

FUNCTIONING OF CENTRAL SILK BOARD & PERFORMANCE OF INDIAN SILK INDUSTRY

(As on 1st April, 2020)



CENTRAL SILK BOARD
(Ministry of Textiles, Govt. of India)
BANGALORE-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, having head quarter at Bengaluru. The Board comprises 39 members appointed as per the powers and provisions conferred by Sub-Section 3 of Section 4 of the CSB Act 1948, for a period of 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 6 Regional Offices at New Delhi, Mumbai, Kolkata, Hyderabad, Bhubaneswar 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 2,418 as on 01.04.2020.

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 the 176 units of CSB located in different States through an integrated Central Sector Scheme viz “**Silk Samagra**” an integrated scheme for development of silk industry with the following four components:

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.

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

The Research and Training Institutes of the CSB provide scientific and technological support for enhancing 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 Ranchi (Jharkhand) deals with Tasar culture and Lahdoigarh, Jorhat (Assam) deals with Muga, Eri and Oak tasar culture. Regional Sericulture 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 Centre (RECs) and its sub units are also functioning to provide extension support to sericulturist's. 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 in Bengaluru (Karnataka), Central Sericultural Germplasm Resource Centre at Hosur (Tamil Nadu) and Seri Biotech Research Laboratory at Bengaluru.

During the year 2019-20, a total of 44 new research projects have been initiated and 58 projects have been concluded by various Research and Training institutes of CSB and currently a total of 96 research projects viz., 41 in Mulberry Sector, 30 in Vanya Sector, 11 in Post cocoon sector and 14 in specialized sectors (Seed science and Biotechnology) are under progress.

Research & Development (Highlights of Research Programmes)

(i) R&D on Host Plant (Mulberry):

- ❖ Identified Eight high water and nutrient use efficiency accessions viz., MI-0437, MI-0310, MI-0683, ME-0173, MI-0246, MI-0685, MI-0762 and ME-0256 to develop climate resilient mulberry varieties.
- ❖ Optimized whole plant regeneration protocol for photosynthetic efficient transgenic development using cotyledon and hypocotyl explants of G4 mulberry cultivar.
- ❖ Developed putative transformed and rooted mulberry plantlets containing PEPC+PEPCK genes and CA genes contributing towards higher photosynthetic efficiency.
- ❖ Developed protocol for Agrobacterium mediated genetic transformation in cotyledons/hypocotyl explants of G4 mulberry using AtDREB2A+AtSHN1 gene construct.
- ❖ Popularized and commercialized a product viz. Rot-fix developed for control of root rot disease in mulberry.
- ❖ Evaluated 415 diverse mulberry germplasm for root knot disease caused by *Meloidogyne incognita* and identified eight resistant germplasm accessions viz. BR-8, Karanjtoli-1, MI-0437×MI-0364 (P-2), Nagalur Estate, Tippu, Calabresa, Thai Pech & SRDC-3.
- ❖ Protection of Plant Varieties & Farmers' Rights Authority (PPV&FRA) has accepted to register the high yielding mulberry variety G-4 for Distinctiveness, Uniformity and Stability (DUS) test.
- ❖ A co-nodal DUS test centre was established at CSRTI, Berhampore, West Bengal to test mulberry varieties developed at North and North-eastern zone.
- ❖ Identified four genotypes highly tolerant to alkalinity stress (pH>9) viz., Sahana (MI 0524), Bheria dangi-1 (MI 0822), T-36 (MI 0226) and Kanthaloor-2 (MI 0449) to utilize for future breeding programmes.
- ❖ Crosses of alkaline tolerant genotypes MR2 and Sahana with susceptible genotype V1 (MR2×V1 & Sahana×V1) were made to develop mapping population and to identify Quantitative Trait Locus (QTL) governing alkalinity tolerance in mulberry.
- ❖ Identified five promising drought tolerant and high yielding mulberry genotypes (PYD-1, PYD-4, PYD-7, PYD-8 & PYD-21) with >15% leaf yield improvement over drought tolerant (C-1730) and >6% over ruling check

(C-2038) varieties for rain fed conditions. Identified high yielding mulberry genotypes (C-01 & C-11) with an improvement over S1635 under irrigated (>30%) and rain fed (>20%) conditions.

- ❖ Identified high yielding mulberry genotypes (PPY-8, PPY-10, PPY-24, PPY-7, PPY-20 & PPY-6) with 10-35% improvement over check variety (C-2038) with better quality and lower PDIs under northeastern states.
- ❖ Established 231 (183 indigenous and 48 exotic) diverse mulberry germplasm with 5 replications under ARBD design for exploring the genetic potentiality of yield through Marker Assisted Breeding (MAB).
- ❖ Developed AFP-2 (Alpha-Fetoprotein) mediated suppression (41-55%) of fungal diseases caused by *Myrothecium roridum* (leaf spot; MLS) and *Fusarium solani* (dry root rot; FRR)
- ❖ Characterized 24 new mulberry accessions for morphological, reproductive, anatomical traits and evaluated. Based on the preliminary yield assessment and morphological evaluation, 10 better performing accessions viz. MI-0857, MI-0837, MI-0980, MI-0838, MI-0858, MI-0962, MI-0966, MI-0973, MI-0974 and MI-0841 were identified.
- ❖ MLO (Mildew resistance locus O) proteins of mulberry were analyzed with MLOs from other dicot species and phylogeny was established for identification of clade V MLO genes. Screening for powdery mildew resistant genes and validation of CAPS marker for Chalcone synthase led to identification of five clade V specific MLO genes which are likely involved in powdery mildew susceptibility.
- ❖ Collected 20 new mulberry genotypes and planted in the nursery, 18 were collected in unexplored areas of Tura, Meghalaya and one each from CSR&TI, Berhampore and Pampore.
- ❖ A mulberry variety PPR-1, suitable for temperate conditions with high rooting percentage was developed. All India Coordinated Experimental Trials for Mulberry (AICEM) phase IV has been initiated at 5 test centers across the country.
- ❖ During the last 10 years, 14 mulberry varieties have been released for commercial exploitation.

R&D efforts have helped in improving the mulberry productivity from 50 MT/Ha/yr during 2005-06 to 62 MT/Ha/yr during 2019-20.

