

**FUNCTIONING OF CENTRAL SILK BOARD
&
PERFORMANCE OF INDIAN SILK INDUSTRY**

(As on 1st April, 2023)



CENTRAL SILK BOARD

(Ministry of Textiles, Govt. of India)

Bengaluru-560 068

FUNCTIONING OF CENTRAL SILK BOARD & NOTE ON SERICULTURE

A. FUNCTIONING OF CENTRAL SILK BOARD

The Central Silk Board (CSB) is a Statutory Body, established during 1948, by an Act of Parliament (Act No.LXI of 1948). It functions under the administrative control of the Ministry of Textiles, Government of India with its head quarter located at Bengaluru. The Board comprises 39 members, appointed as per the powers and provisions under Sub-Section 3 of Section 4 of the CSB Act 1948, for a period not exceeding 3 years. The Chairperson of the Board to be appointed by the Central Government and two officials to be nominated by the Central Government, one of whom shall be the head of the Silk Division in the Ministry of Textiles as the Vice-Chairperson and another one shall be the Secretary of the Board, both being the officers not below the rank of Joint Secretary to the Government.

In order to co-ordinate the sericulture development programmes in different States and for undertaking pre-shipment inspection of silk goods meant for exports, the Central Silk Board has established 4 Regional Offices at New Delhi, Kolkata, Hyderabad and Guwahati. Regional Offices of CSB maintain a close liaison with the State Sericulture Departments, field units and CSB field functionaries to co-ordinate transfer of technology. Regional Offices are also conveners of State Level Sericulture Co-ordination Committee meetings constituted by the Central Silk Board. The existing staff strength of CSB is **1602** as on **01.04.2023**.

The mandated activities of CSB are Research and Development, maintenance of four tier silkworm seed production network, leadership role in commercial silkworm seed production, standardizing and instilling quality parameters in the various production processes and advising the Government on all matters concerning sericulture and silk industry. These mandated activities of Central Silk Board are being carried out by 159 units of CSB located in different States through an integrated Central Sector Scheme *viz.*, “Silk Samagra-2” for the development of silk industry. The Union Cabinet has approved the “Silk Samagra-2” which is the improved version of earlier Silk Samagra Scheme at a total outlay of Rs.4679.86 crore for implementation during 2021-22 to 2025-26. The Silk Samagra-2 scheme comprises of two major activities as under:

i. Core activities of Central Silk Board.

1. Research & Development, Training, Transfer of Technology and I.T. initiatives.
2. Seed Organization.
3. Coordination and Market Development.
4. Quality Certification Systems, Export, Brand Promotion & Technology up-gradation.

In addition to the core activities directly implemented by CSB, certain beneficiary oriented critical interventions required in the field for the promotion of sericulture are also implemented for transfer and adoption of improved technology packages developed by the Research Institutes of CSB.

ii. Beneficiary oriented Critical Field level interventions.

1. Critical Field Level Interventions other than North Eastern Region.
2. Implementation of Sericulture Projects in North Eastern Region.
3. Provisions to meet expenditure of ongoing Sericulture Projects of NERTPS.

While the core activities of Central Silk Board with four sub-components are implemented through a network of CSB units in the areas of R&D, seed production, project implementation & monitoring and brand promotion of silk in Indian and outside markets, the beneficiary-oriented components are implemented through State Sericulture Departments/other Line Departments with the fund support from Central Silk Board.

The beneficiary-oriented interventions cover the major areas under pre and post-cocoon sectors *viz.*, development and expansion of host plantation, support for silkworm rearing, strengthening and creation of silkworm seed production infrastructure, development of farm and post-cocoon capacities, up-gradation of reeling and processing technologies in silk, and capacity building through skill development and skill upgradation. These components shall be provided to the beneficiaries either in package mode to individual beneficiary or in a project mode. There are nine bundles of packages available for sericulture stakeholders to cater to the need of individual beneficiaries as well as Seri-Business Entrepreneurs/corporate sericulture (farm to fabric-large scale farming).

In order to establish synergy between State and Central Sector programmes for sericulture development so as to maximize the efforts for growth and employment through sericulture and also for improving income & livelihood creation for small and marginal farmers, a National Level Workshop on Silk Samagara-2 scheme was organized at Bengaluru involving Directors of State Sericulture Departments, sericulture stakeholders in pre & post cocoon sectors, sericulture industry partners / Seri Federation / Silk exporters / Authorized users of SILK MARK etc. Besides, the respective State Sericulture Departments have also organised the workshops at state level involving various sericulture stakeholders, CSB/State Officers to elucidate the details of the scheme.

1. RESEARCH & DEVELOPMENT, TRAINING, TRANSFER OF TECHNOLOGY AND I.T. INITIATIVES

Research & Development

The Research and Training Institutes of CSB provide scientific and technological support for enhancing the production and productivity for sustainable sericulture through innovative approaches. The main institutes at Mysuru (Karnataka), Berhampore (West Bengal) and Pampore (Jammu and Kashmir) deal with Mulberry sericulture, whereas the one located at Ranchi (Jharkhand) pertaining to Tasar culture and the institute at Lahdoigarh, Jorhat (Assam) has to do with Muga, Eri and Oak Tasar culture. Regional Sericultural Research Stations have been functioning for the development of region specific technology package and dissemination of research findings as per regional needs. Besides, a network of Research Extension Centres (RECs) and their sub

units are also functioning to provide extension support to sericulturists. In order to provide Research and Development support in post cocoon sector, the Board has established Central Silk Technological Research Institute at Bengaluru. In addition, the CSB has also set up Silkworm Seed Technology Laboratory and Seri Biotech Research Laboratory at Bengaluru (Karnataka) and Central Sericultural Germplasm Resources Centre at Hosur (Tamil Nadu).

Progress of various Research & Development Projects of CSB R&D institutes during the year 2022-23, up to the end of 4th quarter is summarised as follows:

- ❖ A total of 38 research projects were concluded and 35 new projects were implemented/initiated.
- ❖ Currently, a total of 100 research projects, with the breakup of 46 in Mulberry sector, 30 in Vanya sector, 10 in Post Cocoon sector, and 14 in specialized sectors (Seed, Germplasm & Biotechnology) are under progress. These projects emphasize the research in silkworm quality improvement, rearing management & protection, seed technology, hostplant improvement, management & protection, biotechnology, post cocoon technologies, socio-economic & impact studies and sericulture by-product utilization.

