550 | 21000 |
| Power looms to be established | Nos. | 330 | 600-330=270 |
| Estimated Fabric Production | Lac Mtr. | 66.00 | 120.00 |
| Estimated income generation from Fabric Prod. | Lac Rs. | 33000 | 60000 |

7. Model Silk Villages/Clusters:

A few villages in each district can be adopted and the rearing infrastructure of farmers developed on modern lines so that advanced Seri-technologies are disseminated and farmers are able to improve their cocoon productivity and quality. A complete support system with **backward forward linkage** has to be created in these clusters. Such villages/ clusters can help in spreading sericulture to adjoining areas.

POLICY INITIATIVES

1. Market Support for cocoon and raw silk/Price stabilization:

Cocoon price plays a crucial role. A remunerative and stable price is very important for promotion of sericulture. A sound and complete market support for cocoon and raw silk is not available. About 60% cocoon is purchased by middle men from West Bengal who most often pool resulting low rate to the cocoon grower.

Price Stabilization Fund – **Cocoon Bank Revolving Fund** has to be augmented. Cocoon Bank is a critical intervention which integrates pre-and post cocoon sector. A sound market support for cocoon and raw silk has to be developed so that demand for these items can be regulated and sustained. This intervention will also prevent distress sale and the returns to cocoon grower and the reeler will improve.

2. Cocoon Bank Revolving Fund and Silk Exchange Facility:

Silk Exchange has to be made operational. This would directly help cocoon farmers and silk reelers of the state to operate their business, improve market support and help in stabilizing cocoon and raw silk prices. **Cocoon Bank** is a critical intervention that integrates pre- post cocoon sector of silk chain. Cocoon Bank with working capital, staff and infrastructure for large scale procurement, storage and business operation with set guidelines and procedures need to be established.

3. Introduction of Price Support System:

Downward fluctuation in cocoon and yarn prices has been affecting income and sentiments of cocoon farmers. A mechanism has to be evolved to fix the production cost and to arrive at the **Minimum Support Price (MSP)** to compensate the amount of loss incurred by the farmer/reeler. A fund has to be created for Price Support System.

4. Human Resource Development/Training for farmers and extension staff:

Qualified and well trained human resource is very essential to transform sericulture into a viable sector. Knowledge deficit among farmers is a major constraint. Most of the farmers lack basic training of rearing silkworms and are unaware of latest technologies. The basic cadres who work in the field and are engaged in sericulture extension activities also lack proper training. Most of these cadres are not able to guide the farmer during rearing with the result rearers suffer frequent crop loss. The silkworm rearers and the extension staff need to be trained and their technical knowledge and skill regarding silkworm rearing and quality leaf production need to be upgraded. A **multi dimensional approach** will be adapted to train cocoon farmers and extension workers, build their capacity and knowledge of technical and management aspects, adoption of improved technologies and extension methods. There is also need to recruit extension staff and equip them with necessary training.

5. Strengthening of Extension Activities: In addition to train and equip technical cadres in extension activities and utilize them for the same, extension programs would also be promoted through Krishi Vigyan Kendras, Agriculture Universities and NGOs. The extension and field staff is depleting and fresh recruitment takes time. **Community Resource Persons, Para-Professionals/Extension Workers, Lead Farmers** shall be employed to augment the extension activities. **Community**

Based Organizations shall also be established to promote extension activities in the field.

6. Publicity for the Sector for expansion of Silk Industry.

Expansion of silk industry and introduction of new technology and production packages necessitates **publicizing them** for generating awareness. Awareness will make technology adaptation fast. The main aim of publicity package is to support the expansion of the industry through audio-visuals, publications and periodicals, extension literature, exhibitions, buyer seller meets, awareness programs, workshops etc. Publicity will also be launched to support market and generic promotion of silk products. Publicity sector is to be strengthened for overall growth of silk industry in the state.