(ii) R&D on Mulberry Silkworm:

- ❖ Developed new bivoltine double hybrid BFC25 x BFC11 by utilizing Bulgarian and Indian silkworm genetic resources, which showed shell ratio 23.8%, filament length of 1,095 meter and renditta of 5.8.
- ❖ A high yielding silkworm hybrids G11 x G19, with yield potential of 68.0 kg cocoons /100 dfls, in Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Kerala and Maharashtra has been developed.
- ❖ Conducted Transcriptomic analysis for silk quality in silkworm, which concludes mannosidase and ubil as potential regulators involved in silk fibroin synthesis, which would influence the fibroin synthesis pathway and silk quality.
- ❖ 100 silkworm accessions genotyped with 20 SSR (Simple Sequence Repeats) markers, concurrently evaluated for nine quantitative & five qualitative traits and assembled a germplasm which is genetically diverse with high variation in pupation rate, thermo tolerance, cocoon weight,

- shell weight, shell ratio, and key yield components. Which could be exploited in developing superior genotypes for tropical conditions of India.
- ❖ Evaluated a bivoltine single hybrid S8 x CSR16 (2,84,550 DFLs) under authorization trial, which recorded an average cocoon yield of 69.0Kg/100 DFLs, single cocoon wt., 1.782g, single shell wt., 0.395g and shell ratio of 22%.
 - ❖ Identified 12Y x BCon1.4 (12Y x BFC1) as a promising multi x bi hybrid through OFT in Eastern & NE states (avg. yield: ~52kg with ~10% improvement over N x SK6.7)
 - ❖ Developed a bivoltine double hybrid (BHP3.2 x BHP8.9) with an improved shell (10-12%) over SK6 x SK7 & Bcon1 x Bcon4 (avg. yield: ~65kg).
 - ❖ The crossbreed of ICB29 (an improved pure MV breed) with S8 has developed, which produces 2A grade silk at par with MV1 × S8 and it is superior over the existing crossbreed PM × CSR2. No hibernation was observed in crossbreed of ICB29 with bivoltine S8 and CSR2.
 - ❖ An improved Cross Breed, MV1 × S8 (Cauvery Gold) evaluated under authorization trails, showed an average cocoon yield of 60 - 65 kg /100 DFLs, renditta 6-6.5, shell ratio of 21.65%, raw silk recovery 15.41% and fibre quality of 2A-3A grade.
 - ❖ A Entomopathogenic fungus *Isaria javanica* which causes grey muscardine in silkworm (first report from India) was isolated from Karnataka and the LD50 of the isolated strain is calculated as 3x10⁵ conidia/ml. The molecular characterization of the fungus was done and the genetic sequence has submitted to NCBI (accession number MH712278.1).
 - ❖ Validated the M-LAMP assay for tasar and the results were in conformity with the microscopic testing.
 - ❖ Pheromone trap against silkworm uzi fly is being demonstrated and popularized.
 - ❖ Developed a general disinfectant, NIRMOOL for disinfection of silkworm rearing house and appliances.
 - ❖ Developed molecular markers (py1 & py2) to assess humidity tolerance in silkworm.
 - ❖ Developed & verified a new technology for egg enhancement in Bivoltine hybrids (FC1 x FC2) by application of host plant volatiles with increased egg production by 8.5g per kg of cocoons.
 - ❖ Recombinant silk Fibroin- Cecropin B, a fusion protein expression was achieved in a heterologous expression system. This silk fusion protein was effective against gram-positive and gram negative bacteria. It has shown enhanced wound healing activity in rats and human dermal cells. The fusion protein has also shown strong activity against oxidative stress.
 - ❖ Developed transgenic silkworms to over-express antimicrobial genes Relish 1 and Drosomycin B. Successful over expression of Relish in transgenic silkworms has shown enhanced resistance / tolerance against major pathogens.
 - ❖ A formulation is developed comprising of two eco-friendly chemicals, an oxidizing agent and a wetting agent is found to be effective against all silkworm pathogens (based on the *in vivo* and *in vitro* studies)
 - ❖ Popularized B.Con.1 x B.Con.4 in West Bengal, Orissa, Jharkhand and North East States for commercial use.
 - ❖ Twenty-five Oval and fifteen Dumbbell foundation crosses (FCs) were developed Using silkworm genetic resources from Bulgaria.
 - ❖ Cauveri gold (MV11 X S8) an improved cross breed with 62 to 74 kg/100dfls has been developed.

- ❖ Developed Transgenic Silkworm for the over-expression of disease-resistant genes for enhanced immunity.

R&D efforts have helped in improving the yield from 48 Kg/100 dfls during 2005-06 to 65 Kg/100 dfls during 2019-20.

(iii) R&D on Vanya Silk:

Vanya Host Plant

- ❖ Assessed phytochemical diversity of Som under three different agro-climate zones of Meghalaya and Assam revealed the region and season specific differences in the phytochemical quantities, stress magnitude and intrinsic protection potential of Som. It is established that the magnitude of soil intrinsic nutritional capacity in som fields varies in different agro-climatic zones.
- ❖ A formulation of native rhizobacteria having antagonistic effects against *Alternaria* blight has developed for management of castor blight disease, enhancing 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 variability to the gene pool for its further exploitation.
- ❖ Assessed impact of petroleum crude oil activities on muga culture in Assam, observed adverse effects of petroleum pollutants on muga culture. The finding has facilitated in devising the suitable mitigation measures to revive the muga culture in contaminated areas.
- ❖ 1452 soil samples were collected and analyzed covering North East states viz. Assam, Nagaland, Manipur, Meghalaya, Mizoram and Arunachal Pradesh.
- ❖ Developed biopesticide “Bioneem” (10ml/l) against *H.puera* and found to be most effective over the other treatments in reducing *H.puera* population.
- ❖ Identified an alternative food plant *Lagerstroemia Speciosa* for Tasar silkworm rearing, which is easy rooter and fast growing. Trials are on to validate the rearing performance.
- ❖ Two Som accessions (S3 and S6) resistant to leaf spot disease, leaf blight and rust are being popularized in the field.
- ❖ Developed Integrated Nutrient Management (INM) package for castor cultivation which is under field testing.
- ❖ In the last 10 years, four Vanya host plants have been identified and recommended for commercial exploitation.

Vanya Silkworm

- ❖ Developed 18 days preservation schedule for the three days Muga eggs, With 2 days post preservation/ incubation period resulted in 85% hatching.
- ❖ Developed short term seed preservation schedule for Tasar silkworm BDR10 mixed eggs (at 15°C for 15 days) with two days progressive incubation (totaling 17 days) resulted in 90% hatching.

- ❖ Standardized DNA bar coding techniques for assessment of wild silk moth diversity in Nagaland. Sequencing data has submitted for open source database.
- ❖ Eco-friendly bait method was developed to control potential bug predator (*Eocanthecona furcellata* Wolff) in Muga ecosystem.
- ❖ Developed a model for prediction of percent flacherie infestation using Geospatial technique, which alerts farmers to take proper precautionary measures to avoid disease out-break in advance.
- ❖ Developed a formulation using potential bio-desulfurizing bacterium isolated from crude oil polluted soils for reclamation of the polluted soil, which is under OST validation.
- ❖ Solar LED light traps of different wavelengths has developed and installed in muga rearing fields for controlling major insect pests and predators in muga ecosystem. The technique is being demonstrated under various awareness programmes in Assam and Arunachal Pradesh.
- ❖ Validated a diagnostic tool for early detection of baculovirus causing Tiger band disease in Oak Tasar (*Antheraea proylei*). Standardized an effective sodium hypochlorite based egg disinfection technique to minimize tiger band disease.
- ❖ Whole-Genome 10X linked library of Tasar Silkworm, *Antheraea mylitta* has prepared with 10X chromium technology at an average size of the 544bp and sequenced the 10X chromium libraries on Illumina HiSeq X 10 with 2x150 pair end chemistry.
- ❖ In the last 10 years, 5 Vanya silkworm breeds have been released for commercial exploitation.