Highlights of Research Programmes

(i) R&D on Mulberry Host Plant

- ❖ Identified two triploid genotypes, TRI-10 and TRI-8 with higher leaf yield than the check varieties, G4 and Vishala.
- ❖ Finalized the fertilizer dose recommendation for tree mulberry cultivation i.e., NPK @ 258:103:103 g/plant/year + 15 kg FYM/plant/year in southern states.
- ❖ Validated drip fertigation technology for the improvement of mulberry leaf production with an enhancement of 17% leaf yield in comparison with conventional methods and by saving 25% fertilizer dose.
- ❖ Generated cultivar identification diagram using 6 SSR markers *viz.*, MulSSR26, MoSo288, MulSSR96B, M2SSR87, M2SSR68 and MoSo340-2 for easy and rapid identification of reference and candidate varieties during any conflict.
- ❖ Five mulberry varieties *viz.*, G-2, RC-1, AR-12, Sahana and MSG-2 were registered under Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001.
- ❖ C-9 (C-2058), the new genotype performed higher, with 10% leaf yield under rainfed red & laterite soils (15.15 t/ha) and North Eastern region (26.55 t/ha) over check variety, C-2038.
- ❖ PD-1, PD-8, PP-8 & PP-10, the four new mulberry genotypes recorded more than 10% leaf productivity under both irrigated and rainfed conditions of E & NE India.
- ❖ Study on spacing and nutrient dose for C-2038 genotype revealed that 2'x2' spacing with 120% recommended dose of fertilizer (RDF) yield 15% higher leaf biomass (68.5 t/ha) of high nutritive quality compared to control (59.52 t/ha).
- ❖ Under AICEM-IV, CBP-01 recorded more than 10% mean seasonal leaf yield under irrigated and rainfed conditions along with resistance to powdery mildew compared to check, C-2038 at E & NE regions. Genotype,

CMY-01 has outperformed check varieties for mulberry leaf yield in southern region.

- ❖ Three new mulberry varieties (C-2038, C-2028 and C776) were popularized among 96 farmers (7.68 acres) in 4 states of E & NE India.
- ❖ Two formulations, BAP+AA and SNP were identified to cause lower senescence (50-65% compared to control) along with improved leaf yield and quality.
- ❖ Identified seven powdery mildew resistant progenies from S-1 x Vietnam-2 population.
- ❖ A total of eight new mulberry germplasms from Kurung Kumey & Kara Dadi Districts of Arunachal Pradesh (Koloriang -3, Sangram-2, New-Palin-2, New-Putin-1) of in North Eastern India and five new mulberry germplasm from Varanasi, UP were Collected.
- ❖ Standardized protocol for chromosome study of mulberry has been developed and published.
- ❖ Based on morphological descriptors, 312 mulberry accessions were screened and 84 of them were identified as suspected duplicates through multivariate cluster analysis and 14 accessions were confirmed based on SSR marker.
- ❖ Identified explant, stress conditions and plant growth regulators combinations for haploid embryogenesis/callus induction through ovule culture. The nature of ploidy was analyzed by SSR markers.
- ❖ Two candidate genes, MLO2 and MLO6A which are involved in powdery mildew susceptibility were identified, which would be exploited for development of powdery mildew resistance.

R&D efforts have helped in improving the mulberry productivity from 50 MT/Ha/yr during 2005-06 to 65-67 MT/Ha/yr during 2022-23.

(ii) R&D on Mulberry Silkworm

- ❖ Developed six multivoltine silkworm lines with improved silk quality. The combination, MAS-3 x BM2 displayed 3A grade silk. The parentage of MAS-3 is MV1x S8.
- ❖ CBDH-4 (HB4×MO6×FC2), a Multi-voltine double hybrid, performed better followed by CBDH-1 (ND10×PM×FC2) & CBDH-2 (PM×ND10×FC2) with an improvement of 5-7 % in the egg recovery over the ruling crossbreed (PM×CSR2) and additional advantages of no cocoon colour variation and hibernation of eggs during grainage operation and with better silk quality of 2A grade.
- ❖ BFC1 x BFC10, a new bivoltine double hybrid has been evaluated in southern states and it recorded an average cocoon yield of 68-72 kg/100 DFLs with shell percentage, 23.4 and renditta, 5.5 to 6.0 and silk grade of 2A-3A.
- ❖ A process was developed for extraction of pupae oil and concentration of ALA (α -Linolenic acid).
- ❖ Proteomics characterization of mulberry silkworm pupae was carried out.
- ❖ Human food products, such as pasta, cookies, beverage mix and mayonnaise were prepared from mulberry silkworm pupae and from eri pupae, roasted and spiced pupae and pickle products were prepared.

- ❖ Silkworm pupae based poultry and fish feed formulations were prepared and completed the feeding trials.
- ❖ RDIN1 (multi viral tolerant silkworm double hybrid) recorded high pupation rate (97.4%) compared to FC1 x FC2 (91.4%) in all the seasons.
- ❖ Developed paper strip method for the detection of pesticide contamination in mulberry leaf and soil.
- ❖ 12Y x BFC1, a new productive cross breed was found very promising with an overall average cocoon yield of 45.3 kg/ 100 DFLs against control [N x (SK6 x SK7)] of 40.28 kg. Hybrid Authorization Committee, CSB, Bengaluru has recommended 12Y x BFC1 for authorization and commercial exploitation in E and NE India.
- ❖ Three new bivoltine foundation crosses viz., NFC11(P) x NFC18(P), NFC19(D) x NFCR(D) and NFC18(M) x NFC12(M) were identified as potential male components based on the shell content (>19%) and survival (>85%).
- ❖ BHP-DH: (BHP3 x BHP2) x (BHP8 x BHP9), bivoltine double hybrid tested with 20,000 DFLs in E and NE India under OFT has been recommended for authorization trials by the HAC.
- ❖ The improved Nistari lines are > 60% tolerant to BmNPV.
- ❖ SK7HH, B.Con4HH, N5HH, WB1HH, and HTH10HH, the five Bivoltine Breeds have been identified for high temperature and humidity tolerance based on their survival rate and presence of the DNA markers.
- ❖ DNA markers, S0803 & S0816 (thermo-tolerant markers), Pyx3 & Pyx4 (Humidity tolerant markers) were screened in the identified thermo tolerant breeds. Pyrexia gene showed up-regulated expression, marking its potential as gene marker.
- ❖ PR1 and OLP, Antimicrobial peptides are identified from the mulberry leaf protein that inhibited bacterial pathogen growth. Further, two novel antimicrobial peptides, sPR1 and sOLP are designed from the identified AMPs which exhibited antibacterial activity against *Bacillus* spp., *Staphylococcus* spp. and *Micrococcus* spp. that cause flacherie disease in *Bombyx mori*.
- ❖ sPR1 is more active against the *Staphylococcus* spp. than sOLP with 58% growth inhibition at 50µM. However, at >50 µM concentration of sPR1, 80-90% inhibition was observed in *Staphylococcus* spp.
- ❖ The resistant double hybrid (DHR) FC1R(CSR6R x CSR26R) X FC2R(CSR2R x CSR27R) showed minimum of 3% and maximum of 12 % increase in the survivability as well as yield/100 DFLs compared to control during testing at RSRS Anantapur, Chamarajnaragar and Kodathi stations.
- ❖ A modified multiplex PCR was developed for the identification of major pathogens in *Bombyx mori*.

R&D efforts have helped in improving the yield from 48 kg/100 DFLs during 2005-06 to 70 kg/100 DFLs during 2022-23.

(iii) R&D on Vanya Host Plant

- ❖ Based on molecular characterization, seven superior *Terminalia* hybrids with high leaf yield were identified and are being validated.

