ENGLISH SECTION

CONTENTS

HIGHLIGHTS OF ACHIEVEMENTS OF CENTRAL SILK BOARD

INDIAN SILK INDUSTRY PERFORMANCE

- A record raw silk production of 35,468 MT achieved by the country during 2018-19 compared to 31,906 MT in 2017-18, thereby recording an increase of 11.2%.
- Out of the total raw silk production in the country, mulberry sector contributed a total of 25,345 MT (BV - 6,987 MT and CB - 18,358 MT) compared to 22,066 MT (BV - 5,874 MT and CB - 16,192 MT) in 2017-18.
- The Vanya sector, comprising tasar, eri & muga silks, produced 10,124 MT of raw silk with 6,910 MT of eri, 2,981 MT of tasar and 233 MT of muga during 2018-19.
- Import-substitute bivoltine mulberry silk production increased from 5,874 MT (2017-18) to 6,987 MT during 2018-19, an increase of 18.9 %.
- The silk exports registered a quantum jump of Rs.2031.88 crore in 2018-19 from Rs.1649.48 crore in 2017-18. On the other hand, the raw silk import drastically reduced from 3712 MT in 2017-18 to 2785 MT in 2018-19.

RESEARCH & DEVELOPMENT

During the year 2018-19, a total of 24 new research projects have been initiated and 50 projects concluded by various R&D institutes of CSB. Currently, a total of 109 research projects *viz.,* 61 in Mulberry Sector, 38 in Vanya Sector and 10 in Post-cocoon Sector are under progress. During the year, a high yielding mulberry genotype C-9, suitable for low input soils was identified and a mulberry variety PPR-1, suitable for temperate conditions with high rooting percentage was developed.

Mulberry Sector

- Initiated All India Coordinated Experiments-Mulberry (AICEM) phase IV with three new high yielding mulberry varieties *viz.,* AGB-8, PPR-1, and C1360 at 20 test centres across the country.
- Initiated one Final Yield Trial (FYT) with six triploid mulberry genotypes and Preliminary Yield Trial with 25 selected mulberry hybrids
- Started FYT at 4 different test centres by plantation of short-listed hybrids.
- Standardized Distinctiveness, Uniformity and Stability (DUS) characterization for mulberry and published by PPV & FRA, New Delhi.
- Popularized high yielding silkworm hybrid G11 x G19 with yield potential of 68.0 kg cocoons /100 dfls, in South Indian states and B.Con.1 x B.Con.4 in West Bengal, Odisha, Jharkhand and North-eastern States.
- Developed 25 Oval FCs and 15 Dumbbell FCs, utilising silkworm genetic resources from Bulgaria.
- Tested MASN silkworm lines for their suitability in various agro-climatic conditions of Southern India.
- Developed Cauvery Gold (MV11 X S8), an improved cross breed with 62 to 74 kg/100 dfls.
- Developed a thermo-tolerant bivoltine double hybrid (N21 x N56) with yield potential of 72 kg cocoons/100 dfls and 21.5% shell, through molecular marker assisted selection breeding. In addition, two new productive bivoltine hybrids *viz.,* CSR52N x CSR26N and (CSR52N.S8N) x

(CSR16N.CSR26N) with BmNPV tolerance and improved cross breeds *viz.,* ICB17 x S8 and ICB 14 x N23 with a yield potential of 70 kg/100 dfls and 2A-3A silk have been developed and are under field testing.

- Popularized 'Rot-fix' for management of mulberry root rot disease with 68-74% of efficiency in reviving the infected plants.
- Tested 'Ankur', a combination of organic and inorganic nutrients.
- Developed a technology for the management of root rot disease in Kashmir region.
- Developed micro-propagation protocol with a success rate of 83% for the variety Goshoerami.
- Developed and validated LAMP - a technique to detect *Nosema Bombycis.*
- Developed and evaluated sex-pheromone "Uzi-lure", in collaboration with NBAIR-Bengaluru, for effective management of uzi fly at laboratory and field conditions.
- Developed synthetic oviposition stimulant blend, Arka Eggstra for enhancing the egg laying in silkworm.
- Recommended 14 mulberry varieties, 13 mulberry bivoltine silkworm hybrids and 12 mulberry cross breed hybrids for commercial exploitation in the last ten years.
- Improved the mulberry productivity from 50 MT to 60 MT/ha/yr and cocoon yield from 48 kg to 60.3 kg/100 dfls during the period 2005-06 to 2017-18.

Vanya Sector

- Tested a total of 10 accessions of *T. arjuna* for drought tolerance, accession No.525 and No.523 were found superior in terms of higher stress tolerant index with better plant growth, physiological and biochemical characters.
- Initiated multi-locational trials with C9 having moisture stress tolerance in eastern and north-eastern region of India.
- Popularized two Som accessions (S3 & S6) resistant to leaf spot disease, leaf blight and leaf rust in the field. *Ailanthus grandis* (Barpat) with a leaf yield of 32 MT/ha/yr has been popularised as an alternative host plant for eri silkworm.
- Sequenced the genome of muga silkworm *Antheraea assamensis* and the genome size was 500mb.
- Developed BDR 10, a tasar silkworm breed.
- Developed Pebrine Visualization Solution (PVS) to detect pebrine easily, in tasar silkworm, by enhancing the clarity of smear, removing of cellular debris, liberation and visibility of pebrine spores in the tasar mother moth.
- Released four Vanya host plants and 5 vanya silkworm breeds for commercial exploitation in last 10 years.

Post-cocoon Sector

- Developed a conveyor drying machine with capacity of 1.2 MT cocoons per day.
- Developed a new machine "Sonalika" to replace bhir reeling of muga cocoons.
- Developed eri cocoon opening machine, pre-treatment equipment for cocoon cooking and baby dyeing machine.
- Developed technology for development of diversified silk knitwear products/ garments using international quality Indian silk.
- Developed technology for extraction of sericin from silk yarn using HTHP method.

- Developed "Tasar Plus" for cooking of tasar cocoons.
- Developed and optimized sericin-based finish on textile materials, that is durable.
- Developed suitable finishing treatment technology for silk fabrics to improve its photo degradation resistance.
- Developed silk nano-composite fibres (with fibroin, sericin & active drugs composition) using electro-spinning technique.
- Developed a different type of silk melange yarns using different types of silk waste.
- Developed pre-treatment method for improving the reelability of muga cocoons.
- Developed a new type of yarn (Void silk) by introducing the PVA yarn during reeling and spinning processes.
- Developed technology for improving the reelability of cocoons using high temperature and high pressure cooking and chemical recipe.
- Developed cost-effective electronic jacquard for handloom and procured infrared drying machine for silk (SCTH, Kanchipuram).

Patents & Commercialization

- Commercialized Ankur, an organic and inorganic nutrient supplement for soil fertility and health.
- Commercialized Ankush, an eco & user-friendly silkworm body and rearing seat disinfectant.
- License was given to M/s. Digiflic Controls (India) Pvt. Ltd., Bengaluru for powder duster.
- Licence for Amruth, an eco-friendly formulation for the control of silkworm diseases, Grasserie and Flacherie was renewed.
- Patent filed for Rot fix, a broad spectrum eco-friendly formulation for control of root rot disease in mulberry.
- Patents were awarded for i) Improved handloom using pneumatic lifting mechanism for jacquards, and ii) An improved reeling-cum-twisting machine.
- Patents obtained for:
  - A process for dyeing silk with lac dye
  - Motorized tasar reeling charkha
  - Development of process protocol for purification (removal of heavy metals) of mulberry silk sericin for cosmetic applications.
  - CSTRI eri eco-cocoon degumming machine & process standardization.

Capacity Building & Training

- A total of 13,885 persons were trained by CBT Division and CSB institutes against the target of 12,825 persons. In addition, exposure to sericulture was given to 3,131 college students and school children.
- Organized two batches of foundation training programmes covering 57 newly recruited CSB scientists.
- A total of 357 farmers covering all the sub-sectors of silk were taken for exposure visit to developed sericulture clusters and R&D Centres for inspiring them broadening their vision and knowledge levels.
- Thirty-five candidates successfully completed the Post-Graduate Diploma in Sericulture (PGDS) and 54 persons were enrolled for 2018-19 session.

- Twenty-three Sericulture Resource Centres (SRCs) were established in different Seri-clusters including North-East region covering 2942 beneficiaries.
- A total of 376 new enrolments took place in Certificate in Sericulture (CIS, a 6 - months' course run by IGNOU in association with CSB, taking total enrolments to 1196.
- CSB, as a Physical Verification Agency (PVA), carried out the physical verification of 209 training centres under Samarth Scheme of Ministry of Textiles.
- CSB developed 18 qualification files for conducting skill training in post-cocoon sectors of silk industry of which, 6 qualification packs are NSQF aligned by National Skill Development Agency (NSDA) through Textile Sector Skill Council.

IT Initiatives

- DBT MIS for the scheme 'Development of Silk Industry' was developed and security audit clearance was obtained from STQC.
- 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. A total of 410 advisories were sent as 53,14,565 SMSs.
- SMS service through mobile phone on day-to-day market prices of silk and cocoons for the benefit of the farmers and other stakeholders of the industry continued.
- Sericulture Information Linkages and Knowledge System (SILKS) portal was 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.
- Central Silk Board website "csb.gov.in" in bi-lingual *viz.,* English and Hindi is providing information for the benefit of common citizen with the details about the organization, schemes and other details with features of publicity of sericulture plan programmes, achievements and sharing of success stories.
- Aadhaar enabled bio-metric attendance system is being implemented at Central Silk Board.
- A web based Farmers and Reelers Data Base (FRDB) has been developed to have database of farmers and reelers at national level. As on 31st March 2019, details of 6,80,180 farmers and 12,187 reelers have been entered.
- MIS for Intensive Bivoltine Sericulture is developed and hosted on dedicated servers for trouble-free access by all stake holders.

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 produced 483.03 lakh dfls of commercial mulberry seed (Bivoltine hybrids: 406.20 lakh dfls and Cross-breed: 76.83 lakh dfls). Similarly, vanya seed organizations (BTSSO, MSSO & ESSO) have produced and distributed 22.09 lakh dfls of basic seed (tasar: 17.14 lakh; muga: 4.04 lakh; eri: 0.91 lakh).

Swachhata Abhiyan

During the year, Central Silk Board and its Research & Development Institutes across the country took up Swachhata Abhiyan by involving its Officers, Officials, sericulture stake holders, local dignitaries, etc. Swachhta programmes were undertaken in Office Campus, Hostels, Grainages and Staff Quarters. Awareness programmes through Street Plays, Road Shows were conducted in public places. Many competitions like Slogan Writing, Essay Writing, and Innovative Ideas for Cleanliness were conducted amongst the staff. Guest lecturers were arranged on Waste Segregation, E-office.

The R&D Institutes through their sub units took up Swacchta Abhiyan in many sericulture clusters with a view to bring in awareness amongst the stakeholders. The importance and benefits of green waste compositing and water conservation were highlighted during the programmes. Four toilets, one each in four sericulture clusters of Ghokhlakhona, Nelli, Chukunjapara and Tura, were constructed for the benefit of women Sericulturists. Distributed toilets cleaning materials, dustbins to the Govt. schools and conducted competitions on Swachhta Abhiyan and distributed prizes to the winners among the students

Special Events

Distribution of Buniyaad reeling machine by Smt. Sushma Swaraj, Union Minister of External Affairs at Surging Silk – Accomplishment and Way Forward, a Mega Silk Event organized at Vigyan Bhawan, New Delhi on February 9, 2019

Felicitation of Shri Sarbananda Sonowal, Chief Minister, Assam on the occasion of Foundation Stone Laying Ceremony of Eri Spun Silk Mill at Borgong on January 29, 2019

Laying of Foundation Stone for Eri Spinning Mill at Udalgiri by Smt. Smriti Zubin Irani, Union Minister of Textiles on February 22, 2019

Launch of Oak Tasar Development Project by Shir Trivendra Singh Rawat, Chief Minister, Uttarakhand and Shri Ajay Tamta, Union Minister of State for Textiles on June 22, 2018

Smt. Smriti Zubin Irani, Union Minister of Textiles inaugurating 6th India International Silk Fair at Pragati Maidan, New Delhi on October 16, 2018

Smt. Smriti Zubin Irani, Union Minister of Textiles evinced keen interest in sericulture activities and products displayed on the occasion of National Workshop on Silk Samagra at Sangaipat, Manipur on October 9-11, 2018

Shri Anant Kumar Singh, Secretary (Textiles), Govt. of India and Shri K.M. Hanumantharayappa, Chairman, CSB at National Workshop on Silk Samagra at New Delhi on May 17, 2018

Shri Ajay Tamta, Union Minister of State for Textiles and Shir Satyadev Pachauri, Minister of Silk, Khadi & Gramodyog, Textiles, Export Promotion, Govt. of Uttar Pradesh amongst other dignitaries at National Workshop on Silk Samagra at Lucknow on December 22, 2018

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 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 Sector/Pre-cocoon Sector and (c) Industry or Post-cocoon Sector. The focus of sericulture sector during 2018-19 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 192 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 & silk sector.
- Production of basic & 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 list of members nominated during 2018-19 is given in Table 2.1.

Table 2.1: New members nominated during 2018-19			
#	Name and designation of nominated member	Period of nomination	Notification details
1.	Dr. Shakuntala Devi, Chief Controller of Accounts, MoT, GoI, New Delhi	25.09.2018 to 24.09.2021	25011/4/2017-Silk dtd.25.09.2018 under section 4(3)(b)
2.	Shri Neeraj Shekhar Singh, Member of Parliament No.3, Gurudwara Rakabganj Road, New Delhi -110 001 Village & Post – Ibrahim Patti 221 716. District Ballia, Uttar Pradesh	08.05.2018 to 07.05.2021	25012/5/2017-Silk dtd 26.04.2018 under Section 4(3)(c)
3.	Shri Sandeep Kumar, IAS Principal Secretary and Commissioner, Cottage & Rural Industries, Govt. of Gujarat, Block No.7, Udyog Bhavan, Gandhinagar – 382 011.	30.05.2018 to 29.05.2021	25011/4/2017-Silk dtd.30.05.2018 under Section 4(3)(g)

List of Members of the Board as on 31.03.2019 under different Sections is at Annexure–II. During the period under report, a Standing Committee Meeting was held on 19.09.2018 and a Board Meeting was conducted on 05.12.2018 at Bengaluru.

Changes in Senior Level Officers

1. Dr. Satish Verma, Scientist-D took over the charge as Director I/c, CSGRC, Hosur w.e.f. 09.07.2018.
2. Dr. Ranjana Das, Scientist-D took over the charge as Director I/c at CMER&TI, Lahdoigarh, Jorhat w.e.f. 01.08.2018
3. Dr. Pramod Kumar, Scientist-D REC, Basti, took over the additional charge of Regional Office, CSB, Lucknow w.e.f. 06.09.2018.
4. Dr. Alok Sahay assumed the charge of Director, CTR&TI, Ranchi w.e.f. 25.10.2018 consequent upon his transfer from BTSSO, Bilaspur (Chhattisgarh).
5. Dr. Narendra Rebelly, IRS (IT: 1998) assumed the charge as Director (Finance), CSB, Bengaluru w.e.f. 02.11.2018 for a period of 5 years.
6. Dr. R.K. Mishra, Director, NSSO, CSB, Bengaluru was given additional charge of CSGRC, Hosur w.e.f. 01.01.2019.
7. Dr. Ravindra Singh Teotia assumed the charge of Director, CSR&TI, Mysuru w.e.f. 01.02.2019.
8. Dr. Sukhen Roy Chowdhury assumed the charge of Director, CSR&TI, Pampore w.e.f. 05.02.2019.
9. Dr. Joytsna Tirkey assumed the charge of Director, CMER&TI, Lahdoigarh w.e.f. 15.02.2019.

Staff Strength

The sanctioned and working strength of CSB staff as on 31st March, 2019 is indicated in Table 2.2.

The Board recruited 58 officers and staff in different categories (Group: A-57 and C-1) against existing vacancies. During the same period, 269 officers and staff in different categories (Group: A-79, B-118 and C-72) superannuated/ resigned/ expired/ voluntarily retired from the Board's Services.

Table 2.2: Central Silk Board staff strength as on 31.03.2019

Group	Sanc-tioned	FILLED					Filled TOTAL
		GN	SC	ST	OBC	PWD	
A	646	311	111	49	81	2	554
B	1232	724	228	119	67	13	1151
C	1084	501	268	136	97	14	1016
Total	2962	1536	607	304	245	29	2721
%		56.45	22.31	11.17	9.00	1.07	100

Implementation of Reservation Policy

Central Silk Board has been following the reservation policy as per the directions of Govt. of India for persons belonging to Scheduled Castes, Scheduled Tribes and Other Backward Classes under direct recruitment and also for promotions. Apart from the above, the reservation policy is also extended to the Persons with Disabilities for direct recruitment in all groups and for promotions 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 preventive vigilance by streamlining of procedures

The units of the Central Silk Board which are considered sensitive areas have been identified and measures for preventive vigilance, surveillance and detection have been taken. Besides, the Chief Vigilance Officer of the Central Silk Board, the Directors / Officers-in-Charge of the Central Silk Board stationed at different Zones have been entrusted with the task of carrying out surprise inspections of the units/sensitive areas, clearly demarcating their areas of jurisdiction. The Inspection Reports, if and when received, are invariably scrutinized and action is taken wherever necessary. However, during 2018-2019, 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 Directors of the Research Institutes/Research Stations and the officers of the rank of Scientist-D holding independent charge of various units have been delegated with powers to function as disciplinary authority in respect of certain categories of officials. The complaints and petitions received are examined and action taken as and when a *prima facie* case is established. During the period under reference, 23 complaints were received and all of them were disposed off.