(iv) R&D in Post Cocoon:

- ❖ Molecular weight determination of Red Eri Silk Sericin was done by SDS PAGE and standardized enzymatic hydrolysis of white and Red Eri-silk sericin using protex 6L and hydrolyzed White Red Eri silk Sericin in powdered form.
- ❖ An optimum line of machinery under Miniature concept of Eri spinning has been developed.
- ❖ Identified some of the chemicals possessing solubility characters for mulberry silk.
- ❖ In Vanya sector, wet reeling of tasar and Muga cocoons, sizing machine for tasar silk, modified dry reeling machine for tasar cocoons, pressurized hank degumming machine and equipment for recycling of silk reeling water are being popularized in field.
- ❖ Designing and fabrication of Solar Cooker and low power consumption Hot Air Dryer were completed.
- ❖ Determined Molecular weight of Red Eri Silk Sericin by SDS PAGE and standardized enzymatic hydrolysis of white and Red Eri-silk sericin using protex 6L and hydrolyzed White Red Eri silk Sericin in powdered form.
- ❖ An optimum line of machinery under Miniature concept of Eri spinning has been developed.
- ❖ Identified some of the chemicals which have the solubility characters for mulberry silk.
- ❖ In Vanya silk post cocoon sector: Wet reeling of tasar and Muga cocoons, Sizing machine for tasar silk, modified dry reeling machine for tasar cocoons, Pressurized hank degumming machine and Equipment for recycling of silk reeling water are being popularized in field.

- ❖ Developed technology for development of diversified silk knitwear products/ garments using international quality Indian silk.
- ❖ Developed package for Daba, Raily and Modal ecoraces with different concentrations of sodium carbonate and sodium bi- carbonate combined with varying boiling and steaming time to improve the cooking efficiency & reeling performance without affecting the colour/ luster and tensile properties of the silk fibroin. The technology is cost effective and the chemicals are easily available.
- ❖ Developed technology for development of diversified silk knitwear products/ garments using international quality Indian silk.

R&D efforts have helped in improving the Renditta from 8.2 during 2005-06 to 7.3 during 2019-20.

(v) Technologies/products filed for patenting/offered for Commercialization:

a. Patent applied:

1. Method for degumming silk hanks under high temperature, high pressure conditions and recovery of sericin.
2. Patent application has been filed for the patenting of “Tasar Silkworm Egg Washing cum Disinfection Machine”.

b. Patent Obtained:

1. Sericin extraction process - A process for the extraction of virgin sericin of *Bombyx mori*

c. Technologies/ products commercialized:

1. Cocoon harvester from plastic collapsible mountages - commercialized to M/s. Srikrupa Enterprises Pvt. Ltd, Kolhapur, Maharashtra thorough NRDC for production and supply to sericulture farmers.
2. Mulberry leaf chopping machine - commercialized to M/s. Srikrupa Enterprises Pvt. Ltd, Kolhapur, Maharashtra thorough NRDC for production and supply to sericulture farmers.
3. Silk and silk blended mélange yarn
4. Void silk reeling technology
5. Development of handloom silk sarees using spun silk
6. Slit Button
7. Egg Washing cum Disinfection Machine with NRDC, New Delhi.
8. Pebrine Visualization Solution (PVS) with NRDC, New Delhi.

(vi) Collaborative Research Projects and Biomaterial Research:

- 1) The R&D institutes of CSB, in addition to the in-house funded projects, external funding collaborative research projects with the financial assistance from DBT, DST, MNRE etc are being carried out. As on March-2020, a total of 15 research projects with external funding are being carried out.
- 2) CSB Institutes also collaborate with other research Institutes such as IIHR Bengaluru, KVK Bengaluru, NCL Pune, JNU New Delhi, UDSC New Delhi, University of Bengal West Bengal, MNRE Ministry of Renewable Energy Jharkhand, ICAR-NBAIR, Bangalore, NESAC, Shillong, CSIR-

NEIST Jorhat, Nagaland University, University of Kashmir, R.V. College of Engineering, Bengaluru etc. At present, 12 projects are being carried out in collaboration with some of these institutes.

- 3) International collaboration with different institutes has also been undertaken. A project on molecular characterization of Ifla virus infecting tasar silkworm with Swedish Research Council have been taken up.
- 4) 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, covering all activities on the silk value-chain pertaining to all the four silk sub-sectors, are intensively involved in training, skill seeding and skill enhancement on a sustainable basis. CSB's capacity building and training initiatives have been structured under the following five heads:

- (i) Skill Training & Enterprise Development Programmes (STEP):** Under this category a 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 Dev. 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 a select 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, one-stop shop for Seri-inputs, doubt clarification and problem resolution at cluster level itself. As on date 23 SRCs are functioning.
- (iii) Capacity Building & Training by R&D Institutes of CSB:** In addition to conducting structured long-term training programme (Post Graduate Diploma in Sericulture & Intensive Sericulture Training) the R&D institutes of CSB also conduct technology-based training both for farmers and other stakeholders besides organizing Krishi Melas, Farmer's day, farmer's interaction workshops etc. for empowering the framers and other industry 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 like – Pvt. Silkworm Seed Producers, Adopted Seed Rearers, Managers and work force attached to Govt. owned grainages.

(v) Information, Education and Communication (IEC): IEC is meant for supporting Capacity Budding and training initiatives by popularizing recommended technologies through Brochures, pamphlets, handouts, booklets etc. This component also proposes to produce technology based instructional videos, study materials and documentary films to show case the industry.

Table below shows details of number of persons trained under programmes organized by the Research & Training Institutes of CSB during the years 2017-18, 2018-19 and 2019-20 is given below:

#	Training courses	No. of persons Trained					
		2017-18		2018-19		2019-20	
		Target	Achmt.	Target	Achmt.	Target	Achmt.
1	Structured Courses (PGDS, Mulberry & Non-Mulb. Courses & Intensive sericulture training)	265	216	230	191	130	121
2	Farmers Skill Training, Technology Orientation Programmes, Capsule & Adhoc Courses and Exposure Visit	8030	8853	8290	8050	10025	8100
3	Other Training Programmes	4945	6322	3045	4862	4050	4560
4	STEP	2030	1901	1260	782	1545	717
	TOTAL	15270	17292	12825	13885	15750	13498

Transfer of Technology (TOT):

The technologies emanated out of the concluded projects are being effectively transferred to the field through various extension communication programmes viz, Krishi Melas, Group Discussions, Enlightenment programmes, Field Days, Farmers' Meet, Audio Visual programmes, Technology demonstrations etc. During 2019-20, a total 2231 ToT programmes have been organized and 51 technologies were transferred effectively to the user level under both pre-cocoon & post cocoon sector among 1,17,986 stakeholders. Further, 90,103 samples viz., cocoon, raw silk, fabric, dyes, water etc. were tested for various parameters.