- ❖ Identified biomass Carbon sequestration potential of *T. arjuna* under a spacing of 10 X 6 ft and tasar sericulture practices as 28.6 t ha⁻¹ and *T. tomentosa* under a spacing of 12 X 12 ft and tasar sericulture practices as 23.9 t ha⁻¹.
- ❖ Plant growth promoting bacteria were isolated from rhizospheric soils of primary tasar host plants and screened for PGPR attributes.
- ❖ Fertilizer recommendation chart has been developed for tasar food plants.
- ❖ A formulation of native rhizobacteria having antagonistic effects against *Alternaria* blight was developed for management of castor blight disease and to enhance plant growth and productivity of the leaf biomass, which is under on station trials.
- ❖ Geographical coordinates of 08 wild / cultivated perennial castor accessions growing in North East were collected for their utilization in the pre-breeding programme. Collection of wild perennial castor accessions from the field has brought in variability to the gene pool for its further exploitation.
- ❖ Assessed the impact of activities associated with the use of petroleum crude oil on muga culture in Assam, and observed its adverse effects. The finding has facilitated in devising the suitable mitigation measures to revive the muga culture in contaminated areas.

In the last 10 years, four Vanya host plants have been identified and recommended for commercial exploitation.

(iv) R&D on Vanya Silkworm

- ❖ Developed SCAR markers, such as TT-PB1, TT-PB2 and TT-PB3, from the polymorphic bands obtained from the RAPD primers, such as OPK04, OPAJ15 and OPA17, have been used for validation to distinguish thermo-tolerant and susceptible lines in S8 generation of thermo-tolerant lines.
- ❖ *De novo* whole genome sequencing of *A. mylitta* was performed using PacBio and Illumina sequencer.
- ❖ In-depth survey was performed in seven different parts of India inside the forest corridor for the collection of *A. mylitta* ecoraces and collected 18 different ecoraces. TasarGeoTag mobile application has been developed and linked with both mobile and GAGAN dongle.
- ❖ KASP based SNP barcoding system has been established for the specific identification of ecoraces. High density SNP database was established for further molecular research in *A. mylitta*.
- ❖ Mass production protocol of *Cordyceps militaris* over tasar silkworm refuse, such as egg, pupa and adult moth tissues was standardized.
- ❖ Cocoonase variants, trypsin and papain were tested and showed ability in cocoon softening at laboratory level and have been taken under OST.
- ❖ For mass level extraction of sericin from tasar cocoon cooking waste water, prototype unit was designed / assembled.
- ❖ Signaling network underlying thermo-tolerance of *A. mylitta* had been analyzed and being validated for further confirmation.
- ❖ Developed a technique for *Antheraea mylitta* semen collection and its cryopreservation.

- ❖ Pathogen responsible for virosis disease in muga silkworm was identified as cypovirus-4 (Reoviridae).
- ❖ Test verified 11 chemicals for enhanced egg laying in eri silkworm, the results indicated 27% more egg production than the control. Similarly, in muga, 22 chemicals were test verified and found 33% increase in egg laying over the control.
- ❖ Eco-friendly bait method was developed to control the potential bug predator (*Eocanthecona furcellata* Wolff) in muga eco- system.
- ❖ Identified eucalyptus leaf and neem seed extracts as effective repellents against uzi fly for non-destructive management.
- ❖ Species diversity in tasar ecosystem was studied and 13 species of predatory wasps were reported across major tasar growing regions, which are causing major damage to tasar silkworm.
- ❖ Developed fish feed (RESHMEEN) from tasar waste pupae in collaboration with ICAR-CIFRI, Barrackpore.
- ❖ The IBD analysis for 369 bivoltine and 83 multivoltine germplasm resources revealed that 37 bivoltine as well as 12 multivoltine accessions were found to be with moderate to high IBD %.
- ❖ Genome Re-sequencing of four silkworm accessions BMI- 0001 (Pure Mysore), BMI- 0017 (Nistari), BBI-0290 (CSR-2) & BBI-371(SK-6) was carried out through NGS Illumina (short read) platform.
- ❖ A rapid, reliable, specific and more sensitive point of care diagnostic technology, LFA kit is developed for pebrine detection under BIRAC, New Delhi funded project.
- ❖ Multiplex PCR was developed for the simultaneous detection of Pebrine, cypovirus (CPV) and I flavivirus infecting *A. assamensis* and *A. mylitta* silkworms.
- ❖ Whole genome sequencing of golden silkmoth, *Antheraea assamensis* Helfer has been successfully completed. The analysis showed the presence of 599 colinear blocks containing ~ 41 % of the predicted genes.

In the last 10 years, 6 Vanya silkworm breeds (Tasar-1, Muga-2, Eri-2, Oak tasar-1) have been developed, which are under field trials for commercial exploitation.

(v) R&D on Post Cocoon Technology

- ❖ Developed and characterised wrinkle resistant and high drape soft silk fabric which is technically feasible and economically viable.
- ❖ Developed 3D woven silk Fabrics and identified their suitable applications.
- ❖ *In-vitro* and *in-vivo* studies of mulberry sericin for toxicity assessment were carried out using animal and cell line models.
- ❖ Developed sericin based Bread, Chicken sausage, Cookies, Jelly, Soap, *etc.*
- ❖ Developed protocol for computerized zari testing.
- ❖ Developed different types of blended yarns and analysed the comfort characterization of the blended fabrics.
- ❖ Standardized the protocol for the dyeing of silk having good fastness property in handloom industry.

R&D efforts in Postcocoon Technologies have helped in improving the Renditta from 8.2 during 2005-06 to 6.3 during 2022-23.

(vi) Technologies/Products/Process-Patents (applied/granted) & Commercialisation

a. Patents applied

- Auto Adjusted Angle Cutting Machine for silkworm Pupal Separation (Patent Application No. 202241052752 dated 15.09.2022)
- Optical tool embedded silkworm pupal gender classification and sorting machine (Patent Application No. 202241060352 dated 21.10.2022)
- Process for Extraction of Chitin/Chitosan from moth scales by Submerging Fragmentation Technology (Patent Application No. 202241059744 dated 19.10.2022)
- Process for mass production of *Cordyceps milltariis* on Vanya silkworm refuses (NRDC/IPR/PC/22075/2022).
- Cocoonase enzyme variant based cocoon processing for producing value added tasar silk (NRDC/IPR/PC/22074/2022)
- Tasar Sericin Purification Cum Concentrating Machine (NRDC/IPR/PC/22076/2022)
- Yarn Winder and Inspection apparatus for evaluation of Yarn surface characteristics of Muga and Tasar yarns.

b. Patents granted

- Machine for Harvesting Silkworm Cocoons from Mountages (Patent No. 394725 dated 12.04.2022).
- Dusting machine for silkworms (Patent No. 394974 dated 19.04.2022).
- Tray Washing Machine (Patent No. 402483 dated 28.07.2022).
- Wet reeling machine for wild silk, Patent No. 407711 dated 27.09.2022.
- Nirmool -Trade Mark (Patent No. 5146724 dated 24.09.2022)
- Weft winding machine with Bobbins and Pirn Winder (Patent No.412331 dated 24.11.2022).

c. Commercialization

- Poshan-M/s R.V.Seri Agrovvet, Kolar; M/s. SERIO CARE, Kolar; M/s. Seri- Con Technologies, Bengaluru
- Vijetha- Bed disinfectant-M/S Healthline Pvt.Ltd
- Cocoon Cutting cum Pupae Separator Machine-M/s NSTG India Pvt. Ltd
- Pebrine visualization Solution (PVS)-M/s Biosafe Hygiene.

