ENGLISH SECTION

CONTENTS

HIGHLIGHTS OF ACHIEVEMENTS OF CENTRAL SILK BOARD

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PERFORMANCE OF INDIAN SILK INDUSTRY

- The country has produced 35,820 MT of silk against the target of 38,530 MT during 2019-20 achieving 93.0% of the target.
- The mulberry silk production was 25,239 MT (BV-7,009 MT and CB-18,230 MT) in 2019-20 compared to 25,344 MT (BV-6,987 MT and CB-18,357 MT) in 2018-19.
- The *vanya* silk (tasar, eri and muga) production grew by 4.5% from 10,124 MT in 2018-19 to 10,581 MT in 2019-20. The production of tasar, eri and muga silks was 3136 MT, 7204 MT and 241 MT, respectively during 2019-20.
- The export earnings from silkgoods was Rs.1,745.65 crore (US$ 246.67 million) during 2019-20 compared to Rs.2,031.89 crore (US$ 291.36 million) in 2018-19.
- The import of raw silk increased by 19.03% from 2,785 MT during 2018-19 to 3,315 MT in 2019-20.

RESEARCH & DEVELOPMENT

- During the year 2019-20, 44 new research projects were initiated and 58 projects concluded by various R&D institutes of CSB. Currently, a total of 96 research projects *viz.,* 41 in mulberry, 30 in *vanya*, 11 in post-cocoon sectors and 14 in specialized sector (germplasm, seed technology & bio-technology) are under progress.

Mulberry Sector

- Developed climate-resilient mulberry varieties, eight accessions *viz*., MI-0437, MI-0310, MI-0683, ME-0173, MI-0246, MI-0685, MI-0762 and ME-0256 which were identified with high water and nutrient use efficiency.
- Optimized whole plant regeneration protocol for G4 mulberry cultivar.
- Developed putative transformed containing PEPC+PEPCK and CA genes for contributing towards higher photosynthetic efficiency.
- Popularized “Rot-fix” developed for control of root rot disease in mulberry.
- Identified eight germplasm accessions resistant to root knot disease caused by *Meloidogyne incognita viz*., BR-8, Karanjtoli-1, MI-0437×MI-0364 (P-2), Nagalur Estate, Tippu, Calabresa, Thai Pech and SRDC-3.
- Identified four alkalinity stress-tolerant genotypes (pH>9) *viz*., Sahana (MI 0524), Bheria dangi-1 (MI 0822), T-36 (MI 0226) and Kanthaloor-2 (MI 0449).
- Identified five high yielding drought-tolerant mulberry genotypes *viz*., PYD-1, PYD-4, PYD-7, PYD-8 & PYD-21 over local check C-1730 (>15%) and ruling check C-2038 (>6%) under rainfed conditions.
- Identified high yielding mulberry genotypes (C-01&C-11) with an improvement over S1635 under irrigated (>30%) and rainfed (>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 for North-eastern states.
- Developed new bivoltine double hybrid, BFC25 x BFC11, utilizing Bulgarian and Indian silkworm genetic resources with shell ratio of 23.8%, filament length of 1,095 metre and renditta of 5.8.
- Evaluated S8 x CSR16, a bivoltine single hybrid with 2.85 lakh dfls under authorization trials (average cocoon yield of 69.0 kg/100 dfls, single cocoon wt. 1.782 g, single shell wt. 0.395 g and shell ratio of 22%).
- Developed a bivoltine double hybrid, BHP3.2 x BHP8.9 with an improved shell (10-12%) over SK6 x SK7 & Bcon1 x Bcon4, with an average yield of 65 kg/-100 dfls.
- Identified thermo-tolerant bivoltine hybrids *viz*., WB7.5 x WB1.3 and Ka19. WB5 x WB1.3.
- Evaluated improved cross breed, MV1 × S8 (Cauvery Gold) under authorization trials, 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.
- Published the sequence of *Beauveria bassiana* isolated from silkworm *Bombyx mori* L to NCBI, and obtained accession number, MT355427.
- Developed a general disinfectant, Nirmool for disinfection of silkworm rearing house and appliances.
- Developed molecular markers (py1& py2) for humidity tolerance in silkworm.
- Designed prototype of Suvarna (modified charkha) to improve efficiency, for eastern zone.
- Achieved recombinant silk Fibroin - Cecropin B, a fusion protein expression, in a heterologous expression system, effective against gram-positive and gram-negative bacteria with strong activity against oxidative stress and showed enhanced wound healing activity in rats and human dermal cells.
- Developed transgenic silkworms to over-express antimicrobial genes, Relish 1 and Drosomycin B., with enhanced resistance/tolerance against major pathogens.
- Identified eight silkworm breeds *viz*., BHR 2, BHR 3, B.con 1, B.con 4, CSR 50, ATR 16, NB4D2 and RSJ 14 for development of nutrigenetic specific hybrids for sub-tropical conditions of North-West India.
- Identified eight silkworm bivoltine lines *viz*., DSK-3, DSK-5, DSK-6, DSK-7, DSK- 9, DSK-16, DSK-17 and DSK-18 with a shell ratio of >20-21% & cocoon yield of 55 kg/100 dfls for the temperate region of Kashmir valley.
- Identified six foundation crosses *viz.,* PAM114 x CSR27, PAM114 x CSR50, CSR50 x PAM114 (oval) and PAM114 x APS4, PAM117 x SK7 and SK6 x SK7 (constricted) with SR of 20-21% and cocoon yield of 60 kg/100 dfls, suitable for temperate climatic conditions.

- A large scale field trial with 34,500 dfls of MASN4 x CSR4 was found promising with a cocoon yield of 32 to 52 kg/100 dfls during spring and around 30 kg/100 dlfs during autumn season in Jammu, Himachal Pradesh and Uttarakhand.
- Improved mulberry productivity from 50 MT to 60 MT/ha/yr and cocoon yield from 48 to 65 kg/100 dfls during the period 2005-06 to 2019-20.

Vanya Sector

- Identified region and season specific differences in the phyto-chemical quantities, stress magnitude and intrinsic protection potential of Som.
- Developed a formulation of native rhizobacteria having antagonistic effects against *Alternaria* blight, for management of castor blight disease, enhancing plant growth and productivity of the leaf biomass.
- Collected geographical coordinates of eight wild/cultivated perennial castor accessions growing in North-East for their utilization in the pre-breeding programme.
- Carried out impact assessment of petroleum crude oil activities on muga culture in Assam, indicating adverse effects of petroleum pollutants on muga culture.
- Collected 1452 soil samples and analyzed, covering North-eastern states *viz.,* Assam, Nagaland, Manipur, Meghalaya, Mizoram and Arunachal Pradesh.
- Collected 208 isolates from 114 rhizosphere soil samples from major tasar producing areas and screened, of which 40 were found to synthesize Indole-3-Acetic Acid (IAA) hormone. Seventy four *Pseudomonas* isolates were screened against pathogens, of which 8 were having anti-fungal and 19 with anti-bacterial properties. Atmospheric Nitrogen fixation by 40 Azotobacter isolates showed wide range from 2.3N µg/ml to 11.0N µg/ml and four isolates showed high amount of atmospheric nitrogen.
- Popularized two som accessions (S3 & S6) resistant to leaf spot disease, leaf blight and leaf rust in the field.
- Popularized *Ailanthus grandis* (Barpat) with a leaf yield of 32 MT/ha/yr, as an alternative host plant for eri silkworm.
- Developed short-term seed preservation schedule (20 days) for muga silkworm eggs, for 18 days at preservation (15+5+15+10+15^{0}C for 4+5+3+5+1 days) and 2 days post-preservation/ incubation period (25^{0}C), which resulted in 85% hatching.
- Developed short-term seed preservation (17 days) schedule for tasar silkworm BDR10 mixed eggs, for 15 days preservation (at 15^{0}C) and 8 days post-preservation/ incubation (25^{0}C) resulting in 90% hatching.
- Standardized DNA bar coding techniques for assessment of wild silkmoth diversity in Nagaland. Sequencing data was submitted for open source database.
- Developed eco-friendly bait method to control potential bug predator (*Eocanthecona furcellata* Wolff) in muga eco-system.

- Isolated bio-desulfurizing bacterium collected from crude oil polluted soils and whole genome sequences, submitted to NCBS.
- Standardized an efficient mechanical method for management of uzi fly infestation in oak fields, using PET bottles containing sugarcane syrup as bait. Use of 'Bioneem' (10ml/l) was found to be most effective for control of *Hyblaea puera* and *Phalera raya*.
- Developed Solar LED light traps of different wavelengths and installed in muga rearing fields for controlling major insect pests and predators in muga ecosystem.
- Carried out Meta genomic analysis of the potential phenol degrading bacterial cultures. Loss of native gut bacteria following the antibiotics (Streptomycin, Tetracycline and Ampicillin) treatment reduced the silkworm fitness. The detailed midgut bacterial diversity and their functions were elucidated for the first time in tasar silkworm.

Post-cocoon Sector

- Carried out molecular weight determination of red eri silk sericin by SDS PAGE and standardized enzymatic hydrolysis of white and red erisilk sericin using protex 6L and hydrolyzed white red eri silk sericin in powdered form.
- Developed an optimum line of machinery under miniature concept of eri spinning.
- Identified some of the chemicals possessing solubility characters for mulberry silk.
- Popularized 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 in *vanya* sector.
- Developed technology for diversified silk knitwear products/garments using international quality Indian silk.
- Developed cost-effective cooking package for Daba, Raily and Modal ecoraces with different concentrations of sodium carbonate and sodium bi-carbonate, combined with varying boiling and steaming time, which improves cooking efficiency & reeling performance without affecting the colour/luster and tensile properties of the silk fibroin.
- Installed solar power plant in tasar and post-cocoon sectors, to operate one each of the reeling (MRTM & Charkha), re-reeling and spinning machines, as well as 25 kg capacity Hot Air Dryer. Designing and fabrication of Solar Cooker and low power consumption Hot Air Dryer was completed.

PATENTS AND COMMERCIALIZATION

- Commercialized eight technologies *viz.,* cocoon harvester from plastic collapsible mountages, mulberry leaf chopping machine, silk and silk blended mélange yarn, void silk reeling technology, handloom silk sarees using spun silk, slit button, egg washing-cum-disinfection machine and technology on Pebrine Visualization Solution.
- Two patents *viz.*, method for degumming silk hanks under high temperature, high pressure conditions & recovery of sericin

and tasar silkworm egg washing-cum-disinfection machine, were filed and a patent was obtained for sericin extraction process, a process for the extraction of virgin sericin of *Bombyx mori.*

CAPACITY BUILDING AND TRAINING

- Training was imparted to a total of 13,498 stakeholders from various sub-sectors of silk value chain by CSB institutes and CBT division.
- A total of 52 candidates successfully completed the Post Graduate Diploma in Sericulture (PGDS) and 58 students were enrolled for 2019-20 session.
- Two batches of International Training on Sericulture and Silk Industry for 19 trainees from 10 countries and on Post-cocoon Technology for 23 trainees from 13 countries were organized by CSB.
- Four courses in the silk sector *viz.,* 1. Mulberry silk reeling, 2. *Vanya* silk reeling & spinning, 3. Silk weaving and 4. Silk wet processing have been developed and aligned to NSQF through Textiles Committee (RSA under *Samarth* Scheme).
- The four courses are already been mapped under *Samarth* scheme and same is available in public domain for conducting short-term skill training (200 hours).
- Central Silk Board was assigned by MoT to conduct physical verification of 190 training centres of state government agencies under *Samarth* in Assam, Mizoram, Arunachal Pradesh, Madhya Pradesh and Jharkhand. All the Centres have been verified within a stipulated period.
- CSB has been identified as ToT agency in silk sector and is also implementing partner under *Samarth* Scheme.

IT INITIATIVES

- **CSB website:** CSB has a website "csb.gov.in" in bilingual, English and Hindi for common man who may need to know about the organization as well as schemes and other details. CSB has completed the new website and is in the process of getting CSB website, the GIGW compliance and security audit, as per Govt. of India guidelines.
- **Registration of stakeholders under Central Seed Act:** Online registration process to facilitate and submit application for registration (new/renewal) through website www.csb.gov.in *viz.*, nsso.csb.gov.in for paperless trans-action.
- **mKisan web portal:** 622 advisories were sent as 68,26,200 SMS messages.
- **SMS service:** Mobile numbers received from DoS are updated and all the registered 11,090 farmers are receiving SMS messages on daily basis.
- **SILKS Portal:** CSB has taken up the collaborative research project with NESAC, for "Geo-tagging of assets created under NERTPS programme of CSB in North eastern region" by CMERTI, Lahdoigarh and "Study on existence of tropical tasar silkworm eco-races and their subsist places with the help of geospatial technology" by CTR&TI, Ranchi.
- **AEBAS:** Aadhaar Enabled Bio-metric Attendance System is being implemented at Central Silk Board. Over 4,254

employees including farm workers have registered into the attendance portal. All the 121 devices are RD Services enabled.

- **MIS for Automatic Reeling Machine:** For collecting and analyzing cocoon consumption and silk production details from ARMs.
- **MIS for IT Initiative for CBT programme:** MIS for monitoring and evaluation of training programmes of CBT, on real time basis across the country**.**
- **Social media:** CSB is also disseminating the technologies and R&D related activities to public and stakeholders of sericulture through social media like Facebook & Twitter.

SEED ORGANIZATION

The seed organizations of CSB under mulberry and vanya (tasar, muga & eri) sectors have effectively contributed towards raw silk production in the country through supply of quality basic and commercial seeds to states and other agencies for distribution among farmers. NSSO has produced a total of 411.36 lakh dfls of basic & commercial mulberry seeds (basic seed: 11.48 lakh dfls; commercial bivoltine hybrids: 356.30 lakh dfls & multivoltine hybrid-cross-breed 43.58 lakh dfls). Similarly, vanya seed organizations *viz.,* BTSSO, MSSO & ESSO have produced and distributed 68.32 lakh dfls of nucleus, basic and commercial seeds (out of which BTSSO has produced 55.53 lakh dfls (tasar nucleus seed: 19.03 lakh dfls, basic seed: 18.33 lakh dfls and commercial seed: 18.17 lakh dfls). MSSO has produced 5.71 lakh dfls (out of which basic seed 3.53 lakh dfls & commercial seed 2.18 lakh dfls), ESSO produced 6.64 lakh dfls (out of which eri basic seed 0.95 lakh dfls and commercial seed 5.69 lakh dfls)) and 0.44 lakh dfls of basic seed of oak tasar has also been produced by the units under CTR&TI, Ranchi.

EVENTS

In the first meeting of Regional Textiles Conference for NER states held on 22.10.2019 at Guwahati, Shri Ravi Capoor, Secretary (Textiles) reviewed implementation of the schemes and programmes of the Ministry of Textiles and sought interventions required, besides, the inputs from the states, for better coordination and synergy in implementation. Shri R.R. Okhandiar, Member Secretary, CSB spoke on the progress of the ongoing and newly approved projects.

In order to combat Covid-19, Govt. of India geared up the health infrastructure across the country by creating adequate quarantine facilities, identifying testing centres, setting up dedicated hospitals, organising sufficient ventilators and making available Personal Protective Equipments (PPE) like, coveralls, surgical masks, gloves etc., in big numbers, for use by the medical and para medical staff, engaged in detection and treatment of Covid-19.

Ministry of Textiles had the responsibility to prepare the domestic sector for the production and supply of PPE in big numbers. Under the Member Secretary, CSB as Field Officer, CSB was assigned the role of the Nodal Agency to facilitate production and monitor supply of coveralls from Bengaluru, and serve as a part of the Covid-19 Task Force.

The responsibilities of CSB included gearing up Bengaluru-based apparel sector to take up coverall production, facilitating

opening of factories, movement of materials and labour, product testing and certification at SITRA, Coimbatore and monitoring & reporting production on a daily basis, during national lockdown.

The result of sincere efforts was evident from the fact that daily production of coveralls from Bengaluru region reached one lakh pieces per day in a month's time of CSB donning the role of Nodal Agency.

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FUNCTIONS & ORGANIZATIONAL SET-UP

FUNCTIONS & ORGANIZATIONAL SET-UP

INTRODUCTION

Central Silk Board (CSB), constituted in April, 1949, by an Act of Parliament (Act No. LXI of 1948), is a statutory body under the Ministry of Textiles, Government of India, established for the development of sericulture and silk industry in the country. It is under the administrative control of Ministry of Textiles, Government of India, and is an apex agency to oversee the growth and development of silk industry in India. The vision of CSB is to "See India emerge as the Global Silk Leader" and aligned to this vision statement, the Board has planned its programmes and strategies for all the three distinct sectors *viz.,* (a) silkworm seed production; (b) farm and pre-cocoon sectors, and c) industry or post-cocoon sector. The focus of sericulture sector during 2019-20 among other priorities was to increase production of quality bivoltine raw silk.

The functions of CSB include, research and development, frontline demonstration, maintenance of four-tier silkworm seed production network, leadership role in basic and commercial silkworm seed production, standardizing and instilling quality parameters in various production processes, promotion of Indian Silk in domestic and international markets and advising the Union Government on all matters concerning sericulture and silk industry. A network of 176 units located across the country is carrying out these activities. Organization chart of CSB and details of its units are at **Annexure I (A & B).**

Functions

CSB coordinates and assists in:

- Promotion of the development of silk industry by such measures as it thinks fit.
- Undertaking, assisting and encouraging scientific, technological and economic research in sericulture and silk sector.
- Production of basic and commercial silkworm seed for supplementary assistance to various states.
- Improvement of raw silk marketing and brand promotion.
- Advising the central government on all matters relating to the development of silk industry including import and export of raw silk.
- Collection of sericulture statistics.
- Preparation of reports related to silk industry for Ministry of Textiles, Govt. of India.

Constitution of the Board

The Board of CSB consists of 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 new members nominated during 2019-20 are listed in Table 2.1.

List of Members of the Board as on 31.03.2020 under different Sections is at **Annexure II**.

Table 2.1: New members nominated during 2019-20			
#	Name and designation of the nominated member	Period of nomination	Notification details
1	Shri B.N. Bache Gowda, M.P. (Lok Sabha)	05.08.2019 to 04.08.2022	F.No.25011/19/2019-Silk dt.5.8.2019 under Section 4(3)(c)
2	Shri Ajay Nishad, M.P. (Lok Sabha)		
3	Shri D.K. Suresh M.P. (Lok Sabha)		
4	Shri Ashok Kumar Yadav, M.P. (Lok Sabha)		
5	Smt. Shubha Sarma, Commissioner- cum- Secretary, Handlooms, Textiles & Handicrafts Department, Secretariat, Bhubaneswar	05.08.2019 to 04.08.2022	F.No.25011/17/2019-Silk dt.5.8.2019 under Section 4(3) (i)
6	Dr. K.H. Govindaraj, Secretary (Textiles), Govt. of Maharashtra, Cooperation, Marketing and Textile Department, Mantralaya, Mumbai		
7	Director (Silk), Directorate of Sericulture, Govt. of Uttar Pradesh, Lucknow		F.No.25011/17/2019-Silk dt.05.08.2019 under Section 4(3)(g)
8	Shri Uday Pratap, Director, Handloom, Sericulture & Handicraft, Department of Industries, Govt. of Jharkhand, Ranchi		
9	Shri Sudhakar Xalxo, Director, Directorate of Rural Industries (Sericulture Sector), Govt. of Chhattisgarh	22.10.2019 to 21.10.2022	F.No.25011/17/2019-Silk dt.22.10.2019 under Section 4(3)(g)
10	Shri Sanjay Singh, M.P. (Rajya Sabha)	06.12.2019 to 05.12.2022	F.No.25012/5/2017-Silk (I) dt.06.12.2019 under Section 4(3) (c)

During the period under report, one meeting of Standing Committee was held at Bhubaneswar on 02.8.2019 and two meetings at New Delhi on 27.11.2019 and 11.3.2020 while two meetings of the Board were held at Bhubaneswar and New Delhi on 02.8.2019 and 11.3.2020, respectively.

Changes in Senior Level Officers of CSB

Dr. Pankaj Tewary & Dr. Ravi Bhushan Sinha took over the charge, as Directors of CSR&TI, Mysuru and BTSSO, Bilaspur on 29.10.2019 and 13.12.2019, respectively. Dr. Jalaja S. Kumar, Scientist-D joined as Director (I/c), CMER&TI, Lahdoigarh on 29.02.2020.

Staff Strength

The group-wise sanctioned strength and working strength of CSB as on 31st March, 2020 is indicated in Table 2.2.

Table 2.2: Staff Strength of Central Silk Board as on 31.03.2019

Group	Sanc-tioned	Filled	GEN	SC	ST	OBC	PWD	TOTAL
A	645	492	275	97	43	75	2	492
B	1233	1053	652	221	106	64	10	1053
C	1084	885	444	217	119	93	12	885
Total	2962	2430	1371	535	268	232	24	2430
%			56.4	22	11	9.6	0.99	100

The Board has recruited 2 Assistant Directors (Admn. & Accts.) against existing vacancies. During the same period, 274 officers and staff in different categories (Group: A-78, B-113, C-83) were super-annuated/resigned/ expired/voluntarily retired from the Board's Services.

Implementation of Reservation Policy

The CSB has been following the reservation policy as per the directions of Government of India for persons belonging to Scheduled Castes, Scheduled Tribes and Other Backward Classes under direct recruitment and for promotion also. Apart from the above, the reservation policy is also extended to the Persons With Disabilities for direct recruitment in all groups and for promotion under Group 'C' category under the Equal Opportunities, Protection of Rights and Full Participation Act, 1995 of Government of India.

Vigilance

a. Measures taken to strengthen the preventive vigilance by streamlining of procedures

Those CSB units which are considered to be sensitive areas have been identified and measures for preventive vigilance, surveillance and detection have been taken. Besides, the Chief Vigilance Officer of the CSB, the Directors/Officers in-Charge of the CSB stationed at different zones have been entrusted with the task of carrying out surprise inspections of the identified sensitive units, clearly demarcating their areas of jurisdiction. The Inspection Reports of the Chief Vigilance Officer/Directors/Officer-in-Charge stationed at different zones, if and when received, are invariably scrutinized and action taken, wherever necessary.

However, during the period 2019-2020, there arose no necessity to initiate any disciplinary proceeding based on such Reports. An Internal Audit Wing, supported by Zonal Audit Teams of different Zones, has been functioning to conduct the Internal Audit on the accounts of the units. The complaints and petitions received are examined and appropriate action is taken as and when a *prima facie* case is established. During the period under reference, 11 complaints were received and out of which, 10 complaints were disposed off as on 31.03.2020, and one case was pending.

b. Expediting completion of preliminary investigations/oral inquiries

Preliminary investigations, wherever ordered, are being carried out as early as possible and action is being taken on the findings of the Preliminary Investigation Officers. As on 31.03.2020, 12 disciplinary cases were pending for disposal.

c. Sexual harassment complaints

CSB has constituted a Complaints Committee at its secretariat and also at the institutes' level to act as the Inquiring Authority in the cases of complaint related to sexual harassment, received, if any, from the women employees/women farm workers of CSB.

d. Observance of Vigilance Awareness Week

In accordance with the guidelines issued by the Ministry/Central Vigilance Commission, New Delhi, the Vigilance Awareness Week was observed at the Central Silk Board's Secretariat and at all its subordinate units between 28.10.2019 to 02.11.2019 in a befitting manner.

Implementation of Right to Information Act, 2005

Under the Right to Information Act, 2005, 32 CPIOs have been designated at CSB Secretariat and field units. During the year, the Public Information Cell received 121 applications from the public, of which 3 were pending for disposal as on 31.03.2020. 12 appeals were also received during the year and all the appeals were disposed.