(i) Implementation of Cluster Promotion Programme for Bivoltine silk:

During XII Plan, the foremost thrust was to augment the import substitute silk in the country and to increase the production of BV silk to 5000 MT from the production level of 1685 MT (2011-12). To achieve the target, Central Silk Board in association with State Sericulture Departments had organized 172 Bivoltine Clusters and achieved production of 5266 MT Bivoltine silk at the end of XII Plan, which includes 3405 MT production through clusters.

Cluster Promotion Programme is being continued from 2017-18 to 2019-20 mainly to focus on enhancing the Country's bivoltine raw silk production target of 8500 MT at the end of 2019-20. While restructuring/reorientation of some of the existing clusters of Northwestern region for effective monitoring purpose, the total number of clusters were brought down to 151 clusters from 172 clusters without effecting the total cluster target. In order to further streamline

these clusters it was decided to reorganize these clusters in to informal bodies as Mega Silk Clusters for empowering the stakeholders to support in extension.

With the joint concentrated efforts, 6987 MTs of Bivoltine raw silk has been produced against Country's target of 7200 MTs during 2018-19 (18.95 % increase over 5874 MT produced in 2017-18). Bivoltine clusters contributed 4987 MT (71.38%) out of the country's total BV raw silk production of 6987 MT.

During 2019-20, the total BV raw silk production stands at 6993 MT, out of which 151 clusters produced 5110 MT (73.07%).

(ii) Implementation of Cluster Promotion Programme for Vanya silk:

To promote Tasar silk sector, Central Silk Board has established 22 vanya clusters in coordination with State Sericulture Departments through cluster approach in 9 tasar producing States. Under this programme, during 2019-20, 45094 dfls were reared by 413 seed rearers during 1st crop and 2921483 seed cocoons were produced @ 64.78 cocoons/dfl. These seed cocoons were processed by 93 private graineurs to produce 387289 dfls. 388637 dfls were reared by 1344 commercial rearers during 2nd crop and 11792589 cocoons produced @ 30.34 cocoons/dfl.

(iii) Japan Overseas Cooperation Volunteers (JOCV) under JICA:

Central Silk Board has implemented JOCV programme in cooperation with JICA since 07.01.2015 initially for a period of two years in the field of extension methodology in organizing Self-Help Groups/CBOs by involving sericulturists for effective technology transfer in bivoltine clusters. At present, five JOCVs have been posted in cluster locations in Karnataka (1), Tamil Nadu (1), Andhra Pradesh (1) and Uttarakhand (2) to continue the JOCV activities in those clusters. The programme is extended upto Dec-2020.

The main objective of JOCVs are to support CSB/State Counterparts in Bivoltine Clusters to identify the field problems, assist in Extension methodology in organizing Self Help Groups/CBOs involving sericulturists for effective technology transfer identified Clusters.

I.T. Initiatives:

- ❖ **DBT MIS:** Development of DBT MIS for the scheme "Development of Silk Industry" is completed and obtained security audit clearance by STQC. Obtaining VPN connection with NIC cloud server for linking of the same with DBT Bharath portal is in process.
- ❖ **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 31.03.2020, 622 advisories were sent 68,26,200 SMS messages.
- ❖ **'SMS service'** through mobile phone on day-to-day market rates of Silk and Cocoons 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 registered 11090 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 is being updated regularly.
- ❖ **Video Conference:** CSB has fully fledged Video Conference facility at CSB Complex, Bengaluru, CSR&TI, Mysuru & Berhampore, CTR&TI, Ranchi, CSR&TI, Pampore, CMER&TI, Lahdoigarh and RO, New Delhi. Till 31.03.2020, 220 multi-studio Video conferences are 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, who may need to know about the organization as well as schemes and other details. Publicity of sericulture plan programmes, achievements and sharing of success stores are featured in the website. CSB has completed the new website and in the process of getting CSB website the GIGW compliance and security audited as per Govt. of India guidelines.
- ❖ **AEBAS:** Aadhaar enabled bio-metric attendance system is being implemented at Central Silk Board. Over 4254 employees including farm workers have registered into the attendance portal. All the 121 devices are RD Services enabled.
- ❖ **National Database for farmers and reelers:** Farmers and Reelers data base is designed and developed to have database of Farmers and Reelers at national level, which will help policy makers with appropriate information for effective decision making. As on 31.03.2020, 7,25,628 farmers and 14,507 reelers details have been recorded by the states in the database.
- ❖ **MIS on NERTPS "Intensive Bivoltine Sericulture Development Project" in Northeastern States:** MIS for Intensive Bivoltine Sericulture is developed and hosted on dedicated servers for trouble free access by all stake holders.
- ❖ **BPO for interacting with FRDB farmers:** Nodal officers of each zone are interacting with selected farmers obtaining their mobile numbers from FRDB database on regular basis.
- ❖ **Digitization of Board Meeting Minutes:** Digitized the minutes of Board meeting and Standing committee meeting.
- ❖ **Digitization of Parliamentary Questions and Answers:** Database for Parliamentary Questions and Answers has been developed.
 - ❖ **Diary of letters** – Letters received are diaraged and work allotment and Assistant diary sheet are obtained through MIS software, after successful implementation in Bills section, the same is extended to all the sections and are being used successfully.
- ❖ **Development of SCSP/TSP MIS:** MIS development for fund management and utilization tracking for SCSP/TSP is in progress.
- ❖ **Developed MIS for ARM:** Development of MIS for Automatic Reeling Machine (ARM) data collection is completed and in use.

2. SEED ORGANISATION

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

The Table below indicates the total quantity of seed production during the year 2017-18, 2018-19 and 2019-20.

(Unit: Lakh dfls)

Particulars	2017-18		2018-19		2019-20	
	Target	Achmnt.	Target	Achmnt.	Target	Achmnt.
Mulberry	440.00	388.35	440.00	483.04	470	399.87
Tasar	50.11	52.34	51.02	51.08	51.17	55.53
Oak Tasar	0.99	0.47	0.64	0.78	1.48	0.44
Muga	8.07	7.08	8.16	5.33	5.65	5.71
Eri	6.00	6.88	6.00	7.22	6.30	6.64
Total	505.17	455.12	505.82	547.45	534.60	468.19

3. COORDINATION AND MARKET DEVELOPMENT.

Central Silk Board administration includes Board Secretariat, Regional Offices, Certification Centers 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. 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, commercialisation 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 their 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, glouse, 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. Quality of cocoons influences the performance during reeling and quality of raw silk produced. Cocoon Testing Centres which have been established in different Cocoon Markets with the support under CDP facilitate cocoon testing. The network of Certification Centres of Central Silk Board attached to the Regional Office carryout voluntary pre-shipment inspection of silk goods meant for export to ensure quality of silk goods exported from India. Besides, Central Silk Board is popularising “Silk Mark”, for purity of silk products through the Silk Mark Organisation of India (SMOI). “Silk Mark”, an assurance label, protects the interests 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 2017-18, 2018-19 and 2019-20 is given below:

Particulars	2017-18		2018-19		2019-20	
	Target	Achmnt	Target	Achmnt	Target	Achmnt
Total No. of new Members enrolled	250	271	250	291	260	280
Total No. of Silk Mark Labels sold (Lakh nos.)	27.50	23.94	27	25.46	27.00	29.71
Awareness Programmes/ Exhibition/ Fairs/ Workshop/ Road shows	450	553	480	463	500	549

(i) Silk Mark Expos

In order to ensure that Silk Mark gains further credibility & popularity, Silk Mark Expos are being organized exclusively for Silk Mark Authorized Users across the country. The Expo is an ideal platform not only to popularize Silk Mark but also in bringing the manufacturers and the consumers under one

platform for selling and buying of pure silk products. Substantial business for the participants is generated during this event. During the event massive awareness and publicity campaigns are carried out by the SMOI.