(vii) Collaborative and externally funded R & D projects

- ❖ CSB R&D institutes, in addition to the multi-institutional collaboration (among CSB R&D institutes), are also collaborated with other research Institutes, such as IISc Bengaluru, NESAC Shillong, Bhat Biotech Bengaluru, ICAR (CIFRI Kolkata, NBAIR Bengaluru, IIHR Bengaluru), CSIR (CFTRI-Mysuru, NEIST-Jorhat) and State Universities (University of North Bengal, Central University-

Manipur, Vel Tech University-Chennai), Adichunchanagiri University-Mandya, PRADAN, NABARD, DoH-Tamil Nadu, Kalyan Foundation-Navsari *etc.* At present, **20** such projects are being carried out in collaboration with these institutes/ organizations

- ❖ International collaboration has also been undertaken by the CSB R&D institutes. Presently, two research projects are undergoing in collaboration with international institutes, such as Tokyo University of Agri. & Technology-Japan, Yamaguchi University-Japan, Uzbek Research Institute-Uzbekistan.
- ❖ In addition to the in-house funding, CSB R&D institutes also expedite financial assistance from national agencies *viz.*, DST, DBT, PPV&FR, NABARD *etc.* A total of **10** research projects with external funding are being carried out at various units of CSB.
- ❖ MoU has been made with research institutions in Bulgaria, Japan, China, and Australia for exchange of Genetic material to improve hybrid vigor of mulberry silkworm.

Training

The R&D institutions of CSB spread across the country are intensively involved in training, skill seeding and skill enhancement on a sustainable basis, covering all activities of the silk value-chain pertaining to all the four silk sub-sectors. Capacity Building and Training initiatives of CSB have been structured under the following five heads:

- (i) Skill Training & Enterprise Development Programmes (STEP):** Under this category, variety of short-term training modules focusing on entrepreneurship development, in-house and industry resource development, specialized overseas training, popularization of sericulture technologies, lab to land technology demonstration programmes, training impact assessment surveys *etc.* have been planned. Some of the popular programmes under this component are Entrepreneurship Development Programme, Technology Up-gradation Programme, Resource Development Programme / Trainers Training Programme, Competency Enhancement Training Programme, Disciplinary Proceedings Training, Management Development Programme *etc.*
- (ii) Establishment of Sericulture Resource Centre (SRC):** SRCs are training cum facilitation centres established in selected Mulberry Bivoltine & Vanya clusters with a unit cost of Rs.2.00 lakhs each to act as an important link between Extension Centres of R&D labs and the beneficiaries. The purpose of these SRCs is technology demonstration, skill enhancement, and one-stop shop for Seri-inputs, doubt clarification and problem resolution at cluster level itself. As on date, 23 SRCs are functioning and three more are planned to be set up during the current financial year.
- (iii) Capacity Building & Training by R&D Institutes of CSB:** In addition to conducting structured long-term training programmes (Post Graduate Diploma in Sericulture & Intensive Sericulture Training), the R&D institutes of CSB conduct technology-based training for farmers and other stakeholders.
- (iv) Capacity Building in Seed Sector:** Silkworm seed is the most critical sector that drives the entire silk value chain. The quality of seed determines the quality of industry output. Therefore, addressing the capacity building and training needs of this sector is of paramount importance. It is proposed to conduct a variety of training programmes to cover industry stakeholders

viz., Pvt. Silkworm Seed Producers, Adopted Seed Rearers, Managers and work force attached to Govt. owned grainages.

- (v) **SAMARTH:** The textile and apparel industry is one of the earliest industries developed in India. In order to meet the skill gap in the industry, the Government of India launched the scheme “**Samarth**”- a “Scheme for Capacity Building in Textile Sector (SCBTS)”. The objectives of the scheme are to skill the youth for gainful and sustainable employment in the textile sector, to provide demand driven, placement oriented NSQF compliant skilling programmes covering the entire value chain of textiles, to promote skilling and skill upgradation in the traditional sectors of handlooms, handicrafts, sericulture & jute, and to enable provision of sustainable livelihood either by wage or self-employment to all sections of the society across the country.

The Central Silk Board is one of the sectoral organizations under Ministry of Textiles carrying out multifaceted tasks such as physical verification of training centres, implementing partner for conducting the training across the country and also as a ToT agency in silk sector. Under the Samarth scheme, CSB has been nominated as one of the physical Verification Agencies and in this capacity, CSB has inspected a total of 1006 Training Centres allotted to CSB, to ascertain suitability for undertaking skill development programmes under Samarth. 192 batches of SAMARTH training has been completed with 4227 stakeholders.

The details of number of persons trained under the above said programmes organized by Research & Training Institutes of CSB during the years, 2019-20 to 2022-23 is given below:

| # | Training courses | No. of persons Trained | | | | | | | |
|--------------------------|---|------------------------|--------|---------|--------|---------|--------|---------|--------|
| | | 2019-20 | | 2020-21 | | 2021-22 | | 2022-23 | |
| | | Target | Achmt. | Target | Achmt. | Target | Achmt. | Target | Achmt. |
| 1 | Structured Courses (PGDS, Mulberry & Non-Mulb. Courses & Intensive sericulture training) | 130 | 121 | 150 | 109 | 150 | 75 | 250 | 99 |
| 2 | Farmers Skill Training, Technology Orientation Programmes, Capsule & Adhoc Courses and Exposure Visit and training in seed sector | 10025 | 8100 | 6865 | 6454 | 6570 | 6196 | 6538 | 7827 |
| 3 | Other Training Programmes | 4050 | 4560 | 1490 | 1434 | 1030 | 1740 | 480 | 3267 |
| 4 | STEP | 1545 | 717 | 860 | 780 | 710 | 953 | 952 | 1003 |
| 5 | Training under SRC | | | 2500 | 3301 | 2650 | 3199 | 2900 | 2976 |
| Total under Silk Samagra | | 15750 | 13498 | 11865 | 12078 | 11110 | 12163 | 11120 | 15172 |
| 6 | SAMARTH | 1360 | | | 726 | | 1369 | 8815 | 4227* |

*Cumulative achievement till March 2023

Transfer of Technology (TOT)

The technologies emanated out of the concluded projects are being effectively transferred to the field through various Extension Communication Programmes (ECPs) *viz.*, Krishi Mela cum exhibitions, Farmers' Field days, awareness programmes, Group Discussions, Enlightenment programmes/Technology Demonstrations, workshops/seminars/conferences *etc.* During the year 2022-23 up to the end of March 2023, a total of 678 ECPs were organized under pre-cocoon sector and various technologies developed by the CSB R&D institutes were transferred effectively among 44,012 stakeholders in pre & post cocoon sectors. A total of 90,923 lots of cocoons, raw silk, fabrics, dyes, water *etc.* were tested for physical, chemical and eco-parameters.