7. Institutional Credit and Investment Strategy:

There is need of credit to meet the investments across the silk value chain and to scale up the operations. Adequate and timely credit to the needy cocoon farmers and silk reelers would help improve quality and productivity thereby augmenting their income. Flow of institutional credit has been negligible. Presently cocoon farmers depend on subsidies and incentives. Only recently **Joint Liability Group (JLG)** scheme has been launched and cocoon farmers are showing interest to avail credit to augment their activities. Initiatives have to be launched in collaboration with Lead Banks including NABARD to make sericulture a priority lending sector. **Financial Literacy Programs** and **Bankers Awareness Programs** have to be organized to increase credit flow to sericulture. These interventions will accelerate the activity and create a sustainable demand for cocoon and raw silk.

8. Outsourcing Major Activities:

Govt can be only a supporter and a facilitator. Govt. cannot do everything every time. The need of the time is to outsource major activities of the department such as **mulberry sapling and silkworm seed production** to private sector. There is also need to involve **NGOs** and **SHGs** in Seri-activities for better dissemination and adoption of cocoon production technologies. All these initiatives are important to make sericulture a **self-sustaining** and **viable** enterprise.

9. Marketing modalities and interventions required:

There are quite inadequate market facilities for both cocoon and raw silk. Cocoon market is organized by the department at every district headquarter but the participation from outside is limited to people from west Bengal. There are only 14 reeling units functional who participate in the auction. Because of less competition

cocoon growers get low price. The purchasing power of local reelers has to be augmented by providing them adequate fund under cocoon bank scheme.

10. Dovetailing sericulture with other schemes for funding:

There is need to include sericulture as a priority sector in flagship programs of the Government such as MGNREGS, SGSY, NRLM, Green India Mission etc. Sericulture has to be priority sector for external funding agencies like World Bank, JICA, UNDP and FAO etc. These agencies can provide fund for infrastructure and skill development.

11. Extension of benefits of Agriculture to Sericulture:

Sericulture involves mulberry cultivation which is an agricultural activity while silkworm rearing is similar to livestock farming and silk reeling and other post cocoon activities come under cottage industry. These activities are practiced by large number of people below poverty line. It is necessary to treat sericulture at par with agriculture and extend all benefits like priority lending, subsidy on seeds and fertilizers, crop insurance, inclusion in National Calamity Fund etc. Similarly silk reeling weaving etc. has to get benefits of village/cottage industry.

12. Diversification of silk products and by-products:

Apart from regular use of silk to make fabric there are possibilities to use by-products of sericulture and increase level of profitability. Owing to recent advances, silk has been used as biomaterial, silkworm pupae as poultry and fish meal, mulberry fruit as jam and jelly - having nutritional and medicinal values. There are many other uses of sericulture products and by-products which need to be commercially exploited.

13. Product Design, Development and Diversification:

Development and diversification of silk products and goods as per the market needs is very important. Export market base of silk products needs to be widened and range of products has to be diverse and broad based. Quality of products has to be as per the expectations of the customer. Jammu and Kashmir has a tradition of silk weaving. Central Silk Board with master weavers and designers can help the state to develop and diversify silk products as per export needs. Govt. Silk Factory Rajbagh Srinagar can play a strong role in this area.

14. Up gradation and modernization of Govt. Silk Factory at Rajbagh Srinagar:

State has a Silk Factory under the control of Jammu and Kashmir Industries (JKI) at Srinagar consuming about 2500 Kg of raw silk at present. JKI intends to upgrade the

systems with the World Bank Assistance and will be installing power looms to increase the consumption of raw silk and improve the quality of fabrics. After up-gradation factory is expected to consume about 10000 Kg of raw silk. This would increase demand for quality silk yarn and quality cocoon thereby directly benefitting cocoon farmers and reelers.