Parliamentary Related Matters

Parliamentary Questions

During 2019-20, CSB furnished reply materials for 272 Parliamentary Questions that were related to Ministry of Textiles, as per the break-up given in Table 2.3.

No Parliamentary Committee visited during the year under report.

Table 2.3: Reply furnished to Parliamentary Questions

House of Parliament	Budget Session (June-July)	Winter Session (November-December)	Budget Session (February-March)	Total
Lok Sabha	54	49	60	163
Rajya Sabha	31	40	38	109
Total	85	89	98	272

Taxes on Major Silk Products

a. Goods & Services Tax (GST)

Silk and silk products, except silkworm seed, cocoon, raw silk and silk waste, are under tax structure under Goods & Service Tax (GST). GST on different silk products is indicated in Table 2.4.

Table 2.4: GST on different silk products

#	Item	ITC HS Code	GST (%)
1	Silkworm egg	5001	0
2	Cocoon	5001	0
3	Raw silk	5002	0
4	Silk waste	5003	0
5	Silk yarn	5004/05/06	5
6	Silk fabric	5007	5
7	Silk testing services	9983	18
8	Silk garments	6101- 6117	5 & 12 *
9	Silk machinery	8445	18
10	All services (Textile manufacturing services including silk)	9988	5

**5% GST, if the price RMG is upto Rs.1000/unit & 12%, if the price is more than Rs.1000/unit.*

b. Customs Duty on Import of Silk Items

Applicable basic Customs Duty and total duty including IGST on import of various major pure silk items are indicated in Table 2.5.

Table 2.5: Customs Duty on Import of Silk Items

#	Product	ITC HS Code	Basic Customs Duty (%)	IGST (%)	Total Duty* (%)
1	Cocoon suitable for reeling	5001	30	0	33.33
2	Raw silk	5002	10	0	11.11
3	Silk waste	5003	15	0	16.70
4	Silk yarn	5004-5006	10	5	16.71
5	Silk fabric	5007	20	5	28.38
6	Silk machinery **	8445	5	18	24.74

** Inclusive of social welfare surcharge/cess.*
***Basic Customs Duty exemption (0%) on import of automatic reeling machinery*

c. Anti-Dumping Duty on Mulberry Raw Silk

In order to protect the interest of the seri-farmers and silk reelers of the country, an anti-dumping duty of US$ 1.85/kg of raw silk was imposed on mulberry raw silk (ITC HS Code 50020010) of 3A Grade & below originated in or exported from China PR during December 2015. The anti-dumping duty will be in place till January 2021. The above measure has helped in reviving the entire silk value chain from the unscrupulous act of Chinese exporters.

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PROJECTS & SCHEMES

PROJECTS/SCHEMES

CENTRAL SECTOR SCHEMES

Silk Samagra – An Integrated Scheme for Development of Silk Industry (ISDSI)

The activities of Central Silk Board (CSB) are being carried out by its 176 units located in different states through Central Sector Scheme *viz.,* "Silk Samagra", an integrated scheme for development of silk industry under the following four components.

1. Research & Development, Training, Transfer of Technology and IT Initiatives
2. Seed Organization
3. Coordination and Market Development
4. Quality Certification Systems, Export, Brand Promotion & Technology Up-gradation

The Cabinet Committee on Economic Affairs (CCEA) in its meeting chaired by the Prime Minister of India on 21.03.2018 at New Delhi had approved implementation of "Silk Samagra" with an investment of Rs.2161.68 crore by Govt. of India for three years from 2017-18 to 2019-20. However, an interim extension has been given by the Department of Expenditure, Ministry of Finance, for continuation of Silk Samagra (beyond 2019-20), during the year 2020-21 also.

The scheme is aimed towards comprehensive and sustainable development of silk industry by undertaking, assisting or encouraging scientific, technological and economic research, devising means for improved methods of host plant cultivation, silkworm rearing, developing and distributing healthy silkworm seeds with good hybrid vigour, improving the quality and production of silk, coordinating with the states for the overall development of silk industry.

While the R&D units develop technology packages, impart training on improved technology to stakeholders and transfer the technology to the field through frontline demonstration, the responsibilities of seed production units are up-keep of the four-tier seed multiplication network for maintaining the racial quality, hybrid vigour and robustness of breeds, production and supply of nucleus and basic seeds to its units and state seed production units and facilitate increase in the basic seed production in State units.

The Board Secretariat and Regional Offices of the CSB conceive and implement the developmental schemes to ensure that the output generated from Plan programmes are disseminated to the stakeholders in coordination with the state govt. for the development of silk industry. The units under the Quality Certification Systems help to maintain and certify the quality standards set by the R&D units for silkworm seed, cocoon, raw silk and silk products covering the entire silk value chain, besides, promoting pure silk products through Silk Mark label in domestic and international markets through appropriate branding by Silk Mark Organization of India (SMOI).

The main focus of R&D intervention is to promote improved crossbreed silk to cater to the increased domestic demand and the import substitute bivoltine silk so that bivotine silk production in India enhances to such a level that raw silk imports become bare minimum thereby making India self-sufficient in silk. The R&D interventions include development of improved & disease resistant silkworm races and host plant varieties encouraging collaborative research with reputed national research organizations like IITs, CSIR, IISc and international research institutes in Japan, China, Bulgaria etc. Thrust has been given on technology upgradation and making mechanization affordable. All these efforts were made to meet the requirement of international quality 4A grade bivoltine silk with higher silk content (5%) and with higher silk recovery. The beneficiary components have been re-introduced under Silk Samagra to catalyze the efforts of state Governments to improve the quality, productivity and production of raw silk besides, generating employment opportunities particularly in the rural areas.

Scheme Objectives

a. Research & Development, Transfer of Technology, Training & IT Initiatives

- Undertake ongoing Research and Development (R&D) in 9 main research Institutes (core research), and its nested 22 Regional Sericulture Research Stations besides, finetuning the technology for local needs and frontline demonstration of technologies.
- Undertake Research and Development activities through development of improved food plants, silkworm breeds, standardization of silkworm seed production techniques, improved package of practices for silkworm rearing.
- Development of post-cocoon technologies and machineries in post-cocoon operations, by-product utilization and product development & diversification.
- Dissemination of technology to identified clusters through Cluster Promotion Programme (CPP) and Institute Village Linked Programme (IVLP).
- Organize trainers training and technology upgradation resource development and beneficiary empowerment Programme and capsule training for farmers reelers, Krishi Mela, etc.
- Utilize IT applications in disseminating technologies, exchanging information, dissemination through SILKS (Sericulture Information Linked Knowledge System) portal, Farmers Reelers Data Base (FRDB), price details through SMS.

b. Seed Organization

- Maintain the four-tier seed multiplication network, supply of nucleus and basic seeds to CSB/units and state seed production units.
- Leadership role in bivoltine commercial seed production and private participation for enhanced seed production.
- Technical support and promotion of state and units, basic seed units and private graineurs in *vanya* silks.
- Institutionalization of quality certification to CSB units and facilitate the same for state and private units.

- Holistic implementation of Silkworm Seed Act for instilling quality parameters in the seed production network.

c. Co-ordination & Market Development

- Conceive, implement and monitor Plan Programmes through CSB Secretariat/ Regional Offices.
- Forge effective synergies to dovetail assistance from the schemes of other Ministries through convergence.
- Statistical analysis of silk production, import and export.
- Publicity, accounts management, internal audit, Official language implementation.
- Coordination with ministry and state sericulture departments.
- Price stabilization of tasar and muga cocoons through Raw Material Banks, administrative and financial managements of CSB units.

d. Quality Certification System and Export/ Brand Promotion & Technology Upgradation

- Institution and promotion of quality in silkworm seed, cocoon and raw silk.
- Ensure quality and purity of silk in the end-products by way of promotion of pure silk products through Silk Mark.
- Cocoon Testing Centres to promote quality based pricing to fetch better price for the primary producers.
- Raw Silk Testing Centres to promote value-based products thereby creating an impetus towards quality improvement of raw silk. The testing of raw silk will benefit reelers/twisters/weavers in producing quality products.

e. Beneficiary Oriented Schemes under R&D and Seed Organization

Under R&D and Seed Organization components of Silk Samagra, certain beneficiary oriented critical interventions for promotion of mulberry, vanya and post-cocoon sectors are implemented. These interventions are important tools for transfer and adoption of improved technology packages developed by the Research Institutes of CSB. The beneficiary oriented interventions cover the major areas *viz., (*a) Development and expansion of host plant; (b) Strengthening and creation of silkworm seed multiplication infrastructure; (c) Development of farm and post-cocoon infrastructure; (d) Upgradation of reeling and processing technologies in silk, and (e) Capacity building through skill development/ Enterprise Development Programme.

Sharing pattern under beneficiary components

The funding pattern for individual beneficiary-oriented Silk Samagra components is given in Table 3.1.

Table 3.1: Silk Samagra - Sharing pattern under Beneficiary Component (%)

Category	GOI (CSB)	State	Beneficiary
General States	50	25	25
General States - For SCSP & TSP	65	25	10
Special Status States & NE	80	10	10
SCSP /TSP	80	10	10
Group Activity	100%	--	--

However, 100% funding (CSB) is eligible for the group activities as these activities are very limited and proposed to be carried out / implemented by CSB Institutes. The group activities are mainly meant for demonstration of latest technologies for adoption by farmers/stakeholders as a model, like CRC, CFC etc. The group activity can also be taken up by the state departments in their farms. If the group activities are implemented by states/ NGOs, then the sharing pattern will be 75:25 by GoI and state/NGO/Beneficiary. Its implementation is monitored by both CSB and states.

Scheme Outcome (2017-18 to 2019-20)

- Silk production increased from the level of 30,348 MT during 2016-17 to 35,820 MT in 2019-20.
- Production of mulberry (multivoltine and bivoltine) silk increased from 21,273 MT during 2016-17 to 25,239 MT and bivoltine silk from 5,266 MT to 7,009 MT in 2019-20.
- *Vanya* (muga, eri and tasar) silk increased from 9,075 MT during 2016-17 to 10,581 MT in 2019-20.
- The productivity of mulberry raw silk increased from 98.5 kg/ha to 100 kg/ha.
- Employment generation increased from 85.10 lakh during 2016-17 to 94.774 lakh persons in 2019-20.

The scheme-wise targets and achievements under Silk Samagra during 2017-18 to 2019-20 are furnished in **Annexure IIIA**.

Table 3.2 indicates year-wise financial progress in respect of Silk Samagra scheme including beneficiary oriented schemes, SCSP and TSP during 2017-18 to 2019-20.

Table 3.2: Silk Samagra - Financial Progress

(Rs. in crore)

Scheme	2017-18		2018-19		2019-20	
	Allocation	Expenditure	Allocation	Expenditure	Allocation	Expenditure
Silk Samagra - Total	161.50	161.50	120.00	*117.41*	209.91	*209.91*
Of which funds released to states for beneficiary components (*)	80.49	80.49	46.56	46.56	145.03	145.03
Of which (i) General States & NE	*27.49*	*27.49*	*6.56*	*6.56*	*95.03*	*95.03*
(ii) For SCSP	*23.00*	*23.00*	*25.00*	*25.00*	*30.00*	*30.00*
(iii) For TSP	*30.00*	*30.00*	*15.00*	*15.00*	*20.00*	*20.00*

(*) A statement indicating state-wise details of funds released to states under the beneficiary components of Silk Samagra during 2017-18 to 2019-20 is furnished at Annexure III (B), while the component-wise details of physical targets and achievements are furnished at Annexure III (C).

Helpline

A helpline, an exclusive e-mail id, Face-book account and Twitter handles have been created to address the grievances of the stakeholders and to create awareness and sharing of information.

HIGHLIGHTS OF ACHIEVEMENTS

A. RESEARCH & DEVELOPMENT, TRANSFER OF TECHNOLOGY, TRAINING AND IT INITIATIVES

The research and development institutes of Central Silk Board have been striving hard to develop new host plant varieties, silk-worm breeds, technologies and machineries to enhance the production of quality silk in the country. Considerable progress has been made both in mulberry and non-mulberry silk sectors to provide necessary technical and scientific inputs to strengthen the silk industry thereby providing much economic benefit to the stakeholders in all areas of sericulture starting from egg to fabric production and marketing. CSB has also taken steps to transfer the benefits of research and development to the end-users through the Cluster Promotion Program (CPP), special projects under NERTPS, MKSP etc. These efforts have helped to boost the production of quality bivoltine silk to meet the demands of the domestic market.

The major institutes involved in R&D of mulberry silk sector are Central Sericultural Research & Training Institutes at Mysuru (Karnataka), Berhampore (West Bengal) and Pampore (Jammu & Kashmir) and those involved in non-mulberry silk sector are Central Tasar Research & Training Institute at Ranchi (Jharkhand) and Central Muga Eri Research & Training Institute, Lahdoigarh (Assam). Further, Silkworm Seed Testing Laboratory at Kodathi (Karnataka) provides the technical support to the seed sector of both mulberry and non-mulberry silk sectors and Seribiotech Research Laboratory at Bengaluru (Karnataka) assists all research institutes by carrying out research on bio-technological aspects. The Central Sericultural Germplasm Resource Centre, Hosur (Tamil Nadu) maintains and provides genetic resources of mulberry silkworm and its host plants while the Central Silk Technological Research Institute, Bengaluru looks after the R&D requirements of the post-cocoon sector of both mulberry and non-mulberry silk industry.

I. RESEARCH & DEVELOPMENT

Some of the important activities and major outputs of the R&D activities of these institutes during 2019-20 are summarized below:

CENTRAL SERICULTURAL RESEARCH & TRAINING INSTITUTE, MYSURU (KARNATAKA)

The R&D programmes undertaken in mulberry and silkworm breeding, crop production and protection; transfer of technology; extension and training activities resulted in developing technologies suitable for the needs of mulberry sericulture farmers in Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana, Maharashtra and Madhya Pradesh. The salient achieve-ments of CSR&TI, Mysuru during 2019-20 are as follows:

Mulberry Crop Improvement, Production and Protection

- Eight accessions *viz.*, MI-0437, MI-0310, MI-0683, ME-0173, MI-0246, MI-0685, MI-0762 and ME-0256 were identified with high water and nutrient use efficiency.
- 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 photo-synthetic efficiency.
- 21 hybrids were analyzed through SSR marker to evaluate their inheritance pattern for rooting ability and photo-synthetic related traits linked to foliage yield potential under optimal and sub-optimal irrigated conditions.
- The protocol using *Agrobacterium* mediated genetic transformation in cotyledons/ hypocotyl explants of G4 mulberry using *AtDREB2A+AtSHN1* gene construct has been developed.
- Rot-fix, a product developed for control of root rot disease in mulberry was popularized and the technology is transferred to two firms for its commercial production.
- Evaluated 415 diverse mulberry germ-plasm 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.
- PPV&FRA has accepted to register the high yielding mulberry variety G-4 for Distinctiveness, Uniformity and Stability (DUS) test.
- A Co-nodal Distinctiveness, Uniformity and Stability test centre was established at CSRTI, Berhampore, West Bengal to test mulberry varieties developed at North and North-eastern zone.
- Identified MR2 and Sahana as alkaline tolerant genotypes and crosses were made with susceptible genotype V1 (MR2×V1 & Sahana×V1) for develop-ment of mapping population to identify QTLs governing alkalinity tolerance in mulberry.
- Out of 46 SSR markers profiling against 96 selected diverse germplasm, 16 markers (37.78%) were found suitable for diversity analysis and QTL identification in mulberry displaying repeatable polymorphic bands.
- Established 231 diverse mulberry germ-plasm (183 indigenous and 48 exotic) with 5 replications under ARBD design for exploring the genetic potentiality of yield through Marker Assisted Breeding (MAB).
- Developed crop selection indices for moisture and alkalinity stress tolerance in mulberry based on additive CSI (ADD CSI) by linear scoring method. These indices have wide utility in quantifying the stress intensity and abiotic stress responses which also

provides information on tolerance level of the variety.

- 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) and these genotypes could be utilized for future breeding programmes.

Silkworm Crop Improvement, Production and Protection

- Developed the new bivoltine double hybrid, BFC25 x BFC11 utilizing Bulgarian and Indian silkworm genetic resources that recorded shell ratio 23.8%, filament length of 1,095 metre and renditta of 5.8.
- Transcriptomics analysis for silk quality in silkworm, revealed mannosidase and ubi1 as potential regulators involved in silk fibroin synthesis, which would influence the fibroin synthesis pathway and silk quality. SNPs associated with these genes have been identified with 4 multi-allelic sites in Pure Mysore with 3 prominent SNPs, whereas 17 multi-allelic sites were identified in PM X CSR2 bearing 15 SNPs with highest 2.22 ts/ts values.
- 100 silkworm accessions genotyped with 20 SSR markers and concurrently evaluated for nine quantitative and five qualitative traits. These SSR markers were polymorphic with mean allele number of 4.3, polymorphic information content (PIC) of 0.47 and gene diversity of 0.51. Structure analyses placed most of the accessions into the five sub-populations with 16.5% as admixtures. The assembled germplasm 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.
- Isocitrate dehydrogenase, glucose dehydrogenase, lipase, protein tyrosine phosphatase, attacin, ankyrin, alkaline tyrosine kinase, dipeptidyl peptidase are identified as (SSR) markers associated with disease tolerance (*Bm*DNV1, *Bm*IFV and *Bm*NPV), of which Isocitrate dehydrogenase (S0803-R) was identified as potential marker for selection of diseases tolerant lines. The SSR markers are characterized for chromosomal location, locus and amplicon size.
- S8 x CSR16, a bivoltine single hybrid evaluated (2,84,550 dfls) under authorization trials has recorded an average cocoon yield of 69.0 kg/100 dfls, single cocoon wt. of 1.782 g, single shell wt. of 0.395 g and shell ratio of 22%.
- ICB 29, an improved pure MV breed recorded single cocoon weight of 1.431 g, single shell weight of 0.274 g, shell percentage of 19.18, reelability of 67.87%, filament length of 558 m, silk percentage of 9.72 and neatness of 85.80. No hibernation was observed when crossed with bivoltine S8 and CSR2. The cross breed of ICB29 with S8 produces 2A grade silk which is at par with MV1 × S8 and superior over the existing cross breed PM × CSR2.

- Pm4 × CSR2 cross breed was found superior over existing PM × CSR2 on all important economic traits *viz*., single cocoon weight of 1.63 g (1.47 g), single shell weight of 0.31 g (0.27 g), shell ratio of 19.24% (18.61%), reelability of 86% (84%), filament length of 681 m (548 m) and neatness of 85% (80%).
- MV1 × S8 (Cauvery Gold), the improved cross breed, evaluated under authorization trails showed an average cocoon yield of 60-65 kg /100 dfls, renditta of 6-6.5, shell ratio of 21.65%, raw silk recovery of 15.41% and fibre quality of 2A-3A grade.
- Eight combinations prepared utilizing MV1 and HB4 as female parents and S8, BM2 as male parents were subjected to RNA analysis to check the expression of diapause and non-diapause genes. Three samples showed expression for Trehalose Transporter gene, five samples expressed for Paralytic peptide binding protein gene and two samples expressed for Sorbitol dehydrogenase gene. Stabilization of the line is under progress.
- Silkworm disease monitoring in South Indian states revealed 0.40% prevalence of grasserie, 1.37% flacherie and 0.27% muscardine.
- The pathogenicity of *Isaria javanica* (first report from India) which causes grey muscardine in silkworm was isolated from Karnataka and the LD50 of the isolated strain was estimated as 3x105 conidia/ml. The molecular characterization of the fungus was done and the sequence submitted to NCBI (accession number MH712278.1).
- Published the sequence of *Beauveria bassiana* isolated from silkworm *Bombyx mori* L to NCBI and got accession number Mt355427.
- Validated the M-LAMP assay for tasar and the results were in conformity with the microscopic testing. The DNA was isolated from the tasar moth, *Antheraea mylitta* and the primers F3 and B3 used in M-LAMP assay were used for amplification in the PCR reaction and the sequence obtained shows 93.43% similarity to that of *Nosema sp*. Two seque-nces submitted to NCBI and obtained accession numbers (MN416241 & MN 416240).
- A pheromone trap for uzi fly was demonstrated and popularized with 250 farmers from Karnataka and Tamil Nadu.
- *Nesolynx thymus,* a biological control agent for control of uzi fly was supplied covering 3.13 lakh dfls for silkworm rearing for effective management of the pest.
- For control of leaf roller (*Diaphania pulverulentalis*), 216 units of egg parasitoid (*Trichogramma chilonis*) and 209 units of larval parasitoid (*Bracon brevicornis*) were supplied to farmers of Karnataka, Tamil Nadu and Andhra Pradesh.

Patents and Commercialization of Technologies

- Sericin extraction process - A process for the extraction of virgin sericin of *Bombyx mori*.
- Two machines namely cocoon harvester from plastic collapsible mountages and

mulberry leaf chopping machine were commercialized to M/s. Srikrupa Enterprises Pvt. Ltd., Kolhapur, Maharashtra through NRDC for production and supply to sericulture farmers.

CENTRAL SERICULTURAL RESEARCH AND TRAINING INSTITUTE, BERHAMPORE (WEST BENGAL)

Central Sericultural Research & Training Institute, Berhampore along with three Regional Sericultural Research Stations (RSRSs) and nine Research Extension Centres (RECs) are rendering significant contribution for the development of sericulture industry in eastern and North-eastern region. The R&D activities undertaken in mulberry & silkworm breeding, crop production & protection, transfer of technology, extension and training activities resulted in developing technologies suitable for the farmers in West Bengal, Odisha, Chhattisgarh, Jharkhand, Bihar, Assam, Nagaland, Sikkim, Manipur, Tripura, Meghalaya, Arunachal Pradesh and Mizoram. The salient achievements of main institute and nested units for the year 2019-20 are as follows:

Mulberry Crop Improvement, Production and Protection

- 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 rainfed conditions.
- Development of AFP-2 mediated suppression (41-55%) of fungal diseases caused by *Myrothecium roridum* (leaf spot; MLS) and *Fusariumsolani* (dry root rot; FRR).
- Application of hydrogel with alternate day DKT irrigation was found economical (BCR of 1:1.37) with an effective leaf yield of 4.78 MT/crop in Odisha.
- 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.
- Identified high yielding mulberry genotypes (C-01 & C-11) with an improvement over S1635 under irrigated (>30%) and rainfed (>20%) conditions.

Silkworm Crop Improvement, Production and Protection

- 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 improved shell percentage (10-12) over SK6 x SK7 & Bcon1 x Bcon4 (avg. yield: ~65 kg).
- FC1 x FC2 was identified as the best bivoltine hybrid (21% shell ratio) in Odisha through OST.
- *Rhodopseudomonas* spp. feed supplementation through mulberry improved survival by 16% against flacherie by *Staphylococcus* sp.
- Developed a general disinfectant, NIRMOOL for disinfection of silkworm rearing house and appliances.

- Identified thermo-tolerant bivoltine hybrids (WB7.5 x WB1.3 & KA19.WB5 x WB1.3) for further evaluation in adverse seasons.
- Developed molecular markers (py1 & py2) for humidity tolerance in silkworm.
- A prototype of Suvarna (modified charkha) was designed for improved efficiency

CENTRAL SERICULTURAL RESEARCH & TRAINING INSTITUTE, PAMPORE (JAMMU & KASHMIR)

Central Sericultural Research & Training Institute (CSR&TI), Pampore is a premier research institute for development of sericulture in the northern & North-western region in the country. Since its establishment in 1991, the Institute is rendering research & develop-ment, technical, technological, innovation, training and extension service support to the sericulture farmers and stakeholders in the states/Union Territory of Jammu & Kashmir, Uttar Pradesh, Uttarakhand, Punjab, Haryana, Himachal Pradesh and Rajasthan.