I.T. Initiatives

- ❖ **mKisan:** CSB has widened the outreach of scientists and experts to disseminate information to provide scientific advisories to farmers through their mobile phones using mKisan Web Portal. All the main institutes are regularly providing advisories through this portal. Till 31.03.2023, total of 911 advisories and 56, 84,794 SMS messages were sent.
- ❖ **SMS service:** Day-to-day market rates of Silk and Cocoons are regularly sent through mobile phones for the use by the farmers and other stakeholders of the industry. Both PUSH and PULL SMS services are in operation. Mobile numbers received from DOS are updated and all the 13,898 registered farmers are receiving SMS messages on daily basis.
- ❖ **SILKS Portal:** Sericulture Information Linkages and Knowledge System portal has been developed in association with North Eastern Space Application Centre, Dept. of Space by capturing geographical images through satellite and used for analysis and selection of potential areas for promoting Sericulture activities in those areas. Multi lingual, multi district data are being updated regularly.
- ❖ **Video Conference:** CSB has full-fledged Video Conference facility at CSB Complex, Bangalore, CSR &TI, Mysore, Berhampore & Pampore, CTR&TI, Ranchi, CSR&TI, Pampore, CMER &TI, Lahdoigarh, RO, New Delhi and MESSO Guwahati. Till 31.03.2023, 674 multi-studio Video conferences and web based video conferences were conducted.
- ❖ **CSB website:** Central Silk Board has a website "csb.gov.in" in bi-lingual English and Hindi. Maximum information is disseminated through this portal for the benefit of common citizen, to access organization, schemes and other details. Publicity of sericulture plan programmes, achievements and sharing of success stories are featured in the website.
- ❖ **National Database for farmers and reelers:** Farmers and Reelers database has been designed and developed to help policy makers by providing appropriate information for effective decision making. As on 31.03.2023, a total number of 7,66,609 farmers and 15,549 reelers details have been recorded by the states in the database.

2. SEED ORGANIZATION

The CSB has a chain of Basic Seed Farms supplying basic seeds to the States. Its commercial seed production centres augment the efforts of the States in supplying commercial silkworm seed to farmers.

The Table below indicates the total quantity of seed production during the year 2020-21 to 2022-23.

(Unit: Lakh DFLS)

| Particulars | 2020-21 | | 2021-22 | | 2022-23 | |
|--------------|----------------|---------------|----------------|----------------|-----------------|----------------|
| | Target | Achmnt. | Target | Achmnt. | Target | Achmnt. |
| Mulberry | 410.00 | 356.18 | 400.00 | 329.74 | 425.00 | 349.70 |
| Tasar | 52.77 | 47.37 | 51.40 | 47.46 | 46.23 | 35.95 |
| Oak Tasar | 0.576 | 0.50 | 0.138 | 0.053 | 0.1035 | 0.035 |
| Muga | 5.86 | 5.72 | 6.463 | 6.20 | 6.59 | 6.51 |
| Eri | 6.00 | 6.48 | 6.00 | 6.45 | 6.20 | 6.79 |
| Total | 475.206 | 416.25 | 464.001 | 389.903 | 484.1235 | 398.985 |

IT initiatives under Seed sector:

- Registration of Seed Producers under the provision of Central Silk Board (Amendment) Act, 2006: CSB has developed a web based Online registration (new/renewal) platform to facilitate the Silkworm Seed Producers, Chawki Silkworm Rearers and the Silkworm Seed Cocoon Producers through www.csb.gov.in/ <https://nssoregwebpages.firebaseio.com>, which eases the process of paperless submission/transaction for registration.
- “e Cocoon” mobile application: As a part of quick and real-time monitoring by the Seed Analysts /Seed Officers under the provision of Central Silk Board (Amendment) Act, 2006, CSB has developed an Android based mobile application “e-Cocoon” for onsite inspection and online reporting by Seed Officers and Seed Analysts.

3. COORDINATION AND MARKET DEVELOPMENT

Central Silk Board administration includes Board Secretariat, Regional Offices, Certification Centres and Raw Material Banks. The Board Secretariat of CSB monitors the implementation of various schemes and coordinates with Ministry and States in implementation of various projects in sericulture sector. Besides, Board secretariat undertakes activity to mobilize additional funds through convergence with the programmes/schemes of various Ministries of Govt. of India. Several National meetings, Board meetings & Review meetings and other high level meetings are being carried out by the Board Secretariat. The Raw Material Banks operate floor price to stabilize the market price of cocoons to ensure remunerative price to primary producers.

PRODUCT DESIGN, DEVELOPMENT AND DIVERSIFICATION (P3D)

The activities under P3D are to give special focus on fabric engineering, silk blends, designing new fabric structures, design and development of new products in silk and silk blends, product development in the clusters, commercialization of developed products, assisting the commercializing partners in providing backward linkage, technical know-how and assisting/coordinating in sample development.

Activities of P3D

- Revival of Traditional Silk Products
- Design development and diversification of products with blends
- Product development based on certain identified preferences and requirement in terms of both the design and end uses
- Generating market information, updating market data and forecasting fashion trends.
- Generic and Brand promotion of Indian Silks by organising theme pavilions and display of products in silk expos /exhibitions.
- Assist silk manufacturers and exporters in development of innovative designs and fabrics in tune with the market demand.
- Display of latest developments in silk products and ultimately to create a Centre of excellence for innovations in Indian Silks.

Products Developed:

1. Muga Satin fabric on power loom and Garments
2. Eri silk denim fabrics for Blazer and garments, Eri and Mulberry knits, Eri silk blanket and carpet & Eri silk thermal wear.
3. Tasar silk fabric on power looms for bridal dress.
4. Pure silk sarees and Fabrics in Chanderi cluster.
5. Kanchipuram sarees with Muga silk is designed for replacement of Zari.
6. Stain guard and Aroma treated sarees.
7. Silk life style products – Ladies purse, bags, socks, gloves, accessories.
8. Silk sarees /fabrics printed in Bagh (MP) cluster.
9. Products with traditional Lambani art work.
10. Mulberry x Eri sarees with Bomkai Design.
11. Mulberry saree with Nagaland tribal motif and Silk /linen, silk / cotton, silk / modal fabrics.

4. QUALITY CERTIFICATION SYSTEM, EXPORT BRAND PROMOTION & TECHNOLOGY UPGRADATION

One of the main objectives of the Quality Certification System is to initiate suitable measures towards strengthening quality assurance, quality assessment and quality certification. Under the scheme, two components viz. “Cocoon and Raw Silk Testing Units” and “Promotion of Silk Mark” are being implemented.

Besides, Central Silk Board is popularising “Silk Mark” to ensure the purity of silk products through the Silk Mark Organisation of India (SMOI). “Silk Mark”,

an assurance label, protects the interest of the consumers from the traders selling artificial silk products in the name of pure silk.

The progress achieved under the Silk Mark Scheme during 2020-21 to 2022-23 is given below:

| Particulars | 2020-21 | | 2021-22 | | 2022-23 | |
|---|---------|---------|---------|---------|---------|---------|
| | Target* | Achmnt. | Target* | Achmnt. | Target | Achmnt. |
| Total No. of new Members enrolled | 130 | 261 | 200 | 360 | 275 | 399 |
| Total No. of Silk Mark Labels sold (Lakh nos.) | 15 | 24.86 | 20 | 30.42 | 27 | 40.27 |
| Awareness Programmes/ Exhibition/ Fairs/ Workshop/ Road shows | 240 | 324 | 300 | 497 | 600 | 808 |

Silk Mark Expos

In order to ensure that Silk Mark gains further credibility & popularity, Silk Mark Expos were organized exclusively for Silk Mark Authorized Users across the country.