15. Export promotion of silk/silk products:

State has to develop its own silk brand and with the help of Central Silk Board and Indian Silk Export Promotion Council (ISEPC) can explore new destinations within and outside India for export of silk products. New emerging markets have to be identified and the export horizons have to be expanded. Help has to be rendered to small production houses to export their products.

RESEARCH STRENGTH AND THE RESEARCH SUPPORT FROM CSB-Quest for Excellence

Central Silk Board has one (1) Central Sericultural Research and Training Institute, one (1) Regional Sericultural Research Station, five (5) Research cum Extension Centers, one (1) P4 Silkworm Seed Station, one (1) Silkworm Seed Production Center, One (1) Regional Office, one SCS, one DCTSC and one Certification Center in Jammu and Kashmir. The State gets continuous R&D support in Sericulture sector through these establishments in the state. State has the following requirements:

1. High yielding and good rooting mulberry variety for temperate and sub-tropical regions of the state along with complete production package.
2. High yielding and robust season specific silkworm hybrids for temperate and sub-tropical regions of the state along with complete rearing technology package.
3. Extension centers do provide extension support but that has to be augmented so that technology transfer is fast and effective thereby improving cocoon productivity. Field oriented research projects have to be taken to address field problems. More technical staff has to be deployed in the field.
4. Technical guidance and extension support in Post Cocoon Sector is not adequate as only one junior level staff is available in Kashmir Division. Expert technical staff has to be posted in Kashmir Division. A complete Road Map has to be formulated to develop the post cocoon sector in the state.

There are two Sericulture Research and Education Centers in two **Agriculture Universities** at Jammu and Srinagar having qualified and well trained staff. These centers do research and produce graduates and post graduates in sericulture besides doing little bit of extension. These two centers are to be taken on board while planning R and D support to the state. Temperate sericulture Research Institute of SKUAST-K has 21 posts of Scientists/Professors. This centre has a **Japanese imported silk reeling machine** at Mirgund which needs to be made operational by appointing one Textile Engineer against an available vacancy.

ON GOING DEVELOPMENT PROJECTS

The ongoing development schemes are:

1. **CSS of Central Silk Board-Ministry of Textiles:** After the discontinuation of Catalytic Development Program by Ministry of Textiles this restructured scheme is only support from Central Silk Board. Funds during 2015-16 have been meager (241 Lac) affecting the developmental programs of the state. There is need to increase allocation under this scheme.
2. **Rashtriya Krishi Vikas Yojna (RKVY)** of Ministry of Agriculture G.o.I: Department gets sizable financial support of 40-60 Lac under this scheme depending on the availability of funds with the State Govt. This scheme is utilized to create infrastructure and promote production growth as per the guideline of the scheme.
3. **Agricultural Technology Management Agency (ATMA)** of Ministry of Agriculture: This scheme is primarily for awareness, technology demonstration, capacity building etc. Department gets little amount of 8-10 Lac under this scheme depending on availability of fund.
4. **Convergence with MGNREGA:** Department under takes mulberry plantation on community and state land under this scheme. The number of plants and the area depends on availability of funds with the District Development Commissioner. The convergence program is picking up. However funds sanctioned under these schemes are uncertain. Policy level interventions to make specific allocations from these schemes for promotion of sericulture have to be ensured. Potential and possibility of convergence with MGNREGA for promotion of sericulture is huge.

PROJECTS PLANNED

1. **Project under Tribal Sub Plan (TSP):** DPR for 241 Lac has been submitted to State Govt. under this program. The proposal is to cover 200 tribal families doing sericulture and living in inaccessible area of the state. The Project if approved will be utilized to upgrade the infrastructure of these families so that there is visible improvement in cocoon productivity and production besides providing them training and building their capacity to take sericulture on a sustainable basis.
2. **Project under Schedule Caste Sub Plan (SCSP):** Project to the tune of 228 Lac has been sanctioned by CSB under this program. Under this project 200 SC families will be identified and covered at two places in two districts in cluster mode so that there will be visible impact on ground. Funds will be utilized to upgrade the infrastructure of these families so that there is improvement in cocoon productivity and production besides providing them training and building their capacity to take sericulture on a sustainable basis.