During 2019-20, this Institute has continued with 12 research projects, initiated four new research projects and concluded six projects. The highlights of R&D achievements are as follows:

Mulberry Crop Improvement, Production and Protection

- The new mulberry variety PPR-1 developed by the institute has been identified as one of the test entries in the AICEM Phase IV, and the programme is initiated at five test centres under the Institute
- Mulberry progenies of 12 cross combinations of exotic and indigenous accessions have been raised for identification of drought tolerant genotypes suitable for North-West India.
- A total of 52 mulberry (Exotic: 20, indigenous: 32) and 111 silkworm accessions are being maintained as germplasm for their utilization in breeding programme.
- A total of 2016 soil health cards were generated for different states of northern & North-western region by analyzing the parameters *viz*., macro (N,P,K) and micro nutrients (S,Fe,Bo,Mg,P), electrical conductivity, pH etc.

Silkworm Crop Improvement, Production and Protection

- Mulberry leaf fortified with 0.5% Glutamic acid was found effective and significantly improved the cocoon yield in bivoltines recording 5.3 kg increase over the control during autumn season.
- Eight silkworm breeds *viz*., BHR 2, BHR 3, B.con 1, B.con 4, CSR 50, ATR 16, NB4D2 and RSJ 14 were identified for development of nutrigenetic specific hybrids for sub-tropical conditions of North-west India.
- A total of 8 silkworm bivoltine lines *viz*., DSK-3; DSK-5; DSK-6; DSK-7; DSK-9; DSK-16; DSK-17 and DSK-18 (four each of oval & constricted) were shortlisted with higher shell ratio of 20-21% and cocoon yield of 55 kg/100 dfls for the temperate region of Kashmir valley.
- Six foundation crosses three each of oval (PAM114xCSR27, PAM114 x CSR50, CSR50 xPAM114) and constricted (PAM114x APS4, PAM117 x SK7, SK6 x SK7) were identified with superiority in SR

of 20-21% and cocoon yield of around 60 kg/100 dfls suitable for temperate climatic conditions.

- The large scale field trials with 34,500 dfls of MASN4 x CSR4 was found promising with cocoon yield of 32 to 52 kg/100 dfls during spring and around 30 kg/100 dlfs during autumn season in Jammu, Himachal Pradesh and Uttarakhand.

CENTRAL SERICULTURAL GERMPLASM RESOURCES CENTRE, HOSUR (TAMIL NADU)

Central Sericultural Germplasm Resources Centre, Hosur recognized as National Active Germplasm Site (NAGS) for mulberry and silkworm germplasm, is a premier exclusive centre in India committed to over-all conservation of mulberry and silkworm bio-diversity for posterity. The research highlights of the Centre for the year 2019-20 are as follows:

- Out of the 20 new mulberry genotypes collected and planted in the nursery, 18 were collected in unexplored areas of Tura, Meghalaya and two from CSR&TI, Berhampore and Pampore.
- 24 new mulberry accessions were characterized 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.
- Systematically conserved 1299 mulberry genetic resources [Indigenous:1014; Exotic:285] in the Field Gene Bank.
- Systematically conserved 369 bivoltine and 83 multivoltine silkworm genetic resources after evaluation for rearing, grainage and post-cocoon parameters true to type as per catalogue data.
- Based on hotspot evaluation, identified following region-wise top performing multivoltine accessions as better combiners with CSR2. Of these acces-sions *viz*., BMI-0025, BMI-0079 and BMI-0048 performed better across the test centres.

CSGRC, Hosur: BMI-0025, BMI-0076, BMI-0074, BMI-0079 and BME-0048

CSR&TI, Mysuru: BME-0048, BMI-0054, BMI-0001, BMI-0025 and BMI-0079

CSR&TI, Berhampore: BMI-0080, BMI-0025, BMI-0079, BMI-0068 and BME-0048

- Based on hotspot evaluation, identified following region-wise top performing exotic bivoltine accessions as better combiners with CSR2/ CSR4:

CSGRC, Hosur: BBE-0329, BBE-0266 [with CSR2] & BBE-0197 [with CSR4]

CSR&TI, Mysuru: BBE-0201 [with CSR2], BBE-0169 & BBE-0197 [with CSR4]

CSR&TI, Berhampore: BBE-0163[with CSR2], BBE-0197, BBE-0169 [with CSR4]

CSR&TI, Pampore: BBE-0267 and BBE-0197 [with CSR4]

SERIBIOTECH RESEARCH LABORATORY, BENGALURU (KARNATAKA)

Seribiotech Research Laboratory (SBRL), Bengaluru has a well-established infrastructure to accommodate and carry out multi-disciplinary research in the field of biotechnology. The highlights of the research

work carried out at SBRL are a blend of conventional breeding and seribiotechnology tools. In the recent past, this Institute has made significant contributions for improvement of silk productivity through molecular breeding strategies both in silkworm and the host plant through various biotechnological approaches. The current research in the laboratory has also focused on by-product utilization of silk, to generate pharmaceutically important products that have potential to be used by humans for therapeutic purposes. Following are the contributions made by SBRL during 2019-20:

Development of Transgenic Silkworms

- A 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 showed 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 have shown enhanced resistance/tolerance against major pathogens, which would pave way for enhancing silk production by reducing the crop losses due to pathogens.
- The Bacteria-based RNAi developed, was suitable for production of large quantities of dsRNA. Two important genes *ie*-1 and lef-1 involved in BmNPV viral DNA multiplication, was targeted for dsRNA production in bacteria. Feeding bacterially expressed dsRNA led to restriction of the viral multiplication in the silkworm. The results indicate successful use of non-pathogenic bacteria as a vector for delivering dsRNA and elicit RNA I against BmNPV in silkworm and alternative tool for insect pest management.

Silkworm Crop Improvement

- Under the study for screening for molecular markers associated with silk filament characters, genes associated with ion transport (ITP), VATPase, CPR genes, SG metabolism pathway genes that are responsible for efficient processing and transportation of silk proteins from PSG to ASG were identified. The study showed that the differential expression of these genes significantly affected the silk production. SNP linked to GFL1 region associated with cocoon weight/shell weight was also identified and this region could be utilized as markers for screening germplasm for developing multivoltine hybrids with better post-cocoon traits.
- The genome of viral pathogen with Accession: GI: 1371952746 infecting oak tasar silkworms (*Antheraea proylei*) has six conserved sequences and the genome of viral pathogen has displayed homology with alpha-baculovirus (*Anpr*-NPV) infecting saturniid silkworms. The presence of the virus on the egg surfaces of *A. proylei* was confirmed through PCR which is due to vertical transmission from the infected eggs.
- The RNA virus known as Iflavirus causing virosis in tropical tasar *Antheraea mylitta*

was characterized through whole genome sequencing. The multiplication of virus was detected in various tissues such as fat body, midgut, malpighian tubule & ovary. Vertical transmission was also confirmed from mother moth to the offspring.

- The field trials conducted with the bivoltine hybrid MASN4 x CSR4 and cross breed Nistari x MASN4 showed better performance than the ruling hybrids under CSRTI, Mysuru, Berhampore and Pampore. The MASN4 x CSR4 hybrids recorded an average yield of 55.3 kg/100 dfls in *Agrahayani* against 52.4 kg in case of the ruling hybrid Sk6 x SK7 & an average yield of 59.8 kg/100 dfls against 52.4 kg during *Falgooni* in West Bengal. The cross breeds Nistari x MASN4 recorded an average yield of 50.7 kg/100 dfls during *Agrhayani* whereas, the ruling hybrid (Nistari x (SK6 x SK7) recorded an average yield of 46 kg/100 dfls. During *Falgooni*, the yield was 50.3 kg and 48.5 kg /100 dfls, respectively. MASN4 x CSR4 yielded 75 kg/100 dfls at RSRS Jammu, 49.35 kg in Jammu-Ramkot and 51.41 kg in Himachal Pradesh against 51.688 kg/ 100 dfls for the ruling hybrid FC1 x FC2 in spring season. In Andhra Pradesh, PM x MASN4 cross, recorded a higher yield of 62.09 kg/100 dfls, than the ruling multi-bivoltine, PM x CSR2 (58.2 kg).

Mulberry Crop Improvement

- MLO 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.

SILKWORM SEED TECHNOLOGY LABORATORY, BENGALURU (KARNATAKA)

Silkworm Seed Technology Laboratory (SSTL), Bengaluru is mainly focusing on development of silkworm seed technologies under National Silkworm Seed Organization and plays a prominent role in developing egg handling techniques, preservation schedules, silkworm disease monitoring, human resource development and extension activities. The salient achievements for 2019-20 are as follows:

- The 18-days preservation schedule developed for the three-days muga eggs (at 15+5+15+10+15°C for 4+5+3+5+1 days) and 2-days post-preservation/ incubation period (total-20 days) resulted in 85% hatching.
- The short-term seed preservation schedule developed for tasar silkworm BDR10 mixed eggs (at 15°C for 15 days) with two days progressive incubation (totaling 17 days) resulted in 90% hatching.
- The four microbial converted plant compounds used against major diseases of silkworm showed 70% suppression of flacherie and 60% muscardine.
- The technology developed for egg enhancement in bivoltine hybrids (FC1 x FC2) by application of host plant volatiles test verified at 3 SSPCs (grainages)

revealed increased egg production by 8.5g per kg of cocoons as against control.

- 11 chemicals test verified for enhanced egg laying in eri resulted in 27% more egg production than the control. Similarly, in muga, 22 chemicals were test verified and found 33% increase in egg layings than the control.
- In the joint seasonal silkworm disease monitoring survey in all the three southern states resulted in testing 1169 lots with 1854 samples. The test results indicated no incidence of pebrine.
- Silkworm disease monitoring of seed and commercial crop rearing with CSR&TI, Mysuru tested at P2 BSF, Yelagiri Hills; P3 BSF, Avalapalli and P3 BSF, Berigai (TN) of total 37 samples in 17 lots indicated no incidence of pebrine. SSTL also involved in P3 BSF, Mysuru and CSGRC, Hosur egg shell testing and mother moth examination programmes and 1300 samples in 650 lots tested at P3 BSF, Mysuru and 4257 samples tested in 927 lots at CSGRC, Hosur also indicated no incidence of pebrine.
- Quarantine testing of silkworm eggs (4,500 dfls of Double Hybrid) from NSSO was carried out and issued quarantine certificate for export to Kampala, Uganda.

CENTRAL TASAR RESEARCH AND TRAINING INSTITUTE, RANCHI (JHARKHAND)

Central Tasar Research and Training Institute (CTR&TI), Ranchi is an ISO 9001: 2015 accredited Institute recognized as Centre of Excellence by the Ministry of Textiles in conducting research & development work and generation of skilled manpower for tasar sector. It is engaged in generation of useful technologies through R&D and their effective transfer in the field. It provides support to all tasar growing states through its extension network of six Regional Sericulture Research Stations, four Research Extension Centres and two P4 Silkworm Breeding Stations and one Raw Material Bank (RMB). The achievements of the Institute and its nested units during 2019-20 are mentioned below:

Host Plant Improvement, Production and Protection

- 208 isolates from 114 rhizosphere soil samples collected from major tasar producing areas were screened, out of which 40 were found to synthesize Indole-3-Acetic Acid (IAA) hormone.
- Atmospheric Nitrogen fixation by 40 Azotobacter isolates showed wide range from 2.3N µg/ml to 11.0N µg/ml and four isolates showed high amount of atmospheric nitrogen.
- Out of the 258 PSB isolates screened, 32 were found to produce IAA. Pseudomonas isolates (74) were screened against pathogens, of which 8 were having antifungal and 19 with anti-bacterial properties.

Silkworm Improvement, Production and Protection

- For Illumina sequencing of Whole-Genome of tasar Silkworm, *Antheraea mylitta*, 10X linked library was prepared with 10X chromium technology with the average size of the library 544bp. Two SMRTbell libraries were used for the

sequencing using PacBio sequel and total 10.22 GB data was generated (4.98 GB from SMRT 1 and 5.24 GB from SMRT 2) with an average polymerase read length of 7.83 kb and 8.11 kb from SMRT 1 and SMRT 2, respectively. Sequencing of the 10X chromium libraries on Illumina HiSeq X 10 with 2x150 pair end chemistry was successfully completed.

- Under genetic characterization of the tropical tasar silkworm, *Antheraea mylitta* through SNP Based Molecular Barcode, Phylogenetic tree were constructed at read depth 10 with an MAF value of 0.05, indicates that there is no observable intra-ecorace variation within five ecoraces such as Raily, Nalia, Barf, Jata and Sarihan because each ecorace forms separate cluster. However, three ecoraces such as Wild Daba, Semi-domesticated Daba and Modal is showing intra-specific variations among the ecoraces and forms different clusters in phylogenetic tree. Kinship heatmap were generated using biallelic polymorphic SNPs data at read depth 10 with an aim to discover genealogical relationships bet-ween individuals based on DNA samples. PAST analysis provided evidence regarding the genetic structure amongst the ecoraces of *A. mylitta*. Jata, Nalia and Raily ecoraces forms a separate cluster. Semi-domesticated Daba shared the cluster with Wild Daba and Barf. For Sarihan ecorace of Jharkhand, analysis suggested existence of an isolated cluster.
- For identification of the most active cocoonase of sericigenous insects through molecular characterization cocoonase gene was amplified and expressed in *E. coli.* Comparison of various ecoraces cocoonase activity and its characterization was done. In addition, the activity of trypsin and proteolytic enzyme papain was compared with cocoonase. Temperature stability test for cocoonase enzyme was done and native cocoonase of *A. mylitta* showed stability at room temperature. Commercially available papain and trypsin were tested for their ability in cocoon softening at various temperature and pH with varying buffer concentration. Extensive structural analysis of substrate binding sites of trypsin was performed. X-ray diffraction with the new crystals of Daba TV cocoonase protein was performed and improved the resolution to 1.8 Å.
- Comparison between culturable bacteria isolated from commercial Daba and Sal based ecoraces showed absence of Tannic acid and Phenol degrading bacteria in commercial Daba. Meta genomic analysis of the potential phenol degrading bacterial cultures was done. Loss of native gut bacteria following the anti-biotics (streptomycin, tetracycline and ampicillin) treatment reduced the silk-worm fitness. The detailed midgut bacterial diversity and their functions were elucidated for the first time in tasar silkworm. Significant symbiotic role was observed between silkworm and midgut bacteria mediated through various physiological functions.

Patents and Commercialization of Technologies

- Patent application has been filed for the patenting of tasar silkworm egg washing-cum-disinfection machine.
- Assignment deed has been signed for the commercialization of two products developed by this institute *viz*., egg washing-cum-disinfection machine and pebrine visualization solution (PVS) with NRDC, New Delhi.

CENTRAL MUGA ERI RESEARCH AND TRAINING INSTITUTE, LAHDOIGARH, JORHAT (ASSAM)

Central Muga Eri Research and Training Institute (CMERTI), Lahdoigarh, Jorhat with a network of two RSRSs one each at Boko and Imphal and RECs located at Lakhimpur (Assam), Cooch behar (West Bengal) and Fatehpur (Uttar Pradesh) provides R&D support for the development of muga and eri industries especially in eastern and North-eastern region of the country. Brief highlights of the research works carried out during 2019-20 are as follows:

Host Plant Improvement, Production and Protection

- Assessment of phyto-chemical diversity of Som under three different agro-climatic zones of Meghalaya and Assam revealed the region and season specific differences in the phyto-chemical 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 was 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 eight wild/ cultivated perennial castor accessions growing in the 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.
- Impact assessment of petroleum crude oil activities on muga culture in Assam was carried out. The results indicated 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-eastern states *viz*., Assam, Nagaland, Manipur, Meghalaya, Mizoram and Arunachal Pradesh.

Silkworm Improvement, Production and Protection

- The solvent based host plant volatiles extracted from Soalu and Castor leaves enhanced the egg laying capacity in muga and eri silkworms.
- Cross transmission of pebrine disease between different insect species belonging to Saturniidae family was confirmed and control measures are being worked

out to reduce the incidence in muga culture.

- DNA bar coding techniques were standardized for assessment of wild silk moth diversity in Nagaland. Sequencing data was submitted for open source database.
- Eco-friendly bait method was developed to control potential bug predator (*Eocanthecona furcellata* Wolff) in muga ecosystem.
- As a part of utilization of existing genetic variability in muga silkworm, cold reeling technique was standardized, keeping the pupa alive even after reeling. This aids in selection of muga silkworm genetic material with better cocoon characteristics and reproductive abilities.
- A number of bacteriophages were isolated against muga silkworm bacterial pathogens. The bacteriophages are being purified and will be used as a cocktail for application in the rearing field.
- Geo-spatial technique was used to develop a model for prediction of percent flacherie infestation. This model will be very useful for the farmers to take proper precautionary measures to avoid disease outbreak in advance.
- Potential bio-desulfurizing bacterium was isolated from crude oil polluted soils. Hetrologus expression of hpaC gene in biosurfactant producing bacterium for effective desulfurization of Dibenzothiophene. Whole genome sequencing of bio-desulfurizing bacterium was completed.
- An efficient mechanical method for management of uzi fly infestation in oak fields using PET bottles containing sugarcane syrup as bait was standardized. Use of 'Bioneem' (10ml/l) was found to be most effective to control *Hyblaeapuera* and *Phalera raya*.
- Solar LED light traps of different wavelengths were developed and installed in muga rearing fields for controlling major insect pests and predators in muga ecosystem. The technique was demonstrated in various awareness programmes in Assam and Arunachal Pradesh.
- Muga crop schedule for *Jethua* and *Bhodia* seasons in Terai region of West Bengal was refined which will improve the muga cocoon productivity in the region and help in avoiding losses due to high temperature stress.
- Validated a diagnostic tool for early detection of baculovirus causing tiger band disease in *Antheraea proylei*. Standardized sodium hypochlorite based egg disinfection technique as an effective egg disinfectant to minimize tiger band disease.

CENTRAL SILK TECHNOLOGICAL RESEARCH INSTITUTE, BENGALURU (KARNATAKA)

Central Silk Technological Research Institute (CSTRI), is a premier research Institute in the country involved in the research and developmental activities in the field of silk. It was established in 1983 by the Central Silk Board, Ministry of Textiles, Govt. of India with a mandate for quality & productivity improvement, services to the industry, enterprise development and market information dissemination. The

textile testing laboratory (TTL) of this institute has been accredited for a period of two years up to 25.12.2021 by NABL, New Delhi as per the revised standard ISO 17025:2017.

CSTRI has its main institute at Bengaluru and 15 sub-units located strategically in important silk clusters of India. These units serve as channels for the transfer of research findings, besides, addressing the various field related issues, interventions & impact made for continuous improvement of the silk industry. Some of the important contributions made by the institute and its sub-units during 2019-20 are as follows:

Research & Development

- 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.
- Developed an optimum line of machinery under miniature concept of eri spinning.
- Identified some of the chemicals that possess solubility characters for mulberry silk.
- Popularized technologies developed 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.
- Technology developed for 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 bicarbonate combined with varying boiling and steaming time to improve cooking efficiency and reeling performance without affecting the colour / lustre and tensile properties of the silk fibroin. The technology is cost-effective and the chemicals are easily available.
- Installed solar power plant in tasar sector (in PCT section) as a part of utilization of solar energy in post-cocoon sector, is working fine with all the reeling and spinning machines as well as 25 kg capacity Hot Air Dryer. Reeling Machine (MRTM & Charkha), Re- Reeling Machine and Spinning Machine (one each) have been procured and operated by solar power. Designing and fabrication of Solar Cooker and low power consumption Hot Air Dryer were completed.

Improved Machineries Developed

- Reelability apparatus to estimate the reelability of cocoons.

Patents and Commercialization of Technologies

- Method for degumming silk hanks under high temperature, high pressure conditions and recovery of sericin.
- Silk and silk blended mélange yarn
- Void silk reeling technology
- Development of handloom silk sarees using spun silk
- Slit button

Testing

A total of 90,103 lots of cocoons, raw silk, fabrics, dyes, water, etc., were tested for physical, chemical and eco parameters by the main institute and sub-units during the year.

II. TRANSFER OF TECHNOLOGY

CSRTI, MYSURU

- A record quantity of 5054.50 MT bivoltine raw silk was produced through Bivoltine Cluster Promotion Programme implemented in 26 mega clusters (106 clusters) in Andhra Pradesh, Karnataka, Kerala, Telangana, Maharashtra, Tamil Nadu, and non-captive areas from 452.88 lakh dfls rearing with an average cocoon yield of 72.62 kg/100 dfls.
- 73,755 sericulturists were sensitized with new technologies through 1220 extension communication programmes on bivoltine rearing, mulberry & silkworm disease management and quality cocoon production.
- Sericulture Farmers' Workshops were organized at Madakasira (Andhra Pradesh), Senjeriputhur (Tamil Nadu), Siddipet (Telangana) and 4950 farmers were enlightened with improved mulberry sericulture technologies.
- Three JOCVs were trained under a month long overseas training programme at CSRTI, Mysuru and then posted to Hindupur (Andhra Pradesh), Haldwani and Dehradun (Uttarakhand).
- Under M-kisan portal, 96 messages were sent to 75,314 registered farmers in every fortnight to Karnataka, Andhra Pradesh, Telangana, Maharashtra, Tamil Nadu and Madhya Pradesh in Kannada, Telugu, Tamil and Hindi.
- A total of 5332 visitors including farmers, students and foreign nationals visited the institute.
- One Farmer Producer Organization (FPO) was organized under Maddur Mega cluster, Karnataka.
- Training on Formation of Farmer Producer Organization was organized on 2nd and 3rd July, 2019 at CSRTI, Mysuru. Eighty CSB and DoS counterparts of mega clusters across southern states and scientists from CSRTI, Mysuru participated in the programme.
- A book on sericulture success stories was published and released on 30th August, 2019 at CSRTI, Mysuru. The book is the collection of 52 progressive farmers narrating their saga of sericulture life and appreciation on taking it as their way of life for sustainable livelihood. The book was distributed to all CSB institutes across India and DoS offices (Southern zone).
- A series of six sericulture technologies were broadcasted in local language (Kannada) through AIR, Mysuru from January 9 to February 13, 2020.

CSRTI, BERHAMPORE

- A total of 18076 soil health cards were distributed to the farmers.
- Established a unit for mass multiplication of bio-control agents for supply of *Scymnus* beetles (mealy bugs) and *Chrysoperla* (thrips) to the farmers.
- Produced a quantity of 102.87 MT bivoltine raw silk through Cluster Promotion

Programme (13 clusters) in eastern & NE India (16.23 lakh dfls; avg. yield: 49.37 kg /100 dfls).

- Produced 92.65 MT ICB raw silk through Cluster Promotion Programme (eight clusters) in eastern & NE India (17.18 lakh dfls; avg. yield: 44.00 kg/100 dfls).
- Sensitized 14,845 stakeholders with recent sericulture technologies through 266 ECPs.
- Communicated 71 scientific advisories/ messages in different languages (Bengali, Hindi, Odia and Nepali) to 5,753 farmers through m-Kisan.