- SMOI, Guwahati organized “Silk Mark Expo 2022” at Guwahati from 06.04.2022 to 10.04.2022. Approximately, 3000 people visited the expo and recorded the business of Rs. 1.4 Crore.
- SMOI, Kolkata Chapter organized “Silk Mark Expo 2022 Patna” at Patna from 27.04.2022 to 01.05.2022. Approximately 2000 people visited the expo and recorded the business of Rs. 30-35 lakh.
- SMOI, Bengaluru Organized Silk Mark Expo at Bengaluru from 4th to 8th August, 2022 at Rangoli, MG road Metro, Bengaluru.
- SMOI, New Delhi Organized Silk Mark Expo from 22nd to 28th August, 2022 at Agha Khan Hall, New Delhi.
- SMOI, New Delhi participated in the “Silk FAB Expo-2022” organized by National Handloom Development Corporation (NHDC) from 8th to 22nd Oct, 2022 at Handloom Haat, Janpath, New Delhi.
- SMOI, New Delhi participated in the “Sharadotsav Winter Fair” event on 10th & 11th Dec, 2022 organized by New Moti Bagh Ladies club at New Delhi.
- SMOI, New Delhi participated in the “Textile Conclave” on 14th & 15th Dec, 2022 organized by Min. of Commerce & Industry, Consumer affairs, Food & Public Distribution and Textiles at TFC, Varanasi.
- SMOI, New Delhi participated in the event “My Saree My pride” organized by NHDC during 16th to 30th Dec, 2022 at HL Haat, Janpath, New Delhi.

- SMOI, Guwahati participated in the Exhibition during Muga Vanya Krishi Vigyan Mela-2022 organized by Muga Eri Silkworm Seed Organization (MESSO), CSB at Mendipathar on 24.12.2022.
- SMOI participated in the India International Silk Fair (IISF) 2023 organised by ISEPC at Rivera House, Gurugram, New Delhi from 22nd to 24th March 2023 and 7 (Seven) SMOI members participated in this international fair. In this fair, theme pavilion was set up by SMOI.

5. FINANCIAL PROGRESS

The table below indicates year-wise financial performance of the Central Silk Board during the years 2020-21 to 2022-23:

(Rs. in Crores)

| BUDGET HEADS | 2020-21 | | 2021-22 | | 2022-23 | |
|---------------------------------|-----------------|---------------|--------------------------|---------------|-----------------|---------------|
| | Allocation (RE) | Expnd. | Allocation (Approved RE) | Expnd. | Approved Outlay | Expnd. |
| Administrative Expenditure | 447.88 | 447.88 | 500.44 | 488.52 | 492.68 | 492.68 |
| Scheme Outlay- for Silk Samagra | 202.13 | 202.13 | 374.56 | 365.55 | 382.32 | 382.32 |
| Total | 650.00 | 650.00 | 875.00 | 854.07 | 875.00 | 875.00 |

6. OTHER SCHEMES

A. CONVERGENCE EFFORTS:

CSB, Ministry of Textiles, GoI has taken up many convergence initiatives with various Ministries of Govt. of India by availing the financial support from other schemes/Programmes, such as MGNREGS, RKVY, NAP, TDF and State plan schemes to support sericulture activities from plantation to marketing including infrastructure for both pre & post cocoon sector & extension. During the year 2021-22, states have received sanction for 119 projects worth Rs.1069.58 crores and funds amounting to Rs.686.34 crores were released for the sericulture development. Further, during the year 2022-23, states have submitted 116 project proposals and received sanction for 80 projects amounting to Rs.786.61 crores and received funds of Rs.414.49 crores.

B. SCHEDULED CASTE SUB-PLAN (SCSP)

During 2022-23, an amount of Rs. 25.00 Crores has been released to the states towards implementation of beneficiary oriented components under Scheduled Caste Sub-Plan (SCSP) of Silk Samagra-2 Scheme. In addition to this, funds of Rs.26.73 Lakhs have been released from Plan-General (PLG) funds to the beneficiaries belonging to Scheduled Caste category towards implementation of beneficiary oriented components.

C. TRIBAL SUB-PLAN (TSP) & North East Tribal (NET)

During 2022-23, an amount of Rs. 15.00 crores and Rs. 20.00 crores have been released to the states towards implementation of beneficiary oriented

components under Tribal Sub-Plan (TSP) North East Tribal (NET), respectively. In addition to this, funds of Rs.11.61 Crores have been released from Plan-General (PLG) funds to the beneficiaries belonging to Scheduled Tribes category towards implementation of beneficiary oriented components.

D. SERICULTURE DEVELOPMENT IN NORTH-EASTERN STATES (NERTPS)

North East being a non-traditional area for Sericulture, Govt. of India has given special emphasis for consolidation and expansion of Sericulture in all the North Eastern states with critical interventions at every stage of production chain from host plantation development to finished products with value addition. As a part of this, under NERTPS-an Umbrella scheme of Ministry of Textiles, the Govt. of India has been implementing 38 Sericulture projects for implementing in the identified potential districts of all North Eastern states under four broad categories *viz.*, Integrated Sericulture Development Project (ISDP), Intensive Bivoltine Sericulture Development Project (IBSDP), Eri Spun Silk Mills and Aspirational Districts with a total cost of Rs.1115.64 crore, of which GoI share is Rs.963.74 crore. During 2021-22, NERTPS have been subsumed under Silk Samagra-2 Scheme and separate funds are earmarked for the release for completion of these projects. As on March, 2023, an amount in total of Rs. 881.95 crore has been released to the above projects under NERTPS & Silk Samagra-2 schemes.

a. Integrated Sericulture Development Project (ISDP): Eighteen projects have been approved with a total cost of Rs.631.97 crore with GoI share of Rs.525.11 crores under ISDP in Assam including BTC, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura states. The projects will cover 29,910 acres of Mulberry, Eri & Muga plantation benefitting around 41,068 beneficiaries of all NE States.

Silk Printing Unit at Tripura: To modernize the Silk printing facilities for value addition to the silk and fabric produced in Tripura, a project for establishment of Silk Processing and Printing Unit under NERTPS was approved at a total cost of Rs. 3.71 crore with 100% Central assistance. This unit targets to print and process 1.50 lakh metre silk per annum.