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 31-03-2019, three disciplinary cases were pending for disposal. For the disciplinary cases initiated in the Central Silk Board under Rule 14 of Central Civil Services (Classification, Control & Appeal) Rules, 1965, *viz.,* major penalty proceedings, serving as well as retired officers

of the Central Silk Board are appointed as the Inquiry Officers, with instructions to complete the inquiry process within the specified time limit. Five retired Judicial Officers (retired District Sessions Judges) have been empanelled to be appointed as the Inquiry Officers, as and when disciplinary cases crop up.

c. Sexual Harassment Complaints

As regards complaints relating to sexual harassment at work places received from women employees/women farm workers of Central Silk Board, Complaints Committees have been constituted both at Secretariat and Institutes' level to act as Inquiring Authority in cases involving such complaints.

d. Observance of Vigilance Awareness Week

In accordance with the guidelines issued by the Ministry/Central Vigilance Commission, Vigilance Awareness Week was observed at Central Silk Board's Headquarters and all its subordinate units from 29.10.2018 to 03.11.2018 in a befitting manner.

e. Implementation of Right to Information Act, 2005

Under the Right to Information Act, 2005, 35 CPIOs and 215 APIOs have been designated at CSB Secretariat and field units. During the year, the Public Information Cell has received 175 applications from the public, of which 4 applications were pending for disposal as on March 31, 2019. Thirty-three appeals were also received during the year and all the appeals were disposed off.

Parliament Related Matters

Parliamentary Questions

During 2018-19, CSB furnished reply materials for 90 Parliamentary Questions that were related to Ministry of Textiles (Table 2.3).

Table 2.3: Reply furnished to Parliamentary Questions

House of the Parliament	Monsoon Session (July-August)	Winter Session (December - January)	Budget Session (February-March)	**Total**
Lok Sabha	18	30	7	55
Rajya Sabha	13	14	8	35
Total	**31**	**44**	**15**	**90**

No Parliamentary Committee visited during the year under report.

Tariff on Silk Products & Anti-Dumping Duty

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 (job works)	9988	5

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

b. Customs Duty on import of Silk Items

Table 2.5 indicates applicable basic Customs Duty and total duty including IGST on import of various silk products.

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	30.09
2	Raw silk	5002	10	0	10.30
3	Silk waste	5003	15	0	15.40
4	Silk yarn	5004-5006	10	5	15.82
5	Silk fabric	5007	20	5	25.82
6	Silk machinery **	8445	5	18	24.74

** Inclusive of cess.*
*** Basic Customs Duty excemptions (0%) on import of automatic reeling machinery*

c. Anti-Dumping Duty

Anti-dumping duty of US $ 1.85 per kg is in place on import of raw silk of 3A Grade and below, originated in or exported from China PR vide Gazette Notification Extraordinary, Part I, Section 1, Notification number 14/17/2014-DGAD, dated 4th December, 2015, which will be in force till December 2020.

PROJECTS / SCHEMES

CENTRAL SECTOR SCHEMES

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

The activities of Central Silk Board are carried out by the 192 units located across the country through Central Sector Scheme (CSS) *viz.*, "Integrated Scheme for Development of Silk Industry (ISDSI). The scheme has the following four components:

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

The Cabinet Committee on Economic Affairs (CCEA) has approved continuation of the above ongoing Central Sector Scheme, ISDSI, beyond XII Plan for three years from 2017-18 to 2019-20 under the new name ***"Silk Samagra"***. The component-wise details with year-wise break-up of allocation approved by Govt. of India are given in Table 3.1.

Table 3.1: Component and year-wise break-up of allocation under ISDSI (Silk Samagra)

(*Rs. in crore*)

#	Scheme Components	Fund Allocation (Central Share)			
		2017-18	2018-19	2019-20	Total
1	Research & Development, Training & IT Initiatives	309.37	394.05	378.49	1081.91
2	Seed Organization	178.16	245.47	217.07	640.70
3	Co-ordination & Market Development	139.96	156.64	132.27	428.87
4	Quality Certification System, Export, Brand Promotion & Technology up-gradation	2.50	3.60	4.10	10.20
	Total	**629.99**	**799.76**	**731.93**	**2,161.68**
	Of which provision for Beneficiary oriented Components implemented by States (Including SCSP, TSP and NE) (Provisional)	***93.22***	***155.68***	***174.10***	***423.00***

Note: *The Scheme outlay of Rs.2161.68 crore include a provision of Rs.1400.00 crore towards administrative / establishment expenditure like payment of salaries & allowances, wages, pension & retirement benefits etc. for CSB employees and pensioners and balance Rs.761.68 crore is towards development of silk industry. This encompasses Rs.423.00 crore for releasing to States for implementation of beneficiary-oriented interventions.*

All the four major components of Silk Samagra are interlinked and aimed at a common goal. While the R&D units develop technology packages, impart training on improved technology programmes to the stakeholders and transfer the technology to the field through frontline demonstration; the seed production units produce basic and commercial seeds of the improved silkworm breeds developed by the research institutes.

The Secretariat and Regional Offices of the Central Silk Board conceive and implement the developmental schemes in coordination with the state governments to ensure that the output generated from these programmes are disseminated to the stakeholders for the development of silk industry. The units under the Quality Certification System support 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.

The beneficiary-oriented 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

- Ongoing Research and Development in nine main Research Institutes (core research), its nested 22 Regional Sericultural Research Stations finetune the technology for local needs and frontline demonstration of technologies.
- Undertake Research and Development (R&D) activities through developing improved food plants, silkworm breeds, standardization of silkworm seed production techniques, improved package of practices for silkworm rearing.
- Developing post-cocoon technologies and machineries in post-cocoon operations, by-product utilization, product development & diversification.
- Technology dissemination to identified clusters through Cluster Promotion Programme (CPP), Institute Village Linked Programme (IVLP) etc.
- Trainers training, technology up-gradation programme, resource development programme, beneficiary empowerment, capsule training for farmers/reelers, krishi mela, etc.
- Harnessing IT applications for 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

- Maintaining the four-tier seed multiplication network, supply of nucleus and basic seeds to own units and state seed production units.
- Leadership role in bivoltine commercial seed production and encourage private participation for enhanced seed production.
- Promotion of private graineurs in vanya sector.
- Technical support to the state seed production units and Registered Seed Producers.
- Institutionalization of quality certification to own 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

- Conceiving, implementing and monitoring Plan Programmes through CSB headquarters and Regional Offices.
- Forging effective synergies in dovetailing assistance from schemes of other Ministries through convergence.

- Statistical analysis of silk production, prices, import and export.
- Publicity, accounts management, internal audit and Official Language implementation.
- Coordination with Ministry and State Sericulture Departments.
- Price stabilization of tasar and muga cocoons through Raw Material Banks, administrative and financial management 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.
- Ensuring quality and purity of silk in the traded 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 and thereby, creating an impetus towards quality improvement of raw silk which 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) Up-gradation of reeling and processing technologies in silk, and (e) Capacity Building through Skill Development/ Enterprise Development Programme.

Scheme Highlights

1. Emphasis on collaborative research to strengthen genetic base and hybrid vigour.
2. Promote R&D to increase crop cycles, increase systematic plantation of Vanya silks for controlled rearing.
3. Promote horizontal expansion of sericulture in non-traditional areas including North-East through cluster approach.
4. Promote soil testing and issue of Soil Health Card to beneficiaries.
5. Promote organic farming and eco- friendly Vanya Silks.
6. Provide critical input support to the beneficiaries for productivity and quality improvement from Kisan Nursery to fabric production.
7. Use of silkworm by-products *viz.*, pupa for poultry feed, sericin for cosmetic applications and product diversification into non-woven fabrics, silk denim, silk knit etc., for added value realization.
8. Upgrade state seed multiplication facilities and encourage private participation in seed production to match the raw silk production target.
9. Strengthening Seed Act through registration and reporting by seed production centres, basic seed farms and extension centres automated by developing web-based software.

10. Upgrade reeling technology and promote indigenously developed Automatic Reeling Machine and improved Vanya reeling devices under 'Make in India' Programme.
11. Promote credit flow to sericulture - promote SHG / Cluster approach.
12. Brand promotion – Generic promotion of 'Indian Silk' & creation of global image for Indian silk products.
13. Extension of single window-based SILKS (Sericulture Information Linked Knowledge System) portal to cover more districts for expansion of sericulture.
14. Ensure development of sericulture database for better planning. Free SMS service on cocoon and raw silk prices to all registered farmers & reelers and state functionaries.
15. Mobile apps, audio, video spots, Institute Village Linked Programme and Cluster Promotion Programme to farmers.

Expected Outcome from the Scheme

1. Increase in the silk production from the level of 30,348 MT during 2016-17 to 38,500 MT by end of 2019-20.
2. Enhanced production of mulberry silk (multivoltine and bivoltine) from 21,273 MT to 27,000 MT including bivoltine silk from 5,266 MT to 8,500 MT.
3. Increase in the Vanya silk (muga, eri and tasar) production from 9,075 MT to 11,500 MT.
4. Increase in the production level of upto 4A grade mulberry (bivoltine) silk from about 15% to 25%.
5. Increase in the productivity of mulberry raw silk from 100 kg/ha to 111 kg/ha.
6. Employment generation from 85 lakh to 100 lakh persons by 2019-20.

Sharing Pattern under Beneficiary-oriented Components

The funding pattern for individual beneficiary-oriented Silk Samagra components is given in Table 3.2.

Table 3.2: Silk Samagra – Sharing Pattern under Beneficiary Components

Category	Sharing pattern (%)		
	GOI (CSB)	State	Bene-ficiary
General States	50	25	25
General States – For SCSP & TSP	65	25	10
Special Status States & NE states	80	10	10
SCSP / TSP	80	10	10
Group Activity	100%	--	--

Hundred percent 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 state departments in their farms. If the group activities are implemented by States/NGOs, then the sharing pattern will be 75:25 by GoI & State/NGO/Beneficiary. The implementation of this is monitored by both CSB and states.

Table 3.3 indicates year-wise financial progress in respect of Silk Samagra scheme including beneficiary-oriented schemes/SCSP/ TSP during the years 2017-18 and 2018-19.

Table 3.3: Silk Samagra – Financial progress				
				(Rs. in crore)
Scheme	2017-18		2018-19	
	Allocation	Expenditure	Allocation	Expenditure
Silk Samagra -Total	**161.50**	**161.50**	**120.00**	**117.41**
Funds released to States for beneficiary components (*)	80.49	80.49	46.33	46.33
of which (i) General States & NE	27.49	27.49	6.33	6.33
(ii) SCSP	23.00	23.00	25.00	25.00
(iii) TSP	30.00	30.00	15.0-0	15.00
(*) A statement indicating details of funds released to States and status of their utilization under the Beneficiary components of Silk Samagra during 2017-18 and 2018-19 are furnished in Annexure III (a). Component-wise details of physical targets and achievements during 2017-18 and 2018-19 are furnished in Annexure III (b).				

Helpline for Silk Samagra

A helpline and exclusive e-mail ID, Facebook account & Twitter handles have been created to address the grievances of the stakeholders, create awareness and share information. These are:

Helpline No.: 080-26684431
Facebook: https://www.facebook.com/central.silkboard
Twitter: http://twitter.com/csbmot/
Website: http://www.csb.gov.in/

HIGHLIGHTS OF ACHIEVEMENTS

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 season and region specific host plant varieties, silkworm breeds, technologies and machineries to enhance production of quality silk in the country. Considerable progress has been made, both in mulberry and vanya silk sector to provide necessary technical and scientific inputs to strengthen the silk industry and thereby, providing economic benefit to the stakeholders in all areas of sericulture starting from egg to fabric production and marketing. Central Silk Board has also taken many steps to transfer the benefits of research and developments to the end-users; prominent among them are, Cluster Promotion Programme (CPP), IVLP etc. These efforts have helped to boost production of quality bivoltine silk to meet the demands of the domestic market.

The major institutes engaged 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 vanya 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 both mulberry and non-mulberry seed sectors and Seribiotech Research Laboratory at Bengaluru (Karnataka), assists all the research institutes by carrying out research on biotechnological 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

Important activities and major outputs of the R&D activities of these Institutes during 2018-19 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 and training activities by CSRTI, Mysuru cater to the needs of mulberry sericulture farmers of Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana, Maharashtra and Madhya Pradesh. The salient achievements for the year 2018-19 are as follows:

Mulberry Crop Improvement, Production and Protection

- In order to identify superior mulberry accessions having adaptive functional traits associated with climate change, 37 mulberry accessions with different characteristics were evaluated and leaf yield ranged from 194.17 (Mount Abu-1) to 769.17 g/plant (Khakad-1) among the test accessions. Out of these 4, 15, 16 and 26 accessions showed significantly higher leaf yield over the check varieties *viz.,* V1, S13, Vishala and Anantha, respectively.
- For optimization of regeneration protocol using cotyledon and hypocotyl explants of G4 mulberry, one hormonal combination containing 0.5 mg/L TDZ showed regeneration frequency of 88% and 64% from cotyledon and hypocotyl explants, respectively. The hardened plants were transferred to soil containing cups. Regeneration protocol in tobacco, MS medium with BAP (1 mg/L) + NAA (0.1 mg/L) showed maximum multiple shoot bud induction and regeneration of shoot lets. Full strength MS medium without any hormone/additives showed maximum rooting of the regenerated shoot lets. Received transgene constructs containing CA+PEPCK genes and CA gene from University of Hyderabad. Genetic transformation experiments are being continued using cotyledon/hypocotyls explants of mulberry cultivar G4 and leaf disc explants of tobacco.
- Evaluated and identified superior mulberry hybrids with drought adaptive traits under optimal and sub-optimal irrigated conditions, 21 mulberry hybrids with more than 60% rooting have been multiplied in nursery beds and subsequently transplanted in experimental plots for establishment.
- Validated the stress response of 40 alkaline stress contrast genotypes by screening them in hotspots (REC- Koppal & Kinakanahalli) and pots (CSRTI, Mysuru). Identified two genotypes (MI-0025 and MI-764) tolerance to alkaline stress which can be used further in crossing programme for development of mapping population after confirmation.
- Forty eight mulberry genotypes were screened against existing 16 SSR markers and new set of SSR markers will be procured from UAS, Bengaluru and these markers will be screened against diverse mulberry genotypes and 350 diverse germplasm were multiplied in CSRTI, Mysuru and RSRS, Kodathi.

- Progressive higher accumulation of antioxidants and osmolytes (proline & glycine betaine) were observed during moisture stress in tolerant genotypes and hence, these specific antioxidants as well as osmolytes accumulated in stress can be utilized as a biochemical marker/indicator for moisture stress tolerance in mulberry.
- Under popularization of Rot-fix for management of root rot disease of mulberry, among sericulture farmers of southern states, about 2414 kg of Rot-fix has been distributed among 498 farmers in Karnataka, Andhra Pradesh, Tamil Nadu and Telangana by conducting 130 demonstrations. The feedback data showed 68.62% control of disease due to application of Rot-fix.
- Higher mulberry leaf yield was recorded in drip irrigation with reduced tillage and mulching (63.7 MT/ha/ year) than furrow irrigation without mulching (55.9 MT/ha/ year). Soil analysis has indicated an increase in organic carbon (0.85%), available phosphorous (72.2 kg/ha), available potassium (407.8 kg/ha), micronutrient like copper (1.10 ppm), (zinc 3.30 ppm), iron (3.25 ppm) and manganese (1.30 ppm) content in treatment, compared to control. The total carbon sequestered (leaf and stem together) is estimated at 14.8 MT/ha/yr in treatment compared to control *i.e.,* 13.6 MT/ha/yr.

Silkworm Crop Improvement, Production and Protection

- S8xCSR16, a bivoltine single hybrid identified for higher shell content (>23.0%) and lower renditta (5.0-5.5) was evaluated under authorization trials has recorded an average cocoon yield of 69.3 kg/100 dfls in Karnataka, Andhra Pradesh, Tamil Nadu and Maharashtra covering 494 farmers and 1,10,450 dfls.
- Based on the transcriptomic analysis among silkworm breeds contrasting for silk quality, RNA poly II, mannosidase and ubi1 have been identified as potential regulators that are involved in silk fibroin synthesis, which would influence the fibroin synthesis pathway and silk quality.
- A new bivoltine double hybrid developed (BFC1 x BFC 10) utilizing Bulgarian and Indian silkworm genetic resources is characterized by shell percentage of 24.3, filament length of 1,120 metre and renditta of 5.5.
- 100 silkworm genotypes (40 bivoltine & 60 multivoltine) collected from different sericulture research institutions were characterized for five qualitative and ten quantitative traits. A wide range of diversity observed for the all characters were studied. The results would be used for association mapping for economically important traits for future breeding programme.
- A Pure Mysuru line was isolated with improved shell weight of 0.230g, shell ratio of 17.95, filament length of 418 metre, reeling percentage of 83, raw silk recovery of 61.41%, neatness of 65%, tenacity of 3.2g/d, elongation of 25% and cohesion stroke of 86, showing improvement of 30% in filament length, 29% in raw silk recovery percentage, 30% in cohesion stroke and 47% in elongation percentage, in comparison to existing PM line. The resultant hybrid also showed improvement in shell weight 0.34g (14.81%), shell ratio 19.78% (6.28), filament length of 681 meter, (24.27%), renditta of 7.2 (20%) and raw silk percentage 15.18 (4.69) and neatness of 85% (3.66). Further, the newly developed line will be evaluated by Department of Sericulture.