CTRTI, RANCHI

- Field trial of in situ soil health and nutrient management for tasar food plants at RSRS Dumka showed that rain water harvesting and application of PSB & green manure enhanced leaf and cocoon yield by 19.88% & 19.66% and silk ratio by 4.97%.
- Establishment and popularization of improved accessions no. 102 & 123 of *Terminalia arjuna* and *Lagerstroemia speciosa* of tasar food plants which exhibits improved vegetative growth and high silkworm yield.
- Trial of Neem based pesticide for control of bark eater of Arjun and Asan was conducted at 8 locations and was found 90% effective. Further, rejuvenation of the affected part of the plants was also observed.
- Multi-locational trial rearing of CTR-14, conducted at 8 locations and except for Shell ratio %, tasar breed CTR-14 showed comparatively better to control.
- Conducted trial of Pebrine Visualizing Solution (PVS) at 4 locations covering 27 stakeholders and was found that, PVS is very effective for quick and easy detection of pebrine spores during mother moth examination.

CMERTI, LAHDOIGARH

- OSTs on Integrated practice of ITK and improved technology for muga silkworm seed production & higher cocoon yield were validated at 11 and 21 DoS units, respectively. 36.6% gain was achieved in fecundity and cocoon yield increased by 33.3% over benchmark during Bhodia seed crop (Aug-Sep, 2019).
- 16920 seedlings of muga and eri host plants were supplied and four acres of superior kesseru accessions (HF-005 & HF-008) were raised at farmers' fields.
- Two farmers from Upper and Lower Assam were trained in nursery raising of Borpat, a promising perennial eri host plant.
- Three *Vanya* Resham Krishi melas, 17 field days, 14 farmers' days, 29 awareness programmes, 29 group discussions and 11 technology demonstration programmes were organized to sensitize 6679 persons.
- Through 9 Sericulture Resource Centres, 43 training programmes were conducted to sensitize 889 farmers/ beneficiaries on improved technologies of muga and eri culture.
- 1500 seedlings of Kesseru accessions (HF005 and HF008) were supplied to 10 eri farmers for popularization of

these superior accessions under TOT programme.

SSTL, BENGALURU

- Six programmes on transfer of technology and 7 ECPs were conducted for sensitizing 422 stakeholders.
- Under Capacity Building and Training of Central Silk Board, 140 stakeholders were trained in various silkworm seed technology aspects. Under Seed Act, eight persons were trained for getting license to produce commercial silkworm seed.

CSTRI, BENGALURU

The technologies in the post-cocoon sector popularized in the field during the year are listed in Table 3.3.

Table 3.3: Technologies in post-cocoon sector

#	Technology	No. of stakeholders covered
Mulberry Sector		
1	MRM (10 Basin)	14
2	ARM (200 ends)	3
3	ARM (400 ends)	12
4	Twisting units (480 Spindles)	11
5	Pupae processing unit	3
6	Cottage basin up-gradation	20
7	Raw silk testing center	2
8	Cocoon testing center	13
	Weaving	
9	Loom up-gradation	5
10	Modified silk handloom	5
Vanya Reeling/Spinning sector		
11	Reeling cum Twisting Machine (Unnati)	10
12	Buniyaad reeling machine	2394
	Total	**2492**

- Organized extension communication programmes *viz*., 2 farmers meet, 23 awareness programmes, 67 group discussions, 2 workshops and 146 demonstrations/interaction meets benefitting 4650 stakeholders during 2019-20.

COLLABORATION WITH INTERNATIONAL ORGANIZATIONS

a. International Sericultural Commission

A five-member delegation of CSB attended the 25th International Congress on Sericulture and Silk Industry held at Tsukuba, during 19-22 November, 2019. The Congress was inaugurated by Shri R.R. Okhandiar, Member Secretary, CSB, in the capacity of Secretary General, ISC who also gave away the Louis Pasteur Award - 2019 to three renowned scientists from Japan, India and Thailand. Dr. T. Mogili, a retired researcher of CSB was bestowed with the Pasteur Award in recognition of his outstanding contribution to Indian silk industry. The Member Secretary also gave away newly introduced award "Excellence in Sericulture Science" to four young scientists from Japan and Thailand.

Dr. Alok Sahay, Director, CTR&TI, Ranchi and Dr. Subhas V. Naik, Director, CSTRI, Bengaluru chaired two sessions of the Congress. Central Silk Board also facilitated the participation of 78 Indian stakeholders in the Congress to present their research findings.

b. Collaboration with Other Countries

CSB signed an MoU with "Uzbekipaksanoat", the government department dealing with silk industry in Uzbekistan on 5th April, 2019 at Bukhara, Uzbekistan for

cooperation in sericulture and silk industry. As a follow-up of the MoU, CSB initiated steps for taking up a collaborative research project between Central Sericultural Research and Training Institute (CSR&TI), Pampore and Scientific Research Institute of Sericulture (SRIS), Tashkent.

c. International training

Two R&D institutions namely Central Sericultural Research and Training Institute, Mysuru and Central Silk Technological Research Institute, CSB, Bengaluru are the empanelled training institutions for imparting international training under the Indian Technical and Economic Cooperation (ITEC) Programme of the Ministry of External Affairs, Govt. of India. Under ITEC programme, two international trainings of one month duration on Sericulture & Silk Industry (19 candidates) and Post-cocoon Technology (23 candidates) were conducted during the year. Participants in the programme were from Afghanistan, Argentina, Bangladesh, Ethiopia, Ghana, Kenya, Lithuania, Madagascar, Nepal, Nigeria, Syria, Thailand, Tunisia, Uganda and Vietnam.

d. Visit of CSB Officials to other countries

The Member Secretary, CSB in the capacity of Secretary General, ISC organized the Executive Committee of International Sericulture Commission during 5-6 April, 2019 at Bukhara, Uzbekistan .

The Member Secretary, CSB represented India in the 9th BACSA International Conference on Sericulture at Batumi, Georgia during 8-9 April, 2019 and presented a country paper on Indian Silk Industry.

e. Visit of foreign nationals to CSB

CSB hosted the visit of a nine member delegation from Ministry of Textiles and Jute, Govt. of Bangladesh to the sericulture areas of Karnataka during 2-12 September, 2019.

III. CAPACITY BUILDING AND TRAINING

CSB has been conducting Post-Graduate Diploma course in Mulberry and Vanya silk (15-months duration) at Central Sericulture Research & Training Institute, Berhampore (West Bengal) affiliated to Kalyani University and at Central Tasar Research & Training Institute, Ranchi (Jharkhand) affiliated to Ranchi University, respectively. During 2019-20, 52 candidates have successfully passed out the course (96.30%) and during same year, level of enrollment was 96.67% (58 candidates). The candidates are being trained either to start their own venture or to get themselves placed in the state/central government departments or in Private Sectors in Sericulture sector.

- Intensive Training on Bivoltine Mulberry Sericulture (35 days duration) was conducted covering 63 selected entrepreneurs during the year at three training institutes.
- Two batches of Resource Development Programme for 40 State Government Officials and Implementing Partners involved in Oak Tasar and Tropical Tasar Development Projects in Uttarakhand and Chhattisgarh State
- Innovative Entrepreneurship Development Programme for 24 passed out PGDS and Sericulture Graduates was conducted in collaboration with Extension Education

Institute, Ministry of Agriculture, Govt. of India at Assam Agricultural University, Jorhat.

- 46 CSB scientists were trained under Management Development Programme to upskill their domain and management knowledge.
- Besides, above initiatives, 10,913 grass-root level stakeholders in entire silk value chain such as silk rearers, reelers, spinners, weavers, seed producers, NGO officials and field officers (state and central government) were trained for skill seeding and up-skilling in Sericulture sector.
- Sericulture Resource Centre (SRC) is a 'village forum' with all state of the art infrastructure in a sericulture cluster for staging technology demonstrations/ discussions/skill upgradation for the benefit of cluster stakeholders. During the year, 2354 stakeholders were covered under this programme through 19 SRCs operating across the country.
- Web based Management Information System (MIS) exclusively for its Capacity Building and Training Programmes has been developed and is being utilized for monitoring and evaluation of training programme on real time basis across the country and also to maintain the database of trained manpower in DBT format.
- CSB has been identified as Sectoral Implementing Partner, Physical Verification Agency and also for conducting ToT Programme (silk sector) under the scheme for Capacity Building in Textiles Sector (*Samarth*) of Ministry of Textiles, Govt. of India. Central Silk Board so far has developed four NSQF aligned courses and physically verified 190 Training Centres in the States of Assam, Mizoram, Arunachal Pradesh, Madhya Pradesh and Jharkhand.

The break-up of the programmes conducted is indicated in Table 3.4.

Table 3.4: Category-wise break-up of coverage during 2019-20

#	Training Programmes	Coverage
1	*Structured Courses*	
	a. PGDS (Mulberry &*Vanya* silk)	58
	b. Intensive Training	63
2	a. Farmers Skill Training - R&D	4,949
	b. Farmers Skill Training - Seed	531
3	a. Technology Orientation Programme – R&D	498
	b. Technology Orientation Programme – Seed	140
4	Training under Post-cocoon Sector	1,253
5	Exposure Visit	729
6	Other Training Programmes	4,560
7	Skill Training & Enterprise Development Programme	717
	TOTAL	13,498

IV. IT INITIATIVES

- **DBT MIS:** Development of DBT MIS for the scheme "Development of Silk Industry" is completed and obtained security audit clearance by STQC. Linking of the same with DBT Bharat 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. During the year, 622 advisories were sent as 68,26,200 SMS messages.

- **SMS service:** through mobile phone on day-to-day market rates of silk and cocoons for 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 11,090 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 a full-fledged video conference facility at CSB Complex, Bengaluru; CSRTI, Mysuru, Berhampore and Pampore; CTRTI, Ranchi; CMERTI, Lahdoigarh and RO, New Delhi. During the year, a total of 36 multi studio 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, 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 is 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 4,254 employees including farm workers have registered into the attendance portal. All the 121 devices are RD Services enabled.
- **National database for farmers and reelers:** A software package was designed and developed to have data-base of farmers and reelers at national level, which would help policy makers with appropriate information for effective decision making. During the year, details of 7,25,628 farmers and 14,507 reelers were recorded by the states in the database.
- **MIS on NERTPS "Intensive Bivoltine Sericulture Development Project in North East States":** MIS for Intensive Bivoltine Sericulture has been developed and hosted on dedicated servers for trouble free access by all the stakeholders.
- **MIS for SCSP/TSP:** MIS to monitor the funds allocation and utilization status by the states.
- **MIS for Automatic Reeling Machine (ARM):** Designed and developed an MIS for collecting and analyzing cocoons consumption and silk production details from ARMs.
- **MIS for CBT programme:** MIS exclusively for Capacity Building Training

Programmes has been developed and is being utilized for monitoring and evaluation of training programmes on real time basis across the country.

B. SEED ORGANIZATION

I. Mulberry Seed Sector

National Silkworm Seed Organization (NSSO), Bengaluru is the most recognized mulberry silkworm seed production organization in the country. It maintains and multiplies basic stock of authorized silkworm races true to the breed characters by following one-way system of multiplication at Basic Seed Farms (BSFs) and plays a major role in producing quality bivoltine hybrid silkworm seed in its ISO certified production centres to support the production of import substitute bivoltine raw silk in the country. Through its effective network of Basic Seed Farms (17), Seed Cocoon Procurement Centre (02), Silkworm Seed Production Centres (18) and Cold Storage Plants (03) spread over nine states in the country; it provides support to all states and private seed producers.

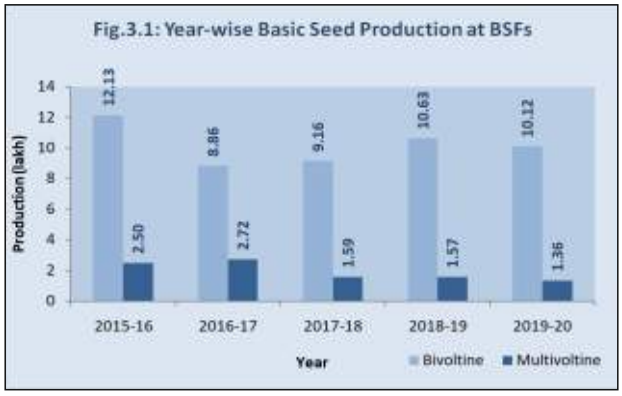
Basic Seed Farms

The Basic Seed Farms assume a great importance in the seed production not only by maintaining the stock of the approved breeds true to their breed characters, but also by assisting in multiplication of these races at different levels. With effective functioning of the farms by precise planning, scientific and systematic execution of activities, seed maintenance and multiplication support at different levels, *viz.,* P3, P2 and P1 is extended.

During the year, 51.14 lakh bivoltine and 29.37 lakh multivoltine seed cocoons (P3~P1 level) were generated against a target of 67.90 and 23.14 lakh, respectively. Utilizing these seed cocoons, 11.48 lakh basic seed (10.12 lakh bivoltine and 1.36 lakh multivoltine) was produced. A quantity of 7.78 lakh bivoltine and 1.36 lakh multivoltine basic seed was distributed during the year as detailed in Table 3.5. The comparative production of bivoltine and multivoltine seed over the last five years is given in Fig.3.1.

Table 3.5: Basic seed production and supply

Breed		P3	P2	P1	Total
Production	Bivoltine	3854	41953	965891	1011698
	Multivoltine	1900	4739	129722	136361
	Total	5754	46692	1095613	1148059
Supply	Bivoltine	2307	25089	750150	777546
	Multivoltine	1900	4339	129722	135961
	Total	4207	29428	879872	913507



P1 Bivoltine Seed Production

P1 SSPC, K.R. Nagar is the only bivoltine seed production centre with ISO 9001:2015 certification, which is entrusted with the responsibility of meeting the bivoltine basic seed requirement of all the stakeholders.

During the year, the unit produced 9.10 lakh bivoltine P1 basic seed against a target of 10.00 lakh.

Generation of Parental (P1) Seed Cocoons

Seed cocoons are of great importance, being the basic input for production of commercial dfls at the grainages. Hence, they have to be generated systematically on scientific lines by maintaining racial characters, vigour and disease freeness. The Seed Cocoon Procurement Centre (SCPC), K.R. Pet supported the SSPCs by procuring 70.19 lakh bivoltine seed cocoons for preparation of both bivoltine hybrid and cross breed layings at NSSO grainages. Similarly, the Seed Cocoon Procurement Centre (SCPC), Kunigal supported the SSPCs by procuring 29.78 lakh multivoltine seed cocoons for preparation of cross breed layings. In addition, NSSO also supported the private Registered Seed Producers (RSPs) by supplying 6.86 lakh bivoltine seed cocoons.

The quality hybrid seed production is primarily attributed to the specific and successful production model supported by the Adopted Seed Rearers (ASRs) for seed cocoon generation, which ensured quality seed production in the SSPCs. These ASRs are registered under Central Seed Act and supported technically with assured market governed by quality linked pricing system.

During the year, a total of 1256 lakh bivoltine seed cocoons were generated for the production of bivoltine hybrid and cross breed dfls. The SSPCs of NSSO in West Bengal, DoSs of West Bengal and Uttar Pradesh were supported by SCPC, K.R. Pet and SSPCs by generating 50.93 lakh (34.46 lakh - SSPCs of West Bengal, 3.37 lakh - DoS, West Bengal, 13.10 lakh-DoS, Uttar Pradesh) bivoltine seed cocoons in south India and supplied against an indent of 55.18 lakh seed cocoons (35.00 lakh-SSPCs of West Bengal, 4.56 lakh-DoS, West Bengal, 15.62 lakh-DoS, Uttar Pradesh).

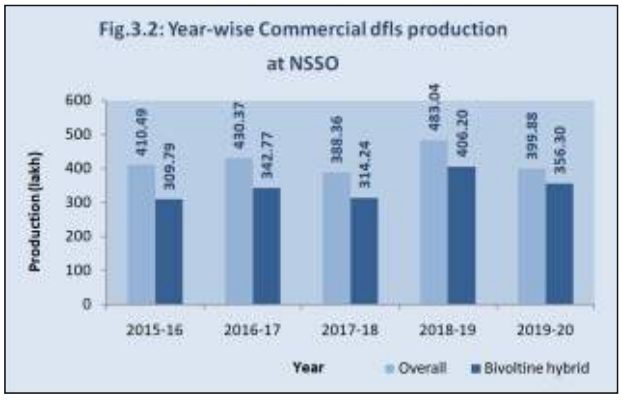
Commercial Seed Production and Supply

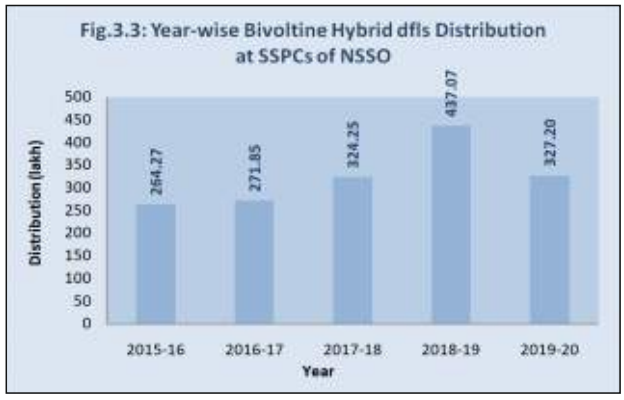
The exemplary performance of NSSO in 2018-19 has paved way for fixing a target of 400 lakh bivoltine hybrid dfls in 2019-20. However, the production during the year though started on a promising note, was affected, bringing down the achievement to around 90% of the targets, also contributed to inventory loss in seed cocoons and hybrid seed due to the disturbances in logistics during Covid-19 pandemic at the fag-end of the last quarter.

Production of quality commercial silkworm hybrid dfls (bi x bi & multi x bi) and their distribution among stakeholders is also one of the mandated activities of Silkworm Seed Production Centres (SSPCs). Eighteen ISO certified SSPCs produced a quantum of 399.88 lakh dfls, against the target of 470 lakh dfls achieving 85.08%.

Out of the total production of 399.88 lakh dfls, 356.30 lakh dfls (Fig.3.2) were bivoltine hybrids (89.10%) while the cross breed layings accounted for 43.58 lakh dfls (10.90%). Of the total bivoltine hybrid produced, double hybrid accounted for 333.34 lakh dfls. Among the multivoltines, Nistari x Bivoltine formed the core production (21.39 lakh dfls). Details of different combinations produced are given in Table 3.6.

Table 3.6: Combination -wise target and production of dfls (in lakh)				
Combination		Target	Achievement	Achievement (%)
Bivoltine Hybrids	CSR2 x CSR4	7.00	5.50	78.57
	FC1 x FC2	365.00	333.34	91.33
	SK6 x SK7	13.00	7.22	55.54
	SH6 x NB4D2	15.00	6.85	45.67
	Others		3.39*	
Total		400.00	356.30	89.08
Multi X Bivoltine Hybrids	PM x CSR2		0.63	
	PM x FC2		8.76	
	N x Bi	39.00	21.39	54.85
	N x M12 (W)	31.00	11.30	36.45
	Others		1.50*	
Total		70.00	43.58	62.26
Grand Total		470.00	399.88	85.08
** for Race authorization trials*				





During the year, 327.20 lakh bivoltine hybrid dfls were distributed, which included export of 3,000 dfls to Uganda. The bivoltine hybrid dfl distribution for the last five years is indicated at Fig. 3.3. Apart from this, NSSO also supplied 44.65 lakh multi-bivoltine hybrid dfls to various state departments. The incidence of serious floods in northern Karnataka and certain areas of Maharashtra affected the bivoltine hybrid supply to these areas, bringing down the supply.

Grainage productivity: Strict implementation of quality norms has also ensured improvement in productivity at the

grainages. The egg recovery in multi x bivoltine hybrids produced in the southern region was 31.71% against the norm of 28.00%. In bivoltine hybrids, the average egg productivity in the case of CSR2 x CSR4 hybrids was 59.45 g/kg cocoon against the norm of 55 g/kg cocoon and for double hybrids, it was 70.95 g/kg cocoon against the norm of 65 g/kg cocoon.

Promotion of Private Participation

Eleven private RSPs nurtured by NSSO, produced 49.37 lakh bivoltine hybrid dfls during the year, registering an increase of 72.86% over the previous year. These private producers were supported by NSSO by supplying quality bivoltine seed cocoons (6.86 lakh) and providing facilities for preservation of the dfls in its cold storage plants, free of cost.

Extension Activities

CRC Discount Scheme: This scheme was in operation till June 2019 and discontinued from July 2019, to create a level playing field for all the stakeholders involved in seed production. The 116 CRCs were supplied 37.01 lakh bivoltine hybrid dfls during the first quarter, wherein a discount of 10% was allowed.

Extension communication programmes: During the year, 19 group discussions, one enlightenment programme was conducted and 477 farmers were sensitized. Six interactive sessions with ASRs were conducted during the year, and 189 farmers participated.

Training programmes: NSSO coordinated and conducted various training programmes covering seed crop rearing and seed production. A total of 44 students, 6 Private RSPs and 84 DoS officials were trained in various aspects of large scale bivoltine commercial seed production during the year. Similarly, 100 ASRs were trained on seed crop rearing for capacity building for generation of quality seed cocoons.

Seed Act Implementation

NSSO continued its efforts for implementation of the provisions of Central Silk Board (Amendment) Act, 2006. During the year, out of 1196 new applications for registration, certificates were issued to 1,081 stakeholders (8 RSPs, 101 RCRs and 972 RSCPs). In addition, certificates for renewal were issued to 574 stakeholders (65 RSPs, 37 RCRs and 472 RSCPs). Upto March 2020, 26,923 registrations have been effected (18,029 in mulberry, 6,425 in tasar, 985 in eri and 1484 in muga).

Certificate training course of three months duration was organized at Central Sericultural Research & Training Institute, Mysuru for 74 chawki rearers and at SSTL, Kodathi for 9 seed producers. Refresher training to 57 chawki rearers/RSPs was provided. Apart from this, Orientation Programme, demo on e-cocoon mobile app and online registration were conducted, wherein 227 Officers/officials from CSB units and state DoSs participated.

On-line registration under Seed Act developed to facilitate quick registration and renewal processes, has enabled 278 registrations (new and renewal) during the year.

Awareness Programmes (37) were conducted covering 3700 farmers / officials (Seed Analysts / Seed Officers).

Revenue Generation

The revenue generated from the farms of NSSO was Rs.174.34 lakh during the year.

Impact of NSSO on Bivoltine Raw Silk Production

The Government of India is making all efforts to curtail the import of bivoltine raw silk by increasing quality domestic production. NSSO being the leader in bivoltine hybrid dfl production, takes the leadership role in contributing to the targeted bivoltine raw silk production. The production of 356.30 lakh bivoltine hybrid dfls and distribution of 327.20 lakh bivoltine hybrid dfls by NSSO during 2019-20 directly contributed to nearly 70% of the country's bivoltine raw silk production. Support extended to the private RSPs resulted in production of around 50 lakh hybrid dfls, which speaks of the commitment of NSSO in promotion of private participation in seed sector.

ii. Vanya Seed Sector

Tropical tasar: Basic Tasar Silkworm Seed Organization (BTSSO), Bilaspur, Chhattisgarh is mandated for organizing the systematic seed production and supply of tropical tasar silkworm seed, through 18 Basic Seed Multiplication & Training Centres (BSM&TCs) operating in nine states and a Central Tasar Silkworm Seed Station (CTSSS) at Kota in Chhattisgarh. CTSSS is responsible for production and distribution of tasar nucleus seed to BSM&TCs for further multiplication, besides, maintaining germplasm of different tasar silkworm races. The Centre has produced and supplied 0.24 lakh dfls of tasar nucleus silkworm seed during the year for replenishment of existing stock of BSM&TCs. 18 BSM&TCs produced 18.33 lakh basic dfls & 18.79 lakh nucleus dfls during 2019-20. Besides, BTSSO has also produced 18.17 lakh commercial dfls by involving private graineurs.