During the year 2019-20, SMOI has organized six Silk Mark Expos at Guwahati, Lucknow, Bengaluru, Chennai, Pune and Hyderabad. Of which, three expos at Guwahati, Lucknow and Bengaluru were Silk Mark Expos and the remaining at Chennai, Pune and Hyderabad were National Level Special Handloom Expos (NLSHE) organized with the financial support of the Development Commissioner (Handloom).

The details of No. of stalls, visitors, business turn over etc. are given in the below table:

Place	Guwahati	Lucknow	Bengaluru	Chennai	Pune	Hyderabad	Cumulative
	5 th to 9 th April, 2019	18 th to 23 rd Sept, 2019	10 th to 6 th Dec, 2019	18 th to 31 st Dec, 2019	16 th to 29 th Feb, 2020	4 th to 17 th March, 2020	---
No. of stalls	41	31	38	45	40	48	243
No. of AU s	42	21	38	45	40	48	234
No. of states	7	8	11	10	10	11	57
No. of Visitors	800	1800	8000	8400	5000	5000	29000
Business turnover (₹, Cr)	1.50	0.32	2.00	1.30	1.50	2.80	9.42

Awareness Programme for IFSOWA: An awareness programme on Silk and Silk Mark was organised for the Indian Forest Officers' Wives Association, in the Civil Services Officers' Institute Auditorium, Chanakyapuri, New Delhi on 25th June, 2019, with a view to increase the awareness about silk and 'Silk Mark'. The programme was inaugurated by Smt. Sushmita Das, President of IFS Officers Wives Association (IFSOWA). A presentation elaborating on silk and Silk Mark was made to the Members of IFSOWA, followed by an interactive session wherein the Members of IFSOWA raised many queries related to the silk and Silk Mark which were clarified to them. A live demonstration of silk identification was also arranged for the benefit of the participants. At the end of the programme, a questionnaire was distributed to the participants and three best participants were identified and felicitated by the IFSOWA President.

India International Silk Fair: Central Silk Board / SMOI participated in the 7th India International Silk Fair organized by the Indian Silk Export Promotion Council, ISEPC, at Pragati Maidan, New Delhi from 15th to 17th July, 2019. SMOI has set up a customized Theme Pavilion under the banner of "Silks of India" depicting an array of activities from the pre-cocoon to post-cocoon technologies. Mrs. Smriti Zubin Irani, Hon'ble Union Textile Minister has inaugurated the Theme Pavilion. In addition, CSB has offered ten stalls free of cost to participants from the Northeastern region and another ten stalls at subsidized rates to the Silk Mark Authorized Users from across India.

Publicity Measures: In addition to organising expos and participating in events, workshops, fairs etc., SMOI has taken up initiatives to promote Indian Silk and Silk Mark across India and abroad. SMOI has released advertisements in leading English and vernacular newspapers, magazines, television ads,

scrolling in local channels, hoardings at metro stations, railway stations, bus back panels etc.

Newspaper in Education: SMOI had released an educational series on silk in the supplement for students in the newspaper 'Times of India' under the programme 'Newspaper in Education (NIE)' with the topics head viz; Types of Indian Silks, Silk Purity Testing, Innovative Uses of Silk and Silk Care. More than 3 lakh students from about 900 schools were covered, Quiz questions were given at the end of the articles and the students were asked to submit their responses. Certificates were issued to the successful students.

Participation in the 25th Congress of the International Sericultural Commission at Tsukuba, Japan

The 25th ISC Congress was organized at Tsukuba International Congress Centre Epochal, Tsukuba, Japan. With the objective to project the uniqueness of Indian Silks to overseas audiences, Silk Mark Organisation of India, Central Silk Board participated and put up a fascinating display of Indian Silk products as an ancillary activity. A paper on "Accreditation and Compliance of Pure Silk Products in Trade": A case of Silk Mark in India was presented in the Congress and also urged for the creation of a World Silk Council by all the silk-producing and consuming countries. Further, exhorted to join hands and constitute a global Silk Mark for the benefit of consumers & industry stakeholders to preserve true value of their products.

5. FINANCIAL PROGRESS

The table below indicates year-wise financial performance of the Central Silk Board during the years 2017-18, 2018-19 and 2019-20:

(Cr. Rs.)

BUDGET HEADS	2017-18		2018-19		2019-20	
	Allocation (RE)	Expnd.	Allocation (Approved RE)	Expnd.	Allocation (Approved RE)	Expnd.
Administrative Expenditure	381.00	381.00	481.29	481.29	577.70	575.65
Scheme Outlay- for Silk Samagra	161.50	161.50	120.00	117.41	209.91	209.91
Total	542.50	542.50	601.29	598.70	787.61	785.56*

*provisional

6. OTHER SCHEMES

A. CONVERGENCE EFFORTS:

The Ministry of Textiles is extending support to the sericulture sector in the form of SILK SAMAGRA. Efforts are also being made to mobilize additional funds through convergence, by availing the financial support from other schemes being implemented by various other Ministries of Govt. of India. As per the latest reports received from States, during the year 2018-19, against the project submitted for Rs. 837.02 crores, the States have received sanction for Rs. 776.90 crores, of which Rs. 670.53 crores have been released under RKVY, MGNREGA and other convergence programmes. During the financial year 2019-20, States have submitted proposals for Rs. 711.00 crores, received sanction for Rs. 620.71 crores and received funds worth Rs. 481.50 crores.

B. MAHILA KISAN SASHAKTIKARAN PARIYOJANA (MKSP):

Multi-state tasar projects under Mahila Kisan Sashktikaran Pariyojana (MKSP) at an outlay of Rs.7160.96 lakhs, shared by MoRD (Rs.5366.15 lakhs) and CSB (Rs.1794.81 lakhs) are being coordinated by CSB in six states, since October 2013. The project envisages creating over 36,000 sustainable livelihoods for the marginalized households, especially women in 23 districts, which are mostly Left-Wing Extremism (LWE) affected in the States of Jharkhand, Odisha, West Bengal, Chhasttisgarh, Maharashtra, Andhra Pradesh & Bihar.