- An improved cross breed line ICB-29 has been developed with fecundity of 483, ERR of 9276 (by No.), ERR of 14.85g (by weight), Single cocoon weight of 1.641g, single shell weight of 0.300 g and shell ratio of 18.3%. When crossed with bivoltine breeds such as CSR2, S8, CSR27, C. Oval, BFC-7 and N23, ICB-29 line, also showed improvement in shell weight (4-18%), shell ratio (6-7%), ERR by number (7-10%) and weight (15-29%), reeling (6-7.4%), raw silk recovery (8-10%) in comparison to PM xCSR2 and MV1x S8.
- A total of 64,660 dfls of MV1xS8 (Cauvery Gold) were produced and distributed to farmers. The cocoon yield ranged from 62 to 73 kg/100 dfls with an average yield of 65.22 kg fetching a higher price by Rs.15-40/kg in comparison to PM x CSR2.
- A project to develop multivoltine breed with improved silk quality (3A grade) by utilizing indigenous and exotic bivoltine breeds has been undertaken; the F2 generation rearing has been completed and greenish yellow cocoons are selected for F3 generation studies.
- Thirty three polyvoltine breeds are maintained conforming to the original breed characteristics for future breeding programmes, as and when required.
- A total quantity of 4,329 pouches of *Nesolynx thymus* (4.3 crore of adult parasitoids to cover 2.16 lakh dfls rearing) and 307 boxes of *Scymnus coccivora* beetles (76,750 adult beetles to cover 300 acres of mulberry) were produced.
- A record quantity of 4,781.21 MT bivoltine raw silk was produced through Bivoltine Cluster Promotion Programme (106 clusters) in Andhra Pradesh, Karnataka, Kerala, Tamilnadu, Telangana and Maharashtra from 433 lakh dfls rearing with an average cocoon yield of 71.79 kg /100 dfls.

Commercialization of Technologies

- License for manufacturing of powder duster was given to M/s. Digiflic Controls (India) Pvt. Ltd., Bengaluru.
- License of Amruth, an eco-friendly formulation for control of silkworm diseases, Grasserie and Flacherie was renewed.

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

Central Sericultural Research & Training Institute, Berhampore along with three Regional Sericultural Research Stations (RSRSs) and 10 Research Extension Centers (RECs) has rendered significant contributions for development of sericulture industry in Eastern & North-eastern region. The R&D activities undertaken in mulberry & silkworm breeding, crop production & protection, transfer of technology and training activities has resulted in developing technologies suitable for the farmers in the states of 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 2018-19 are as follows:

Mulberry Crop Improvement, Production and Protection

- Eight high yielding mulberry progenies were identified with high nitrate reductase activity, better leaf quality and propagation traits as compared to V1 variety.
- Ten mulberry genotypes (PYD-08, 27, 26, 04, 01, 15, 21, 03, 30 & 23) were identified for high yield and drought tolerance.

- Seven genotypes (C-1, 11, 45, 384, 2, 212 & 5) for irrigated and four genotypes (C-45, 108, 1 & 384) for rainfed condition recorded significantly higher leaf yield over S1635.
- SSR markers for bacterial leaf spot disease in mulberry were identified and the genotype BLS-7 performed better (1.6-5.9 less fold than DSI of 23.5%) than the control variety, S-1.
- 75% of the Recommended Dose of Fertilizer (RDF) through drum kit & drip tape fertigation systems increased leaf yield by ~30% MT/ha, total leaf soluble protein (~31%), water use efficiency (~23%) and nutrient use efficiency (~64%).
- Growing Degree Days (GDD) based leaf yield weather models for mulberry (S1635) were estimated [3'x3':Y=-0.0002 (GDD2) + 0.79 (GDD) – 53.22 (R2=0.74); 2'x2': Y = -0.0003 (GDD2) + 0.62 (GDD) – 58.57 (R2=0.77), where Y is mulberry leaf yield].
- Average leaf yield/plant/year recorded high bush plantation (S1635; two crops) *viz.,* 1,943 g (8'x8') followed by (1,452 g) 6'x6' & (1,236 g) 5'x5'.

Silkworm Crop Improvement, Production and Protection

- Two silkworm hybrids, namely B Con1 x B Con4 (Bi x Bi) and M6DPC x (SK6.SK7) (cross breed) were authorized by Hybrid Authorization Committee, Central Silk Board for commercial exploitation in eastern and North-eastern states.
- Two Multi x Bi hybrids (12Y x B Con1.B Con4 & 21Y x B Con1.B Con4) performed better in terms of yield (20%) over control, N x (SK6. SK7) under OFT.
- Two bivoltine double hybrids (BHP1.BHP3 x BHP8.BHP9 & BHP3.BHP2 x BHP8.BHP9) performed better with respect to shell content (10-12%) than SK6 x SK7 and B Con1 x B Con4.
- Field trial of single hybrid, BHP2 x BHP8 (200 dfls; two farmers) recorded an average cocoon yield of 68 kg/100 dfls in Falguni-2019.
- Efforts were made to develop congenic breeds with higher plasticity at RBL1-BC5 generation. The desired targets for multivoltine (shell weight: 0.25-0.26 g) and bivoltine (pupation:93%) was achieved.
- Through crossbreed studies, five multivoltine accessions *viz.,* Accession Nos. 01, 25, 69, 79 and 80 were identified superior to Nistari hybrid *viz.,* Acc. 290 in the eastern zone.
- Apolipophorin-III was successfully cloned and expressed in Pichia pastoris. Recombinant lipoprotein of ~20kDa and ~33kDa exhibited antibacterial activity against pathogenic bacteria.
- Mulberry sericulture scenario in West Bengal showed cubic trend with negative CGR for mulberry acreage (-1.38%) and exponential trend with positive CGR for cocoon (2.35%) and raw silk (3.72%) production based on time-series (1989-2018) data available with DoS-West Bengal. Return per rupee investment for cocoon production was higher with small farmers (1:1.58) compared to marginal farmers (1:1.47). 70% farmers were found to be resource use efficient with regard to economic efficiency.

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

Central Sericultural Research and Training Institute, Pampore along with its Regional

Sericultural Research Stations (RSRSs) and nested units caters to the sericultural needs of North India through R&D, Extension and training. The major achievements made during the year 2018-19 are as follows:

Mulberry Crop Improvement, Production and Protection

- New mulberry variety PPR-1 developed by the Institute has been included in the AICEM- Phase IV.
- Somatic hybrids were evolved in three combinations (PPR-1-Chinese White, PPR-1-Ichinose & PPR-1-PPR-1) by protoplast isolation, fusion, callus induction from fused protoplasts and regeneration studies.
- The regenerated somatic hybrids of three combinations were hardened and acclimatized in plastic pots by utilizing the green house and poly house conditions at collaborated institute (University of Kashmir).
- Cold tolerant genes like WRKY46, 14.3.3, ERD10, Dehydrin, Cysteine Proteinase Inhibitor, poly-amine spermidine synthase, Universal Stress Protein (USP), Cold-regulated 413 plasma membrane protein 2, Annexin 2, TIFY10 and Annexin like Protein were identified.
- Gurez genotype exhibited high degree of up-regulation of cold tolerant genes compared to Goshoerami, Leh2 and G4 mulberry genotype.
- Under AICEM Phase-III, plantation of six mulberry varieties *viz.,* C2038, FYT/99-G4, Suvarna-2, TR-23, Vishala and S-146 as control was maintained with recommended package of practices. Data on different parameters was recorded during Spring and Autumn, 2018.

Silkworm Crop Improvement, Production and Protection

- The season and region specific BmNPV tolerant bivoltine hybrids were identified under the Project, AIB-3569 and will be tested under limited field trials during spring 2019 in J&K and Uttarakhand.
- Under evolution programme of Autumn specific breeds, the lines completed F8 generation during Autumn, 2018. The lines have attained homozygosity and are recording shell in the range of 19-21% and cocoon yield more than 55 kg/100 dfls.
- Identification of sustainable silkworm foundation crosses suitable for temperate climatic conditions showed desirable results by recording shell in the range of 20-21% and cocoon yield around 60 kg/100 dfls.
- Fortification of mulberry leaf with amino acids revealed significant results on the performance of silkworm double hybrid during autumn season. Mulberry leaf fortified with Glycine 0.5% recorded cocoon yield of about 75 kg/100 dfls with 6-7 kg increase over the control.
- Evaluation of three MASN lines (MASN 4, 6 and 7) completed under subtropical condition of Jammu during spring and autumn crops and large scale field trial was initiated during spring crop in Jammu region of J&K and Himachal Pradesh with 21,500 dfls of MASN4 x CSR4.
- Three double hybrids were identified and tested during spring 2018. 1,240 dfls of DxO2 and DxO3 were reared at field level with farmers of Uttarakhand resulting in average yield of 44.4 kg/100 dfls and during autumn 2018, 5,000 dfls were reared (3,000 in Uttarakhand and 2,000 in Salem, TN) at farmers' level.

- For introduction of multiple cocoon crops in North-West India, a diagnostic study was conducted. Date of brushing was worked out for summer crop in between spring and summer and hybrids were shortlisted for Spring, Summer and Autumn crops using evaluation index.

CENTRAL SERICULTURAL GERMPLASM RESOURCES CENTRE, HOSUR (TAMILNADU)

Central Sericultural Germplasm Resources Centre, Hosur is the premier and exclusive centre in India committed to overall conservation of mulberry and silkworm biodiversity for posterity. The Centre is recognized by the National Bureau of Plant Genetic Resources (NBPGR), ICAR, New Delhi as a National Active Germplasm Site (NAGS) for mulberry germplasm and by the National Bureau of Agricultural Insect Resources (NBAIR), ICAR, Bengaluru for silkworm germplasm. The following are the highlights of achievements of the Centre during the year 2018-19:

- Under conservation of mulberry genetic resources, 1292 accessions were conserved in the field gene bank and 22 mulberry accessions have been characterized for morphological, reproductive, anatomical characters and evaluated.
- Evaluation of mulberry genetic resources for functional traits for resilience to climate change at CSGRC Hosur; CSR&TI, Mysuru and RSRS, Ananthapur revealed five accessions *viz.,* MI-0256, MI-0622, ME-0007, MI-0458 and ME-0251 as top performers for leaf yield which can be utilized for mulberry crop improvement.
- Evaluation of core set of mulberry germplasm for physiological efficiency and leaf quality revealed top 10 performers based on multiple trait analysis *viz.,* MI-0167, MI-0231, ME-0262, MI-0252, MI-0310, ME-0027, ME-0156, ME-0001, ME-0220 and MI-0290 which can be utilized in mulberry breeding programmes.
- Under conservation of silkworm genetic resources, 369 bivoltine and 83 multivoltine accessions were evaluated for rearing and grainage parameters including single cocoon reeling parameters in 3 batches of BV with 115, 140 and 113 accessions respectively and 5 crops of multivoltine with 83 accessions in each crop were completed. 14 new bivoltine silkworm races collected from CSR&TI, Berhampore were subjected to first quarantine rearing and will be assigned national accession numbers after one more quarantine rearing.
- Evaluation of 20 combinations of exotic bivoltine accessions with CSR2/CSR4 at different agro-climatic locations *viz.,* CSGRC Hosur, CSR&TI Mysuru, Berhampore and Pampore revealed that, the combination 14MxCSR4 performed better in all the three locations compared to check.
- A total of 315 [Indigenous 270 and Exotic 45] mulberry and 69 [BV–37; MV–32] silkworm accessions have been utilized for collaborative projects/student research purpose.

SERIBIOTECH RESEARCH LABORATORY, BENGALURU (KARNATAKA)

Seribiotech Research Laboratory, Kodathi carries out intensive basic and applied research on silkworms and their host plants using modern biotechnological tools to improve productivity and quality of silk. Using the state-of-the-art facilities, the laboratory carries out cutting-edge research through a multi-disciplinary approach. The Institute has already

made its mark on development of disease resistant silkworm breeds through Marker Assisted Selection breeding, transgenic silkworm with disease resistance, elucidation of gene functions, easy and precise detection of pathogens and diversification of the usage of silk proteins to new avenues with considerable economic and healthcare benefits. The major achievements made during the year 2018-19 are as follows:

- Transgenic silkworms that are over expressing immunity genes (Relish, Cecropin and Drosomycin) were successfully developed and have shown resistance to pathogens and recombinant expression of Silk-Cecropin β fusion protein was achieved in heterologous expression systems. The infrastructure facility for mammalian cell culture is developed at SBRL.
- Validated nsd-2 marker assisted selection lines of CSR6-R, CSR26-R, MASN-6R, MASN7R and J2P-R for resistance to BmDNV-2 through bioassays and found absence of viral genome at the molecular level, thereby demonstrating complete resistance upon BmDNV-2 infection in the developed breeds.
- Demonstrated that the hybrids generated by crossing parents carrying nsd-2 resistant allele in homozygous condition were completely resistant to BmDNV-2 and the Gene for Filament Length (GFL1) (possess two alleles 600bp and 700bp) showing similarity with fibroin–H region. Inheritance analysis showed that in F1 individuals of PM x CSR2 and Nistari x CSR2, the alleles were in heterozygous condition; however, segregation (1:2:1) was observed in F2 generation. Analysis of posterior silk gland region showed that in the individuals possessing both the alleles (600bp and 700bp), (the expression levels had improved.
- Demonstrated that selection at nsd-2 locus is sufficient for the development of BmDNV-2 resistant productive silkworm breeds and hybrids. Real-time quantitative analysis of midgut samples of dsRNA treated BmNPV infected silkworms showed decrease in the copy number of viral genes compared to only infected samples. Bioassay validated the effect of dsRNA on viral multiplication and found that there was >50% increase in the survival percent after dsRNA treatment of BmNPV infected silkworms.
- The virus particle purified from the infected oak tasar (*A. proylei*) silkworms. The genomic DNA isolated and conserved regions have been cloned and sequenced. The full-length genome of virus was identified (Accession: GI: 1371952746). The surface of the eggs of *A. proylei* was analyzed for the presence of virus through PCR and Ifla virus infecting the *Antheraea mylitta* has been characterized. The multiplication of virus in different tissues as well as mode of transmission has been analysed.
- National level field evaluation of bivoltine NPV tolerant high yielding hybrid MASN4 x CSR4 and multi x bi hybrid Nistari x MASN4 showed better rearing performance at different regions under Berhampore. Both hybrids showed higher survival. Agrahayani crop in November of 7,750 dfls rearing was successful and yield was up to 52 kg/100 dfls in comparison with 50 kg in control ruling hybrid (SK6 x SK7). Field level evaluation of the bivoltine hybrid MASN4 x CSR4 is under trial at different parts of sericultural belt of South India, Jammu & Kashmir and Uttarakhand. Validation of markers for NPV tolerance in different batches confirmed presence of the marker in MASN lines.

- Muga silkworm genome size is found as nearly 500Mb by whole genome sequencing. Average contig length was 185827.3 whereas, total contig length was 501176205. Total 23,770 genes were predicted from reared and 23,651 from wild type. Total 17,527 proteins were annotated from reared race and 17,415 proteins annotated from wild types, SSR analysis of the genome showed an average of 25,600 SSRs including pentanucleotides and tetranucleotide repeats.

SILKWORM SEED TECHNOLOGY LABORATORY, BENGALURU (KARNATAKA)

Silkworm Seed Technology Laboratory with a mandate of developing improved silkworm seed technologies for the improvement of seed sector, seed preservation, egg handling techniques, monitoring of silkworm disease and imparting seed technology training to the stakeholders, has contributed the following during the year 2018-19:

- Application of three host plant volatiles extracted in collaboration with Indian Institute of Horticultural Research (IIHR), Bengaluru on bivoltine double hybrid (FC1 x FC2) enhanced more than 8% fecundity over control with less retention.
- Standardized muga embryo isolation methodologies and prepared muga embryonic chart. Under single step refrigeration method, identified cold resistance embryonic stages (36 & 72h) for muga eggs.
- Tasar silkworm (BDR10) eggs preserved in different temperatures with different embryo age showed that sensitive point was lying between 15°C and 20°C.
- Under development of technology for enhancing egg laying in Vanya silkmoths by application of host plant volatiles, champak leaves recorded more egg layings by number (473), followed by castor leaf (425) for eri silkworm. For muga, eggs laid on som leaf was (148) and eggs retained in abdomen was 35 eggs, followed by som stem (97.9, 94) and soalu leaf extract (97.8, 89).
- Under silkworm disease monitoring of seed and commercial crop rearing of South Indian States in collaboration with CSR&TI, Mysuru, 67 samples in 26 lots were tested at P2 BSF, Yelagirihills, P3 BSF, Avalapalli and P3 BSF, Berigai (TN) and found no incidence of Pebrine.
- Nistari (Chalsa) had an average fecundity of 477 with 54.28 kg/dfls of cocoon yield and 98% pupation rate. A quantity of 797 cocoons/kg is an indication for quality seed cocoon generation to realize the hybrid viguor in the field. A total number of 120 P2 dfls of Nistari (Chalsa) were supplied to BSF, Parigi (A.P.).
- Regular monitoring for disease freeness of basic seed crops at three Basic Seed Farms in Tamil Nadu was conducted and no pebrine incidence was recorded. Seasonal joint silkworm disease monitoring was conducted in Karnataka, Tamil Nadu and Andhra Pradesh covering different levels of seed multiplication to survey the incidence and intensity of different diseases in the field. A total of 2,320 lots with 6,646 samples were tested and found pebrine free.
- Eight training programmes (CAC approved programmes and 2 programmes under Central Seed Act) were conducted in 11 batches. A total of 118 stakeholders were covered, under special training of Seed Act for 82 CSB Scientists/DoS personnel in 3 batches, 5 Transfer of Technology programmes and 8 ECPs were conducted besides sensitizing 519 farmers / DoS staff.