Human resource status/requirement:

Availability of well trained and qualified human resources is very essential to promote sericulture and transform silk sector in to a viable enterprise. The department faces serious human resource deficiency which hampers the extension activities of the department. There is total 2523 sanctioned strength including 37 Gazetted, 660 Non-Gazette and 1826 Class-IV Posts. Presently 18 Gazette, 206 Non-Gazetted and 435 Class-IV posts are vacant. **There is need to accelerate the recruitment of these posts** and recruiting agencies have already been approached by the government to expedite the process. Convergence for arrangement of resource persons on contractual basis will be made with ATMA interventions.

Based on the above analysis following is reiterated:

- Quest for excellence – develop silk industry in J&K to enhance silk and fabric production.
- Sericulture Sector needs revolutionary support to realize its full potential and make it viable and sustainable.
- Technological initiatives can contribute to enhance mulberry production, quality silkworm seed, quality cocoon and raw silk.
- Investment in sericulture on liberal and privatized mode can make it to compete in the global markets.
- Sound strategies leading to balanced growth having forward linkages. *viz.*
 - i. Measures for qualitative improvements in mulberry leaf, silkworm seeds and raw silk based on proper research and development under changing climatic conditions.
 - ii. Proper management of soil, water, plant & other inputs for registering increasing returns to scale and to achieve efficient levels of production and productivity for inclusive growth.
 - iii. Enhancing present status of low production to enhanced production of disease free mulberry leaves, cocoon and raw silk by adopting a suitable policy for expansion.
 - iv. Production/distribution to register economies of scale.
 - v. Liberal funding for raising host plantation, seed arrangement, conversion & marketing of produce in public-private partnership model.
 - vi. Building infrastructure in collaboration with CSB for pre & post cocoon expansion.
 - vii. Besides, CSB the services of State Agricultural Universities and KVKs have to be utilized for technological inputs and extension to realistically achieve the targets for sustainable growth.
 - viii. Big push for capacity building measures needs to be launched.

- ix. Stages of value addition requires much focused attention as presently the yield is being consumed at stress sale rates by middle men from Bengal at a very low rate. Mechanism for utilizing 100% production within the state needs to be promoted. Marketing modalities need a drastic change.
- x. Dovetailing of meager resources can help but to a limited extent. Ministry of Textiles, Govt. of India may consider provision for enhancing the capacity of state Government by providing Rs. 5.00 crore revolving fund to fully operate the Cocoon Bank.
- xi. State has sizable a Tribal and SC population doing silkworm rearing and cocoon production. Steps need to be taken for uplifting these down trodden people so that they earn their livelihood from this intervention.
- Establishment of Silk Training Institute.
 - Existing facilities of JKI silk factory at Srinagar to be upgraded to consume more raw silk for fabric production.
 - Textile engineering section can be developed in Temperate Sericulture Research Institute of SKUAST-K, Mirgund, where infrastructure can be easily developed / upgraded.
 - Cocoon crop needs insurance cover under Prime Ministers Fasal BimaYojana.
 - Silk Park at Zakura Srinagar with 38 silk reeling and weaving units to be developed and made operational on priority basis.
 - Master trainers to be contractually arranged for proper training of reelers for quality production, CSB has to augment the activity.