Seed Infrastructure Units in CSB: To create infrastructure facilities for production of the quality seeds in Mulberry, Eri and Muga Sectors in Assam, BTC, Meghalaya and Nagaland, 6 silkworm seed production units were set up at a total cost of Rs.37.71 crore with 100% Central assistance. These units have a production capacity of 30 lakh mulberry silkworm DFLS and 21.51 lakh Muga & Eri silkworm DFLS for supplying to States and stakeholders.

b. Intensive Bivoltine Sericulture Development Project (IBSDP): To produce import substitute bivoltine silk in NE states, ten projects under IBSDP are being implemented at a total cost of Rs. 290.32 crores with GoI share of Rs.258.74 crores. These projects cover around 4,900 acres of mulberry plantation and benefits around 10,607 women beneficiaries in all NE States (except Manipur).

c. Eri Spun Silk Mills (ESSM): Establishment of 3 Eri Spun Silk Mills in Assam, BTC and Manipur States have been approved with a total cost of Rs.72.31 crore (GoI share of Rs.65.00 crore) to produce 165 MT of Eri spun

silk yarn per annum, which benefits around 7,500 stakeholders after completion of establishment.

d. Development of Sericulture in Aspirational Districts (AD): Govt. of India has the initiated development of silk industry in the Aspirational Districts in one/two blocks per district covering Mulberry, Eri, Muga or Oak Tasar as per the potentiality of the district with the involvement of State Governments. Presently, 5 sericulture projects are under implementation in the states of Assam, BTC, Mizoram, Meghalaya and Nagaland at a total cost of Rs. 79.60 crore with GoI share of Rs. 73.47 crore. These projects are envisaged to cover 3,360 acres of plantation to benefit around 4,245 beneficiaries.

e. Progress: Up to March, 2023, about 37,326 acres have been brought under host plantation of Mulberry, Eri, Muga & Oak Tasar covering 50,826 beneficiaries and produced 5000 MT(P) of raw silk during the project period (2014-15 to 2022-23). As against GoI share of Rs. 963.74 crore, Ministry/CSB has released Rs.882.97 crore of which 768.23 Cr., has been utilized/incurred towards creation of about 50,000 assets at individual beneficiary level and at common facility level (Construction of rearing houses, seed grainages, reeling infrastructure, mounting halls, plantation etc.).

The summary of overall Sericulture projects being implemented under NERTPS up to March 2023 is given in the Table below:

| # | State | Total Project cost (Rs.Cr.) | Total GoI Share (Rs.Cr.) | Progress during the project period up to March, 2023 | | |
|---|-------------------------------------|-----------------------------|--------------------------|--|----------------------|--------------------|
| | | | | GoI Release (Rs.Cr.) | Beneficiaries (Nos.) | Plantation (Acres) |
| A | ISDP (18 Projects) | 631.99 | 525.11 | 497.12 | 38,178 | 29,910 |
| | Tripura (Silk Printing) | 3.71 | 3.71 | 3.71 | - | - |
| | CSB Seed Infrastructure | 37.71 | 37.71 | 37.71 | - | - |
| | Total for ISDP (20 Projects) | 673.41 | 566.53 | 538.54 | 38,178 | 29,910 |
| B | IBSDP (10 Projects) | 290.32 | 258.74 | 237.27 | 9,379 | 4,650 |
| C | Eri Spun Silk Mills (3 Projects) | 72.31 | 65.00 | 32.00 | - | - |
| D | Aspirational Districts (5 Projects) | 79.60 | 73.47 | 70.32 | 3,269 | 2,766 |
| | IEC | - | - | 4.84 | - | - |
| | Grand Total* (38 projects) | 1115.64 | 963.74 | 882.97 | 50,826 | 37,326 |

Sericulture Development in North-Eastern States under Silk Samagra-2

As per the directives of Department of Expenditure, Govt. of India, various Central Sector Schemes have been rationalized and schemes with similar objectives are proposed to be merged under one scheme. Keeping in view of the said guidelines of the DOE, Ministry of Textiles, Govt. of India has decided to discontinue the Ministry's umbrella scheme "NERTPS". Ministry of Textiles has directed Central Silk Board to continue the project based sericulture activities in North Eastern States under the proposed Silk Samagra-2 scheme in line with the NERTPS with necessary budgetary provision under NE Budget head of Ministry. It has been further directed that in view of the discontinuation of

NERTPS by the Ministry of Textiles, the on-going sericulture projects activities under NERTPS have to be carried forward as committed expenditure under Silk Samagra-2 Scheme.

Progress: Up to March, 2023, about 6640 acres of host plantation have been approved under Mulberry, Eri and Muga sectors covering 10358 beneficiaries and proposed to produce 711 MT (P) of raw silk during the project period (2021-22 to 2024-25). Under Silk Samagra-2, Rs. 53.93 crore has been released for the implementation of projects under NERTPS during the year, 2022-23.

Some of major initiatives adopted for monitoring of the implementation of above projects are as follows:

- Geo-tagging of assets created under on-going sericulture projects have been undertaken through NESAC, Shillong. The assets of around 46,094 NERTPS beneficiaries are to be geo-tagged. The 14 projects sanctioned since 2018, the details of land and beneficiaries covered in respect of plantation are being captured using GPS Map Camera App. and geo-tagged details of around 40000 beneficiaries for plantations and other assets have been uploaded in SILKS Portal.
- MIS have been developed under ISDP, IBSDP & Aspirational Districts. So far, 90% of MIS have been uploaded under the project.
- As part of monitoring & evaluation, field visits have been undertaken in the project sites by the scientists of CSB regularly. An Internal Assessment on the progress of projects is being carried out regularly and suggests DoSs to take action on the findings.
- Combined meetings are being conducted at regular intervals with all NE States by CSB and MoT to review the progress of projects.

POLICY INITIATIVES

1. Customs Duty on imports: The basic customs duty on raw silk was enhanced from the level of **10% to 15%** on 1st Feb-2021. The basic customs duty on silk fabric is maintained at 20 %.

B. STATUS OF SILK INDUSTRY

Silk is the most elegant textile in the world with unparalleled grandeur, natural sheen, and inherent affinity for dyes, high absorbance, light weight, soft touch and high in durability. Because of these unique features, silk is known as the **“Queen of Textiles”** the world over. It provides livelihood opportunity for millions, owing to its high employment potential, low capital requirement and remunerative nature of its production. The very nature of this industry with its rural based on-farm and off-farm activities and enormous employment generation potential has attracted the attention of the planners and policy makers to recognize the industry among one of the most appropriate avenues for socio-economic development of a largely agrarian economy of India.

Silk has been intermingled with the life and culture of the Indians. India has a rich and complex history in silk production and its silk trade dates back to 15th century. Sericulture industry provides employment to approximately 9.2

million persons in rural and semi-urban areas in India. Of these, a sizeable number of workers belong to the economically weaker sections of society, including women. India's traditional and culture bound domestic market and an amazing diversity of silk garments that reflect geographic specificity has helped the country to achieve a leading position in silk industry. India has the unique distinction of being the only country producing all the five known commercial silks, namely, Mulberry, Tropical Tasar, Oak Tasar, Eri and Muga, of which Muga which is produced only in India with its golden yellow glitter is a prerogative of India.

India is the second largest producer of silk in the world. Among the four varieties of silk produced in 2022-23, Mulberry accounted for 75.60% (27,654 MT), Tasar, 3.60% (1,318 MT), Eri 20.09% (7,349 MT) and Muga 0.71% (261MT) of the total raw silk production of 36,582 MT.