- Under Quarantine testing, Quarantine certificate was issued to M/s. VSSPC, Bengaluru for 4,100 dfls of double hybrid silkworm to export it to California, USA.

CENTRAL TASAR RESEARCH AND TRAINING INSTITUTE, RANCHI (JHARKHAND)

Central Tasar Research and Training Institute, Ranchi is an ISO 9001:2015 accredited Institute par excellence recognized as Centre of Excellence by the Ministry of Textiles in conducting Research & Development work and generation of skilled manpower to cater to the needs of tasar sector, both tropical and temperate. It is engaged in generating useful technologies through R&D and their effective transfer in the field with an ultimate aim to improve the socio-economic status of the stakeholders associated with tasar culture. It provides support to all tasar growing states through its extension network of six Regional Sericulture Research Stations, six Research Extension Centres and three P4 Silkworm Breeding Stations and one Raw material Bank (RMB). The achievements of the Institute and its nested units during 2018-19 are mentioned below:

Host Plant Improvement, Production and Protection

- Bioassay done on selected Terminalia hybrids revealed that there was no significant difference among the test hybrids and control plant genotype for cocoon weight and reeling parameters. A total of 167 saplings were developed from 20 selected hybrids of second batch. Further, among the developed hybrids, 501 x 533 (P1) and 701 x 614 (P3) hybrids showed the highest total chlorophyll content.
- From rhizosphere soil of tasar host plants, 170 PSB isolates were screened for their phosphate solubilization efficiency using Ascorbic acid method. About 30 isolates were identified as high P-solubilizes (>200 µg/mL). Out of 51 high P-solubilizing bacterial strains screened for IAA hormone production, 32 isolates produced IAA *in-vitro*. 50 PSB isolates and 50 Azotobacterial isolates were inoculated in pot along with commercial biofertilizer (positive control) to test their *in-vivo* P-solubilization and nitrogen fixing ability, respectively.
- The infestation of stem borer in tasar food plants was assessed at different BSM&TCs and PPCs and the infestation was found to be 1-5%. A neem-based pesticide was formulated for management of stem borer in tasar food plants.

Silkworm Improvement, Production and Protection

- A good quality DNA of 23 Kb size and a total of 8.5 µg of DNA were successfully isolated from fat tissue of male pupae in various sets. DNA sequencing was performed with the help of Illumina Hiseq 2500 sequencer and 65 GB of DNA sequenced data (100 x coverage) of *A. mylitta* was generated with a total of 226035598 raw reads and 212502416 clean reads. Total GC content was found to be 35.9%. Mapping to reference genome shows that the Genome of *A. mylitta* is closer to the genome of *Antheraea yamamai* (77.4% mapping) than the genome of Bombyx mori (11.3% mapping).
- For genetic characterization of tropical tasar silkworm ecoraces, Genomic DNA were extracted and purified from female pupal fat body and ddRAD sequencing have been performed in the purified DNA samples of semi-domesticated Daba, wild Daba, Raily, Modal, Jata, Nalia, Barf and Sarihan.

- The infestation of yellow fly, X predator was recorded in tasar growing areas and found below 2% except RSRS, Warangal (15%) and BSMTC, Chinoor (22%). Seven chemical compounds *viz.,* Octen-3-ol, Pentadecanoic acid, 2-Methylphenol, 4-Methylphenol, L-Citrulline, Octanol and Limonin were identified on the EAG (Electro Anteno Gram) studies.
- Eight bacterial metabolites were extracted from Phyloplane and Rhizosphere of tasar food plants which have shown antagonistic properties against disease causing bacteria. Bacteria having significant phenol degrading capacity (up to 0.2%) from larvae of Modal and Raily ecoraces were isolated (total 16 isolates).
- A new egg laying device (perforated round plastic box with rough inner rough surface), which is more suitable for tasar egg laying was developed. Collection of eggs is easy and fast. It is easy to disinfect, requires less storage space and durability is more (5-6 years). Upto 130-mandays can be saved for collection of eggs of one lakh dfls using this egg laying device than earthen pot or other devices.
- Under conservation status of tasar ecoraces in Odisha, four new populations/ecoraces were identified. To study the spatial distribution and predicting the probability of occurrence of wild tasar populations in Odisha, GIS and Maximum Entropy (Maxent) modelling were used with support from remote sensing data. Maxent analysis revealed that precipitation seasonality, temperature seasonality, annual mean temperature, mean temperature of wettest quarter and mean diurnal temperature range together contribute 68.2% of habitat suitability of tasar silkworm. Similipal region of Mayurbhanj was identified as the centre of wild ecoraces in Odisha. Western, southern and central zones of Similipal are more congenial for wild tasar whereas there is a tendency of habitat loss in northern and eastern zones. Efforts were made for *ex-situ* conservation of threatened local ecorace Sukinda. The third crop was successful with productivity rate of 59 cocoons/dfl.
- Under conservation, multiplication and popularization of wild eco-race programme, rearing of wild ecorace Barf under *in-situ* condition in Bastar (Chhattisgarh) resulted in an average yield of 19 & 6 cocoons/dfl during 1st and 2nd crops, respectively.

Tasar Post-cocoon Technologies

- Residual sericin was removed from the fiber waste by boiling with 0.2% sodium carbonate. Average recovery ranged between 2.33 and 2.79%. Wider molecular weight range proteins and more hydrophobic amino acid residues were found in fiber waste sericin. As compared to other ecoraces, Raily sericin possessed higher inhibition percentage of tyrosinase, glutathione-stransfease activity and hydrogen peroxide scavenging potential. Sericin separated from cocoons of Sal fed larvae had more biological properties than those fed on Asan and Arjun. The waste water sericin had higher amount of low molecular weight proteins (>35kDa) and lower amount of high molecular weight (<245kDa). Separated sericin had anti-tyrosinase activity, DPPH scavenging potential and inhibition of lipid per-oxidation potential showing its potential for cosmeceutical applications.
- Cocoonase enzyme was purified by using size exclusion chromatography and after protein estimation SDS-PAGE was performed

to get the protein band of around 25-26 kDa. Mass Spectrometry of Sarihan, Andhra Local, Barf and Jata was done and many peaks were observed. RNA isolation, cDNA preparation and PCR amplification were done by using samples of various ecoraces. SEM and Element analysis (FTIR, TGA/TDA, CHNS, DSC) of cocoonase and soda treated silk fibre was done. Crystals of cocoonase purified from BV were obtained. These crystals diffracted X-rays to a resolution of 2.8 Å.

- For utilizing solar energy for post-cocoon operations in tasar, four reeling and one spinning machines with total capacity of 1 kW (6 hours running per day for 17 days per month) and hot air dryer for cocoon drying with capacity of 3 kW (4 hours running per day for 8 days per month) have been successfully operated using the electricity generated from solar photovoltaic power plant.
- For development of ecorace specific package, non-peroxide cooking recipes for Daba, Raily and Modal ecoraces have been developed which are showing better cooking efficiency, reelablity and raw silk recovery.

Patents & Commercialization

- Patents obtained for "A Process for Dyeing Silk with Lac Dye". Patent No. 297511, Date of filing patent by NRDC: 1st September, 2008. Date of license: 7th June, 2018.
- Motorized Tasar Reeling Charkha (Provisional No. Temp/E-1/41403/2018).

CENTRAL MUGA ERI RESEARCH & TRAINING INSTITUTE, LAHDOIGARH

Central Muga Eri Research & Training Institute, Lahdoigarh, Jorhat with a network of RSRS, Boko, RSRS, Imphal and RECs located at Lakhimpur (Assam), Coochbehar (West Bengal) and Fatehpur (Uttar Pradesh) provides R&D support for the development of muga and eri industries especially in eastern and North-eastern regions of the country. A brief highlight of the research works done during the year 2018-19 is presented below:

Host Plant Improvement, Production and Protection

- During the year, 99,870 muga host plant seedlings were raised and 24,508 were supplied; and 8,000 eri host plant seedlings were raised and 7,000 were supplied to the farmers under different programmes. Five acres of som plantation was also raised at farmers' fields.
- For assessment of phytochemical constituents of Som and to develop a comprehensive nutrient management package, leaf moisture, protein, phenol content of leaves, major and micro-nutrient of soil have been estimated for all the rearing seasons in three different locations.
- A total of 366 soil samples were collected covering Assam, Nagaland, Manipur, Meghalaya, Mizoram and Arunachal Pradesh of which 306 samples were analyzed. Soil Health Cards (SHCs) have been developed for 608 farmers. Digitalization of SHCs for 244 farmers of Assam has been completed.
- RSRS, Imphal had analyzed 984 soil samples for 13 parameters (pH, EC, OC, available N, P, K, S, Zn, Fe, Cu, Mn, B & Li) for 1339 farmers (866 samples collected from 1221 farmers in Manipur and 118 samples collected from 118 farmers in Meghalaya). Out of that, 1261 Soil Health Cards have been issued.
- Antagonistic bacteria were isolated and identified from castor Rhizospheres which

are promising against Alternaria blight of castor. Biochemical and molecular characterization of bacterial antagonists has been completed.

Silkworm Improvement, Production and Protection

- Two high yielding muga silkworm breeds CMR-1 & CMR-2 have been multiplied and performance evaluation was done at institutional, state farm, RSRS and private farmer fields. During the year, 4966 dfls of CMR-1 and 6590 dfls of CMR-2 were reared in different farms with 55-60% ERR.
- Two embryo isolation methodologies for muga silkworm eggs have been standardized. Hot water method has been found suitable for early and mid embryonic stages, whereas KOH method is suitable for mid and late embryonic stages.
- Morphological characterization of the virus causing Tiger Band disease of oak tasar silkworm has been carried out through Scanning Electron Microscope (SEM). Isolated the genomic DNA and used for PCR amplification. The PCR products were cloned and sequenced. The results revealed that the Tiger Band disease virus is an alpha baculovirus of nucleopolyhedrovirus (Group-I) having close similarity with the NPV infecting *Antheraea pernyi*.
- Two new combinations of eri silkworms *viz.,* YP X GBZ (shell weight 0.53 g; fecundity 352) and GBS X GBZ (shell weight 0.55 g; fecundity 355) were developed which are superior to the existing commercial breeds.
- Biosurfactant producing bacteria *viz., Bacillus sp., Enterococcus sp., Pseudomonas sp., Staphylococcus sp.,* and *Serratia sp.* were identified and isolated from hydrocarbon contaminated soils near muga growing areas in Upper Assam. Biosurfactant producing bacteria from soil samples from oil polluted areas were isolated and 16S rRNA PCR amplification and purification has been done.
- A new chemical formulation for reducing the incidence of flacherie disease has been developed and field disinfection studies conducted with the newly developed formulation exhibited 22% increase in ERR under *in-vitro* evaluation of the disinfectant.
- Pathobiome associated with muga silkworm flacherie disease is identified and established with comparative genomic studies. Pathogenic and opportunistic pathogenic bacteria distribution in muga silkworm midgut has been deciphered with high throughput sequencing analysis and PCR amplification of pathogenic bacteria completed.
- Standardized the bamboo treatment process which can be used without any detrimental effect to muga and eri silkworms and 20 entrepreneurs were trained on treatment of bamboo. 2500 strip type collapsible mountages and 200 treated bamboo chalonis were distributed to the beneficiaries of Lakhimpur, Dimapur, Jorhat, Morigaon, Sivasagar, Golaghat, Dibrugarh, Nagaon and Udalguri. Six demonstration-cum-awareness programmes were organized at Lakhimpur, Tokobari, Jorhat, Bogagaon, Titabar and Nellie by DoS, Nagaland covering more than 650 farmers for popularization of treated bamboos for utilization.
- Indigenous Technical Knowledge (ITK) associated in muga culture was validated at Institute, DoS and farmers' field levels. Two technologies were found to have positive effect on the production of muga cocoons

when integrated with the recommended improved practice of muga culture. Average yield under integration of ITK and recommended package was recorded as 71 cocoons/dfl with 66.2% ERR against 62 cocoons/dfl with 57.9% ERR under existing recommended package. Thus, cocoon yield under integration of ITK with the existing recommended practices was found to be increased by 14.5% against the existing recommended package of practices at farmers' level.

CENTRAL SILK TECHNOLOGICAL RESEARCH INSTITUTE, BENGALURU (KARNATAKA)

Central Silk Technological Research Institute, a premier institute in the country is involved in the R&D activities in the field of silk since 1983, with a mandate for improvement of quality and productivity, services to the industry, enterprise development and market information dissemination. The institute has been awarded ISO 9001:2015 Certification of the Quality Management System and Testing Laboratory has been accredited by NABL, New Delhi as per ISO/IEC 17025.

CSTRI located at Bengaluru and 15 units located strategically in important silk clusters of India, serve as channels for the transfer of research findings, besides addressing various field related issues, interventions and impact made for continuous improvement of the silk industry. Some of the important contributions made by the Institute and its sub-units during 2018-19 are as follows:

Research & Development

The following technologies were developed:

- Sericin based finish on textile materials and optimized the conditions for application of durable sericin finish.
- Suitable finishing treatment technology for silk fabrics to improve its photo-degradation resistance.
- Nano-composite fibres (with fibroin, sericin & active drugs composition) using electro-spinning technique.
- Standard method and procedure for grading of tasar raw silk yarn.
- A different type of silk mélange yarns using different types of silk waste.
- Pre-treatment method for improving the reelability of muga cocoons.
- A new type of yarn (Void silk) by introducing the PVA yarn during reeling and spinning processes.
- Handloom silk sarees using fine quality spun silk.
- Technology for improving the reelability of cocoons using high temperature and high pressure cooking and chemical recipe.
- Cost-effective Electronic Jacquard for Handloom and procured infrared drying machine for silk (by SCTH, Kanchipuram).

Patents & Commercialization

- Development of process protocol for purification (removal of heavy metals) of mulberry silk sericin for cosmetic applications.
- Design & development of CSTRI Eco Eri Cocoon Degumming Machine & process standardization.

Testing

A total of 1,07,252 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

CENTRAL SERICULTURAL RESEARCH & TRAINING INSTITUTE, MYSURU (KARNATAKA)

- 81,141 sericulturists were sensitized with new technologies through 1,527 Extension Communication Programmes (ECPs) in bivoltine rearing, mulberry silkworm disease management and quality cocoon production.
- Under m-kisan Portal, 96 messages were sent every fortnight to 71,324 registered farmers of Karnataka, Andhra Pradesh, Telangana, Tamil Nadu, Maharashtra and Madhya Pradesh in Kannada, Telugu, Tamil and Hindi languages.
- Sericulture farmers' workshops were organized in CSR&TI Mysuru (Karnataka); V. Kota (Andhra Pradesh); Kolinjipatti, Namakkal (Tamil Nadu) in which 3,210 farmers were enlightened with improved mulberry sericulture technologies.
- A total of 6,681 visitors including farmers, students and foreign nationals visited the institute.
- Resham Krishi Mela was organized at CSRTI Mysuru, in which 1,200 farmers were exposed on improved package of practices in sericulture.

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

- A record quantity of 115.86 MT bivoltine raw silk was produced through Cluster Promotion Programme (15 clusters) in West Bengal, Odisha, Bihar, Assam, Manipur, Mizoram, Nagaland and Tripura (16.78 lakh dfls cocoon yield: 48.54 kg/100 dfls).
- Mass-multiplication training was conducted for *Scymnus pallidicolli*, a predator of mealy bug. Bio-control agent release resulted in the reduction of 66-75% egg colonies, nymph and adult mealy bugs.
- Suvarna (modified charkha) & Souro-Neer (solar water heating system) were developed in association with private industries to reduce fuel cost & labour.
- A total of 13,045 stakeholders were sensitized with new technologies through 245 extension communication programmes.
- m-Kisan: 94 scientific advisories/messages in different languages (Bengali, Hindi, Nepali, Odiya) were communicated to 5,253 farmers.
- Seri-5k: 7,118 farmers were enrolled and crop-wise data was uploaded.
- Across India a total of 8,835 Soil Health Cards were prepared and uploaded in the website.
- Five video documentaries (History of Murshidabad Silk & CSR&TI; Soil test-nursery preparation & mulberry varieties; Mulberry disease and pest management; Disinfection of rearing room and silkworm diseases & control methods; Role of women in sericulture) were prepared and telecast.
- Eleven radio programmes were broadcast through AIR with regard to technologies of mulberry sericulture.
- A half-yearly R&D news bulletin (News & Views) and 22 leaflets/pamphlets/ booklets were published.

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

- Nine latest technologies were disseminated among 96,232 sericulture farmers of North-West India.

- Under Seri-model Village/Institute Village Linkage Programme, in 4 villages of Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, Uttarakhand, a total of 25,000 dfls were reared during spring and 11,800 dfls during Autumn, 2018 with total green cocoon production of 11,504.08 kg and 4,868.3 kg, respectively.
- A total of 12,129 stakeholders were sensitized with new technologies through 336 extension communication programmes *viz.,* group discussion, awareness programme, field days, farmers days etc.