CREATION OF INFRASTRUCTURE AND ASSETS

MULBERRY SECTOR

| ACTIVITY | UNIT | During 7years 2017-18 to 2023-24 | | During 7 years 2024-25 to 2030-31 | |
|--|------|-------------------------------------|------------------------|--------------------------------------|------------------------|
| | | Physical | Financial (Lac Rs.) | Physical | Financial (Lac Rs.) |
| Production of mulberry saplings | Lac | 70.00 | 1400 | 80 | 2400 |
| Distribution of saplings for plantation | Lac | 70.00 | 1400 | 80 | 2400 |
| Up gradation of nurseries (Bore well, fencing etc) | No | 100.00 | 5000 | 73 | 3650 |
| Establishment of Kisan nurseries | No | 20 | 20.0 | 20 | 20.0 |
| Total | | | 7820 | | 8470 |

SILKWORM SEED SECTOR

| Activity | Unit | 2017-18 to 2023-24 (7 years) | | 2024-25 to 2030-31 (7 year) | |
|--------------------------------|----------|-------------------------------|----------------|-------------------------------|----------------|
| | | Physical | Fin (Rs Lac) | Physical | Fin(Rs Lac) |
| Production of basic seed | Lac DFLs | 2.33 | 23.30 | 4.53 | 45.30 |
| Production of commercial seed | Lac DFLs | 233 | 1398.0 | 383 | 3064.0 |
| Basic Seed Stations | No | 2 | 200.0 | 2 | 200.0 |
| Commercial Seed Centers | | 3 | 450.0 | 3 | 450.0 |
| Renovation of seed stations | | 10 | 100.0 | - | - |
| Cold storage | No | 3 | 450.0 | 4 | 600.0 |
| Refrigerated Van | No | 1 | 15.00 | 1 | 15.00 |
| Incubation cum Chawki Centre's | No | 4660×0.15 | 699.0 | 8080 | 1212.0 |
| CRC buildings | No | 40 | 600.0 | 40 | 600.0 |
| SPC in Private Sector | | 30 | 150.0 | 40 | 200.0 |
| CRCs in Private Sector | | 40 | 200.0 | 60 | 300.0 |
| Total | | | 4285.30 | | 6686.30 |

COCOON PRODUCTION SECTOR

| Activity | Unit | 2017-18 to 2023-24 (7 year) | | 2024-25 to 2030-31 (7 year) | |
|----------------------------|----------|-----------------------------|--------------|-----------------------------|--------------|
| | | Physical | Fin (Lac Rs) | Physical | Fin (Lac Rs) |
| Rearing houses for farmers | No | 10500 | 15750 | 15000 | 22500 |
| Rearing kit for farmers | No | 10000 | 6000 | 15000 | 9000 |
| Disinfectants etc | Lac DFLs | 233 | 1165 | 453 | 2265 |
| Incentive on cocoon | MT | 1372 | 205 | 2800 | 420 |
| Total | | | 23120 | | 34185 |

POST COCOON SECTOR

| | 2017-18 to 2023-24 (7 year) | | 2024-25 to 2030-31 (7 year) | |
|-------------------------------|-----------------------------|---------------|-----------------------------|---------------|
| | Physical | Fin (Lac Rs.) | Physical | Fin (Lac Rs.) |
| Cocoon auction markets | 8 | 400 | 4 | 200 |
| Cocoon ware house | 6 | 600 | 6 | 600 |
| Reeling units | 88 | 1848 | 98 | 2058 |
| Twisting Units | 20 | 160 | 20 | 160 |
| Power looms | 375 | 1688 | 415 | 1867 |
| CFCs | 1 | 3000 | 2 | 6000 |
| Silk Exchange Fund | 2 | 1000 | - | - |
| Cocoon Bank Fund | 2 | 1000 | - | - |
| Total | | 9696 | | 10885 |

HUMAN RESOURCE DEVELOPMENT

| Work/Activity | 2017-18 to 2023-24 (7 year) | | 2024-25 to 2030-31 (7 year) | |
|---|-----------------------------|---------------|-----------------------------|---------------|
| | Physical | Fin (Lac Rs.) | Physical | Fin (Lac Rs.) |
| Training Institute for technical staff and Farmers | 1 | 300 | 1 | 300 |
| Hostel for students of training institute | 2 | 300 | - | - |
| Hostel for farmers | 2 | 300 | - | |
| Training/Capacity Building/Awareness | 150 | 150 | 150 | 150 |
| Creation of new posts | 10 | 100.0 | 10 | 125.0 |
| Total | | 1150.0 | | 575.0 |