A total of 33938 farmers have been mobilized into 696 informal producer groups. Under the project 1521 ha of tasar host plants have been raised by 2738 farmers. 2.978 lakh dfls of nucleus seed and 13.977 lakh dfls of basic seed have been reared to produce 116.83 lakh nucleus seed cocoons and 385.01 lakh basic seed cocoons. 365 private graineurs processed 284.43 lakh seed cocoons and produced 64.44 lakh commercial dfls. 13933 commercial rearers brushed 65.04 lakh dfls and produced 2400.87 lakh reeling cocoons besides various capacity and institution building activities across tasar value chain.

Scaling up projects under MKSP with CSB as NRLM support organization (NSO)

CSB being the National Rural Livelihood Mission (NRLM) support Organization (NSO) of MoRD is supporting State Rural Livelihood Missions (SRLMs) in up-scaling initiatives under tasar sector. MoRD has already approved three MKSP Tasar projects formulated with support of CSB, for the states of Jharkhand (25000), Odisha (5220), and West Bengal (5000) covering 35,220 Mahila Kisans funded by MoRD (60%) and SRLMs (40%) with an outlay of Rs.63.34 crores, which are under implementation during the year. Besides, project proposals from the states of Chhattisgarh and Bihar are under consideration and proposal for Maharashtra is due for formulation.

C. SCHEDULED CASTE SUB-PLAN (SCSP)

The Ministry of Textiles, Govt. of India has sanctioned an amount of Rs. 30.00 crores towards implementation of Scheduled Caste Sub-Plan (SCSP) under sericulture for the year 2019-20. The entire sanctioned amount of Rs. 30.00 crores have been released to Karnataka, Andhra Pradesh, Telangana, Tamil Nadu, Kerala, Uttar Pradesh, Himachal Pradesh, Jharkhand, Odisha, Punjab & Haryana towards implementation of components under SCSP during the year 2019-20. A total number of 1936 beneficiaries have been covered.

D. TRIBAL SUB-PLAN (TSP)

The Ministry of Textiles, Govt. of India has sanctioned an amount of Rs.20.00 crores towards implementation of Tribal Sub Plan (TSP) under sericulture for the year 2019-20. The entire sanctioned amount of Rs. 20.00 crores have been released to Karnataka, Andhra Pradesh, Telangana, Uttarakhand, Jharkhand, Himachal Pradesh, Odisha, Uttar Pradesh, Chhattisgarh & Tamil Nadu towards implementation of components under TSP during the year 2019-20. A total number of 3438 beneficiaries have been covered.

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

The North Eastern region of India 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 from host plantation development to finished products with value addition at every stage of production chain. As a part of this, under NERTPS - an Umbrella scheme of Ministry of Textiles, the Govt. of India has approved 38 Sericulture projects implementing in all North Eastern States in the identified potential districts under four broad categories viz., Integrated Sericulture Development Project (ISDP), Intensive Bivoltine Sericulture Development Project (IBSDP), Eri Spun Silk Mills (ESSM) and Aspirational Districts.

A total of 38 projects covering Mulberry, Eri and Muga silk are implemented in all NE States which includes 24 on-going and 14 new projects. Total cost of these projects is Rs. 1,107.90 crores, of which GoI share is Rs.956.01 crore. Of which, 20 projects in ISDP including establishment of Seed Infrastructure in CSB units and Silk Processing & Printing unit in Tripura, 10 projects in IBSDP, 3 Projects for Eri Spun Silk Mills and 5 projects for Aspirational Districts. The Objective of these projects is to establish sericulture as viable commercial activity in NE by creating necessary infrastructure and imparting training skills to the locals for silkworm rearing and allied activities in the value chain. The projects are proposed to bring around 38,170 acres of plantation under mulberry, Eri, Muga & Oak Tasar sectors and expected to contribute additional production of 2,650 MT raw silk during the project period and generate employment around 3,00,000 persons.

a. Integrated Sericulture Development Project)ISDP(: Eighteen projects have been approved with a total cost of Rs.631.97 crore)GoI share of Rs.525.11 crores(which includes 14 on-going and 4 new projects for implementation in Assam including BTC, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. This includes setting up of Soil to Silk for BTC (Assam) and Post Cocoon Technology for Nagaland. The projects will cover 29,910 acres of Mulberry, Eri & Muga plantation benefitting around 41,068 beneficiaries covering in all NE States. Till March 2020, Ministry has released Rs.416.67 crore for the above projects, against which the expenditure reported is Rs.358.39 crore)86%(.

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 (100% Central assistance). This unit targets to print and process 1.50 lakh metre silk per annum. So far, the Ministry has released Rs.3.52 crore for the purpose, against which expenditure has been reported for Rs.3.49 crore (99%).

Seed Infrastructure Units in CSB: To create infrastructure facilities for production of the quality seed in Mulberry, Eri and Muga Sectors in NE States, a project was approved at a total cost of Rs 37.71 crore (100% Central assistance). This scheme envisages construction of 6 seed infrastructure units [(1 mulberry seed unit at Jorhat (Assam), 4 muga seed units at Silchar (Assam), Kobulong. Mokoukchung (Nagaland), Kowbill, Kokrajhar (BTC-Assam), Tura (Meghalaya) and 1 Eri seed unit at Topatoli (Assam)] with a production capacity of 30 lakhs mulberry Dfls and 21.51

lakh Muga & Eri Dfls]. Ministry has so far released Rs.35.82 crore for this project, against which the expenditure reported is Rs.32.54 crore (91%).

b. Intensive Bivoltine Sericulture Development Project (IBSDP): Ten projects to produce for import substitute bivoltine silk with a total cost of Rs.290.31 crores out of which GoI share of Rs.258.74 crores which includes 8 on-going and 2 new projects have been sanctioned under NERTPS. The projects cover 4,900 acres of mulberry plantation benefitting around 10,607 women beneficiaries covering in all NE States (except Manipur). Upto March, 2020, Ministry has released Rs.213.38 crore for the above project, against which the expenditure reported is Rs.194.32 crore (91%).

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.64.59 crore (GoI share of Rs.57.28 crores) to produce 165 MT of Eri spun silk yarn per annum benefitting around 7,500 stakeholders after establishment of mills. So far Ministry has released Rs.19.55 crore under the above said project.

d. Development of Sericulture in Aspirational Districts (AD): Govt. of India 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 have been approved 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. The projects cover 3,360 acres of plantation benefitting around 4,245 beneficiaries. Till March 2020, Ministry has released Rs.37.45 crore under the above said project. against which the expenditure reported is Rs.17.08 crore (46%).

Progress: Upto March, 2020, about 34,736 acres have been brought under host plantation of Mulberry, Eri, Muga and Oak Tasar covering 46,783 beneficiaries and produced 3,475 MT of raw silk during the project period (2014-15 to 2019-20). As against Rs.731.25 crore released by Ministry under the above projects, an expenditure of Rs.610.34 crore (83%) has been incurred.