CENTRAL TASAR RESEARCH AND TRAINING INSTITUTE, RANCHI (JHARKHAND)

- 5,732 stakeholders participated under various motivational programmes.
- Multi-location trial of CTR-14 conducted at 9 locations showed 5-12% gain over control in respect of productive traits.
- Multi-location trial of 'Development of *in-situ* soil health and nutrient management for tasar food plant' at 3 locations showed 5.13 to 13.28% gain in leaf yield and 4.02 to 5.37% gain in cocoon weight.
- Integrated package of rearing with 4 low-cost technologies continued to be popular among stakeholders.
- REC, Palampur and REC, Seoni-Champa are working as Multi-Tasking units.
- RECs continued technical support to the DOSs & NGOs.
- Under eco-race conservation and popularization programme, 1,870 dfls of eco-race Bhandara have been produced. 9316 seed cocoons of eco-race Bhandara are under preservation at RSRS, Bhandara.
- Under eco-race conservation and popularization programme, 2,600 dfls of eco-race Sarihan have been produced and 1,800 dfls distributed to farmers. 10,500 seed cocoons of eco-race Sarihan are under preservation at RSRS, Dumka.
- Under eco-race conservation programme 17,700 seed cocoons of eco-race Sukinda are under preservation at RSRS, Baripada.
- A technology for silkworm Pebrine disease identification *viz.,* Pebrine Visualization Technology (PVT), was developed wherein, a person can examine 125 to 130 samples in an hour with ease against the traditional practice of 50 samples.
- P-4 Tasar Breeding Station, Katghora prepared 7,788 dfls of two promising lines DTS and DT-12 and supplied 7,288 dfls. 17,645 seed cocoons are under preservation.
- Oak tasar units produced a total of 6,355 dfls against the target of 12,250 dfls.

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

- Five Vanya Resham Krishimelas, 18 Field Days, 18 Farmers Days, 33 Awareness Programmes and 37 Group Discussions, 11 technology demonstration programmes were organized by the institute. More than 5,000 persons were sensitized through these programmes during the year.
- Under 9 SRCs, 1169 farmers / beneficiaries were sensitized in advanced and improved technologies of muga and eri against the target of 900 farmers.
- Under the SMVs, during Katia commercial crop, 2018, 262 farmers brushed 93,914 muga dfls, produced 54,96,549 commercial cocoons and 1099 kg raw silk. During Aherua

& Bhodia seed crops, 29 farmers brushed 7,590 muga dfls, and produced 3,01,416 cocoons. During Jethua commercial crops, 82 farmers brushed 61,370 muga dfls and produced 37,86,505 cocoons and 757.30 kg raw silk.

- In case of eri SMVs, during spring crop, 300 farmers brushed 12,520 eri dfls and produced 1,051 kg silk. During summer crop, 300 farmers brushed 12,940 eri dfls, and produced 1,001 kg silk. During autumn crop, 300 farmers brushed 13,196 eri dfls, and produced 1,124 kg silk.

CENTRAL SILK TECHNOLOGICAL RESEARCH INSTITUTE, BENGALURU (KARNATAKA)

The technologies in the post-cocoon sector popularised in the field during the year are listed in Table 3.4.

Table 3.4: Technologies in the post-cocoon sector

#	Technology	Achieve-ment
	Mulberry Reeling / Twisting Sector	
1	Multiend Reeling Unit (6/10 basins)	35
2	ARM (200 ends)	1
3	ARM (400 ends)	6
4	ADRM (142 ends)	1
5	Twisting units (480 spindles)	14
6	Pupae processing unit	1
	Vanya Reeling / Spinning Sector	
7	Motorized / Pedal operated spinning machine	1000
8	Buniyaad reeling machine	557
9	Motorized reeling machine	30
10	Tasar reeling machinery package	1
11	Modified region specific silk handlooms	80
12	Support for setting up hot air driers	80
13	Improved Vanya reeling machine	100
14	Two step reeling cum twisting machine	10
15	Automatic tasar cocoon sorting machine	1
16	Hot air driers-multifuel 100 kg capacity	2
	Total	**1,919**

Collaboration with International Organizations

Central Silk Board continued to coordinate with the International Sericultural Commission (ISC), Bengaluru, India, for the development of sericulture and silk industry in the country. The hosting of ISC in India has significantly benefited CSB by engaging with other international organizations, governments and reputed institutions by means of collaborative research programmes leading to the development of Indian sericulture and silk industry.

International Training

The Ministry of External Affairs, Govt. of India, has empanelled Central Sericultural Research and Training Institute, Mysuru and Central Silk Technological Research Institute, Bengaluru as the training Institutions under the Indian Technical and Economic Cooperation (ITEC) Programme. Under the ITEC programme, foreign nationals from ITEC member countries are be trained in Indian institutions on specialized areas for enhancing their skill level.

During 2018-19, three international training programmes sponsored by ITEC and ISC were held in CSB institutions (Table 3.5).

Table 3.5: International training programmes sponsored by ITEC and ISC

#	Country	No. of participants			Total
		Silkworm Seed Production (10 days)	Post-cocoon Technology (One month)	Sericulture & Silk Industry (One month)	
1	Afghanistan	2	-	-	2
2	Argentina	-	-	1	1
3	Azerbaijan	-	-	2	2
4	Bangladesh	2	-	2	4
5	Cuba	-	-	2	2
6	DPR Korea	2	-	-	2
7	Egypt	2	-	-	2
8	Ethiopia	-	-	4	4
9	Ghana	2	-	2	4
10	Iran	2	-	-	2
10	Kenya	2	-	1	3
11	Madagascar	2	21	2	25
12	Nigeria	-	-	1	1
13	Philippines	-	-	3	3
14	Romania	2	-	-	2
15	Sudan	-	-	1	1
16	Thailand	2	-	4	6
17	Tunisia	-	-	2	2
18	Uganda	-	-	1	1
19	Uzbekistan	2	-	-	2
20	Vietnam	-	-	2	2
	Total	**22**	**21**	**30**	**73**

Visit of CSB Officials to other countries

i. A four member MoT/CSB delegation led by Shri Atul Kumar Tiwari, Joint Secretary, MoT, visited Deakin University, Geelong, Australia during November 13-16, 2018 to evaluate and finalize the outcome of the collaborative research projects between CSB and Deakin University.

ii. In the capacity of Secretary General of International Sericultural Commission, Shri R.R. Okhandiar, Member Secretary, Central Silk Board, visited Japan during May 19-24, 2018 to finalize the arrangements of next ISC Congress to be held during November, 2019.

III. CAPACITY BUILDING AND TRAINING

Keeping the objective of refining the quality of human resources in silk industry, the Capacity Building & Training Division alongwith the R&D and Seed institutions, has covered a total of 13,885 persons against a set target of 12,825 persons during 2018-19. The coverage included farmers, seed producers, reelers, other industry stakeholders, students, extension agents, trainers, R&D and technical personnel. The Capacity Building & Training Division coordinated all such efforts of skill seeding and skill development by CSB covering all activities in silk value chain pertaining to all the four silk sub-sectors *viz*., mulberry, tasar, eri and muga. The institute-wise and programme-wise coverage details are indicated in Tables 3.6 and 3.7.

Table 3.6: Institute-wise coverage of training

#	Sector	No. of Persons trained
A	R&D Sector	
	CSR&TI, Mysuru	1,735
	CSR&TI, Berhampore	2,570
	CSR&TI, Pampore	1,123
	CTR&TI, Ranchi	1,053
	CSR&TI, Lahdoigarh	2,282
	CSTRI, Bengaluru	1,166
	Sub-total (A)	9,929
B	Seed Sector	
	NSSO, Bengaluru	381
	BTSSO, Bilaspur	2,502
	SSTL, Kodathi	200
	MSSO & ESSO	110
	Sub-total (B)	3,193
C	CBT Division, Bengaluru	763
	Grand total (A+B+C)	**13,885**

Table 3.7: Programme-wise coverage of training		
#	Training Category	No. of persons trained
a	Sericulture farmers skill training & exposure visits	6,164
b	Silk reelers, twisters, dyers, printers and weavers	496
c	Private graineurs, ASRs, support staff & seed officials	1,529
d	CSB scientists, other employees & State Govt. officials	782
e	Post Graduate Diploma in Sericulture students	52
f	Other sponsored training programmes	4,862
	Total	**13,885**

Highlights

- A total of 13,885 persons were trained by CBT Division and other CSB Institutes against the set target of covering 12,825 persons. In addition, a total of 3,131 college students and school children were exposed to sericulture.
- CSB organized two batches of Foundation Training covering 57 newly recruited CSB scientists.
- A total of 357 farmers covering all the sub-sectors of silk were taken for exposure visit to developed sericulture clusters and R&D Centres for inspiring them and broadening their vision and knowledge levels.
- A total of 35 candidates enrolled during 2017-18 successfully completed the Post Graduate Diploma in Sericulture (PGDS) and 54 persons were enrolled for 2018-19 session. Thirty-nine students were admitted at CSR&TI, Berhampore for PGDS (mulberry) and 15 students at CTR&TI, Ranchi for PGDS (vanya silk).
- With a view to facilitate farmer to farmer contact for information sharing and technology demonstration, 23 Sericulture Resource Centres (SRCs) were established in different Seri-Clusters including NE region and 2,942 beneficiaries were covered during the year.
- IGNOU in association with CSB has been running a six months – Certificate in Sericulture (CIS) course since 2008. During the year, 376 new enrolments took place making the total enrolments to 1196 so far.
- As entrusted by Ministry of Textiles, Govt. of India, CSB, as a Physical Verification Agency (PVA) carried out the physical verification of 209 Training Centres under Samarth Scheme.
- The Central Silk Board has been empanelled as training partner with Agriculture Skill Council of India (ASCI), to conduct NSQF aligned course for sericulturists, pertaining to cocoon production sector.
- CSB has developed 18 Qualification Files for conducting skill training in Post-cocoon sector of silk industry. Out of which, six qualification packs are NSQF aligned by National Skill Development Agency (NSDA) through Textile Sector Skill Council during the year.

IV. IT INITIATIVES

- *DBT MIS*: Development of DBT MIS for the scheme "Development of Silk Industry" was completed and security audit clearance by STQC has been obtained. Linking of the same with DBT Bharat portal is in process.

- *m-Kisan*: CSB has widened the outreach of scientists and experts to disseminate information to provide scientific advisories to farmers through their mobile phones using m-Kisan web portal. All the main institutes are regularly providing advisories through this portal. Till March 2019, 410 advisories were sent as 53,14, 565 SMSs.
- *Day-to-day silk and cocoon prices:* These are sent as SMS through mobile phone for the benefit of the farmers and other stakeholders of the industry. Both PUSH and PULL SMS services are in operation. All the 9,361 registered users are receiving SMS 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. Multilingual and multi-district data is being compiled and updated regularly.
- *Video Conference:* CSB has full fledged video conference facilities at CSB Complex, Bengaluru, CSR&TI, Mysuru, Berhampore and Pampore; CTR&TI, Ranchi; CMER&TI, Lahdoigarh and RO, New Delhi. During the year, 33 multi-studio video conferences were conducted.
- *CSB website:* Central Silk Board has a website "csb.gov.in" in bilingual 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 stories are featured in the website. CSB has completed redesigning of 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 implemented at Central Silk Board. A total of 4254 employees including farm workers have been registered into the attendance portal. All the 121 devices are RD Services enabled. Due to re-structuring of CSB, nearly 450 employees have been shifted to different units, updation of the same is in progress.
- *National database of farmers and reelers:* Farmers and Reelers Database has been designed and developed at national level, which will help policy makers with appropriate information for effective decision making. As on March 2019, details of 6,80,180 farmers and 12,187 reelers have been recorded by the states in the database.
- *MIS for Intensive Bivoltine Sericulture:* It is developed and hosted on dedicated servers for trouble-free access by all stakeholders.
- *Development of Mobile App on Silk Samagra:* Designing and data compilation is in progress.

B. Seed Organizations

Mulberry Seed Sector

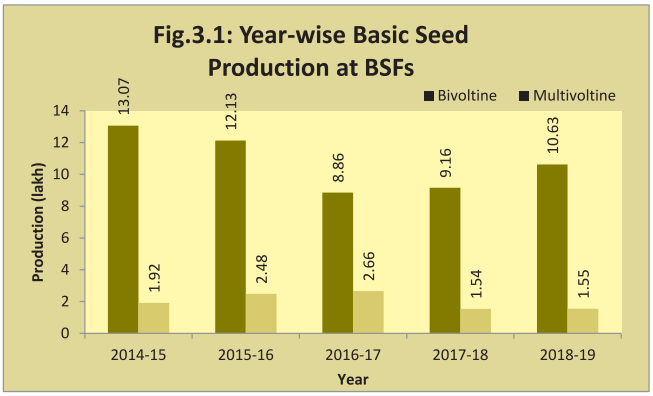
National Silkworm Seed Organization (NSSO) is a vibrant and leading mulberry silkworm seed production organization in the country which maintains and multiplies basic stock of authorized races true to the breed characters by following one-way system of multiplication at its Basic Seed Farms. It also supports production of import-substitute bivoltine silk through production and supply of quality bivoltine hybrid dfls. The basic and

commercial seeds are produced through an effective network of Basic Seed Farms (BSFs), Seed Cocoon Procurement Centres (SCPCs), Silkworm Seed Production Centres (SSPCs) and Cold Storage Plants (CSPs) spread over nine states in the country. In line with the mandate and served by a diligent and committed team, NSSO fulfilled the seed requirement of different stakeholders including basic and commercial silkworm seed during the year under report.

Seed Cocoon Generation and Basic Silkworm Seed Production at Basic Seed Farms

BSFs located in major sericultural regions of India, characterize seed organization for basic seed maintenance and multiplication. One-way system of multiplication of approved breeds is followed meticulously at its 17 BSFs (14 bivoltine and 3 multivoltine). Precise planning, scientific and systematic execution of activities is done for seed maintenance and multiplication at P3, P2 and P1 levels.

A quantity of 54.47 lakh bivoltine and 39.13 lakh multivoltine seed cocoons (P3 ~ P1 level) were generated against a target of 64.29 and 39.09 lakh, respectively. Utilizing these seed cocoons, 12.18 lakh basic seed (10.63 lakh bivoltine and 1.55 lakh multivoltine) was produced. A quantity of 10.97 lakh bivoltine and 1.55 lakh multivoltine basic seed were



distributed (Table 3.8). The comparative production of bivoltine and multivoltine seed over the years is given in Fig 3.1.

SSPC, K.R. Nagar, is the only bivoltine grainage, which exclusively produces P1 bivoltine basic seed, meeting the requirements of all the stakeholders in the country and the unit is also ISO certified. During the year, the unit produced 9.72 lakh bivoltine P1 basic seed against a target of 8.00 lakh.

Generation of quality parental (P1) seed cocoons

Seed cocoons are of great importance as, it is 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 SSPCs of NSSO have a highly successful 'Adopted Seed Rearer' (ASR)

Table 3.8: Basic seed production and supply (No. of dfls)

	Breed	P3	P2	P1	Total
Production	Bivoltine	4153	42130	1016652	1062935
	Multivoltine	2374	7875	145025	155274
	Total	**6527**	**50005**	**1161677**	1218209
Supply	Bivoltine	8067	18563	1071081	1097711
	Multivoltine	2374	7875	145025	155274
	Total	**10441**	**26438**	**1216106**	1252985

system involving technically sound and competent seed rearers. These rearers are selected by the SSPCs to produce quality seed cocoons with assured market governed by quality linked pricing system. These ASRs are registered parental seed cocoon producers. During the year, 1,280 lakh bivoltine seed cocoons were generated for production of bivoltine hybrid and crossbreed dfls. In addition, NSSO has also supported the private Registered Seed Producers (RSPs) by supplying 7.47 lakh bivoltine seed cocoons. The SSPCs of NSSO in West Bengal, DoSs of West Bengal, Uttar Pradesh and North–eastern states were supported by SCPC, K.R. Pet by generating 56.06 lakh (West Bengal - 12.95 lakh, Uttar Pradesh - 17.67 lakh) bivoltine seed cocoons in south India and supplying to them against an indent of 56.08 lakh seed cocoons (West Bengal - 13.00 lakh, Uttar Pradesh - 17.21 lakh).

The SCPC at K.R. Pet supported the SSPCs by procuring 138.84 lakh bivoltine seed cocoons for preparation of both bivoltine hybrid and cross breed layings. The SCPC at Kunigal supported the SSPCs by procuring 52.62 lakh multivoltine seed cocoons for preparation of cross breed layings.

The quality seed production is primarily attributed to the specific and successful production model supported by the ASR for seed cocoon generation which ensured quality seed production in the SSPCs.

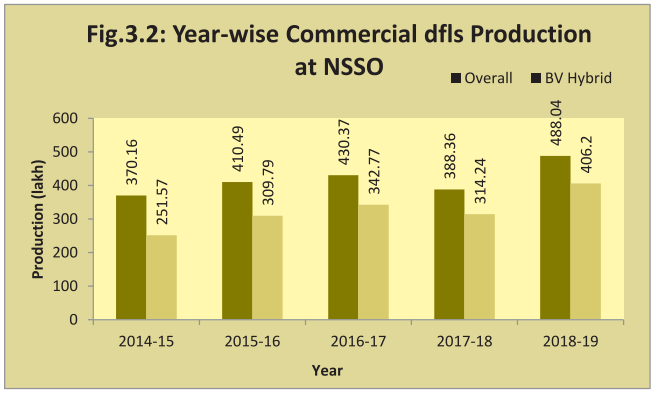
Commercial Seed Production at Silkworm Seed Production Centres

Production of quality commercial silkworm hybrid dfls laying (bivoltine x bivoltine & multivoltinexbivoltine) and their distribution among farmers is also one of the mandated activities. Accordingly, 18 ISO certified SSPCs, produced 483.04 lakh dfls, against the target of 440.00 lakh dfls achieving 109.78% during 2018-19. This is the highest production ever in the history of NSSO, registering an increase of 24.38% over the previous year.