MISCELENIIOUS EXPENDITURE

| | 2017-18 to 2023-24 (7 year) | | 2024-25 to 2031-32 (8 year) | |
|----------------------------------|-------------------------------|----------------|------------------------------|----------------|
| | Physical | Fin (Lac Rs.) | Physical | Fin (Lac Rs.) |
| Purchase of light vehicle | 8 | 80.00 | 8 | 80.00 |
| Heavy vehicle | 4 | 60.00 | 4 | 60.00 |
| POL etc | | 80.00 | | 80.00 |
| Outsource upkeep | | 2000.00 | | 2000.00 |
| Total | | 2220 | | 2220 |

TOTAL OF TABLE (Crores)

| Present Status | 2017-18 to 2023-24 (7 year) | | 2024-25 to 2031-32 (8 year) | |
|-----------------------|---|-----------------------------------|---|-----------------------------------|
| | Expenditure | Estimated Income per annum | Expenditure | Estimated Income per annum |
| 106.00 | 482.85 (one time expenditure 396.5) | 1940 | 630.6 (one time expenditure 484) | 4657.00 |

Year wise Tentative Future Financial Plan

| # | Year | State Plan | Central | Convergence | Total |
|---|---------|------------|---------|-------------|---------|
| 1 | 2017-18 | 500.00 | 2500.00 | 600.00 | 3600.00 |
| 2 | 2018-19 | 700.00 | 3000.00 | 700.00 | 4400.00 |
| 3 | 2019-20 | 800.00 | 3500.00 | 800.00 | 5100.00 |
| 4 | 2020-21 | 800.00 | 4000.00 | 800.00 | 5600.00 |
| 5 | 2021-22 | 800.00 | 4500.00 | 900.00 | 6200.00 |

SOCIO ECONOMIC IMPACT

Sericulture has a huge socio economic impact and has the potential to transform the lives of people by providing viable and sustainable employment opportunities. It involves a number of processes right from mulberry plantation through silkworm rearing, reeling, weaving and marketing and thus engaging large number of people including women. Presently more than 30000 families (about 2 Lac people) of the state are practicing sericulture to earn livelihood. This figure includes large number of SCs, STs and women. Once promoted on a larger scale with value addition, sericulture has the potential to provide gainful employment to about 10 Lac people of the state. Sericulture activities are village based and hence **prevent migration from rural to urban areas** in search of jobs. Sericulture perfectly aligns with the **National Goals** and the **Sustainable Development Goals of UN** and will help in **poverty alleviation and inclusive growth**.

Sericulture is **eco – friendly** no use of pesticides. Silk is a natural fiber. Mulberry plantation acts as a carbon sink and mitigates effects of global warming/climate change. Therefore practicing sericulture **will prevent environmental degradation** in the state which is having a unique natural ecosystem.

SUGGESTIONS FROM STATE TO CENTRAL SILK BOARD

- CSB should provide strong R&D support to the State.
- CSB should help to develop the human resource of the State and promote extension activities to increase raw silk production and productivity.
- CSB should increase allocation to the State for promotion of Sericulture.
- CSB should help to develop the post cocoon and post yarn sector of the State.
- CSB should help to promote market for cocoon and raw silk.
- CSB should provide funds for Cocoon Bank Revolving Fund and Silk Exchange. This intervention will promote market for cocoon and silk.
- CSB should help to promote export of silk fabric and garments from the **State**.
- **To sustain growth of 7 to 8 % per annum it is necessary to restore Catalytic Development Program and enhance Central allocation for the State. This is necessary to sustain the growth momentum created under Catalytic Development Program. Therefore the quantum of funds reflected above has to be considered for the over al growth of Silk Industry in the State.**