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 project activity is underway. For the 14 newly approved projects, in respect of plantation, the details of land and beneficiaries covered has been captured using GPS Map Camera App. Around 3000 geo-tagging of plantation and beneficiaries have been uploaded in CSB website.
- Third party evaluation of the projects to evaluate the socio-economic impact on the implementation of the NERTPS projects has been taken up through TERI, Bangalore which is under progress.
- Two MIS have been developed under ISDP, IBSDP & Aspirational Districts. So far 86% of MIS have been uploaded under the project.
- As a part of monitoring & evaluation, field visits have been undertaken in the project sites by the scientists of CSB regularly. An Internal Assessment

of the projects have been made on the progress of projects and DoSs have been requested to initiate action on the report.

- Combined meetings were conducted at regular intervals with all NE States by CSB and MoT to review the progress of projects.

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

#	State	Total Project cost (Rs. Cr.)	Gol Share (Rs.Cr.)	Gol Release (Till Mar-20) (Rs. Cr.)	Beneficiaries (No)		Output per annum (MT) 2019-20	
					Target	Achmt	Target	Achmt (P) (upto Mar-20)
I	Integrated Sericulture Development Project							
1	Assam	66.67	47.42	45.05	5,965	5,965	94	96.85
2	BTC	34.92	24.68	23.44	3,356	3,356	75	66.62
3	BTC (IEDPB)	11.41	10.61	10.08	654	654	26	26.92
4	BTC (Soil to Silk)	55.36	53.12	37.09	3,526	2,345	102	102.00
5	Arunachal Pradesh	18.42	18.42	17.50	1,805	1,672	36	33.25
6	Manipur (Valley)	149.76	126.60	107.55	6,613	5,957	203	114.00
7	Manipur (Hill)	30.39	24.67	20.50	2,169	1,339	51	40.04
8	Meghalaya	30.16	21.91	19.57	2,856	2,856	77	53.80
9	Mizoram	32.49	24.49	23.26	1,683	1,683	49	35.14
10	Mizoram (IMSDP)	13.52	12.83	12.19	833	800	10	2.44
11	Nagaland	31.47	22.66	21.52	2,678	2,678	69	56.08
12	Nagaland (IESDP)	13.66	12.83	12.19	1,053	1,053	24	31.45
13	Nagaland (PCT)	8.57	8.48	8.06	400	406	Post cocoon & post yarn activities are in progress	
14	Tripura	47.95	33.20	29.58	3,432	3,432	121	85.50
	Total (I)	544.75	441.93	387.57	37,023	34,196	938	744
Ia	New ISDP projects							
15	Ar. Pradesh (ILSEF)	37.25	35.65	9.12	1,270	445	48	-
16	Ar, Pradesh (IMSDP)	12.69	12.15	6.08	875	350	9	1.50
17	BTC –IESDP (Tap)	18.63	17.35	5.78	1,400	375	18	7.82
18	Nagaland- Chungtia	18.67	18.04	8.13	500	150	16	-
	Total (Ia)	87.24	83.19	29.11	4,045	1320	91	9.32
	Sub Total	631.97	525.11	416.68	41,068	35,516	1,029	753.32
Ib	Infrastructure Projects							
19	Tripura (Silk Printing)	3.71	3.71	3.52	-	-	1.50 lakh mts./yr	Printed 356 sarees
20	CSB Seed Infrastructure	37.71	37.71	35.82	-	-	30 lakh Mulberry & 3.70 lakhs Muga / Eri dfls / yr	6.87 lakh Mulberry, 0.87 lakhs Muga & 0.08 lakhs Eri dfls achieved
	Total (Ib)	41.42	41.42	39.35	-	-	-	-
	Total (I+Ia+Ib)	673.41	566.53	456.03	41,068	35,516	1,029	753.32
II	Intensive Bivoltine Sericulture Development Project							
1	Assam	29.55	26.28	24.96	1,144	1,144	17	24.90
2	BTC	30.06	26.75	25.41	1,188	1,188	17	2.80

3	Arunachal Pradesh	29.47	26.20	24.89	1,144	663	16	3.10
4	Meghalaya	29.01	25.77	24.47	1,044	1,033	16	12.01
5	Mizoram	30.15	26.88	25.54	1,169	1,169	16	16.99
6	Nagaland	29.43	26.16	24.85	1,144	1,144	16	6.94
7	Sikkim	29.68	26.43	25.11	1,094	988	17	0.75
8	Tripura	29.43	25.95	24.65	1,144	1,144	16	24.55
	Total (II)	236.78	210.41	199.88	9,071	8,473	130	92.04
Ila	New Bivoltine projects							
9	Nagaland–Biv (SPV)	22.43	20.68	10.34	436	320	14	-
10	Tripura-Sepahijala	31.11	27.64	3.16	1,100	120	17	-
	Total (Ila)	53.54	48.32	13.50	1,536	440	31	-
	Total (II+Ila)	290.31	258.74	213.38	10,607	8,913	161	92.04
	IEC			4.84				
III	Eri Spun Silk Mills							
1	Assam	21.53	19.09	5.00	-	-	-	-
2	BTC	21.53	19.09	9.55	-	-	-	-
3	Manipur	21.53	19.09	5.00	-	-	-	-
	Total (III)	64.59	57.28	19.55	-	-	-	-
IV	Aspirational Districts							
1	Assam	21.03	19.55	9.78	1,200	566	46	-
2	BTC	20.28	18.64	9.32	1,020	400	40	7.84
3	Meghalaya	12.08	10.97	5.48	410	200	17	-
4	Mizoram	11.56	10.82	9.74	650	226	17	-
5	Nagaland	14.65	13.49	3.13	965	962	17	8.00
	Total (IV)	79.60	73.47	37.45	4,245	2354	137	15.84
Grand Total (I+II+III+IV) (38 projects)		1,107.90	956.01	731.25	63,235	46,783	1,327	861.20

(P): provisional

SUCCESS STORIES IN SERICULTURE:

1. Smt. Bala Devi, Dehradun, Uttarkhand state is involved in practicing sericulture since 2005 as a subsidiary activity. From her small scattered plantation of mulberry garden with 15 tree mulberry plantation, she is able to earn an average annual income of Rs. 28,000/ year, which is noteworthy, with limited resources in the hilly region. Her average productivity of Cocoons is around 44Kgs/100 DFLs.
2. Smt. Shakuntala Murmu, Bankura, West Bengal State, a Tasar Seed Graineur or seed producer, is involved in Tasar Seed Production activity since 2012-13. She has established one Grainage Unit during 2012-13 and another unit during 2017-18 with financial support under Tribal Sub Plan category from Ministry of Textiles /CSB. She produces 15,000 to 16,000 DFLs/year. She earns an average annual income of Rs 1,20,000/-, through silkworm seed production activity.
3. Shri K. Jagadeesh, Kirangere Chawki Rearing Centre, Ramnagaram, State-Karnataka, a post graduate in Sericulture made a humble beginning by establishing Keerangere Chawki Rearing Centre in the year 1994 to supply healthy and robust young stage silkworms to a handful of farmers in his native village with the support of Central and State

schemes. Presently the CRC caters to the needs of about 25000 farmers with a capacity of 30 lakh DFLs/Month and cocoon yield improved from 30 kg/100 DFLs to the level of 70 kg /100 DFLs by supplying healthy and robust young silkworm and there by generated job opportunity to about 1000 persons both in his centre and at franchise level. He has earned a net profit of 3 crores from this business and acknowledged two and a half decades of the services.