Oak tasar: The cumulative production of oak tasar silkworm seed by two Regional Sericultural Research Stations (RSRSs) and one Research Extension Centre (REC) located in 3 states was 0.44 lakh dfls during 2019-20.

Muga: The reorganized MSSO, Guwahati, Assam has two P4 units, five P3 units for production of basic silkworm seed and one Muga Silkworm Seed Production Centre for the production of commercial muga silkworm seed. Besides, under North Eastern Region Textile Promotion Scheme (NERTPS), three muga P3 Basic Seed Stations and two SSPCs have also been established. These units have produced 5.71 lakh muga dfls (3.53 lakh basic dfls & 2.18 lakh commercial dfls) during the year 2019-20.

Eri: Eri Silkworm Seed Organization (ESSO), Guwahati, Assam has performed well with its two Eri SSPCs (one each in Assam & Tamil Nadu), two RECs-Multi-tasking units (1 each in UP & Uttarakhand) and one RSRS (Multitasking unit) at Koraput, Odisha. Besides, one P2 Eri Basic Seed Farm at Tapatoli has been established under NERTPS. These units have produced 6.64 lakh eri dfls (0.95 lakh basic dfls & 5.69 lakh commercial dfls) during the year 2019-20.

C. COORDINATION AND MARKET DEVELOPMENT

Regional Offices

The Regional Offices of Central Silk Board liaison with the states, the Departments of

Sericulture in States and CSB's nested units in their jurisdiction, in implementing various sericulture development programmes of central government. The Regional Offices located at New Delhi, Mumbai, Kolkata, Hyderabad, Bhubaneswar and Guwahati are performing their roles and responsibilities as per the mandate.

Under the re-structuring plan of CSB, two Regional Offices located at Lucknow and Patna were closed during 2019-20. This adds to two more Regional Offices located at Chennai and Jammu, which were closed during 2018-19.

All the Regional Offices report the progress on development of sericulture in their jurisdictional states periodically. The Regional Offices conduct State Level Sericulture Co-ordination Committee meetings under the Chairpersonship of the Head of the Sericulture Department or Principal Secretary for Sericulture Department in the state, to discuss the issues related to development of sericulture industry in the state.

Export Promotion Schemes

As a part of the Export Promotion Scheme, CSB is providing the following services with respect to silk exports through its Regional Offices and Certification Centres:

- Voluntary quality inspection of silk goods meant for exports against payment of service charges, as prescribed by the Board.
- Issue of various Tariff Certificates including GSP, Handloom Certificates, Certificate of Origin and Handicraft Certificates on inspection of silk goods and on self-declaration by the exporters as well.
- Inspection and certification of silk wastes meant for exports.
- Inspection of natural silk carpets under 'voluntary basis scheme' as a measure of export promotion, wherever the exporter or importer makes a request to CSB.
- Textile testing services for checking silk quality, identification of constituent yarns and its percentage, physical/chemical properties and other parameters through laboratories attached to Certification Centres.
- Technical assistance in identifying constituent yarns and ascertaining percentage of silk content in products, as and when approached by different organizations like Customs Department, Directorate General of Foreign Trade, Directorates of Sericulture, Textile Institutes, private firms and individuals.

During 2019-20, about 3.97 lakh sq.mtr. of natural silk/mixed silk goods valued Rs.41.17 crore were certified for exports by at the Certification Centres of CSB under Voluntary Quality Inspection Scheme. A total revenue of Rs.3,16,256 has been generated under the scheme by way of inspection charges, sale of blank forms, sample testing charges and issue of various tariff certificates, 691 sq. mtr. of silk goods, valued Rs.9.61 lakh exported by 100% Export Oriented Units (EOU) were certified by Certification Centre, Bengaluru. An amount of Rs.2,62,950 was collected from

the sale of Carpet Labels. Centre-wise details of natural silk goods certified under voluntary quality inspection scheme during 2019-20 are provided in Table 3.7.

Table 3.7: Centre-wise details of natural silk-goods certified under voluntary quality inspection scheme during 2019-20

Centre	Qty (lakh sq. mtr.)	Value (Rs. in crore)
Bengaluru	2.88	18.66
New Delhi	0.16	15.56
Chennai	0.05	00.43
Srinagar	0.01	01.28

Raw Material Banks for Tasar and Muga

The Raw Material Banks (RMBs) for tasar and muga ensure right incentive for production, relieve the beneficiaries from wide fluctuations in market prices of cocoon & raw silk and provide off-the-shelf supply of essential raw materials to actual users and manufacturing exporters of silk goods at steady prices.

D. QUALITY CERTIFICATION SYSTEM

Silk Mark Organization of India (SMOI)

The Silk Mark scheme is a part of Quality Certification System scheme of Central Silk Board. The main objective of the Quality Certification System is to initiate suitable measures towards strengthening quality assurance, quality assessment and quality certification. Silk Mark, a purity assurance label, protects the interest of the consumers from traders selling artificial silk products, in the name of pure silk and SMOI assures guarantee for the purity of the silk products the consumers purchase. During 2019-20, SMOI enrolled 280 Authorised Users under its fold taking its tally to over 4000 AUs across the country. More than 29 lakh Silk Mark labels have been released to the market in the year taking the total number of labels in the market to more than 3.5 crore.

The progress achieved under the Silk Mark Scheme during the year 2019-20 is given in Table 3.8.

Table 3.8: Progress achieved under QCS

Particulars	2019-20	
	Target	Achievement
New members enrolled (No.)	260	280
Silk Mark Labels sold (Lakh No.)	27.00	29.71
Awareness programmes exhibition/fairs/ workshops/ road shows, etc.	500	549

Some of the major promotional activities undertaken during the period are:

Silk Mark Expos

During 2019-20, inspite of the sluggish market for silk products, SMOI has organized six expos at Guwahati, Lucknow, Bengaluru, Chennai, Pune and Hyderabad. Out of these, 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) organised with the financial support of the Development Commissioner (Handloom).

These expos are ideal platform not only to popularize the Silk Mark but also in bringing the manufacturers and consumers on one platform for selling and buying of pure silk products. A total of 234 authorised users have participated from around 12 different silk weaving clusters and more than 29,000 people visited these expos. The participants have generated a business turnover of more than Rs.9.40 crore.

Awareness Programme for IFSOWA

An awareness programme on silk and 'Silk Mark' facilitating interaction with the experts and a live demonstration of silk identification was organised for the Indian Forest Officers' Wives Association at New Delhi on 25th June, 2019 which was inaugurated by Smt. Sushmita Das, President of the Association.

India International Silk Fair

SMOI participated in 7th India International Silk Fair organized by Indian Silk Export Promotion Council, at Pragati Maidan, New Delhi from 15th to 17th July, 2019. SMOI has set up a customized Theme Pavilion on "Silks of India" that depicted activities related to silk value chain. Smt. Smriti Zubin Irani, Hon'ble Union Minister of Textiles inaugurated the Theme Pavilion. In addition, CSB offered ten stalls free of cost to participants from the North-eastern region.

Publicity Measures

Amongst various initiatives to promote Indian Silk and Silk Mark, SMOI released advertisements in leading English and vernacular newspapers, magazines, TV scrolling in local channels, hoardings at metro stations, railway stations, bus back panels etc.

SMOI also released an educational series on silk in the supplement of 'Times of India' newspaper for students under the programme 'Newspaper in Education (NIE)'. Four topics *viz.,* types of Indian silks, silk purity testing, innovative uses of silk and silk care, were covered. The Supplement reached more than 3 lakh students from about 900 schools.

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

With an objective to project the uniqueness of Indian Silks to overseas audiences, SMOI has participated and displayed silk products in the Congress. A paper on "Accreditation and Compliance of Pure Silk Products in Trade: A Case of Silk Mark in India" was presented in the Congress.

OTHER PROGRAMMES/SCHEMES/ PROJECTS

i. Publicity and Media Programmes

The highlights of publicity and media programmes are listed below:

Publications

- CSB continued publication of Indian Silk, a bilingual industrial journal devoted to the sericulture and silk industry of India. Presently, the journal is in its 58th year of publication. A special issue of Indian Silk was brought out on the coverage of "Surging Silk Mega Event" held at New Delhi during February 2019. The issue contained detailed coverage of the event and initiatives/success stories of the awardees for their special recognition to innovation and institution building in sericulture.

- *Annual Administrative Report* of CSB for the year 2018-19 was published in bilingual (English and Hindi) for placing before the Parliament. It provides detailed information about research & development achievements, performance and progress under various projects and schemes implemented by the CSB and overall view of the status and development of the Indian silk industry, during the year.
- *Reshme Vaani,* a quarterly multi-colour newsletter on sericulture activities in Kannada language was published for the benefit of stakeholders of sericulture and silk industry in Karnataka. This newsletter contains information on innovations and technologies both in the pre and post-cocoon sectors, success stories, disease forewarning, news briefs and silk prices.
- *Resham Bharati*, a bi-annual house journal is covering write-ups on sericulture, use of Hindi in the official correspondence, news on OLIC events, poems, stories etc., in Hindi published to encourage the use of Official Language.
- *Sericulture and Silk Industry Statistics 2017:* This publication is a comprehensive record of the status, progress and achievements of sericulture and silk industry in India and of immense use to academicians, researchers and students. This publication provides the latest information on the vital statistics of the world & Indian sericulture and silk industry up till the year of publication.
- *Reprinting of Handbook of Sericulture Technologies in Telugu:* This publication contains valuable information on latest technologies developed in areas like mulberry varietal improvement and cultivation, silkworm breeding, silkworm egg production, rearing of silkworm, disease control, mechanization, silk reeling, extension etc.

Other Publications

- *Multicolour Wall & Table Top Calendars-2020*: Specially designed multicolour wall & table top calendars-2020 of Central Silk Board, highlighting various innovations in different segments of sericulture and silk industry both in mulberry and *vanya* sectors that have made sustained positive impact over a period. The select innovations with impact in larger perspectives were out of the entries received from CSB's Research Institutes/DoSs and select NGOs.
- Published Diary of CSB for the year 2020 which includes introductory information on sericulture and silk industry, CSB schemes, silk production statistics, and address of officials in Ministry of Textiles, Board Members, CSB and DoS.

Press & Media Relations

CSB in liaison with Press Information Bureau issued press invitations, notes and releases on various sericulture and silk related activities and events. There was a wide coverage of such activities in various newspapers in English and vernacular languages as well as electronic media. Media coverage was organized for the

National Technology Day observed by CSTRI, Bengaluru on 11th May, 2019.

Participation in Exhibitions

Publicity Section participated in the expo organized by Botany Department, Bangalore University during December 2019, to mark its centenary celebrations in coordination with Regional Sericultural Research Station, Kodathi and CSTRI, Bengaluru. The expo was a good platform for Central Silk Board to showcase its technologies and development in sericulture industry among the general public. As a part of popularizing flagship programme, Silk Samagra, CSB also released a goodwill advertisement in the Souvenir brought out on the occasion, by the Botany Department. The Publicity Section also coordinated the participation of Central Sericultural Research and Training Institute, Berhampore in 24th Sunderban Kristi Mela O Loko Sanskriti Utsab held at Kultali, 24th district Paraganas, West Bengal during December 20-29, 2019.

Goodwill advertisement on Silk Samagra was also released in November 7-14, 2019 issue of "Chira Sandhaan", Odia weekly newspaper.

Audio-visual Publicity

The Publicity Section has prepared six video clips on successful sericulturists for screening during events to promote sericulture activities.

ii. Official Language Policy

CSB continued all efforts to achieve the targets fixed by the Department of Official Language, Ministry of Home Affairs, Govt. of India, New Delhi for implementation of the Official Language Policy of the Union for the year 2019-20. As a result of accelerating the progressive use of Hindi in official purposes, offices of Central Silk Board scored more than the targets fixed in Annual Programme of Official Language Department. Major achievements and action taken during the period under report is as under:

Awards: Four CSB offices were awarded for excellent performance in O.L. implementation at Town Level. The details are given in Table 3.9.

Compliance of Official Language Act, 1963 & Rules, 1976

Central Silk Board & all its offices complied with Section-3(3) of the Official Language Act, 1963. Further, following Rule-5 of the

Table 3.9: Awards received by CSB Offices

#	Office	Awards details	Grading	Awarded on
1	CSB Secretariat, Bengaluru	Town Official Language Implementation Committee (TOLIC), Bengaluru	Second	17.07.2019
2	CSTRI, Bengaluru	TOLIC, Bengaluru	Third	17.07.2019
3	SSPC, Jorhat	TOLIC, Jorhat	Citation	21.08.2019
4	MSSO, Guwahati	TOLIC, Guwahati	Citation	27.12.2019

Official Language Rules, 1976, letters received in Hindi were replied to in Hindi. Targets fixed for original correspondence, fax, etc., in the Annual Programme 2019-20 were also achieved. 81 Offices including Board Secretariat have so far been notified under Rule 10(4) of Official Language Rules, 1976 and Orders/Memoranda were issued for doing work in Hindi under Rule 8(4) of Official Language Rules, 1976.

Training

Hindi training was imparted in a phased manner in the Board's Secretariat and its subordinate units. 14 staff members of CSB were trained on computer for doing work in Hindi. Phonetic typing was focused in the training and many staff have shown their interest (as they were not able to type in inscript or typing mode).

Meetings

Meetings of Official Language Implementation Committee which monitors Official Language Implementation Programme in Board Secretariat, research institutes and other main subordinate offices were held on 20.06.2019, 20.09.2019, 19.12.2019 & 26.03.2020. In most of the attached/subordinate offices also, the meetings of Official Language Implementation Committee were held, regularly in each quarter.

Hindi Week /Fortnight

Hindi Fortnight was observed jointly by Central Office, National Silkworm Seed Organization and CSTRI, Bengaluru from 3rd September, 2019 to 16th September, 2019 in Bengaluru and competitions *i.e.,* hand-writing, extempore speech, noting-drafting, dictation, Hindi reading, official language knowledge, vividha, cross word competition and rajbhasha parihar programme were organized. Hindi Day was celebrated on 14.09.2019. Hindi Fortnight valedictory-cum-prize distribution function was also organized on 19.09.2019 and winning officers/staff were awarded on this occasion. Staff of CSB also participated in the competitions organized under the auspices of Town Official Language Implementation Committee. Nine officers/staff of Central Silk Board compri-sing CSTRI and NSSO, were awarded at town level at Bengaluru on 17.12.2019.

Workshop/Seminar

Board's secretariat organized Official Language Orientation Programme 'Lakshya' and Conference for the Official Language officers/staff of the Board on 21.06.2019 and also four full-day Hindi Workshops for the staff of CSB on 14.06.2019, 25.09.2019, 21.11.2019 and 27.02.2020. A total of 62 Staff were trained in the workshop. NSSO, Bengaluru organized Rajbhasha Technical Seminar on 19.02.2020 on the status of silkworm seed in North-west States and the efforts for its improvement at Dehradun. Scientists of CSB presented the papers in Hindi in the seminar. Hindi workshops were also organised in attached & subordinate offices of the Board.

Software and Its Use

Following the instruction of Department of Official Language, Ministry of Home Affairs, Govt. of India, Unicode software is being used in CSB and in all its main Institutes, ROs and

other offices. CSTRI, Bengaluru has taken Corporate License of Bank Script Software for preparing pay slip in bilingual in CSB's main offices & accounting units.

Inspection

Inspections pertaining to the implementation of Official Language were carried out in 55 attached and subordinate offices of the Board by the Board Secretariat & its attached/subordinate offices.

Publication

Central Office published Annual Report, 2018-19, Certified Accounts with Audit Certificate & Audit Report for the year 2018-19 and Resham Bharati June, 2019. CTR&TI, CSB, Ranchi published Annual Report 2018-19, House Journal Resham Vani. CSR&TI, Mysuru published Resham Kiran and pamphlets on Dr. Soil, Ankur, Serifit & Tray Washing Disinfection Machine.

Translation

The Board Secretariat translated Annual Report, 2018-19, Certified Accounts with Audit Certificate & Audit Report, 2018-19, "Background Note on Silk & Sericulture in Hindi, Minutes of the Standing Committee Meeting & Board Meeting.

CSB Official Language Award

In order to accelerate the tempo of implementation of Official Language in Board Secretariat and in its units, CSB has introduced Rajbhasha Award Scheme, which envisages awards for their performance during the year. Board's Secretariat, Bengaluru organized CSB Rajbhasha award distribution function for the year 2016-17 on 20.06.2019. The recipients of the award and citation for the year were: (1) Central Tasar Research & Training Institute, Ranchi (2) Central Silk Technological Research Institute, Bengaluru; (3) Regional Sericultural Research Station, Sahaspur, Dehradun; (4) Regional Office, New Delhi (5) Certification Centre, Varanasi; (6) Demonstration-cum-Technical Service Centre, Bhandara; (7) Seri Biotech Research Laboratory, Kodathi; (8) Regional Sericultural Research Station, Koraput. A provision for a separate award has also been made for the sections of the Board Secretariat. In Board Secretariat, Publicity Section and Bill Section bagged the awards for the year 2016-17.

Competitions at Town Level/Board Level

Board Secretariat, Bengaluru organized ''Hindi Noting and Drafting'' under the auspices of TOLIC, Bengaluru at town level on the occasion of Inter Office Competition on 08.11.2019. CSTRI, Bengaluru also organized extempore speech at town level, Bengaluru on 14.11.2019.

All India CSB Hindi write-up competition was organized on 10.01.2020 on the occassion of Vishwa Hindi Diwas. The topic for the competition was "Silk Road: Myth and Reality". A competition on Hindi phrases/glossary was organized for the officers/staff on 12.03.2020.

iii. Bivoltine Sericulture Programme

Implementation of Bivoltine Cluster Promotion Programme (CPP), in XII Plan, was approved for continuation beyond XII Plan for three years *i.e.,* 2017-20. During 2019-20, with the joint concerted efforts of CSB and DoSs, the production level of bivoltine rawsilk in the country reached

7009 MT (increase of 0.1% over production of 2018-19). About 5,115 MT (73% of the total production) of bivoltine raw silk came from 151 clusters and the remaining 1894 MT came from non-captive areas. In order to streamline these clusters, it was decided to reorganize these into informal bodies as Mega Silk Clusters for empowering the stakeholders to support in extension.

Bivoltine raw silk production target *vs.* achievement during 2013-14 to 2019-20 is given in Table 3.10.

Table 3.10: Bivoltine raw silk production target vs. achievement during 2013-14 to 2019-20

Year	Target (MT)	Achieve-ment (MT)	Achieve-ment (%)	Production from BV Clusters (MT)
2013-14	2480	2559	103.0	1475
2014-15	3500	3870	111.0	2357
2015-16	4500	4613	103.0	2932
2016-17	5260	5266	100.0	3405
2017-18	6200	5874	94.74	4100
2018-19	7200	6987	97.00	4987
2019-20	8500	7009	82.27	5110

** Provisional*

iv. North East Region Textile Promotion Scheme (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 in the areas 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 being implemented in all North-eastern states in the identified potential districts under the 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 ongoing and 14 new projects .Total cost of these projects is Rs. 1,107.90 crore, of which GoI share is Rs. 956.01 crore. Among these, 20 projects in ISDP including establishment of Seed Infra-structure 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 a viable commercial activity in NER by creating necessary infrastructure & 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 and oak tasar sectors and expected to contribute additional production of 2,650 MT raw silk during the project period and generate employment for 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 crore) which includes 14 on-going and four new projects for implementation in Assam including BTC,

Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. This includes implementation of Soil to Silk for BTC (Assam) and post-cocoon technology for Nagaland. The projects will cover 29,910 acres of mulberry, eri and 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 & 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 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 lakh mulberry dfls and 21.51 lakh muga and 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)

10 projects to produce import-substitute bivoltine silk with a total cost of Rs. 290.31 crore out of which GoI share of Rs. 258.74 crore which includes 8 ongoing and 2 new projects have been sanctioned under NERTPS. The projects cover 4,900 acres of mulberry plantation benefitting around 10,607 women beneficiaries 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 has been approved with a total cost of Rs.64.59 crore (GoI share of Rs.57.28 crore) 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 Govts. Presently five sericulture projects have been approved in 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

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.

- 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, which is under progress. 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 a dedicated web-site for NERTPS-CSB Geo-tagging.
- 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, Bengaluru 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 has been made on the progress of projects and DoSs has 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 3.11

v. Scheduled Caste Sub Plan (SCSP)

Central Silk Board has been implementing beneficiaryoriented components through sericulture under Scheduled Caste Sub Plan (SCSP) in the country in coordination with the State Sericulture Departments and other implementing agencies during the year 2019-20. The main objective is social upliftment of SC families on sustainable basis with a visible impact in terms of the income generation and employment through sericulture. The scheme has been implemented during 2019-20 by covering 1936 SC beneficiaries in Karnataka, Andhra Pradesh, Telangana, Kerala, Himachal Pradesh, Uttar Pradesh, Tamil Nadu, Odisha, Punjab and Haryana. An amount of Rs.30.00 crore has been released to the states under SCSP during 2019-20. Under the programme, support has been provided to SC families through various components under sericulture is as follows:

Table 3.11: Sericulture Projects being Implemented under NERTPS								
#	State	Total Project cost (Rs. cr)	GoI Share (Rs. cr)	GoI Release till March, 2020 (Rs. cr)	Beneficiaries (No.)		Output per annum (MT) 2019-20	
					Target	Achmt	Target	Achmt upto March 2020
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	406	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**	**37,029**	**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 (Tapioca)	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**	**41,074**	**35,516**	**1,029**	**753.32**
Ib	**Infrastructure Projects**							
19	Tripura (Silk Printing)	3.71	3.71	3.52	-	-	1.50 lakh mtr/yr	Printed 356 sarees
20	CSB Seed Infrastructure	37.71	37.71	35.82	-	-	30 lakh mulberry & 3.70 lakh muga eri dfls/yr	6.87 lakh mulberry, 0.87 lakh muga & 0.08 lakh eri dfls achieved
	Total (Ib)	**41.42**	**41.42**	**39.35**	**-**	**-**	**-**	**-**
	Total (I+Ia+Ib)	**673.41**	**566.53**	**456.03**	**41,074**	**35,516**	**1,029**	**753.32**

Contd...