Table 3.9: Combination-wise target and production of dfls (in lakh)

Combination		Target	Achievement	% Achievement
Bivoltine Hybrids	CSR2 x CSR4	7.00	7.41	105.86
	FC1 x FC2	311.00	360.18	115.81
	SK6 x SK7	18.00	26.10	145.00
	SH6 x NB4D2	14.00	9.29	66.36
	Others		3.22	
Total		**350.00**	**406.20**	**116.06**
Multi X Bivoltine Hybrids	PM x CSR2	13.50	5.14	38.07
	PM x FC2	-	11.92	
	N x Bi	45.50	36.01	79.14
	N x M12 (W)	31.00	20.31	65.52
	Others	-	3.45	
Total		**90.00**	**76.83**	**85.37**
Grand Total		**440.00**	**483.03**	**109.78**

Out of the total production of 483.04 lakh dfls, 406.20 lakh dfls were bivoltine hybrids (84.09%) while the crossbreed layings accounted for 76.84 lakh dfls (15.91%) as given at Fig.3.2. The bivoltine hybrid dfl production also reached an all time high with 29.26% increase over the previous year. A quantity of 406.20 lakh of bivoltine hybrids were produced against a target of 350.00 lakh (achievement 116.06%). This includes 7.41 lakh CSR hybrids, 360.19 lakh double hybrids, 9.29 lakh traditional hybrids, 26.10 lakh of foundation cross (SK6 x SK7) and 3.22 lakh of new hybrids. NSSO has thus, left an indelible mark in the arena of bivoltine hybrid dfl production in the country.

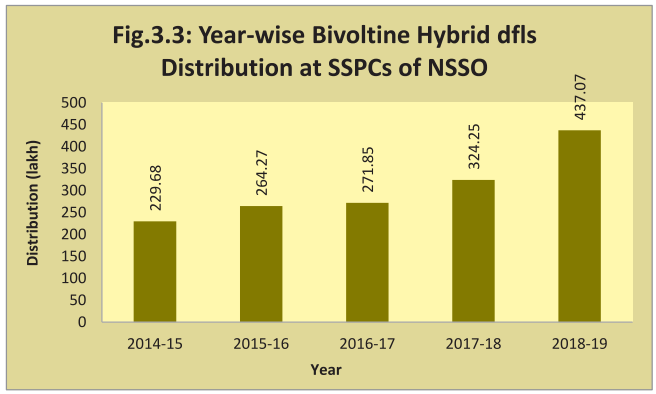


With regard to multibivoltine dfl production, N xBi (36.01 lakh) formed the core production, followed by Nistari x M12W (20.32 lakh). The southern region also produced 5.14 lakh PM x CSR2 and 11.93 lakh PM x FC2 dfls.

Quality F1 dfls production

Seed quality is maintained in all the SSPCs by adopting ISO 9001:2015 Quality Management System at every level of seed production process. The egg recovery in multi x bivoltine hybrids produced in the southern region was 31.60% against the norm of 28.00%. In bivoltine hybrids, the average egg productivity in the case of CSR hybrids was as per the norm of 55g/kg cocoon and for double hybrids it was 70.41 g/kg cocoon against the norm of 65 g/kg cocoon.

During the year, 437.07 lakh bivoltine hybrid dfls were distributed to various States, which is the highest ever. Apart from this, NSSO also supplied 76.70 lakh multibivoltine hybrid dfls to various state departments. The bivoltine hybrid dfl distribution for the last five years is indicated at Fig. 3.3.



Apart from this, under Authorization Trials, 6.67 lakh dfls comprising 3.22 lakh bivoltine x bivoltine and 3.45 lakh multi x bi combination dfls were produced and supplied to the research institutes for evaluation.

Nine private RSPs which are nurtured by NSSO, produced 28.55 lakh bivoltine hybrid dfls during the year with technical guidance and also supported them by supply of quality bivoltine seed cocoons and preservation of the dfls in its Cold Storage Plants.

Extension Activities

a) *Cluster Promotion Programme:* The Scientists of SSPCs identified as CDFs for clusters of NSSO played a significant role in distribution of commercial seed produced at SSPCs of NSSO and in providing extension support through crop monitoring and transfer of proven technologies to the field. Ten Clusters under NSSO were monitored by Scientists of NSSO. A quantum of 35.14

lakh dfls was distributed against a target of 35.63 lakh dfls. An average cocoon yield of 71.11 kg per 100 dfls was recorded with an estimated raw silk production of 350.53 MT.

b) *Institute Village Linkage Programme:* A quantity of 2.73 lakh bivoltine hybrid dfls were distributed in Karnataka, Andhra Pradesh and Tamil Nadu and the average yield recorded was 70.07, 70.56 and 78.39 kg per 100 dfls respectively, in the above mentioned states.

c) *RC Discount Scheme:* This scheme was immensely popular and 171 enrolled CRCs were supplied a quantum of 243.54 lakh bivoltine hybrid dfls during the year, wherein a discount of 10% was allowed.

d) *Extension Communication Progra-mmes:* During the year, 38 group discussions, 4 farmers' day / field day programmes were conducted. Four workshops on "Chawki Rearing" were conducted in Karnataka (2), Andhra Pradesh (1) and Tamilnadu (1). In addition, one radio programme was also conducted.

e) *Film Production:* Two films on "Large scale bivoltine commercial loose egg production" and "Egg handling techniques" were produced through NFDC in seven languages.

Training Programmes

- NSSO also coordinated and conducted various training programmes covering seed crop rearing and seed production. During the year, a total of 34 DoS officials and 22 students were trained in various aspects of large scale bivoltine commercial seed production.
- Under Capacity Building, 100 Adopted Seed Rearers were trained on seed crop rearing for generation of quality seed cocoons.
- An international training on silkworm seed production was conducted from September 17-26, 2018. Twenty-two participants from 11 countries participated in the programme.

Seed Act Implementation

NSSO continued its efforts for implementation of the provisions of Central Silk Board (Amendment) Act, 2006. During the year, 3,997 new applications for registration (434 RSPs, 142 RCRs and 3,421 RSCPs) were scrutinized and processed. In addition, renewal was issued to 1043 stakeholders (34 RSPs, 88 RCRs and 921 RSCPs). Upto March 2019, a total of 25,842 registrations (16,948 in mulberry, 6,425 in tasar, 985 in eri and 1,484 in muga sectors) have been effected.

All the Seed Officers and Seed Analysts were regularly notified with the additions. On-site inspection of the premises of RSPs and RCRs by Seed Analysts and Seed Officers was carried out for the purpose of system and product certifications, respectively.

Certificate training course of three months duration was organized at CSR&TI Mysuru for 17 chawki rearers and at SSTL, Kodathi for 8 seed producers. Refresher training to 83 chawki rearers/RSPs was provided. Apart from this, orientation programme was also conducted for 229 officials.

A mobile app for the use of Seed Officers and Seed Analysts to enable monitoring under Seed Act was developed by NSSO and released by the Hon'ble Union Minister of External Affairs, Smt. Sushma Swaraj, at the mega event "Surging Silk" at Vigyan Bhavan, New Delhi on February 9, 2019. Similarly, online registration under Seed Act has been developed to facilitate quick registration and renewal processes.

Revenue Generation

Total revenue of Rs.176.55 lakh was generated by the BSFs of NSSO during the year.

Impact of NSSO on bivoltine raw silk production

Production of 406.20 lakh bivoltine hybrid dfls by NSSO during 2018-19 (increase of 24.38% over the previous year) and distribution of a whopping 437.07 lakh bivoltine hybrid dfls (34.79% increase over 2017-18) directly contributed to nearly 70% of the country's bivoltine raw silk production. Support was also extended to the private RSPs in production of bivoltine hybrid dfls by supply of good quality parental seed cocoons and preservation of around 29 lakh hybrid dfls produced by the RSPs at its cold storage plants in different schedules. Bivoltine basic seed was supplied to various State Sericulture Departments to enable them for utilization of the same for commercial bivoltine silkworm seed production. Thus, NSSO, both directly and indirectly, supported in achieving the country's target of production of 7200 MT of bivoltine raw silk, thereby reducing the import of raw silk.

Vanya Seed Sector

Tropical tasar: Basic Tasar Silkworm Seed Organization (BTSSO), Bilaspur, Chhattisgarh is responsible 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 0.33 lakh dfls of tasar nucleus silkworm seed during the year for replenishment of existing stock of BSM&TCs. These 18 BSM&TCs produced 17.14 lakh basic dfls & 17.08 lakh nucleus dfls during 2018-19. Besides, BTSSO has also produced 16.53 lakh commercial dfls by involving private graineurs.

Oak tasar: Two Regional Sericultural Research Stations (RSRSs) and one Research Extension Centre (REC) located in three States cumulatively produced 0.78 lakh of oak tasar dfls during 2018-19.

Muga: The re-organized Muga Silkworm Seed Organization (MSSO) under Central Sector Scheme 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 one SSPC have also been established. These units have produced 5.34 lakh muga dfls (4.04 lakh basic dfls & 1.29 lakh commercial dfls) during 2018-19.

Eri: The Eri Silkworm Seed Organization (ESSO) located at Guwahati, Assam performed well with its one Eri Silkworm Seed Production Centre (ESSPC) in North-eastern region, three Eri SSPCs and one Eri Basic Seed Farm in non-traditional states. Besides, one P2 Eri Basic Seed Farm has been established under NERTPS. These units have produced 7.22 lakh eri dfls (0.91 lakh basic dfls & 6.31 lakh commercial dfls) during the year 2018-19.

C. Coordination and Market Development

Regional Offices

Regional Offices of Central Silk Board liaison with the states, the Departments of Sericulture in the states and CSB's nested units in their jurisdiction. They coordinate with these agencies in implementing various sericulture development programmes of central government in respective states. The Regional Offices present in New Delhi, Mumbai, Kolkata, Hyderabad, Bhubaneswar, Guwahati, Lucknow and Patna, are performing their roles and responsibilities as per the mandate. Under restructuring plan of CSB, two Regional Offices

in Chennai and Jammu were closed during the year.

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 in the state to discuss the issues related to development of sericulture industry in the state. The performance of Regional Offices is closely monitored by the CSB secretariat.

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 waste meant for exports.
- Inspection of natural silk carpets under 'voluntary basis scheme' as an export promotion measure, wherever the exporter or importer makes a request to CSB.
- Textile testing services for checking silk quality, identification of constituent yarns and its percentages, physical/chemical properties and other parameters through laboratories attached to Certification Centres.
- Technical assistance in identifying constituent yarns and ascertain 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 2018-19, about 5.62 lakh sq.mtrs of natural silk/mixed silk goods valued at Rs.82.03 crore were certified for exports by the Certification Centres of CSB under Voluntary Quality Inspection Scheme. A total revenue of Rs.7,16,825 has been generated under the scheme by way of inspection charges, sale of blank forms, sample testing charges and issue of various tariff certificates such as GSP, Certificate of Origin, Handloom Certificate, Handicrafts Certificate etc. 689 sq. mtrs of silk goods, valued at Rs.1.12 crore exported by 100% Export Oriented Units (EOU) were certified by Certification Centre, Bengaluru. An amount of Rs.3,28,450 was collected from the sale of Carpet Labels. Centre-wise details of natural silk goods certified under voluntary quality inspection scheme during 2018-19 are provided in Table 3.10.

Table 3.10: Centre-wise details of natural silk-goods certified under voluntary quality inspection scheme during 2018-19

Certification Centre	Silk Goods Certified (lakh sq. mtr.)	Value (Rs. in crore)
Mumbai	0.04	4.95
Bengaluru	4.81	29.50
New Delhi	0.19	29.18
Kolkata	0.28	2.63
Chennai	0.21	2.03
Varanasi	0.01	0.09
Srinagar	0.07	13.65
Total	**5.62**	**82.03**

Raw Material Banks for tasar and muga

CSB has set up Raw Material Banks (RMB) for cocoons and by-products under Price Stabilization Scheme of Govt. of India on no-profit no-loss basis to support the primary growers and supply cocoons at steady price in tasar and muga sectors and also to protect the interest of rearers from exploitation by middlemen. These RMBs 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.

During the year, RMB, Chaibasa has been brought under the control of CTR&TI, Ranchi and the four Tasar sub-depots which were working under RMB, Chaibasa have been merged with other CSB units. Similarly, MRMB, Sivasagar main unit has been merged with CMER&TI, Lahdoigarh and its three sub units have been merged with the other nearby units of CSB. The transaction details of tasar and muga cocoons made by RMBs during 2018-19 are given in Table 3.11.

Table 3.11: Performance of Raw Material Banks

(Unit: Qty. in lakh No., and Value in lakh Rs.)

Sector	Quantity of cocoons procured		Sale of cocoons	
	Qty.	Value	Qty.	Value
Tasar	165.11	197.86	104.23	162.88
Muga	1.79	2.73	1.79	2.80

D. Quality Certification System

Silk Mark Organization of India (SMOI)

One of the main objectives of the Quality Certification Systems (QCS) is to initiate suitable measures towards strengthening quality assurance, assessment and certification. Under the scheme, two components *viz*., "Cocoon Testing Units & Raw Silk Testing Units" and "Promotion of Silk Mark" are being implemented.

Central Silk Board is popularizing "Silk Mark scheme" through SMOI. "Silk Mark", an assurance label, protects the interests of the consumers from the traders selling spurious products in the name of pure silk. The network of Certification Centres of Central Silk Board, working both independently as well as those attached to the Regional Offices are carrying out pre-shipment inspection of natural silk goods meant for export from exporters who apply voluntarily for availing the inspection facility to ensure quality and purity of the natural silk goods exported from India. These offices are also multi-tasking by carrying out the promotion of Silk Mark scheme, thereby helping the consumers of pure silk products to get the value for their money and help the stakeholders of silk value chain to reap greater business. The progress made under the QCS scheme during 2018-19 is given in Table 3.12.

Table 3.12: Progress achieved under QCS

Particulars	2018-19		2019-20
	Tar-get	Achieve-ment	Tar-get
Authorised Users Enrollment (No.)	250	291	260
Sale of Silk Mark Labels (Lakh No.)	27.00	25.46	27.00
Awareness Programmes/ Exhibitions/Fairs/ Workshops/Road Shows (Nos.)	480	463	500

No. of salespersons trained in the Authorized User's premises	2750
No. of surveillance conducted	1195
No. of Silk Mark magazine subscription	332
No. of Silk Mark Expos/NLSHE conducted	9

SMOI participated in a number of national and international events/exhibitions by setting up a grand theme pavilion displaying major achievements of CSB and SMOI. Some of the major promotional activities undertaken during the year 2018-19 are as follows:

- Inspite of sluggish market for silk product during 2018-19, SMOI organized six Silk Mark Expos (two at Guwahati, one each at Dibrugarh, Kochi, Bengaluru and Mysuru). In addition, SMOI successfully conducted three National Level Special Handloom Expo (NLSHE) at Vizag, Hyderabad and Pune with the financial support of Development Commissioner (Handlooms). A total of 335 Authorised Users from 12 different silk weaving clusters participated and more than 63,300 people visited these expos. These expos generated a business turnover of more than Rs.10.50 crore.
- India Trade Promotion Organization (ITPO), a GoI enterprise has organized "India Silk Fair" alongside India Garment Fair & India Home Furnishing Fair at Osaka, Japan from July 18th-20th 2018. SMOI has provided rent-free stall space to four AUs under the banner of SMOI to popularize Indian silks and thus, capture the overseas market.
- Resham Ghar, is a store-in-store concept in collaboration with various state and central apex bodies, selling only 100% pure silk products with authenticity of Silk Mark label to the consumers. Resham Ghar is operative at New Delhi, in collaboration with Lepakshi and has also been started in the premises of Central Cottage Industries Corporation (CCIC), M.G. Road, Bengaluru during August 2018.
- Central Silk Board/SMOI participated in the 6th India International Silk Fair organized by Indian Silk Export Promotion Council (ISEPC), at Pragati Maidan, New Delhi from October 16-18, 2018. SMOI has set up a customized theme pavilion under the banner of "Silks of India" depicting an array of activities from pre-cocoon to post-cocoon technologies. Smt. Smriti Zubin Irani, Hon'ble Union Textile Minister inaugurated the pavilion and released "Look-Book on NE Silk Products". In addition, CSB allotted 10 rent-free stalls to the participants from NE region and another 10 stalls at subsidized rates to the Silk Mark members from various parts of India. More than 168 overseas buyers from 20 countries visited the stalls. The Silk Mark participants received excellent enquires and substantial business orders.
- SMOI in collaboration with National Institute of Fashion Technology, has participated by setting up a theme pavilion in 13th Toshali National Crafts Mela at Janata Maidan, Bhubaneswar, Odisha organized by Handloom, Textiles and Handicrafts Department, Govt. of Odisha from 28.12.2018 to 13.01.2019. In addition, rent free stall space was allotted to four Authorized Users of Silk Mark for the display and sale of pure Silk Mark labeled products.
- SMOI, New Delhi Chapter participated in Trade Enclave/Workshop on "Khadi-Batik Weave Going Global" organized by IAMKHADI Foundation on 18.12.2018 in the

Indonesian Embassy, New Delhi, to explore the possibilities of design collaboration between India and Indonesia and to develop innovative new design and structures to meet the demand of dynamic global markets. The event was promoted by KVIC, IIFT & FICCI in association with the Indonesia Embassy, New Delhi.