Performance of Sericulture Sector

| Particulars | 2018-19 Achmnt. | 2019-20 Achmnt. | 2020-21 Achmnt. | 2021-22 Achmnt. | 2022-23 | |
|---|--------------------|--------------------|--------------------|--------------------|--------------|--------------|
| | | | | | Target | Achmnt. |
| Mulberry Plantation (Lakh ha.) | 2.35 | 2.39 | 2.38 | 2.42 | 2.60 | 2.53 |
| Raw Silk Production | | | | | | |
| Mulberry (Bivoltine) | 6987 | 7009 | 6783 | 7941 | 9250 | 8904 |
| Mulberry (Cross breed) | 18358 | 18230 | 17113 | 17877 | 19510 | 18750 |
| Sub Total (Mulberry) | 25345 | 25239 | 23896 | 25818 | 28760 | 27654 |
| Tasar | 2981 | 3136 | 2689 | 1466 | 3850 | 1318 |
| Eri | 6910 | 7204 | 6946 | 7364 | 7900 | 7349 |
| Muga | 233 | 241 | 239 | 255 | 290 | 261 |
| Sub Total (Vanya) | 10124 | 10581 | 9874 | 9085 | 12040 | 8928 |
| GRAND TOTAL | 35468 | 35820 | 33770 | 34903 | 40800 | 36582 |

Source: Compiled at CSB from the data received from DOSs.

Raw Silk Production during 2022-23

The total raw silk production in the country was 36,582 MT during 2022-23 which is 4.8% higher than the production achieved during 2021-22 (34,903 MT) and around 89.7% of the annual targeted production for the year 2022-23.

The bivoltine raw silk production increased substantially by 12.1% from 7,941 MT during 2021-22 to 8,904 MT during 2022-23. Further, vanya silk, which includes Tasar, Eri and Muga silks, have reduced by 1.7% during 2022-23 over 2021-22. It is mainly due to reduction in the tasar silk production during 2022-23 compared to last year.

The area under mulberry has increased by 4.5% in 2022-23 compared to previous year. The state-wise productions of raw silk during 2018-19 to 2022-23 are given in **Annexure- I**.

Raw Silk Imports

The quantity and value of raw silk imported during 2018-19 to 2022-23 are given below:

| Year | Quantity (MT) | Value (Rs. in Crores) |
|---------|---------------|-----------------------|
| 2018-19 | 2785 | 1041.35 |
| 2019-20 | 3315 | 1149.32 |
| 2020-21 | 1804 | 570.56 |
| 2021-22 | 1978 | 819.68 |
| 2022-23 | 3874 | 1713.68 |

Source: DGCIS, Kolkata

Exports:

Export values of silk goods during 2018-19 to 2022-23 are given below:

| Item | (Rs. in Crores) | | | | |
|---------------------------|-----------------|----------------|----------------|----------------|----------------|
| | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
| Natural Silk Yarn | 24.72 | 16.77 | 29.37 | 52.62 | 38.74 |
| Silk Fabrics and made-ups | 1022.43 | 982.91 | 729.50 | 837.41 | 973.49 |
| Readymade Garments | 742.27 | 504.23 | 449.56 | 671.13 | 489.61 |
| Silk Carpet | 113.08 | 143.43 | 107.56 | 79.12 | 92.34 |
| Silk Waste | 129.38 | 98.31 | 150.61 | 208.67 | 179.19 |
| Total | 2031.88 | 1745.65 | 1466.60 | 1848.96 | 1773.38 |

Source: Compiled from the statistics of DGCIS, Kolkata;

Employment Generation:

The employment generation in silk industry in the country is 9.2 million persons in 2022-23 compared to 8.8 million persons in 2021-22, indicating an increase of 4.5%.

Annexure- I**State-Wise Raw Silk Production during 2018-19 to 2022-23****(in MT)**

| # | State | 2018-19 | | 2019-20 | | 2020-21 | | 2021-22 | | 2022-23 | |
|--------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | Target | Achmnt. | Target | Achmnt | Target | Achmnt. | Target | Achmnt | Target | Achmnt |
| 1 | Karnataka | 10750 | 11592 | 12000 | 11143 | 12600 | 11292 | 12500 | 11191 | 12750 | 11823 |
| 2 | Andhra Pradesh | 7805 | 7481 | 7946 | 7962 | 8208 | 8422 | 9305 | 8834 | 9530 | 9312 |
| 3 | Telangana | 200 | 224 | 295 | 297 | 310 | 309 | 337 | 404 | 362 | 462 |
| 4 | Tamil Nadu | 2190 | 2072 | 2300 | 2154 | 2300 | 1834 | 2400 | 2373 | 2600 | 2589 |
| 5 | Kerala | 14 | 16 | 20 | 13 | 17 | 7 | 10 | 9 | 13 | 11 |
| 6 | Maharashtra | 415 | 519 | 630 | 428 | 475 | 428 | 560 | 523 | 620 | 620 |
| 7 | Uttar Pradesh | 340 | 289 | 365 | 309 | 354 | 316 | 395 | 355 | 430 | 373 |
| 8 | Madhya Pradesh | 160 | 100 | 165 | 61 | 80 | 47 | 74 | 33 | 85 | 22 |
| 9 | Chhattisgarh | 670 | 349 | 562 | 480 | 535 | 300 | 561 | 224 | 562 | 223 |
| 10 | West Bengal | 2775 | 2394 | 2900 | 2295 | 2520 | 872 | 1630 | 1632 | 1776 | 1966 |
| 11 | Bihar | 95 | 55 | 86 | 56 | 58 | 64 | 96 | 56 | 105 | 48 |
| 12 | Jharkhand | 2658 | 2375 | 2604 | 2402 | 2904 | 2185 | 2902 | 1052 | 2902 | 874 |
| 13 | Odisha | 148 | 131 | 155 | 137 | 160 | 102 | 185 | 108 | 190 | 130 |
| 14 | Jammu & Kashmir | 190 | 118 | 170 | 117 | 142 | 80 | 150 | 99 | 150 | 100 |
| 15 | Himachal Pradesh | 43 | 34 | 50 | 31 | 45 | 20 | 40 | 28 | 40 | 31 |
| 16 | Uttarakhand | 45 | 36 | 42 | 40 | 25 | 25 | 42 | 42 | 46 | 41 |
| 17 | Haryana | 2 | 0.7 | 2 | 1 | 1 | 1 | 1 | 0.75 | 2 | 0.3 |
| 18 | Punjab | 5 | 3 | 5 | 3 | 4.5 | 1 | 2 | 3.5 | 7 | 4 |
| 19 | Assam | 4980 | 5026 | 5395 | 5316 | 5519 | 5462 | 5855 | 5700 | 6063 | 5721 |
| 20 | Ar. Pradesh | 65 | 59 | 75 | 64 | 67 | 43 | 59 | 53 | 60 | 61 |
| 21 | Manipur | 435 | 464 | 600 | 504 | 542 | 327 | 530 | 462 | 557 | 454 |
| 22 | Meghalaya | 1110 | 1187 | 1220 | 1192 | 1245 | 1213 | 1367 | 1234 | 1372 | 1168 |
| 23 | Mizoram | 105 | 92 | 130 | 104 | 113 | 43 | 59 | 59 | 95 | 84 |
| 24 | Nagaland | 633 | 620 | 682 | 600 | 649 | 264 | 311 | 315 | 341 | 350 |
| 25 | Sikkim | 3 | 0.4 | 1 | 1 | 2 | 0.08 | 5 | 0.03 | 2 | 0.4 |
| 26 | Tripura | 125 | 230 | 130 | 111 | 125 | 112 | 125 | 113 | 140 | 115 |
| Total | | 35960 | 35468 | 38530 | 35820 | 39000 | 33770 | 39500 | 34903 | 40800 | 36582 |