Table 3.11: Sericulture Projects being Implemented under NERTPS								
#	State	Total Project cost (Rs. cr)	GoI Share (Rs. cr)	GoI Release till March, 2020	Beneficiaries (No.)		Output per annum (MT) 2019-20	
				(Rs. cr)	Target	Achmt	Target	Achmt upto March 2020
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**
IIa	**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 (IIa)	**53.54**	**48.32**	**13.50**	**1,536**	**440**	**31**	-
	Total (II+IIa)	**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	2500	-	-	-
2	BTC	21.53	19.09	9.55	2500	-	-	-
3	Manipur	21.53	19.09	5.00	2500	-	-	-
	Total (III)	**64.59**	**57.28**	**19.55**	**7500**	**-**	**-**	**-**
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**	**63,426**	**46,783**	**1,327**	**861.20**

- Support for development of kisan nursery
- Support for raising systematic mulberry plantation
- Assistance for irrigation and other water conservation and usage techniques
- Scientific rearing house and the rearing equipment
- Establishment of Chawki Rearing Centres
- Support for prophylactic measures
- Door-to-door service agents for disinfection and inputs supply
- Support for cottage basin units
- Support for establishment of multi-end reeling units
- Support for establishment of automatic reeling units
- Capacity building & training for stakeholders

Tribal Sub-Plan (TSP)

CSB has been implementing beneficiary oriented components through sericulture under Tribal Sub Plan (TSP) in the country in coordination with State Sericulture departments and other implementing agencies during 2019-20. The aim is to empower downtrodden ST families through various activities of tasar and mulberry sericulture. The said project has been implemented by covering 3438 ST beneficiaries in the states of Karnataka, Andhra Pradesh, Telangana, Tamil Nadu, Chhattisgarh, Jharkhand, Odisha, Himachal Pradesh, Uttar Pradesh and Uttarakhand. An amount of Rs.20.00 crore has been released to the states to support the ST families through various activities of tasar and mulberry sericulture under TSP during 2019-20 is as follows:

Tasar Sector

- Assistance to seed rearers/adopted seed rearers for maintenance of plantation, development of chawki garden & disinfection.
- Assistance to private graineurs
- Assistance for cocoon storage house

Mulberry Sector

- Support for development of kisan nureseries
- Support for development of mulberry plantation
- Assistance for irrigation facilities
- Support for prophylactic measures
- Scientific rearing house & rearing equipment
- Establishment of Chawki Rearing Centres

General

- Assistance for *vanya* reeling-cum-twisting machine
- Assistance to purchase Buniyaad tasar reeling machines
- Support for establishment of multi-end reeling units
- Support for establishment of automatic reeling units
- Skill upgradation & capacity building of the stakeholders
- Engaging community resource persons & para-professionals
- Sericulture resource centres

vi. Vanya Silk Market Promotion Cell

The activities under Vanya Silk Market Promotion Cell (VSMPC) continued during

2019-2020 with a special focus on generic, brand and market promotion of *vanya* silk by organizing vanya silk expos, workshop, interaction meets, commercialization programmes, participation in expos/exhibitions, product development through collaborative projects and promotion of organic *vanya* silk.

Generic and brand promotion of vanya silks were taken up in association with SMOI. Preparation of coffee table book on Vanya Silk in association with SMOI is under progress.

Operation of vanya silk shoppees at New Delhi and Bengaluru continued with the earlier allotted registered members.

vii. Product Design Development and Diversification (P3D)

The activities under P3D continued during 2019-2020 with a special focus on fabric engineering, development of the silk blends and product development in the clusters, commercialization of new products developed, assisting the commercializing partner in providing backward linkage, technical know-how and assisting/coordinating in sample development. The highlights of the projects and related activities are:

a. Under a collaborative project with NIFT, Mumbai, silk products were developed in Bagh & Maheshwar clusters by applying traditional block prints technique of Bagh and weaving technique of Maheshwar. Sarees, ethnic dresses, modern dresses and lifestyle products were developed. The commercialization of these products is underway with the manufacturers.

b. The commercialization of the products developed under the collaborative project with NIFT, Bhubaneswar is under way. SADAC has taken up the activity of commercialization of these products under the technical guidance of CSB and NIFT, Bhubaneswar.

c. Assisted M/s. Five P Ventures Pvt. Ltd., Erode and provided necessary technical details for developing the eri silk denim fabrics on handloom. The firm is manufacturing the denim fabrics on a large scale and catering to the export as well as domestic markets.

d. Product development using natural dyed eco-friendly silk fabric is under progress. This product development and commercialization activity has been taken up with the private partner M/s. Kairkolar, Erode, Tamil Nadu. The students from the JD Institute of Fashion Technology, Bengaluru are also participating in this project.

e. Organized product display in Silk Mark Expo at Bengaluru during 10th to 16th December 2019 & arranged an exclusive display of Bagh printed sarees and dresses.

f. Participated in Femina Stylista-South in January, 2020 and displayed exclusive silk sarees.

Products developed using various combinations have been displayed in different expos are 7th India International Silk Fair 2019 at Delhi organized by ISEPC from 15th July to 17th July 2019 and Toshali Expo organized by Govt. of Odisha. During these events, theme pavilion has been organized and newly

Products developed under Collaborative Project with NIFT Mumbai

developed products showcased with a view to commercialize these products.

viii. Vanya Cluster Promotion Programme (VCPP)

The Cluster Promotion Programme for vanya silks is being implemented jointly by CSB units in close coordination with concerned State DoS, by utilizing the funds allocated under the restructured Central Sector Scheme. A total of 22 clusters in tasar sector have been identified in different tasar producing states (Table 3.12).

The Directors of CTR&TI, Ranchi and BTSSO, Bilaspur is given the responsibility of monitoring the implementation of these clusters in close coordination with respective State DoSs. Detailed guidelines were circulated for implementation of the programme and committees at cluster, state and institute levels were constituted for expediting the implementation and reviewing the progress of the programme, periodically.

Each cluster is supported with 60 adopted seed rearers and 15 private graineurs along with support for capacity building, door to door service for disinfection and mobile testing units for supporting quality tasar silkworm seed production. The GOI assistance amounting to Rs.12.60 crore to support 1853 beneficiary under the programme was released to respective State Govts. and funds amounting to Rs.74.474 lakh were released to the Directors of CTR&TI, Ranchi and BTSSO, Bilaspur towards capacity building, study tour and awareness programme and for implementing the VCPP programme.

Following major interventions were undertaken in the clusters:

- Organized the stakeholders to undertake different tasar activities in clusters.
- Organized seed production in private

Theme Pavilion during 7th India International Silk fair -2019

Table 3.12: Vanya Silk Clusters			
#	Institutes linked	State	Name of the tasar cluster
1	CTR&TI, Ranchi	Jharkhand	Mohanpur, Deoghar
2			Jharmundi, Dumka
3			Ramgarh, Dumka
4			Bandhgaon, West Singhbhum
5			Majhgaon, West Singhbhum
6			Boarijore, Godda
7		Odisha	Thakurmunda-Mahuldiha-Kendujuani, District Mayurbhanj
8			Baincha-Jalghati-Dantiamuhan, District Mayurbhanj
9		Telangana	Mahadevpur, Karimnagar
10		Andhra Pradesh	Kunavaram, Khammam
11		Maharashtra	Awalgaon -Mendki
12		West Bengal	Kashipur, Purulia
13		Uttar Pradesh	Jhansi
14	BTSSO, Bilaspur	Jharkhand	Barhet, Sahibganj
15			Tonto
16			Sidawasunga
17			Rajnagar, Saraikela/ Kharsawan
18		Odisha	Telkoi -Benhamunda, District Keonjhar
19			Jeenari-Pardapada, District Keonjhar
20		Madhya Pradesh	Narsinghpur
21		Uttar Pradesh	Mungadih, Sonbhadra
22		Chhattisgarh	Ambikapur

sector to cater to the need of increased seed demand.

- Productivity improvement through maintenance of existing vanya host plants, disease monitoring and remedial measures.
- Transfer of improved technologies to the farmers and skill upgradation and training of stakeholders in the proven technologies in the areas of the seed production and rearing activities, etc., as per need of the cluster.
- Strengthen backward and the forward linkages for silkworm seed production, cocoon processing, etc.
- Infrastructure development in private sector especially for silkworm seed production and cocoon processing.

- Community building for the integrated development of vanya silk by improving the group activity / capacity building.
- Disease monitoring through the Joint Disease Monitoring Squads.

Under the programme, during 2019-20, 45094 dfls were reared by 413 seed rearers during 1st crop and 29,21,483 seed cocoons were produced @ 64.78 cocoons/dfl. These seed cocoons were processed by 93 private graineurs to produce 3,87,289 dfls. 388637 dfls were reared by 1,344 commercial rearers during 2nd crop and 1,17,92,589 cocoons produced @ 30.34 cocoons/dfl.

ix. Integrated "Soil to Silk" Tasar Project in Janjgir-Champa Districts of Chhattisgarh

Soil to Silk Tasar Project in Janjgir-Champa district of Chhattisgarh was implemented for a period of three years from 2016-17 to 2018-19 with a total project cost of Rs.68.53 crore. The GOI share of Rs.22.88 crore was proposed to be met from the general Central Sector Schemes of CSB. The Project period has been extended for another two years. The project has envisaged to develop new block tasar plantations in 2,500 hectares of land in the project and maintenance of 1240 ha of existing block plantations in forest community land, besides support for building forward and backward linkages to facilitate basic and commercial seed production, supply of rearing appliances and disinfectant for disease management to tasar rearers for ensuring crop productivity, cocoon storage facilities, reelers collectives, cocoon bank and marketing support in the project area.

The interventions proposed under the project are estimated to produce 45 MT of reeled tasar yarn and 14 MT of spun yarn during the project involving a total of 5824 project beneficiaries.

CSB has released central share amounting to Rs. 86.915 lakh during 2016-17,Rs. 1043.63 lakh during 2017-18 and Rs. 4.732 lakh during 2018-19 (backlog of 2017-18) to the state to support various critical intervention in the project like assistance to nucleus seed rearers, commercial rearers & private graineurs, maintenance of existing block plantation, raising of new block plantation, supply of rearing appliances and disinfectants for disease management, capacity building, besides, cocoon bank and marketing support etc.

New tasar plantations in 1452 ha were raised and maintained during previous years under the project (including 150 ha during 2019-20). The demonstration and training has been provided for preparation of chawki garden, pruning/pollarding and maintenance of plant. Training on rearing and reeling was imparted to 352 farmers (44 nucleus, 29 basic, 279 commercial rearers and one reeler) under the project.

MKSP Projects for Tasar Development

Promotion of Large scale Tasar culture based Livelihoods Project has been implemented under Mahila Kisan Sashaktikaran Pariyojana (MKSP):Non-Timber Forest Produce in 6 states *viz.*, Jharkhand, Chhattisgarh, Odisha, West Bengal (in coordination with PRADAN), Maharashtra (by BAIF, Pune) and Bihar (in coordination

with BRLPS & PRADAN) with the support of Central Silk Board, Ministry of Textiles and the Ministry of Rural Development (MoRD) since 2013 at an outlay of Rs.7160.96 lakh, covering 36,000 beneficiaries in 23 districts, which are mostly Left-Wing Extremism (LWE) affected. The project in AP was discontinued by SERP, Govt. of Andhra Pradesh during September 2016. CSB is responsible for providing technical inputs and training to field staff of the NGO partners through its field units in various sectors *viz.*, seed, pre-cocoon and post-cocoon. Being the Coordinating agency, CSB would receive funds from the Ministry of Rural Development, GOI and transfer to the Project Implementing Agencies (PIAs) as per the requisition received from the PIA and the action plan.

MoRD has released 90% of allocated fund amounting to Rs. 35.22 crore to CSB under multi-state project, of which Rs. 35.236 crore including interest earned have been released by CSB to the PIAs, PRADAN & BAIF and Rs. 30.79 crore have been utilized by the PIAs. MoRD share is released directly to BRLPS and SERP in respect of Bihar and Andhra Pradesh, respectively. CSB has also released its entire share of Rs. 15.946 crore (CDP share) to all the PIAs including SERP, which has been utilized completely.

Project coverage: Till March, 2020, 33,983 farmers were covered against the target of 36,108 including 26,943 STs (79.28%), 1,930 SCs (5.67%), 3,661 OBC (10.77%) and 1,449 others (4.26%) under the project since inception from 734 revenue villages, 64 blocks and 27 districts of the Project states.

Augmentation of tasar host plants: 2,738 mahila kisans established 1,521 ha tasar host plants in private wastelands through seedlings raised by them in kisan nurseries. Progress was slow as this activity was dovetailed to MGNREGS and the project funds were not utilized for the purpose from 2nd year onwards.

Seed rearing and seed augmentation: Under the seed cocoon production, 352 nucleus seed rearers brushed 2.978 lakh dfls of nucleus seed to produce 116.83 lakh seed cocoons @ 39.23 seed cocoons per dfl. 1,704 seed rearers brushed 13.977 lakh dfls of basic seed procured from BTSSO and BSPUs, to produce 385 lakh seed cocoons @27.55 seed cocoons per dfl. 365 private graineurs processed 284.43 lakh seed cocoons and produced 64.44 lakh commercial dfls @ cocoon:dfl ratio of 4.41:1 and 13,933 commercial rearers brushed 65 lakh dfls procured from the private grainages under the special projects, to produce 2400.87 lakh reeling cocoons.

Capacity Building & Institution Building: Under human resource development programme, various capacity and institution building training programmes were organized under the project. Major ones being the technical training (32,360), training on sectoral activities *viz.*, sustainable agriculture, vegetable cultivation etc. (42,648), community resource persons training (1,651), onfield training to CRPs (81,997), etc. Further, 4,908 mahila kisans were taken to exposure visits (under producer collectives), and two trainers training

programmes were organized. Six training modules for various Human Resource Development activities and technical protocol were prepared and submitted to NRLM, under the projects. Also, 696 producer groups were organized of which 12 were federated.

Upscaling Tasar Projects by SRLMs (with CSB as NRLM Support Organization): CSB being the National Rural Livelihood Mission (NRLM) support organization (NSO) of MoRD is supporting State Rural Livelihood Missions (SRLMs) to take upscaling initiatives in livelihood creation under tasar sector in the areas of project formulation, implementation support and capacity building. MoRD has already approved three MKSP Tasar projects formulated with support of CSB for the states of Jharkhand (25,000), Odisha (5,220), and West Bengal (5,000) covering 35,220 mahila kisans funded by MoRD (60%) and SRLMs (40%) with an outlay of Rs. 63.34 crore, which are under implementation. Besides, project proposals from the states of Chhattisgarh and Bihar are under consideration and proposal for Maharashtra is due for formulation. It is targeted to support about 50,000 mahila kisans at an outlay of Rs.89.43 crore, during the period 2017-20 with funding from MoRD (60%) and SRLMs (40%) with technical support from CSB, as and when sought for.

Oak Tasar Development Project in Uttarakhand

The CSB sanctioned a project for oak tasar development in Uttarakhand for a period of 4 years *i.e.,* from 2016-17 to 2019-2020 with a total financial outlay of Rs. 28.36 crore with a CSB share of Rs. 19.55 crore under TSP/CSS, state share of Rs. 6.83 crore (State Plan & MGN-REGS) and beneficiary share of Rs.1.98 crore. The main objective of the project is to augment oak tasar silk production in the state. The project envisaged to address the infrastructure development for stream-lining the seed sector, chawki rearing, equipment/infrastructure support to conduct seed crop and commercial crops rearing, reeling/ spinning and capacity building of various stakeholders, etc., for forward integration to increase oak tasar silk production and create sustainable livelihood to tribal people inhabiting hilly areas. Apart from this, raising of new *Quercus serrata* plantations in 500 ha has been envisaged with the support from MGNREGS in forest community land to support future development.

The interventions proposed under the project are estimated to increase cocoon production from present level of 1 lakh cocoons/annum to 109 lakh cocoons and silk production is 0.05-3.6 MT/annum of reeled tasar yarn and 1.7 MT of spun yarn/annum at the end of the project involving a total of 2290 project beneficiaries. The project is being implemented by the DoS, Govt. of Uttarakhand in potential districts of the state to create employment opportunities to poor tribal population inhabiting these areas.

CSB has released Central share, amounting to Rs. 415.115 lakh during 2017-18 to the DoS, Govt. of Uttarakhand for implementation of the project. The state has identified

four NGOs for implementation of the project *i.e.,* A.T. India, Suvidha, Sanjeevani & Hifeed. Besides, RSRS, Bhimtal and DoS, Uttarakhand are also involved in implementation of oak tasar project.

A total of 897 beneficiaries were supported under the project up to the end of the year 2019-20. Under the project, 75 rearing sheds and 1 CRC have been const-ructed. Two grainage houses are under construction by NGO, Sanjeevini and two existing grainage houses at RSRS, Bhimtal have been renovated. A total of 2.76 lakh food plant saplings were raised. 7850 dfls were reared and 2,55,115 cocoons were produced @ 33 cocoons per dfl. 55 ha of oak tasar economic plantation was raised under the project.

Japan Overseas Cooperation Volunteers Programme (JOCV)

CSB has been implementing JOCV programme in cooperation with JICA since 2015 in the field of extension methodology in organizing Self-Help Groups/CBOs by involving sericulturists for effective technology transfer in bivoltine clusters. The JICA has deputed five JOCvs to one each in the bivoltine clusters of Karnataka, Tamil Nadu, Andhra Pradesh and two in Uttarakhand during 2019-20 to continue the JOCV activities in these clusters. The programme will continue up to December, 2020.

Support from Other Govt. of India Schemes through Convergence

To match the funding gaps aroused due to the reduced allocation under Centrally Sponsored Scheme-CDP and Central Sector Schemes during XII Plan for sustaining pace of development of silk industry in the country, CSB and MOT facilitated convergence programmes with MGNREGA, RKVY and other Central and State schemes to support plantation activities and infrastructure creation, both for pre and post-cocoon operations up to yarn production and to create sustainable livelihood through tasar culture for tribal women under MKSP through SRLMs. Technical support is being extended to the states through preparation of convergence projects for developing plantations and infrastructure, appraisal of projects submitted from the state and monitored the progress.

As reported from Department of Sericulture of states, during 2019-20, the states have submitted 59 proposals for Rs.711.00 crore and received sanction for 55 proposals worth Rs.624.58 crore. The funds amounting to Rs.481.81 crore were released to sericul-ture departments to support sericulture sector.

Second Phase of "Application of Remote Sensing and Geographical Information System (GIS) in Sericulture" Project

The outcomes of the first phase of the RS&GIS project have been appreciated by the Govt. of India, various State Governments and stakeholders throughout the country. In the second phase of the project, the potential districts, not covered in the earlier phase including NE states, have been selected for assessment and finding suitable areas for introducing sericulture in the non-traditional states. A "Project Atlas" for Sericulture Development (NE states) for the selected 70 districts under the Second Phase

of RS&GIS Project was released and circulated among the concerned state DoSs for further utilization of the information for development of sericulture in the SILK districts. With this, a total of 178 SILKS districts have been covered in 25 states during first and second phases of RS&GIS project. The study in the remaining 50 districts in 18 sericulture practicing states (other than North-eastern states) has also been completed and a "Project Atlas" was released on 05.06.2019 at NESAC (HQ), Umiam, Shillong, Meghalaya.

Geo-tagging of Assets Created by CSB and States under Various Govt. Funded Projects Including NERTPS

NESAC in collaboration with Central Silk Board has developed a mobile app *viz*., "SILKS" for geo-tagging of the assets (plantation and infrastructure) created by CSB and states with various Govt. funded projects. As a part of the project, NESAC has organized a "Hands-on training on GAGAN based geo-tagging through "SILKS" mobile application along with the dashboard visualization system" to 11 officers/scientists of CSB on June 6, 2019 at NESAC, Umiam, Shillong, Meghalaya.

Computer Section of CSB Secretariat has developed a software of Management Information System (MIS) for maintenance of computerized database of beneficiaries who are covered under 11 new projects of NERTPS (excluding 3 new spun silk mills) and programmed in such a way that it produces regular reports with KML (Keyhole Markup language) file format (used to display geographic data) for viewing on Google Earth Pro based on time series. In this process, NERTPS Cell has completed data entry of a total geo-tagged data of 2,812 beneficiaries' assets of 11 new projects under NERTPS, mostly plantation has been done by end of February, 2020 successfully, which is against the target of 2570 beneficiaries to be covered.

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FINANCE & ACCOUNTS

FINANCE & ACCOUNTS

I. RECEIPTS & EXPENDITURE

In accordance with Section 9(1) of Central Silk Board Act, 1948, the Central Government released the Grants-in-Aid to the Central Silk Board during the year 2019-20 for enabling it to exercise the powers and discharge its functions under the Act. The details of the Grant-in-Aid released by the Government of India, Ministry of Textiles, New Delhi & the Expenditure booked by CSB during the financial year 2019-20 and also the provisions approved by the Ministry in BE 2020-2021 are given in Table 4.1.

Table 4.1: Grants-in-Aid Released by Govt. of India and Expenditure Booked by CSB during 2019-20

[Rupees in lakh]

	Budget Heads	GIA Released by MOT during 2019-20	Expenditure booked during the year 2019-20	Outlay [BE] Approved by MOT for the year 2020-21
I. Plan				
	Central Sector Schemes			
I-A	Grants towards Development of Silk Industry			
i.	Grants-in-Aid - Salaries [36]	42,349.00	42,144.40	39,900.00
ii.	Grants-in-Aid - General (Revenue) [31]	13,391.00	13,391.00	13,690.00
iii.	Grants-in-Aid-Creation of Capital Assets [35]	1,450.00	1,450.00	1,000.00
	Sub Total	**57,190.00**	**56,985.40**	**54,590.00**
I-B	Grants towards Development of Silk Industry: Special Component Plan for Scheduled Caste [SPSC]			
i.	Grants-in-Aid - Salaries [36]	8,929.00	8,929.00	8,000.00
ii.	Grants-in-Aid - General (Revenue) [31]	3,000.00	3,000.00	5,500.00
iii.	Grants-in-Aid - Creation of Capital Assets [35]	0.00	0.00	0.00
	Sub Total	**11,929.00**	**11,929.00**	**13,500.00**
I-C	Grants towards Development of Silk Industry Tribal Area Sub Plan: [TSP]			
i.	Grants-in-Aid - Salaries [36]	3,718.00	3,718.00	3,600.00
ii.	Grants-in-Aid - General (Revenue) [31]	2,000.00	2,000.00	2,000.00
iii.	Grants-in-Aid - Creation of Capital Assets [35]	0.00	0.00	0.00
	Sub Total	5,718.00	5,718.00	5,600.00
	Total - Plan	**74,837.00**	**74,632.40**	**73,690.00**

II.	Grants towards Development of Silk Industry in North Eastern Areas (NEA)			
i.	Grants-in-Aid - Salaries [36]	1,399.00	1,399.00	1,900.00
ii.	Grants-in-Aid - General (Revenue) [31]	500.00	500.00	700.00
iii.	Grants-in-Aid-Creation of Capital Assets [35]	550.00	550.00	500.00
iv.	Scheduled Tribal Component – GIA– Gen [31]	100.00	100.00	2,000.00
v.	Grants-in-Aid - Salaries [ST component in NEA]	1,375.00	1,375.00	1,200.00
	Sub Total	**3,924.00**	**3,924.00**	**6,300.00**
	Total - Non - Plan	**3,924.00**	**3,924.00**	**6,300.00**
	GRAND TOTAL [I+II]	**78,761.00**	**78,556.40**	**79,990.00**

As against the total amount of Grants-in-Aid of Rs.78,761.00 lakh sanctioned & released by the Ministry during 2019-20, expenditure to the extent of Rs.78,556.40 lakh only had been booked by CSB during 2019-2020 and the balance of Rs. 204.60 lakh had been surrendered to MoT/GoI, New Delhi, as unspent GIA under the Budget head 'GIA-Salaries' for the financial year 2019-2020.

Loan for the Year 2019-20

No loan amount was released by the Ministry of Textiles to Central Silk Board towards House Building Advance during 2019-20.

Internal Audit

Central Silk Board through its Internal Audit Section at Board's Secretariat along with five Zonal Audit Teams (ZAT) is conducting internal audit of all the units of CSB every year. The designated teams conducted the internal audit during 2019-20 and achieved the target as on March 2020, as per the approved programme. The details are given in Table 4.2.