- SMOI, New Delhi Chapter participated in a Reverse Buyer Seller Meet (RBSM) *viz.,* "India Textile Sourcing Fair" organised by Handloom Export Promotion Council, at The Leela Ambience Convention Hotel, New Delhi from February 16-18, 2019. SMOI displayed all varieties of silk products especially newly developed products of P3D/VSMPC to the visiting dignitaries from different countries, 120 overseas trade buyers, and marketing managers from buying agents located at Delhi. In addition, SMOI has provided table space to four Authorised Users of Silk Mark to display and sale of pure silk products, who received reasonably good business orders for garments & made-ups.
- Central Silk Board in coordination with the Ministry of Textiles, New Delhi organized "Surging Silk" at Vigyan Bhavan, New Delhi on February 9, 2019 to commemorate the contributions of stakeholders of silk industry. M/s. Pothys, Chennai, a member of Silk Mark has been awarded as largest consumer of Silk Mark labels for the year 2017-18.
- Ministry of External Affairs (MEA), Govt. of India organized a mega event "15th Pravasi Bharatiya Divas" at Deen Dayal Handicraft Complex, Lalpur, Varanasi (Uttar Pradesh) from January 21-23, 2019. SMOI, New Delhi Chapter in association with SMOI & TTL, Varanasi participated in this event to display activities of CSB and for promotion of Silk Mark. Visitors from overseas visited Silk Mark stall and appreciated the efforts of the CSB/SMOI.
- Ministry of Textiles, Govt. of India organized a four-day Textiles Outreach Programme 'Artisan Speak', from January 7-10, 2019 at Kolkata to display the different activities of Textiles Ministry covering all sectors *viz.,* Jute, Silk, Handloom and Handicraft. SMOI, Kolkata, CSR&TI, Berhampore and STSC, Malda jointly participated in the event to highlight on Silk Mark promotion, R&D activities and post-cocoon technology.
- SMOI, Kolkata allotted rent-free stalls to eight Authorised Users from different parts of the country for the promotion of Indian Silk and sale of their exclusive pure silk products. CSB/SMOI with the help of NIFT, Kolkata conducted a fashion show highlighting muga products of Assam and Baluchuri products of West Bengal with GI and Silk Mark Tags.
- SMOI has initiated demand of the consumers to get testing facility at very nominal charge at silk retail hubs by establishing nine Silk Testing Centres at Bengaluru and Kolkata. SMOI has provided necessary testing instruments like microscope, printer, tab, testing kit etc., and training was imparted to testing staff at CSTRI, Bengaluru on various aspects of silk testing and identification of different textile fibres. SMOI has given wide publicity in the newspaper and electronic media about the STC.
- SMOI, Bengaluru Chapter participated in the Flower Show organized from August 4-15, 2018 in the Glass House, Lalbagh, Bengaluru. A theme pavilion highlighting images of three Silk Mark India logos and silk moths emerging from cocoon, decorated with colourful flowers, was put up for the

promotion of Silk Mark. Lakhs of people visited SMOI stall.

- As a part of Swachhata Abhiyan, SMOI Corporate Office organized street plays at Lalbagh and Cubbon Park on September 29 & 30, 2018, promoting social message, "Say No to Plastic".
- SMOI, Hyderabad Chapter has organized grand finale of Srimathi Silk Mark 2018 at Kalinga Hall, Banjara Hills, Hyderabad on 21.04.2018 to provide a platform to the married women across Hyderabad to excel and highlight their beauty & talent among a large audience. A panel of judges selected Srimathi Silk Mark & two runners-up among the 25 finalists and prizes were distributed. A cultural programme and a fashion show by models dressed in pure silk products developed by Vanya, P3D, CSB were organized.
- In addition to organising the expos and participating in different national and international exhibitions, workshops, fairs etc., SMOI has taken up a number of initiatives to promote Indian Silk, Silk Mark across India and abroad. SMOI has released advertisements in leading English & vernacular language newspapers, magazines, television, scrolls in local cable channels, hoardings at metro and railway stations, bus back panels, Facebook and google.

OTHER PROGRAMMES/SCHEMES/ PROJECTS

1. Publicity and Media Programmes

The highlights of publicity & media programmes are as follows:

Publications

- Central Silk Board continued publication of Indian Silk, the bilingual industrial journal devoted to the sericulture and silk industry of India. Presently, the journal is in its 57th year of publication. Three special issues of the journal were brought out during the year.

  A Special Issue on the 8th International Conference on Wild Silk Moths organized by ICWS, Japan and CSB, India during January 22-24, 2018 at Guwahati, was brought out with a detailed coverage and interviews with a host of seri-scientists from various countries on advanced fields of research and potential areas.

  In addition, two more theme-based special issues one each on "Sericulture By-product Utilization and Diversification" and "Commercial Chawki Rearing Centre", supported with a host of success stories in the sector from the southern part of the country were also brought out.
- *Annual Administrative Report* of CSB for the year 2017-18 was published in bilingual (English and Hindi) and placed before the Parliament. It provides detailed information about research & development achievements, performance and progress under various projects and schemes implemented by the Central Silk Board and overall view of the status and development of the Indian silk industry, during the year.
- *Reshme Vaani,* is a quarterly multi-colour newsletter on sericulture activities in Kannada language for the benefit of the stakeholders and extension personnel of sericulture and silk industry in Karnataka. This newsletter contains information on innovative aspects of pre and post-cocoon technologies, success stories, silk prices, disease forewarning, news briefs, silk prices and other activities and training programmes organized by Central Silk Board.

- *Resham Samvaad* (Dialogue for Development), a multi-colour triannual report that details various interaction programmes of Chairman, CSB with the stakeholders and policy makers across the country, regarding various developmental issues, problems and prospects.
- *Resham Bharati*, a bi-annual in-house journal 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.

Other publications

- *Seri-States of India – A Profile* 2019: A compendium of profiles of sericulture States of India highlighting the performance of sericulture sector, schemes implemented, special features of individual states, etc., covering 27 sericulture-practicing states of the country. This compendium includes useful data and information on sericulture and allied activities, list of manufacturers of various devices, equipment and machineries in pre- and post-cocoon sectors, contact details of state governments and agencies involved in sericulture etc., and it is highly useful for students, academicians, planners, sericulturists and other stakeholders. This was released by Union Minister of External Affairs, Smt. Sushma Swaraj during the "Surging Silk–Mega Event" held at New Delhi during February 9, 2019 in the august presence of Union Minister of Textiles, Smt. Smriti Zubin Irani.
- *Multicolour Calendar-2019*: Brought out multicolour calendar-2019 of Central Silk Board, highlighting the success stories of the select stakeholders from different segments of sericulture and silk industry across the country who are the role models for others.

Press & Media Relations

Central Silk Board in liaison with Press Information Bureau issued several press invitations/notes/releases on various sericulture and silk related activities and events. There was wide coverage of such activities in various newspapers in English and vernacular languages as well as electronic media including All India Radio and Doordarshan. These include:

1. Celebration of National Technology Day, which was organized by CSTRI, Bengaluru on May 11, 2018 at CSB Complex.
2. Swacchhata Abhiyan organized by SMOI, Bengaluru Chapter, in coordination with CSTRI and CSB, Bengaluru.
3. Surging Silk – Mega Event inaugurated by Union Minister of External Affairs, Smt. Sushma Swaraj.

Audio-visual Publicity

During the year, Central Silk Board produced two video films on "Bivoltine Loose Egg Production Technology" and "Bivoltine Egg Handling Techniques" in seven languages for creating awareness amongst the stakeholders through NSSO, Bengaluru.

CSB also produced seven animated instructional video films on various topics of mulberry sericulture in English as an added tool to educate the trainees.

The Publicity Section has also prepared seven video clips of select awardees of best sericulture awards, which were screened during Surging Silk event held at New Delhi on February 9, 2019. Further, a good number of video clips on successful stakeholders were prepared and forwarded to MoT for wide

publicity. Also successfully coordinated with NIC, Delhi and MoT and event manager for the multi-locational interactive video conference held during the Surging Silk–Mega Event held at Vigyan Bhavan, New Delhi.

Participation in Exhibitions

Publicity Section, CSB participated in the Reshme Krishi Mela organized by CSR&TI, Mysuru on February 24, 2019. Literature and video films related to activities of sericulture were on display for the benefit of visiting seri-farmers. Further, the CSB secretariat coordinated participation of various units of CSB in the following expos and trade fairs:

a. RO, Mumbai in the Konkan Mahotsav held at Mumbai during April 22 to May 6, 2018
b. RO, Bhubaneswar in the 16th Folk Fair at Puri, Bhubaneswar held during June 3-7, 2018.
c. CSR&TI, Berhampore & RO, Kolkata in the 6th National Exhibition 2018 held at Kolkata during July 26-29, 2018.
d. RTRS, Bhandara in the Agro-Vision 2018 held at Nagpur during November 23-26, 2018.
e. RO, Kolkata in the India International Trade Fair held at Lucknow during November 5-8, 2018.
f. CSR&TI, Berhampore in the Sunderban Krishi Mela – Kultali 24 Parganas, West Bengal during January 3-12, 2019.

2. Official Language Policy

Central Silk Board 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 2018-19. As a result of accelerating the progressive use of Hindi in official purposes, offices of Central Silk Board achieved more than the targets fixed in Annual Programme of Official Language Department. Major achievements and action taken during the period under report are furnished as under:

Table 3.13: Awards received by CSB offices

Office	Award details	Grading	Awarded on
CSB Secretariat, Bengaluru	Town Official Language Implementation Committee, Bengaluru	Second	17.07.2018
CSR&TI, Mysuru	Regional Implementation Office (South)	Second	14.02.2019
CSTRI, Bengaluru	Town Official Language Implementation Committee, Bengaluru	Third	17.07.2018
MSSO, Guwahati	Town Official Language Implementation Committee, Guwahati	Citation	14.12.2018
RO, Guwahati	Town Official Language Implementation Committee, Guwahati	Citation	14.12.2018
RO, Lucknow	Town Official Language Implementation Committee, Lucknow	Fifth	26.06.2018

Awards

The details of CSB offices which were awarded for excellent performance in Official Language implementation are given in Table 3.13.

Compliance of Official Language Act, 1963 & Rules, 1976

Central Silk Board and all its offices complied with Section-3(3) of the Official Language Act, 1963. Further, following Rule-5 of Official Language Rules, 1976, letters received in Hindi were replied in Hindi. Targets fixed for original correspondence, in the Annual Programme 2018-19 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 Board's Secretariat and its subordinate units. 30 Staff members of CSB were trained on computer for doing work in Hindi. Phonetic typing was focused in the training and many staff shown their interest as they were not able to type in in-script 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 28.05.2018, 27.08.2018, 06.12.2018 & 27.03.2019. In 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 Central Silk Technological Research Institute, Bengaluru from September 3-14, 2018 in Bengaluru and Competitions such as handwriting, extempore speech, noting-drafting, dictation, hindi reading, official language knowledge, *Vividha,* cross word competition and Rajbhasha Manthan programme were organized. Hindi Day was celebrated on 14.09.2018. Hindi Fortnight Valedictory-cum-Prize Distribution function was organized on 27.09.2018 and winning officers/staff were awarded Staff of Central Silk Board also participated in the competitions organized under the auspices of Town Official Language Implementation Committee. Fourteen officers/staff of Central Silk Board comprising of CSTRI and NSSO, were awarded at town level Bengaluru on 17.12.2018.

Workshop/Seminar

One-day Hindi Workshops for the staff of CSB on 18.05.2018, 24.08.2018, 14.12.2018 and 20.03.2019 were organized at the Board Secretariat. A total of 59 staff were trained in the workshop. CTR&TI, Ranchi organized Rajbhasha Technical Seminar on 06.02.2019. Scientists of CSB presented the papers in Hindi in the seminar on overall development of tasar silk industry. Hindi Workshops were also organized in attached and subordinate offices of the Central Silk 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. 'Leap Office 2000' is also used in some CSB Offices. CSTRI, Bengaluru has taken

Corporate Licence of Bank Script Software for preparing pay slip in bilingual in CSB main office and accounting Units of CSB.

Inspection

Inspections pertaining to the implementation of Official Language were carried out in 62 attached and subordinate offices of the Board by the Board Secretariat and its Attached/ Subordinate Offices. Regional Implementation Office inspected RO, New Delhi on 27.09.2018 & MSSO, Guwahati on 13.12.2018 and their performance was appreciated by the team.

Publication

Board Secretariat published Annual Administrative Report, 2017-18, Certified Accounts with Audit Certificate, Audit Report for the year 2017-18 and Resham Bharati June, 2018 in Hindi. CTR&TI, Ranchi published Annual Report 2017-18, House Journal Resham Vani and Oak Tasar Margdarshika, 2018 in Hindi. CSR&TI, Mysuru published Resham Kiran, Technology Descriptor and translated "Designing of Rearing House", 'Poshan", "Ankur", "Biological Control", "Doctor Soil", "Serifit" and "Tray Dhulai Sah Visankraman Machine" in Hindi. CSR&TI, Pampore published half-yearly hindi newsletter. BTSSO, Bilaspur published Newsletter, four technical pamphlets and Annual Report 2017-18 in Hindi. CSGRC, Hosur published Annual Report and Newsletter in Hindi. MSSO, Guwahati published Annual Report and Half-yearly Hindi Newsletter.

Translation

The Board Secretariat translated Annual Report 2017-18, Certified Accounts with Audit Certificate & Audit Report 2017-18, "Background Note on Silk & Sericulture in Hindi, minutes of the Standing Committee Meeting and Board's Meeting.

Competitions at Town Level

The Board Secretariat, Bengaluru organized competition ''Hindi Noting and Drafting'' under the aegies of TOLIC, Bengaluru at town level on the occasion of Inter Office Competition on 08.10.2018. CSTRI, Bengaluru also organized extempore speech at town level.

3. Bivoltine Sericulture Programme

Implementation of Bivoltine Cluster Promotion Programme (CPP), which was initiated in XII Plan, was approved for continuation beyond XII Plan for three years i.e., 2017-20. During 2018-19, with the joint concerted efforts of CSB and DoSs, the production level of bivoltine raw silk in the country reached 6,911 MT (increase of 17.65% over production of 2017-18). About 4,987 MT (72% of the total production) of bivoltine raw silk came from 151 clusters and the remaining 1924 MT came from non-captive areas. A database of farmers covered under the Cluster Promotion Programme is maintained in CSB web portal "seri5k.csb.gov" and the cluster performance was monitored and reviewed at the Secretariate. Bivoltine raw silk production target *Vs* achievement during 2013-14 to 2018-19 is given in Table 3.14.

Table 3.14: Bivoltine raw silk production target *Vs* achievement during 2013-14 to 2018-19

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	99.00	3405
2017-18	6200	5874	94.74	4100
2018-19	7200	6987	95.99	4987

Production of bivoltine raw silk through captive and non-captive area during 2018-19 is furnished in Table 3.15.

Table 3.15: Bivoltine raw silk production through captive and non-captive area during 2018-19

#	State	Clusters	Production of Bivoltine Raw Silk (MT) *(Provisional)*		
			Captive area	Non-captive area	Total
Southern Zone					
1	Karnataka	46	1750	317	2067
2	Tamil Nadu	28	1235	691	1926
3	Andhra Pradesh	13	1283	182	1465
4	Telangana	4	146	68	214
5	Maharashtra	9	326	163	489
6	Kerala	2	17	2	19
	Sub-Total	**102**	**4757**	**1423**	**6180**
North-Western Zone					
1	Jammu and Kashmir	6	16	102	118
2	Uttarakhand	7	17	19	36
3	Himachal Pradesh	8	17	17	34
4	Punjab	1	2	1	3
5	Haryana	0	0	1	1
	Sub-Total	**22**	**52**	**140**	**192**
Central-Western Zone					
1	Madhya Pradesh	4	27	26	53
2	Uttar Pradesh	8	40	67	107
3	Chhattisgarh	0	0	1	1
	Sub-Total	**12**	**67**	**94**	**161**
Eastern Zone					
1	West Bengal	4	36	0	36
2	Odisha	2	Neg.	Neg.	Neg.
3	Bihar	1	1	0	1
	Sub-Total	**7**	**37**	**0**	**37**
North-Eastern Zone					
1	Assam & BTC	3	28	37	65
2	Mizoram	1	8	57	65
3	Nagaland	1	7	3	10
4	Manipur	2	24	99	123
5	Tripura	1	7	22	29
6	Sikkim	0	0	Neg.	Neg.
7	Arunachal Pradesh	0	0	1	1
8	Meghalaya	0	0	48	48
Sub-Total		**8**	**74**	**267**	**341**
GRAND TOTAL		**151**	**4987**	**1924**	**6911**

4. North East Region Textile Promotion Scheme

North-East being a non-traditional area for sericulture, Govt .of India has been giving special emphasis for consolidation and expansion of sericulture in all the North-eastern states with critical interventions from host plantation development to finished products with value addition at every stage of production chain. As a part of this, under North East Region Textile Promotion Scheme (NERTPS) - an umbrella scheme of Ministry of Textiles, Govt. of India have approved 38 sericulture projects in all North eastern states in the identified potential districts under four broad categories *viz*., Integrated Sericulture Development Project (ISDP) and Intensive Bivoltine Sericulture Development Project (IBSDP), Eri Spun Silk Mill and Aspirational Districts.