4. Smt. Bomchak Taipodia, W/o. Shri Mikar Taipodia, Village: Bali, District: West Siang, Arunachal Pradesh has been involved in muga culture since 2008, after undergoing skill training in muga silkworm rearing and quality cocoon production under CDP from Central Silk Board. She raised Som plantation in 3-acre plot and achieved an average yield of 1 lakh cocoons from 3000 dfls from 2 crops of muga cocoons (Jerua & Kotia). She also constructed a muga spinning/ rearing house in 2010. She earns an annual income of Rs.1 lakh.

POLICY INITIATIVES

1. Customs Duty on imports:

At present a basic customs duty of 10% is levied on raw silk and 20% on silk fabric.

2. Anti-Dumping Duty on Raw silk: In order to safeguard the interest of the domestic silk industry against the cheap imports, an antidumping duty of US\$ 1.85 per kg of the landed cost of imported raw silk of 3A grade & Below in the form of fixed duty was imposed during December-2015 by Director General of Antidumping & Allied Duties (DGAD), which will be in force till Dec 2020.

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. On the other hand, it stands for 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 which dates back to 15th century. Sericulture industry provides employment to approximately 9.18 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 2019-20, Mulberry accounted for 70.21% (25,384 MT), Tasar 9.3% (3,370 MT), Eri 19.80% (7,157 MT) and Muga 0.66% (240 MT) of the total raw silk production of 36,152 MT.

Performance of Sericulture Sector

Particulars	2015-16 Achmnt.	2016-17 Achmnt.	2017-18 Achmnt.	2018-19 Achmnt.	2019-20(P)	
					Target	Achmnt
Mulberry Plantation (Lakh ha.)	2.09	2.17	2.24	2.35	2.57	2.40
Raw Silk Production:						
Mulberry (Bivoltine)	4613	5266	5874	6987	8500	6993
Mulberry (Cross breed)	15865	16007	16192	18358	18865	18391
Sub Total (Mulberry)	20478	21273	22066	25345	27365	25384
Vanya						
Tasar	2819	3268	2988	2981	3515	3370
Eri	5060	5637	6661	6910	7370	7157
Muga	166	170	192	233	280	240
Sub Total (Vanya)	8045	9075	9840	10124	11165	10768
GRAND TOTAL	28523	30348	31906	35468	38530	36152

P: provisional, Source: The data received from DOSs & compiled at CSB (Central office)

Raw Silk Production during 2019-20

During 2019-20, the total raw silk production in the country was 36,152 MT, which is an increase of 1.9% over the production achieved during the last year and around 93.8% of the annual targeted production for the year 2019-20.

The mulberry silk production was marginally up by 0.2% during 2019-20 over the previous year. Vanya silk, which includes Tasar, Eri and Muga silks, has achieved 6.4% growth during 2019-20 over 2018-19. Tasar raw silk production achieved a record production of 3,370 MT during 2019-20 by registering 13.1% growth over earlier year. Similarly, an increase of 3.6% and 3% respectively, was noticed in Eri and Muga silk production during 2019-20 compared to 2018-19.

The area under mulberry during 2019-20 was up by 2.0%. The State-wise production of raw silk during four years (2016-17 to 2019-20) are given in **Annexure- I**.

Raw Silk Imports:

The quantity and value of raw silk imported during 2016-17 to 2019-20 are given below:

Year	Quantity (MT)	Value (Rs. in Crores)
2016-17	3795	1092.26
2017-18	3712	1218.14
2018-19	2785	1041.40
2019-20 (P)	3315	1149.32

Source: DGCIS, Kolkata, P: provisional

Exports:

The export earnings during 2019-20 were Rs. 1498.39 crores. Export values of silk goods during 2016-17 to 2019-20 are given below:

Items	(Rs. in Crores)			
	2016-17	2017-18	2018-19	2019-20 (P)
Natural Silk Yarn	15.33	15.67	24.72	9.00
Silk Fabrics	1051.65	864.81	1022.43	405.45
Readymade Garments	864.33	650.48	742.27	842.20
Silk Carpet	63.78	17.34	113.08	143.43
Silk Waste	98.33	101.19	129.38	98.31
Total	2093.42	1649.48	2031.88	1498.39

Source: Compiled from the Statistics of DGCIS, Kolkata; **P:** Provisional

Employment Generation:

The employment generation in the country is raised to 9.52 million persons (provisional) in 2019-20 compared to 9.17 million persons in 2018-19, indicating a growth of 3.8%.

Annexure- I

State-wise raw silk production during the year 2016-17 to 2019-20

(in MT)

#	State	2016-17		2017-18		2018-19		2019-20 (P)	
		Target	Achmnt.	Target	Achmnt.	Target	Achmnt.	Target	Achmnt.
1	Karnataka	11000	9571	11120	9322	10750	11592	12000	11143
2	Andhra Pradesh	5505	5970	6090	6778	7805	7481	7946	7962
3	Telangana	150	119	160	163	200	224	295	297
4	Tamil Nadu	2000	1914	2000	1984	2190	2072	2300	2154
5	Kerala	10	11	12	15	14	16	20	16
6	Maharashtra	285	259	328	373	415	519	630	428
7	Uttar Pradesh	280	269	300	292	340	289	365	309
8	Madhya Pradesh*	275	111	230	103	160	100	165	54
9	Chhattisgarh	290	361	405	532	670	349	562	480
10	West Bengal@	2706	2565	2590	2577	2775	2394	2900	2464
11	Bihar**	84	77	85	63	95	55	86	3
12	Jharkhand	2622	2631	2744	2220	2658	2375	2604	2697
13	Odisha*	130	125	140	116	148	131	155	118
14	Jammu & Kashmir	170	145	180	132	190	118	170	117
15	Himachal Pradesh	40	32	40	32	43	34	50	30
16	Uttarakhand	35	34	44	35	45	36	42	41
17	Haryana	1	1	2	0.7	2	0.7	2	1
18	Punjab	1	3	6	3	5	3	5	3
19	Assam & Bodoland	4103	3811	4705	4861	4980	5026	5395	5316
20	Ar.Pradesh*	48	45	58	54	65	59	75	60
21	Manipur	530	529	560	388	435	464	600	470
22	Meghalaya	900	927	1070	1076	1110	1187	1220	1192
23	Mizoram	70	76	100	83.6	105	92	130	104
24	Nagaland	690	678	770	615	633	620	682	600
25	Sikkim*	10	9	17	0.001	3	0.4	1	1
26	Tripura*	65	75	85	87	125	230	130	94
Total		32000	30348	33840	31906	35960	35468	38530	36152

Note: *refers to April-Feb'20, ** refers to April-Sep'19 (P): Provisional