Table 4.2: Internal audit conducted during 2019-20

#	Name of the I.A. Team	Actual CSB Units covered		Total
		Delegated	Non-Delegated	
01	C.O. I.A Team	31	00	31
02	ZAT – A, CTR&TI, Ranchi	22	01	23
03	ZAT – B, CSR&TI, Berhampore	18	04	22
04	ZAT – C, CSR&TI, Mysuru	19	09	28
05	ZAT – D, RSRS, Jammu	13	08	21
06	ZAT – E, MSSO, Guwahati	04	13	17
	Total	107	35	142

Accordingly, all the Internal Audit teams have conducted the audit of 142 CSB units during 2019-20 successfully and achieved 100% target. In addition to this, the Internal Audit Section had also given audit opinion on 30 files referred by the different sections of CSB, during 2019-20 on service matters and other subjects upto 31st March 2020. Besides, the PDC, MAB, Hyderabad have also conducted the audit of 10 CSB units situated in different parts of the country during 2019-20 and submitted inspection reports. Suitable replies were furnished to con-cerned AGs from time to time.

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SERICULTURE STATISTICS

SERICULTURE STATISTICS

RAW SILK PRODUCTION

The raw silk production in the country reached a record high of 35,820 MT against the target of 38,530 MT during 2019-20 achieving a target of 93% (Table 5.1). The raw silk production was 1% higher during 2019-20 than the previous year (35,468 MT). The shortfall in achievement of targets during 2019-20 was mainly due to delay in onset of monsoon especially in mulberry silk producing belts in South India during 2019 and covid-19 pandemic.

During 2019-20, the bivoltine raw silk production was 7,009 MT against 6,987 MT in 2018-19. There was an increase of 4.5% in production of *vanya* silk in 2019-20 compared to 2018-19. Tasar, eri and muga silk production increased by 5.2%, 4.3% and 3.1%, respectively. The area under mulberry during 2019-20 has increased by 2.1% to 2,39,967 ha from 2,35,001 ha in 2018-19.

State-wise and variety-wise raw silk production during 2019-20 compared to 2018-19 is given in **Annexure IV (A) & IV (B).**

Table 5.1: Raw Silk Production in India

#	Particulars	2019-20		2018-19	% increase over 2018-19
		Target	Achievement		
A	Mulberry plantation (ha)	257000	239967	235001	2.1
B	*Mulberry Raw Silk (MT)*				
	Bivoltine	8500	7009	6987	0.3
	Cross breed	18865	18230	18357	-0.7
	Sub-Total (B)	27365	25239	25344	-0.4
C	*Vanya Silk (MT)*				
	Tasar	3515	3136	2981	5.2
	Eri spun silk	7370	7204	6910	4.3
	Muga	280	241	233	3.1
	Sub-Total (C)	11165	10581	10124	4.5
	Total (B+C)	38530	35820	35468	1.0

Source: *Compiled from the reports received from the State Sericulture Departments.*

Cocoon and Raw Silk Prices

Mulberry Cocoon Prices

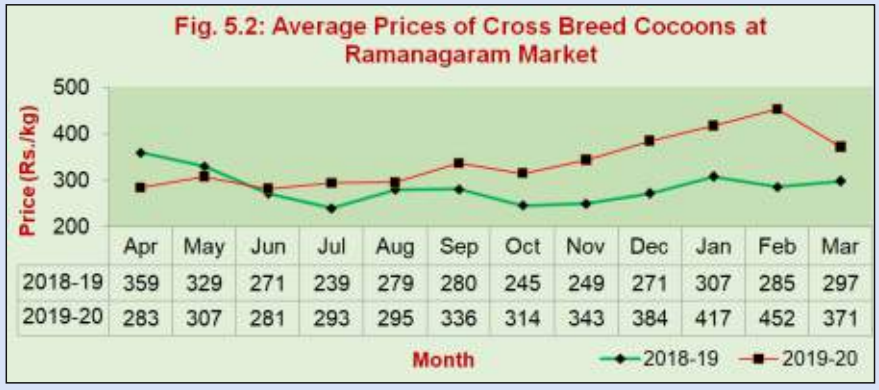
The average prices of bivoltine hybrid reeling cocoons in Government Cocoon Market (GCM), Ramanagaram and cross breed reeling cocoons at GCM, Ramanagaram and Siddlaghatta during 2018-19 and 2019-20 are depicted in Figs.5.1 to 5.3.

Fig. 5.1: Average Prices of Bivoltine Hybrid Cocoons at Ramanagaram Market

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2018-19	447	430	387	307	323	340	313	312	312	338	323	337
2019-20	325	368	357	361	366	410	376	387	441	481	534	439

Data Source: Department of Sericulture, Karnataka

Fig. 5.2: Average Prices of Cross Breed Cocoons at Ramanagaram Market



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2018-19	359	329	271	239	279	280	245	249	271	307	285	297
2019-20	283	307	281	293	295	336	314	343	384	417	452	371

Data Source: Department of Sericulture, Karnataka

Fig. 5.3: Average Prices of Cross Breed Cocoons at Sidlaghatta Market

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2018-19	392	348	313	280	325	330	298	258	300	327	311	300
2019-20	316	317	308	315	333	393	353	375	398	430	453	409

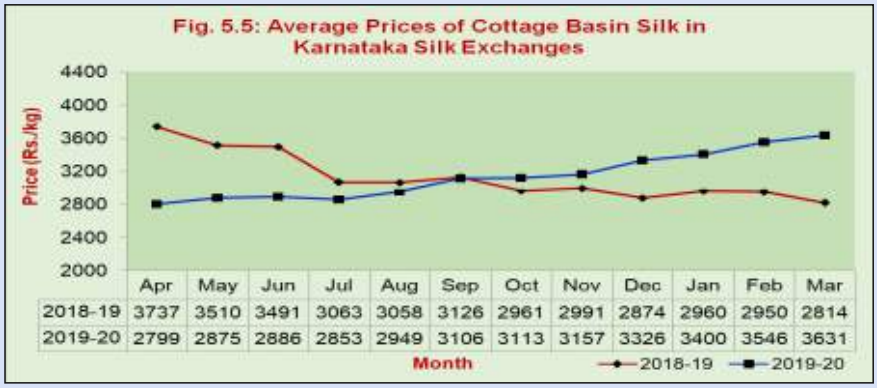
Data Source: Department of Sericulture, Karnataka

Mulberry Raw Silk Prices

The prices of multi-end, cottage basin, dupion and charkha silks transacted in the silk exchanges of Karnataka are shown in Figs. 5.4 to 5.7.

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2018-19	3828	3680	3637	3399	3409	3436	3108	3110	2951	3079	3070	3009
2019-20	2903	2901	2775	2960	2887	2970	3152	3052	3141	3206	3321	3313

Data Source: Department of Sericulture, Karnataka



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2018-19	3737	3510	3491	3063	3058	3126	2961	2991	2874	2960	2950	2814
2019-20	2799	2875	2886	2853	2949	3106	3113	3157	3326	3400	3546	3631

Data Source: Department of Sericulture, Karnataka

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2018-19	2498	2437	2463	2303	2247	2136	2002	1903	1817	1800	1763	1683
2019-20	1746	1756	1732	1444	1679	1798	1866	1901	1903	2137	2182	2164

Data Source: Department of Sericulture, Karnataka

Data Source: Department of Sericulture, Karnataka

Vanya Cocoons and Silk Prices

Prices of cocoon and raw silk of tasar, eri and muga in important markets of *vanya* silk producing states for 2018-19 and 2019-20 are given in Table 5.2.

Table 5.2: Prices of *Vanya* Cocoons and Raw Silk

(Unit: Price: Rs./kg)

Particulars	2019-20	2018-19
A. Tasar Prices*		
1. Reeling cocoon (1000 No.) (Gr I)		
a) Raily	4500-5000	4000-5000
b) Daba	3200-3400	3000-3450
2. Reeled yarn	4000-4500	3200-3500
3. Ghicha yarn	2000-2200	1800-2100
B. Eri Prices**		
1. Cut cocoons (Superior quality)	750-950	700-900
2. Spun yarn	2500-2900	2250-2800
C. Muga Prices **		
1. Reeling cocoon (1000 No.)	3000-6000	1800-6000
2. Raw silk		
A) Warp yarn	19400-25500	18000-25000
B) Weft yarn	17000-19000	16500-20000

Note: ** Tasar prices pertain to Chaibasa (Jharkhand) , Raigarh (Champa), Chhattisgarh and Bhagalpur (Bihar) markets * * Eri and Muga prices pertain to Guwahati (Assam) market.*

Source: *Raw Material Bank, CSB, Chaibasa and Regional Office, CSB, Guwahati*

Prices of Imported Chinese Mulberry Raw Silk

The month-wise landed prices of imported Chinese mulberry raw silk of 4A and above grades along with its sale price at Varanasi market during 2019-20 are shown in Figs. 5.8 and 5.9.

Fig.5.8: Prices of Imported Chinese Mulberry Raw Silk (4A & Above Grades) during 2019-20

	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Min	48.0	48.0	46.0	46.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Max	55.0	55.0	53.0	53.0	55.0	55.0	55.0	55.0	55.0	50.0	50.0	50.0

Data Source: Regional Office, CSB, Mumbai collected through M/s Shah Trading Co., Mumbai

Fig.5.9: Prices of Imported Chinese Mulberry Raw Silk (4A & above Grades) in Varanasi during 2019-20

	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Min	52.9	49.9	44.6	50.1	54.4	54.0	55.7	54.6	53.7	55.4	56.2	51.8
Max	53.3	53.4	50.7	57.0	55.7	54.8	55.7	55.6	54.1	56.8	57.4	55.1

Data Source: Certification Centre, CSB, Varanasi

Silk Exports

Fabrics, made-ups and readymade garments are the major items of India's silk exports. The export earnings from silkgoods was Rs.1,745.65 crore (US$ 246.67 million) during 2019-20 compared to Rs.2,031.89 crore (US$ 291.36 million) in 2018-19. Variety-wise export earnings from silk and silk goods during 2018-19 and 2019-20 are given in Table 5.3.

Table 5.3: Export Earnings from Silk during 2019-20 and 2018-19

Items	2019-20		2018-19		% change	
	Crore Rs.	Mn.US$	Crore Rs.	Mn.US$	Crore Rs.	Mn.US$
Raw silk	1.15	0.16	1.36	0.19	-15.43	-15.79
Natural silk yarn	15.62	2.2	23.34	3.35	-33.07	-34.33
Fabrics and made-ups	982.91	138.95	1022.43	145.85	-3.87	-4.73
Readymade garments	504.23	71.18	742.27	107.3	-32.07	-33.66
Silk carpets	143.43	20.30	113.09	16.11	26.84	26.01
Silk waste	98.31	13.88	129.39	18.56	-24.02	-25.22
Total	**1745.65**	**246.67**	**2031.89**	**291.36**	**-14.09**	**-15.34**

Source: *Compiled from the HS code statistics downloaded from the websites of DGCIS, Kolkata and Ministry of Commerce & Industries.*

The USA, the UAE, China, the UK and France are the top five export destinations for Indian silkgoods, which accounts for 33.94%, 9.08%, 5.07%, 5.06% and 4.12%, respectively of total export earnings during 2019-20. The export earnings from these 5 top countries amounted to Rs.1,000.72 crore (US$ 140.97 million) accounting for 57.33% of total export earnings of Rs.1,745.65 crore (US$ 246.676 million). Country-wise export earnings from silk goods during 2018-19 and 2019-20 are given in Table 5.4.

Table 5.4: Country-wise Export Earnings from Silk during 2019-20 and 2018-19

#	Country	2019-20		2018-19		% Change	
		Crore Rs.	Mn.US $	Crore Rs.	Mn.US $	Crore Rs.	Mn.US$
1	U.S.A.	592.49	83.34	372.66	53.07	58.99	57.04
2	U.A.E.	158.54	22.43	372.76	53.72	-57.47	-58.25
3	China	88.47	12.47	102.12	14.60	-13.37	-14.59
4	U.K.	88.42	12.45	107.39	15.39	-17.66	-19.10
5	France	72.79	10.28	67.24	9.58	8.26	7.31
6	Australia	60.62	8.52	60.56	8.58	0.10	-0.70
7	Italy	55.06	7.72	57.78	8.22	-4.71	-6.08
8	Sudan	54.19	7.61	97.68	14.20	-44.53	-46.41
9	Germany	51.03	7.14	72.25	10.29	-29.37	-30.61
10	Nigeria	38.53	5.46	96.37	13.74	-60.02	-60.26
11	Other countries	485.51	69.25	625.08	89.97	-22.33	-23.03
	Total	**1745.65**	**246.67**	**2031.89**	**291.36**	**-14.09**	**-15.34**

Silk Imports

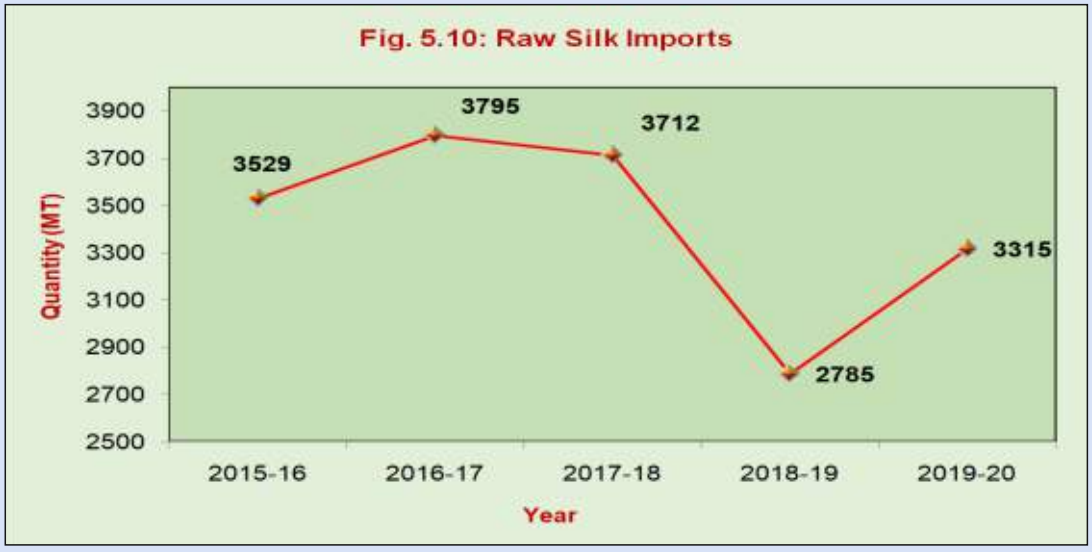
Raw silk is the major item of imports, which accounts for about 74.84% of the total imports followed by fabrics and made-ups. During 2019-20, the value of silkgoods import was Rs.1,535.72 crore (US$ 216.95 million) compared to Rs.1,497.46 crore (US$ 213.52 million) in 2018-19. The import value of raw silk and other silk goods during 2018-19 and 2019-20 are given in Table 5.5.

Table 5.5: Value of Import of Silk during 2019-20 and 2018-19

Item	2019-20		2018-19		% Change	
	Crore Rs	Mn.US $	Crore Rs	Mn.US $	Crore Rs.	Mn.US$
Raw silk	1149.32	162.38	1041.40	148.38	10.36	9.44
Silk yarn	102.07	14.42	114.26	16.34	-10.67	-11.75
Fabric s and made -ups	236.91	33.48	249.85	35.78	-5.18	-6.43
Readymade garments	27.93	3.91	55.55	7.80	-49.72	-49.87
Silk carpets	1.45	0.21	0.03	0.005	4457.05	4516.71
Silk waste	18.04	2.55	36.37	5.22	-50.40	-51.15
Total	**1535.72**	**216.95**	**1497.46**	**213.52**	**2.55**	**1.60**

Source: *Compiled from the HS code statistics downloaded from the websites of DGCIS, Kolkata and Ministry of Commerce & Industries.*

The total import of raw silk increased by 19.03% from 2,785 MT in 2018-19 to 3,315 MT in 2019-20. The quantity of raw silk import during last five years is depicted in Fig. 5.10.



Data Source: DGCIS, Kolkata

ANNEXURES

ORGANISATION CHART OF CENTRAL SILK BOARD

CHAIRMAN

SHRI SANJAY SHARAN
VICE CHAIRPERSON

SHRI R.R. OKHANDIAR
CEO & MEMBER SECRETARY

31st March, 2020

DR. R.K. MISHRA Director (Addl. Charge) Board's Secretariat Bengaluru (Kar)	DR. V. SIVAPRASAD Director CSR & TI Berhampore (WB)	DR R.K. MISHRA Director NSSO Bengaluru (Kar)	DR. PANKAJ TEWARY Director CSR&TI Mysuru (Kar)	DR. ALOK SAHAY Director CTR&TI Ranchi (Jharkhand)	DR. SUBHAS V. NAIK Director CSTRI Bengaluru (Kar)	DR. SUKHEN ROY CHOWDHURY Director CSR&TI, Pampore (J&K)	DR. JALAJA KUMAR Scientist-D CMERTI Lahdoigarh, (Assam)
RO.....6 SMOI.....2	RSRS.....3 REC.....9	ZSSO.....1 FARM.....17 SSPC.....19 SSC.....1 SCPC.....2 SSTL.....1	RSRS.....5 SSBS.....1 REC.....17 SUB UNIT.....2 FARM.....1	RSRS.....6 REC.....5 P4 STATION.....1 RMB.....5	STSCS.....12 RSTRS.....1 ZO.....1	RSRS.....2 REC.....6 SUB UNIT.....1 FARM.....1	RSRS.....2 M-REC.....2 E-REC.....1 FIELD LAB.....3

DR. NARENDAR REBELLY
Director (Finance)
Board's Secretariat
Bengaluru (Kar)

DR. R.K. MISHRA
Director (Addl. Charge)
CSGRC
Hosur (TN)

DR. R.K. MISHRA
Director (Addl. Charge)
SBRL
Bengaluru (Kar)

BSMTC - Basic Seed Multiplication & Training Centre
BTSSO - Basic Tasar Silkworm Seed Organisation
CSGRC - Central Sericultural Germplasm Resource Centre
CMERTI - Central Muga Eri Research & Training Institute
CSR&TI - Central Sericultural Research & Training Institute
CSTRI - Central Silk Technological Research Institute
CTR&TI - Central Tasar Research & Training Institute
MSSO - Muga Silkworm Seed Organisation
NSSO - National Silkworm Seed Organisation
REC - Research Extension Centre

RMB - Raw Material Bank
RO - Regional Office
RSRS - Regional Sericultural Research Station
RSTRS - Regional Silk Technological Res. Station
SBRL – Seri-biotech Research Laboratory
SCPC - Seed Cocoon Procurement Centre
STSC - Silk Technical Service Centre
SMOI - Silk Mark Organisation of India
SSC - Sericulture Service Centre
SSPC - Silkworm Seed Production Centre
SSTL - Silkworm Seed Technology Laboratory
ZSSO - Zonal Silkworm Seed Organisation

DR. ALOK SAHAY
Director (Addl. Charge)
BTSSO
Bilaspur, (Chhattisgarh)

CTSSS.....1
BSMTC.....18
FIELD UNIT.....1

SHRI BORPUZARI PRABHAT
Scientist-D
MSSO
Guwahati, (Assam)

FARM.....10
MUGA SSPC.....1
ERI SSPC.....2
ERI FARM.....1

INSTITUTE-WISE UNITS OF CENTRAL SILK BOARD, BANGALORE AS ON 31.03.2020

CSR & TI MYSORE (28)

RSRS Bangalore(Kar)
RSRS Salem (TN)
RSRS Ananthpur (AP)
RSRS,Chamrajnagar(Kar)
RSRS, Mulugu(Tel)

SSBS,Coonoor(TN)

REC Madivala (Kar)
REC Chitradurga(Kar)
REC Rayachoty(AP)
REC Vikarabad(Tel)
REC Krishnagiri (TN)
REC Samayanallur(TN)
REC Parbhani (MH)
REC, Baramati (MH)
REC,V.Kota(AP)
REC, Udumalpet(TN)
REC,Eluru (AP)
REC,G.palayam(TN)
REC,Amaravathi(MH)
REC,Hoshangabad(MP)
REC,Palakkad(Ker)
REC,Aurangabad(MH)
REC, Koppal (Kar)

S-unit Bidar (Kar)
S-unit, Maddur (Kar)
S-unit,Osamanabad (MH)

P4 Hassan (Kar)

RSRSs = 5
SSBS, = 1
RECs = 17
S-Unit = 3
Farm = 1
Total = 27

CSR&TI PAMPORE (11)

RSRS Sahaspur(UTR)
RSRS Jammu(J&K)

REC,Ghumarwin (HP)
REC, Barnoti (J & k)
REC, Lamberi (J&K)
REC, Basti (UP)
REC, Varanasi (UP)
REC, Haldwani(UTR)

S-Unit,Panchkula(Har)
P4 Manasbal -BV (J&K)

RSRSs = 2
RECs = 6
S-Unit = 1
Farm = 1
Total = 10

CSR & TI BERHAMPORE (13)

RSRS Koraput (ORI)
RSRS Kalimpong (W.B)
REC,Mongoldai(Assam)
REC Rangpoo (SIKKIM)
REC,Bhandra(JHA)
REC, Bagmara (WB)

RSRS,Jorhat(Assam)
REC.Agartala(Tripura)
REC,Shillong(Meghalaya)
REC,Dimapur(Nagaland)
REC,Aizwal(Mizoram)
REC,Sille (AR.P)

RSRSs = 3
RECs = 9
Total = 12

CTR & TI RANCHI (13)

RSRS Jagadalpur (CHHA)
RSRS Baripada (ORISSA)
RSRS Warrangal (A.P)
RSRS Bhandara (MAH)
RSRS Bhimtal (UTR)
RSRS,Dumka (JHA)
REC Palampur (H.P)
REC Champa (CHHA)
REC,Kapista (W.B)
REC T. Kullen(MANIPUR)
P4 Station, Chakradharpur(JHA)
RMB,Chaibasa (Jha)

RSRSs = 6
P4 Station= 1
RECs = 4
RMB = 1

Total = 12

CSTRI, BANGLORE (KAR) (15)

STSC, Jammu(J&K)
STSC,Ramanagaram (Kar)
STSC,Sidlaghatta(Kar)
STSC,Rayapura(Kar)
STSC,Salem(TN)
STSC,Cuttack(Ori)
STSC,Dehradun(U'khand)
STSC, Bhagalpur(Bihar)
STSC, Bilaspur(CHHA)

RSTRS, Dharmavaram(AP)
RSTRS, Kancheepuram(TN)
RSTRS, Malda(WB)
RSTRS,Guwahati(Assam)
RSTRS,Varanasi (UP)

RSTRS = 5
STSC = 9
Total = 14

NSSO, BANGALORE(42)

KARNATAKA
SCPC Kunigal
SCPC K.R.PET

P3 Mysore
P2 Dharmapura (BV)
P2 Gavimata (BV)
P2 Nagenahalli(MV)
Grainage/P1,Chikka malavadi

SSPC Bangalore
SSPC Mysore
SSPC Ramanagaram
SSPC Vijayapura
SSPC Chintamani
SSPC K.R.Nagar
SSPC Malavalli

SSTL Kodathi

ASSAM
SSPC Jorhat

RO's (6)
RO,New Delhi (Delhi)
RO,Mumbai (MH)
RO,Kolkata (WB)
RO,Hyderabad (Tel)
RO,Bhubaneswar (ORI)
RO,Guwahati (Assam)

TAMIL NADU
P2 Krishnagiri (MV)
P2 Y. Hills (BV)

SSPC Dharmapuri
SSPC,Hosur

ANDHRA PRADESH

P2 Horsely Hills
P2, Madakisra
P2 Parigi (MV)

SSPC Hindupur
SSPC Madanapalle

SSC Vijayawada

KERALA
SSPC Palakkad
P2 Palakkad

BIHAR

P2 Purnea

JAMMU & KASHMIR

SSPC Udhampur

CSGRC, Hosur (TN)

SBRL,BANGALORE(Kar)

WEST BENGAL
ZSSO,Raiganj

P3 A.falkatta
P2 Karnasubarna
P2 Dhubulia

SSPC Berhampore
SSPC D.B Pur
SSPC Kolitha
SSPC Raiganj

UTTARANCHAL

P3 Majra
P2 Sheeshambara
SSPC Dehradun

SSTL = 1
ZSSOs = 1
BSFs = 17
SSPCs = 19
SSCs = 1
SCPCs = 2

Total =41

BTSSO, BILASPUR(CHHA) (21)

CTSSS,Kargi Kota(CHHA)
BSMTC Chinnoor (A.P)
BSMTC Rampachodavaram(AP)
BSMTC Kharswan (JHA)
BSMTC Kathikund (JHA)
BSMTC Madhupur (JHA)
BSMTC Ambikapur (CHHA)
BSMTC Pali (CHHA)
BSMTC Bastar (CHHA)
BSMTC Balaghat (M.P)
BSMTC Boirdadar (CHHA)
BSMTC Bhandara (MAH)
BSMTC Nowrangpur (ORISSA)
BSMTC Sundargarh (ORISSA)
BSMTC Patelnagar (W.B)
BSMTC Bhagalpur (Bihar)
BSM&TC Bilaspur (CHHA)
BSM&TC Baripada (ORI)
BSM&TC Kendujhar(ORI)
Field Unit,PallaharA (ORI)

BSM&TCs = 18
Field Unit = 1
CTSSS = 1
Total = 20 **Total = 20**

CO,Bangalore (Kar)
SMOI, Palakkad (Ker)
SMOI, Chennai (TN)

MSSO, GUWAHATI (15)

P3 Nongpah (MEGH)
P3 Rompara (MEGH)
P3 Adokgiri (MEGH)
P3 Hahim (ASSAM)
P3 Mendipathar (MEGH)
P3, Naryanapur (Assam)
P3, Kowabill (Assam)
P3,Paliapool (Assam)
P3,Kobulong (Nagaland)
P4, Tura (Meg)

MUGA-SSPC Kaliabari(Assam)

Eri BSF,Topatali (Assam)

ERISSPC, Azara (Assam)
ERISSPC,Hosur(TN)

Farms = 10
M-SSPC = 1
E-SSPC = 2
E-BSF = 1
Total = 14

CMER&TI LADOIGARH (7)

RSRS Boko (ASSAM)
RSRS Imphal (MANIPUR)
MUGA-REC, Lakhimpur (Assam)
MUGA-REC, Coochbehar (WB)

MUGA Field Lab,Titabar (Assam)
ERI REC,Fatehpur (UP)

RSRS = 2
M-REC = 2
E-REC = 1
Field lab = 1
Total = 6

ABSTRACT

CSB - HQ	->	1
CSR&TI	->	3
CTR&TI	->	1
CSTRI	->	1
NSSO	->	1
MSSO	->	1
CMERTI	->	1
CSGRC	->	1
SBRL	->	1
SSTL	->	1
ROs	->	6
SMOI	->	2
RSTRS	->	5
RSRS	->	18
SSBS	->	1
REC	->	39
REC, S-unit	->	4
RMB	->	1
ERI-BSF	->	1
STSC	->	9
BTSSO	->	1
CTSSS	->	1
BSM&TC	->	18
Field Unit	->	1
ZSSO	->	1
SCPC	->	2
SSPC	->	22
SSCs	->	1
Field Lab	->	1
P4 Stations	->	4
P3 Stations	->	12
P2 Stations	->	13
P1 Stations	->	1
Total	->	**176**

BTSSO - Basic Tasar Silkworm Seed Organization
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CTR & TI - Central Tasar Reasearch & Training Instititute
CTSSS - Central Tasar Silkworm Seed Station
MSSO - Muga Silkworm Seed Organisation

NSSO - National Silkworm Seed Organisation
P4,P3,P2 - Basic Seed Farms
REC - Research Extention Centre
RSRS - Regional Sericultural Research Station
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SCPC - Seed Cocoon Procurement Centre
SSC - Sericulture Service Centre
SSPC - Silkworm Seed Production Centre
SSTL - Silkworm Seed Technology Laboratory
S-UNIT - Sub unit attached to REC
BSM&TC - Basic Seed Multiplication & Training Centre

ZSSO - Zonal Silkworm Seed Organisation
M-SSPC/M-REC - Muga SSPC/ Muga REC
E-SSPC/E-REC - Eri SSPC/ Eri REC

Composition of the Board as on 31.03.2020

Sl. No.	Name & Address of the Member
I	**UNDER SECTION 4(3)(a)**
1	Vacant Chairman
II	**UNDER SECTION 4(3)(b)**
2	**Shri Sanjay Sharan,** Joint Secretary (Silk)& Vice-Chairman, CSB, Ministry of Textiles, Govt. of India, "Udyog Bhavan", New Delhi-110 011.
3	**Dr. Shakuntla Devi,** Chief Controller of Accounts, Ministry of Textiles, "Udyog Bhavan", New Delhi-110 011
4	**Shri Rajit Ranjan Okhandiar, IFS** Member Secretary, Central Silk Board, Bengaluru.
III	**UNDER SECTION 4(3)(C)**
5	**Shri B.N. Bache Gowda** Member of Parliament (Lok Sabha) New Delhi
6	**Shri Ajay Nishad** Member of Parliament (Lok Sabha) No.197, North Avenue, New Delhi-110 001.
7	**Shri D.K. Suresh** Member of Parliament (Lok Sabha) # 804, Kaveri Apartment, Dr. B.D. Marg, New Delhi 110 011.
8	**Shri Ashok Kumar Yadav** Member of Parliament (Lok Sabha) New Delhi.
9	**Shrimati Sampatiya Uikey,** Member of Parliament (R S), No.16-C, Ferozeshah Road New Delhi
10	**Shri Sanjay Singh,** Member of Parliament (RS) #129-131, North Avenue New Delhi-110 001.
11	**Shri Rajendra Kumar Kataria, IAS** Secretary, Horticulture, Agriculture & Sericulture Department, Govt. of Karnataka, Room No.404, 4th Floor, 3rd Gate, M.S. Building, Bengaluru-560 001.
12	**Smt. C.P. Shylaja, IAS,** Commissioner for Sericulture Development & Director of Sericulture, Government of Karnataka, 5th Floor, Gate No.1,Dr. Ambedkar Veedi, M.S. Building, Bengaluru-560 001.
13	**Shri S. Yogesha,** S/o Shri Shivananjappa, Grama: Rangapura, PO: Marithammena Halli, Dodda Magge Hobli, Arakalagudu, Tq.,Hassan, Dist. Karnataka.
14	**Shri K. Mudde Gowda** S/o Shri Kempe Gowda, No.189, 4th Cross, PTC Layout, Nethaji Nagar, Alanahalli, Mysuru, Mysuru District.
15	**Shri P. Somanna,** S/o Late Puttaswamy, Suttur Vilage, Biligere Hobli, Nanjangud Taluq, Mysuru District.
V	**UNDER SECTION 4(3)(e)**
16	**Tmt. P. Sri Venkada Priya, IAS** Director (Sericulture), Department of Sericulture, Government of Tamil Nadu, Nethaji Nagar,Hasthampatty, Salem-636 007
VI	**UNDER SECTION 4(3)(f)**
17	**Smt. Madhumita Choudury, IAS** Commissioner of Textiles & Sericulture, Government of West Bengal, New Secretariat Building, 6th Floor, Block-A, Kiran Sharkar Ray Road, Kolkata-700 001.

VII	UNDER SECTION 4(3)(g)
18	**Shri Chiranjiv Choudhary, IFS** Commissioner of Sericulture, Government of Andhra Pradesh, Department of Sericulture, TTPC Building, 1st floor, Old Market Road, Chutugunta, Besides Mini Raythu Bazar, Guntur-522 007.
19	**Shri Mukta Nath Saikia, ACS** Director of Sericulture, Government of Assam, Directorate of Sericulture, (Near Research Gate) Gauwahati-781 022.
20	**Shri Narendra Kumar Sinha, IAS** Director, Handloom & Sericulture Dept, Government of Bihar, Vikas Bhavan, Patna-800 015
21	**Shri Sudhakar Xalxo, IAS** Director, Directorate of Rural Industries (Sericulture Sector), Government of Chhattisgarh, 4th Floor, Block-A, Indravathi Bhawan, New Raipur.
22	**Shri Sandeep Kumar, IAS** Principal Secretary & Commissioner, Cottage & Rural Industries, Government of Gujarat, Block No.7, Udyog Bhavan, Gandhinagar-382 011.
23	**Shri Uday Pratap, IAS** Director, Directorate of Handloom, Sericulture & Handicrafts, Department of Industries, Mines & Geology, Govt. of Jharkhand, Udyog Bhavan, 3rd Floor, Near All India Radio, No.5, Ratu Road, Ranchi-834001.
24	**Shri Kavindra Kiyavat, IAS** Commissioner of Sericulture, Government of Madhya Pradesh Lower Basement, Satpura Bhawan, Bhopal-462 004.
25	**Shri Madan Pal Arya,** Director, Directorate of Sericulture, Government of Uttar Pradesh, L D A Commercial Complex, 1st Floor, Vishwas Khand-III Gomti Nagar, Lucknow -226 010.
26	**Shri Anand Kumar Yadav,** Director, Directorate of Sericulture, Govt. of Uttarkhand, Premnagar, Dehradun.
VIII	UNDER SECTION 4(3)(h)
27	**Shri Mohmaad Afzal Bhat, IAS** Principal Secretary, Govt. of Jammu & Kashmir, Agriculture Production Dept. Room No.205 / 206,2nd Floor, Civil Secretariat, Srinagar-190 001.
IX	UNDER SECTION 4(3)(i)
28	Commissioner-cum-Secretary, Handlooms, Textiles & Handicrafts Department, Government of Odisha, Bhubaneswar-751 001
29	Secretary (Textiles), Government of Maharashtra Co-operation, Marketing & Textile Department, Room No.331, Annex, Mantralaya, Mumbai-400 032.
30	**Shri S.K. Barchung,** Director Department of Sericulture & Weaving, Government of Meghalaya, Nokrak Building, Lower Lachumiene, Shillong-793 001.

X	PERMANENT INVITEES
1	**The Textile Commissioner,** Ministry of Textile, Govt. of India New CGO Building, # 48, New Marine Line, P.B. No. 11500 Mumbai-400 020.
2	**The Chairman,** Indian Silk Export Promotion Council Plot No.340, Pace City 2, Udyog Vihar-6, Sector 37, Gurgaon-122 001.
3	**Shri L. Venkatram Reddy,** Director of Sericulture (FAC) Telangana, Hyderabad Govt. of Telangana, Road No. 72, Prashashan Nagar, Film Nagar-Post, Hyderabad-500 033.
4	**Dr. S. Ayyappan,** (Chairman, RCC, CSB), No. 106, Sankalp Basant # 40 & 41, Akka Mahadevi Road, Industrial Suburb, J.P. Nagar Mysuru-570 008.

***

Component-wise target *vs* achievements made under Beneficiary components of Silk Samagra (2017-18 to 2019-20)

#	Components	2017-18		2018-19		2019-20		Total	
		Targ.	Ach.	Targ.	Ach.	Targ.	Ach.	Targ.	Ach.
1	Support for Mulberry Plantation Development - Raising high yielding mulberry varieties (acre)	1500	1658	2000	2184	2300	6072	5800	9914
2	Support for development of Kisan nursery (acre)	133	24	160	87	160	32	453	143
3	Assistance for irrigation and other water conservation and usage techniques (acre)	1000	1997	2000	1041	2800	920	5800	3958
4	Assistance for construction of Rearing House (No.)	1515	2200	2647	1619	2856	4768	7018	8587
5	Supply of Rearing Appliances (No.)	1750	2710	2773	936	2774	4867	7297	8513
6	Production units for Biological inputs (No.)	20	24	32	8	32	18	84	50
7	Popularisation of Chawki Rearing Centre (No.)	35	35	48	11	48	27	131	73
8	Multi End Reeling Machines (No.)	40	33	45	3	45	33	130	69
9	Automatic Reeling Units - 400 Ends (Imported) (No.)	3	5	4	1	5	21	12	27
	Automatic Reeling Units (200 ends) (No.)	2	1	4		4	6	10	7
10	Automatic Dupion Silk Reeling Units(142 ends)(No.)	1	1	3		3		7	1
11	Assistance for Twisting Units (480 ends) (No.)	5	12	9	8	9	14	23	34
12	Pupae Processing Units (No.)	2	1	3	1	3	3	8	5
13	Vanya Reeling/Spinning Machine (No.)	1292	152	1653	1092	1655	150	4600	1394
14	Buniyaad Reeling Machines (No.)	2500	450	690	3280	700	2682	3890	6412
15	Hot Air Driers (No.)	25	3	28	5	28	2	81	10
16	Loom Up-gradation-different equipment (No.)	630		1415		1445	71	3490	71
17	CFC for silk dyeing & fabric processing and accessories (No.)	11		22		30	1	63	1
18	Support to Adopted Seed Rearers (No.)	200	80	400		200	139	800	219
19	Seed Testing Equipment for Private & State Grainages (No.)	30	1	44		51		125	1
20	Up-gradation or setting up new Industrial Seed Production unit by state & Private RSPs (No.)	1	2	4		6	1	11	3
21	Support to Private Tasar Graineurs (No.)	200	285	330	49	389	47	919	381
22	Strengthening of Tasar Seed Multiplication Centres (No.)	12	54	13		13	1	38	55

Statement Indicating the State-wise Funds Released under Silk Samagra for Implementation of Beneficiary Components (2017-18 to 2018-19) (Rs. in lakh)

#	State	2017-18	2018-19	2019-20
1	Karnataka		9.06	5507.29
2	Andhra Pradesh	857.74	496.39	2748.01
3	Telangana	210.83	497.07	1021.66
4	Tamil Nadu	1110.44	619.91	1452.2
5	Maharashtra	81.52	16.17	475.55
6	Kerala			305.35
7	Uttar Pradesh	267.94	624.12	455.77
8	Madhya Pradesh		98.18	0
9	Chhattisgarh	1119.69	4.73	218.32
10	West Bengal	115.47	40.41	447.8
11	Bihar	301.33		0
12	Jharkhand	396.26	370.01	44.65
13	Odisha	115.67	214.76	261.93
14	Jammu & Kashmir	631.88		0
15	Himachal Pradesh	1037.2	1298.97	213.79
16	Uttarakhand	1554.12	173.6	928.98
17	Haryana			217.76
18	Punjab	128.52		107.9
19	Assam	**Covered under NERTPS**	44.04	74.14
20	BTC		2.52	0
21	Arunachal Pradesh		5.04	0
22	Manipur			0
23	Meghalaya		2.1	0
24	Mizoram		5.04	0
25	Nagaland		63	0
26	Sikkim			0
27	Tripura			0
	Total for States	**7928.61**	**4585.12**	**14481.08**
	Central Silk Board	**120.63**	**70.85**	**22.475**
Total under scheme for components		**8049.24**	**4655.97**	**14503.55**

CENTRAL SECTOR SCHEME - SILK SAMAGRA - (INTEGRATED SCHEME FOR DEVELOPMENT OF SILK INDUSTRY)

(Targets and Achievements during 2017-18 to 2019-20)

#	Milestones	Unit	2017-18		2018-19		2019-20	
			Target	Achvmnt	Target	Achvmnt	Target	Achvmnt
1	**R&D / Transfer of Technology / Training / IT initiative**							
	No. of research projects to be concluded	No.	36	36	50	50	50	58
	Technologies to be disseminated	No.	56	56	56	54	56	51
	Capacity Building & Training Training under CSB Schemes	No.	15270	17292	15500	13885	15750	13498
2	**Silkworm Seed Production**	dfls in lakh						
	Production of basic and commercial seeds for mulberry (Bivoltine, ICB, and CB), tasar, muga and eri sectors	Total	**515.11**	**465.86**	**515.73**	**559.65**	**595.00**	**479.67**
		Mulberry	449.94	399.09	449.92	495.22	530.40	411.35
		Tasar	51.10	52.81	51.66	51.87	52.65	55.97
		Muga	8.07	7.08	8.15	5.34	5.65	5.71
		Eri	6.00	6.88	6.00	7.22	6.30	6.64
3	**Area expansion & silk production**							
	Area	Lakh ha	2.42	2.24	2.46	2.35	2.57	2.39
	Total raw silk production in the country	MT	33,840	31,906	35,960	35,468	38,530	35,820
	Bivoltine Raw Silk Production (3 A & above)	MT	6,200	5,874	7,200	6,987	8,500	7,009
	Raw silk production in North Eastern Region	MT	7,365	7,166	7,455	7,680	7,539	7,891
	Production of *Vanya* Raw Silk	MT	*10,365*	*9,840*	*10,660*	*10,124*	*11,165*	*10,581*
	Tasar	MT	3,450	2,988	3,650	2,981	3,515	3,136
	Eri	MT	6,675	6,661	6,750	6,910	7,370	7,204
	Muga	MT	240	192	260	233	280	241
4	**Employment Generation**	Lakh persons	87.98	86.04	96	91.78	100	94.30
5	**SMOI Activities**							
	Members Enrollment	No.	250	271	250	291	260	280
	Silk Mark Label distribution	Lakh No.	27.5	23.94	27	25.46	30	29.71
	Progammes/ events/ Expos/ Road shows etc., to be organized	No.	450	553	480	463	500	549
	Cocoon & Raw silk Centres	No.	-	-	11	-	18	15
6	**Allocation and Expenditure**	Rs. in crore						
	Total Allocation & Expenditure		**542.50**	**542.50**	**601.29**	**598.70**	**787.61**	**785.56**
	Of which administrative expenses		381.00	381.00	481.29	481.29	577.70	575.65
	Scheme cost		161.50	161.50	120.00	117.41	209.91	209.91

State-wise Silk Production During 2019-20

State	Mulberry plantation (ha)	Mulberry Raw Silk (MT)			*Vanya* Silk (MT)				Total (M+V) (MT)
		Bivoltine hybrids	Cross breed	Total	Tasar	Eri	Muga	Total	
Andhra Pradesh	44607.2	1446.0	6511.0	7957.0	4.5			4.5	7961.5
Arunachal Pradesh	278.0		3.5	3.5		58.0	2.5	60.5	64.0
Assam	2095.0	57.6		57.6		3680.0	159.9	3839.9	3897.4
Bihar	598.0		2.2	2.2	45.5	8.2		53.7	55.9
Bodoland	413.0	11.0		11.0		1369.3	38.0	1407.3	1418.2
Chhattisgarh	242.4	0.8	6.9	7.7	472.2			472.2	479.9
Haryana	213.7	0.8		0.8					0.8
Himachal Pradesh	3183.0	31.0		31.0					31.0
Jammu & Kashmir	8183.0	117.0		117.0					117.0
Jharkhand	552.4		2.6	2.6	2399.0	0.1		2399.1	2401.7
Karnataka	106384.3	2015.7	9126.9	11142.6					11142.6
Kerala	144.1	13.4		13.4					13.4
Madhya Pradesh	2018.0	39.2	16.0	55.2	6.0			6.0	61.2
Maharashtra	7154.0	407.5	1.0	408.5	19.1			19.1	427.6
Manipur	3291.2	135.0	14.2	149.2	5.0	347.4	2.1	354.6	503.8
Meghalaya	3289.0	49.9	4.2	54.1		1102.9	35.1	1138.0	1192.1
Mizoram	1678.8	73.3	20.0	93.3	0.1	7.7	2.4	10.3	103.6
Nagaland	694.4	10.7	1.2	11.9	0.0	587.8	0.4	588.3	600.1
Odisha	457.2	2.0	0.1	2.1	130.0	5.1		135.1	137.2
Punjab	1164.3	3.3		3.3					3.3
Sikkim	300.0	1.0		1.0					1.0
Tamil Nadu	23268.0	2037.5	117.0	2154.4					2154.4
Telangana	4770.0	289.4	0.1	289.5	7.9			7.9	297.4
Tripura	2064.0	26.7	83.8	110.5					110.5
Uttar Pradesh	3711.6	162.9	95.2	258.1	17.5	33.2		50.7	308.7
Uttarakhand	3478.4	39.0		39.0	0.0	1.4		1.4	40.4
West Bengal	15733.9	37.9	2224.1	2262.1	29.6	3.0	0.1	32.6	2294.7
Total	**239966.8**	**7008.7**	**18230.0**	**25238.6**	**3136.4**	**7204.0**	**240.5**	**10580.9**	**35819.6**

State-wise Silk Production During 2018-19

State	Mulberry plantation (ha)	Mulberry Raw Silk (MT)			*Vanya* Silk (MT)				Total (M+V) (MT)
		Bivoltine hybrids	Cross breed	Total	Tasar	Eri	Muga	Total	
Andhra Pradesh	41915.0	1465.0	6011.0	7476.0	5.0			5.0	7481.0
Arunachal Pradesh	300.0	3.3		3.3	0.0	53.6	2.6	56.2	59.5
Assam	2370.0	52.0		52.0		3563.0	157.0	3720.0	3772.0
Bihar	598.0	0.4	7.2	7.6	38.4	8.7		47.1	54.7
Bodoland	413.0	17.4		17.4		1200.8	36.2	1237.0	1254.4
Chhattisgarh	261.0	0.8	8.1	8.9	340.0			340.0	348.9
Haryana	206.0	0.7		0.7					0.7
Himachal Pradesh	2743.0	33.9		33.9					33.9
Jammu & Kashmir	8183.0	117.9		117.9					117.9
Jharkhand	502.0		3.1	3.1	2372.0			2372.0	2375.1
Karnataka	104578.0	2067.1	9525.2	11592.3					11592.3
Kerala	148.0	16.0		16.0					16.0
Madhya Pradesh	3088.0	60.5	21.1	81.6	18.0			18.0	99.6
Maharashtra	7913.0	488.6	7.8	496.4	22.7			22.7	519.0
Manipur	3300.0	124.1	13.1	137.1	5.2	320.0	1.8	327.0	464.1
Meghalaya	3209.0	49.3		49.3		1103.5	34.3	1137.8	1187.1
Mizoram	4094.0	64.8	18.5	83.3	0.1	7.9	0.8	8.7	92.0
Nagaland	394.0	10.2	2.9	13.1		606.4	0.6	607.0	620.1
Odisha	537.0	1.9	0.9	2.8	123.0	5.3		128.3	131.0
Punjab	1159.0	3.1		3.1					3.1
Sikkim	185.0	0.4		0.4					0.4
Tamil Nadu	20128.0	1926.3	146.2	2072.5					2072.5
Telangana	4383.0	214.1	0.0	214.2	9.8			9.8	223.9
Tripura	1935.0	90.0	140.0	230.0					230.0
Uttar Pradesh	3754.0	107.5	123.1	230.6	22.0	36.5		58.5	289.1
Uttarakhand	3305.0	35.6	0.5	36.1	0.0			0.0	36.1
West Bengal	15400.0	36.2	2329.0	2365.2	24.5	3.9	0.2	28.6	2393.8
Total	**235001.0**	**6986.9**	**18357.6**	**25344.5**	**2980.6**	**6909.6**	**233.4**	**10123.6**	**35468.1**

Source: Compiled from MIS reports received from State Sericulture Departments