Integrated Sericulture Development Project: 16 Projects

Fourteen projects have been approved, with a total cost of Rs. 586.17 crore with GoI share of Rs. 483.35 crore for implementation in Assam including BTC, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. The projects will support 27,010 acres plantation of mulberry, eri and muga. While 15 projects are meant for implementation by the State Sericulture Departments, one project on creation of seed infrastructure is implemented by CSB to produce and ensure uninterrupted supply of quality seed to NE States. Upto March, 2019, Rs.418.54 crore has been released for the above projects, against which the expenditure reported is Rs.359.73 crore (86%). The projects "Seed Infrastructure Units of CSB" and "Silk Printing Unit at Tripura" are detailed as follows :

Seed Infrastructure Units in CSB

To create infrastructure for production of quality seed in mulberry, eri and muga sectors in NE, a project was approved at a total cost of Rs.37.71 crore (100% Central assistance). This scheme envisages construction of six seed infrastructure units [(one mulberry seed unit at Jorhat (Assam), four muga seed units at Silchar (Assam), Mokukchung (Nagaland), Kokrajhar (BTC-Assam), Tura (Meghalaya) and one eri seed unit at Topatoli (Assam)] with a production capacity of 30 lakh mulberry dfls and 21.51 lakh muga and eri dfls. Rs.35.82 crore has so far been released for this project, against which the expen-diture reported is Rs 32.54 crore (91%).

Silk Printing Unit at Tripura

To modernize the silk printing facilities for value addition to the silk and fabric produced in Tripura, a project for establishment of silk processing and printing unit under NERTPS was approved at a total cost of Rs.3.71 crore (100% central assistance). This unit targets to print and process 1.50 lakh metre silk per annum. So far Rs 3.52 crore has been released for the purpose.

Intensive Bivoltine Sericulture Development Project : 8 Projects

Eight projects have been sanctioned under NERTPS to produce import substitute bivoltine silk with a total cost of Rs. 78,236 crore with a GoI share of Rs. 41,210 crore. The project envisages covering 500 acres in 2 blocks of each district involving about 1,100 women sericulturists in each state. Overall, it aims to cover 4,000 acres of mulberry plantation benefitting around 9,071 women stakeholders covering all NE states (except Manipur). Upto March, 2019, Rs.199.88 crore has been released for the project, against which the expenditure reported is Rs.167.46 crore (84%).

Under sericulture sector of NERTPS (ISDP and IBSDP), there are 24 projects, covering mulberry, eri and muga silks are being implemented in all NE states, with a total cost of Rs.822.94 crore of which GoI share is Rs.693.76 crore. The objective of these projects is to establish sericulture as viable commercial activity, by creating necessary infrastructure and imparting skills to the locals for silkworm rearing and allied activities in the value chain. The projects are proposed to bring around 31,010 acres of plantation under mulberry, eri and muga sectors and expected to contribute additional production of 2,285 MT of raw silk during the project period and generate employment for 2,30,500 persons.

Against GoI share of Rs.620.42 crore released for the above 24 projects, an expenditure of Rs.527.63 crore has been incurred (85%). Upto March, 2019, about 30,652 acres have been brought under host plantation of mulberry, eri and muga covering 42,026 beneficiaries and produced 2,614 MT of raw silk.

New Sericulture Projects (including ISDP, IBSDP, Eri Spun Silk Mill & Aspirational Districts)

Considering the potential for sericulture development in NE, Ministry of Textiles has approved 14 new projects for implementation from 2018-19 onwards with a total project cost of Rs.284.02 crore, of which GoI share is Rs.261.30 crore to cover 17,141 beneficiaries resulting in production of 366 MT of silk during the project period covering 7,160 acres of plantation from mulberry, eri, muga and oak tasar sectors. Besides, 3 new eri spun silk mills proposed for Assam, BTC and Manipur states will produce 165 MT of eri spun silk yarn per annum. Govt. of India has initiated development of silk industry in the Aspirational Districts in one/two blocks per district covering either mulberry, eri, muga or oak tasar as per the potential of the district with the involvement of state governments. The projects are as follows:

1. Establishment of Eri Spun Silk Mill in Assam
2. Establishment of Eri Spun Silk Mill in BTC
3. Establishment of Eri Spun Silk Mill in Manipur
4. Large Scale Eri Farming in Arunachal Pradesh
5. Integrated Eri Silk Development Project for Sustainable Livelihood to Women folk of BTC through Tapioca plantation
6. Bivoltine Sericulture Development project through Women Empowerment in Wokha district of Nagaland
7. Sericulture Development in Aspirational District of Mizoram
8. Sericulture Development in Aspirational District of Nagaland
9. Sericulture Development in Aspirational Districts of Assam
10. Sericulture Development in Aspirational Districts of BTC
11. Sericulture Development in Aspirational District of Meghalaya
12. Integrated Muga Silk Development for Sustainable Livelihood in Arunachal Pradesh.
13. Eri Silk Development Project through Women Empowerment in Chungtia of Mokokchung, District, Nagaland.
14. Intensive Bivoltine Sericulture Development Project in Sapahijala in Tripura.

Upto March, 2019, Rs.22.85 crore has been released by MoT as first installment for the newly approved projects.

Progress of ongoing projects

The summary of sericulture projects being implemented under NERTPS are given in Table 3.16.

Table 3.16: ISDP and IBSDP projects under NERTPS								
#	State	Total Project cost (Rs. Cr.)	GoI Share (Rs.Cr.)	Amount released by GoI up to March 2019 (Rs. Cr.)	Beneficiaries (No.)		Output Silk Production (MT)	
					Target	Achmt	Target	Achmt (P) (Up to March 2019)**
I	**Integrated Sericulture Development Project**							
1	Assam	66.67	47.42	37.48	5,965	5,965	196	343.25
2	BTC	34.92	24.68	22.62	3,356	3,356	171	259.00
3	BTC (IEDPB)	11.41	10.61	10.08	654	654	60	86.65
4	BTC (Soil to Silk)	55.36	53.12	37.09	3,526	2,345	245	136.00
5	Arunachal Pradesh	18.42	18.42	17.50	1,805	1,672	79	17.50
6	Manipur (Valley)	149.76	126.60	107.55	6,613	5,555	450	575.00
7	Manipur (Hill)	30.39	24.67	20.50	2,169	1,201	68	60.53
8	Meghalaya	30.16	21.91	19.57	2,856	2,856	162	219.39
9	Mizoram	32.49	24.49	23.26	1,683	1,683	117	134.56
10	Mizoram (IMSDP)	13.52	12.83	12.19	833	800	16	1.75
11	Nagaland	31.47	22.66	21.52	2,678	2,678	166	268.36
12	Nagaland (IESDP)	13.66	12.83	12.19	1,053	1,053	72	34.37
13	Nagaland (PCT)	8.57	8.48	8.06	400	406	Post-cocoon & post-yarn activities	
14	Tripura	47.95	33.20	29.58	3,432	3,432	275	289.90
15	Tripura (Printing)	3.71	3.71	3.52	-	-	1.50 lakh mts/yr	
16	Mulberry & Vanya Seed Infrastructure under CSB	37.71	37.71	35.82	-	-	30 lakh mulberry & 3.70 lakh muga /eri dfls/yr	
	Total (I)	**586.17**	**483.35**	**418.54**	**37,023**	**33,656**	**2,076**	**2,426.27**
II	**Intensive Bivoltine Sericulture Development Project**							
17	Assam	29.55	26.28	24.96	1,144	1,144	29	36.01
18	BTC	30.06	26.75	25.41	1,188	1,188	26	28.80
19	Arunachal Pradesh	29.47	26.20	24.89	1,144	663	20	5.00
20	Meghalaya	29.01	25.77	24.47	1,044	1,033	27	26.10
21	Mizoram	30.15	26.88	25.54	1,169	1,169	26	23.10
22	Nagaland	29.43	26.16	24.85	1,144	1,144	27	13.38
23	Sikkim	29.68	26.43	25.11	1,094	885	27	8.50
24	Tripura	29.43	25.95	24.65	1,144	1,144	27	47.05
	Total (II)	**236.78**	**210.41**	**199.88**	**9071**	**8,370**	**209.00**	**187.94**
	IEC			**2.00**				

Contd.....

#	State	Total Project cost (Rs. Cr.)	GoI Share (Rs.Cr.)	Amount released by GoI up to March 2019 (Rs. Cr.)	Beneficiaries (No.)		Output Silk Production (MT)	
					Target	Achmt	Target	Achmt (P) (Up to March 2019)**
III	**New Projects**							
25	Ar. Pradesh (ILSEF)	37.25	35.65	9.12	1,270	-	86	
26	Assam (ESSM)	21.53	19.09	-	2,500	-	-	-
27	BTC (ESSM)	21.53	19.09	-	2,500	-	-	-
28	Manipur (ESSM)	21.53	19.09	-	2,500	-	-	-
29	Mizoram (AD)	11.56	10.82	3.45	650	-	20	-
30	Nagaland (AD)	14.65	13.49	4.50	965	-	32	-
31	BTC - IESDP (Tap)	18.63	17.35	5.78	1,400	-	45	-
32	Nagaland - BV	22.43	20.68	-	436	-	18	-
33	Assam - AD	21.03	19.55	-	1,200	-	55	-
34	BTC - AD	20.28	18.64	-	960	-	22	-
35	Ar. Pradesh IMSDP	12.69	12.15	-	750	-	12	-
36	Meghalaya - AD	12.08	10.97	-	410	-	14	-
37	Nagaland - Chungtia	17.74	17.11	-	500	-	26	-
38	Tripura-Sepahijala	31.11	27.64	-	1,100	-	35	-
	Total (III)	**114.92**	**106.05**	-	**4,920**	-	**164**	-
Grand Total (I+II+III)		**1,106.97**	**955.08**	**643.26**	**63,235**	**42,026**	**2,651**	**2,614.21**

*P: Provisional **The project period is for 3-years and it is continuing for further period to complete the target. However, the production has increased against the target since the project period is extended.*

5. Scheduled Caste Sub-Plan

Central Silk Board has been implementing beneficiary-oriented components in sericulture through "Scheduled Caste Sub Plan (SCSP)" in the country in coordination with State Sericulture Departments and other implementing agencies during 2018-19. The main objective is social upliftment of SC families on sustainable basis with a visible impact in terms of income generation and employment through sericulture. The scheme has been implemented during 2018-19, by covering 3018 SC beneficiaries in the States of Andhra Pradesh, Telangana, Himachal Pradesh, Uttar Pradesh, Tamil Nadu and Uttarakhand. Rs.25.00 crore has been released to the states under SCSP during 2018-19. Under the programme, support has been provided to SC families through various components under sericulture as indicated below:

- Development of kisan nursery
- Raising systematic mulberry plantation
- Irrigation facilities to mulberry ericulture departments and other implementing agencies during 2018-19. The aim is to empower downtrodden ST families through

various activities of tasar and mulberry sericulture. The said project has been implemented by covering 2801 ST beneficiaries in the states of Andhra Pradesh, Telangana, Tamil Nadu, Chhattisgarh, Jharkhand, Maharashtra, Madhya Pradesh, Odisha, Himachal Pradesh and West Bengal. Rs.15.00 crore has been released to the states to support ST families through various activities of tasar, eri and mulberry sericulture under TSP during 2018-19 as indicated below:

Tasar Sector

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

Eri Sector

- Support for eri food plantation
- Assistance for construction of rearing house
- Assistance for rearing appliances

Mulberry Sector

- Support for development of kisan nurseries
- Support for development of mulberry plantation
- Assistance for irrigation facilities.
- Scientific rearing house and 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 and capacity building of the stakeholders
- Engaging community resource persons and para-professionals
- Sericulture Resource Centres

6. Vanya Silk Market Promotion Cell

The activities under Vanya Silk Market Promotion Cell (VSMPC) continued during 2018-19 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. The highlights of the activities are:

- VSMPC in association with SMOI, organized Silk Mark – vanya silk Expos at Vishakhapatnam, Bengaluru, Hyderabad, Guwahati and Mysuru. A theme pavilion for vanya silks was also organized and diversified. Vanya silk products were displayed in the pavilion for bringing awareness among the consumers.
- Generic and Brand Promotion of vanya silks were taken up in association with SMOI through advertisements in Shubha Yatra (Airline Magazine), Indian Silk and Silk Mark Vogue magazines and advertisements on market promotion of Vanya silk products during expos.
- Operation of vanya silk shoppees at New Delhi and Bengaluru continued with the earlier allotted registered members.
- Under the concluded collaborative project “Development and Commercialization of Handwoven Eri silk Denim Fabric in North-East” with SMOI, Guwahati 45 denim

garments (traditional and modern) were developed. The developed garments were displayed in different expos and efforts are being made for its commercialization.

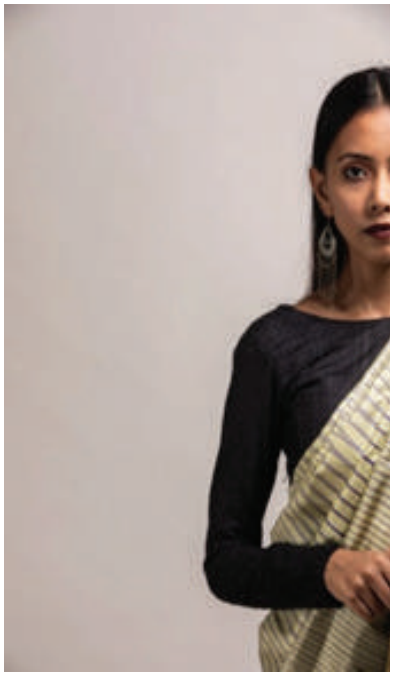
VSMPC has been regularly interacting with manufacturers, traders, exporters, designers and consumers during expos, events etc. and bringing awareness about Vanya silk products, their comfort characteristics, availability and production process. VSMPC is also providing backward and forward linkages to entrepreneurs, manufacturers, traders and exporters who showed interest in vanya products.

7. Product Design Development and Diversification

The activities under Product Design Development and Diversification (P3D) continued during 2018-19 with a special focus on fabric engineering, silk blends, product development in the clusters, commercialization of new products developed, assisting the commercializing partner in providing backward linkage,

Glimpses of newly developed products



Theme Pavilions

technical know-how and assisting/coordinating in sample development. The highlights for the year are:

- Under collaborative project taken up with NIFT, Bhubaneshwar, silk products were developed using Tie & Dye and other surface techniques with the use of tasar peduncle yarn, eri and other silk yarns. These products have been widely accepted by the consumers. The commercialization of these products is underway with NIFT, Bhubaneswar, SADAC and CSB with an MOU.
- Collaborative project work taken up with NIFT, Mumbai, for development of diverse products in Maheshwar cluster using ARM reeled bivoltine yarn as warp and weft. The product development is under progress
- M/s. Five P Ventures Pvt. Ltd., Erode is constantly assisted and necessary technical details are provided in developing the eri 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.
- Products developed in P3D have been displayed in different expos organized by ISEPC, SMOI and Govt. of Odisha. During these events, theme pavilion has been organized and newly developed products showcased with a view to commercialize these products.

8. Vanya Cluster Promotion Programme

The Cluster Promotion Programme for vanya silks is being implemented jointly by CSB units in close coordination with concerned State Sericulture Department, by utilizing the funds allocated under the restructured Central Sector Scheme. Twenty two clusters in tasar sector in different tasar producing states are listed in Table 3.17.

Table 3.17: Vanya Silk Clusters			
#	Institutes linked	State	Tasar cluster
1	CTR&TI, Ranchi	Jharkhand	Mohanpur, Deoghar
2			Jharmundi, Dumka
3			Ramgarh, Dumka
4			Bandhgaon, West Singhbhum
5			Majhgaon, W. 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

CTR&TI, Ranchi and BTSSO, Bilaspur have been entrusted with the responsibility of monitoring the implementation of these clusters in close coordination with respective state sericulture department.

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. GoI assistance amounting to Rs.12.60 crore to support 1,853 beneficiaries under the programme was released to respective state governments and Rs.74.474 lakh was released to CTR&TI, Ranchi and BTSSO, Bilaspur towards capacity building, conducting study tours and awareness programmes and other activities related to implementing the VCPP programme.

Following major interventions were undertaken in the clusters:

- Organizing stakeholders to undertake different tasar activities in clusters.
- Augmentation of seed production in private 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 proven technologies in the areas of seed production and rearing activities, etc., as per the need of the cluster.
- Strengthen backward and 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 Joint Disease Monitoring Squads.

Under the programme, 2,229 beneficiaries (425 seed rearers, 109 private graineurs, 4 door-to-door service agents and 1691 commercial rearers) were covered. Capacity building training has been imparted to 827 persons and 19 awareness programmes were conducted for technology transfer. During 2018-19, 1.69 lakh dfls were brushed by 924 Adopted Seed Rearers in seed crop (I Crop) and 61.55 lakh seed cocoons were produced @ 36.37 cocoons / dfl. These seed cocoons were processed by 142 private graineurs to produce 8.03 lakh dfls of which 5.98 lakh dfls were reared by 2772 commercial farmers in second crop (commercial) and 259.81 lakh cocoons were produced @ 43.47 cocoons / dfl in the clusters. Excess dfls were supplied to farmers of non-captive areas adjoining the clusters.

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

Soil to Silk tasar project in Janjgir-Champa districts of Chhattisgarh is 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 is proposed to be met from the general Central Sector Schemes of CSB. Project envisages to develop new block tasar plantations in 2,500 hectares of land in the project and maintenance of 1240 hectares of existing block plantations in forest community land, besides supporting 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 454 lakh cocoons and silk production from 3.3 MT/ annum to 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 and Rs.1043.63 lakh during 2017-18 to the state to support various critical interventions in the project like assistance to nucleus seed rearers, commercial rearers and 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.

New tasar plantations in 1,302 ha were raised and maintained during past three years under the project, besides, supporting 10 nucleus seed farmers, 120 basic seed farmers, 41 private graineurs and 419 reelers. 35,000 nucleus seed and 2,34,535 commercial seed were reared during 2018-19 and produced 103.53 lakh cocoons by 852 farmers in the project area and produced 11.325 MT raw silk under the project.

10. MKSP Projects for Tasar Development

Multi-state tasar projects under Mahila Kisan Sashktikaran Pariyojana (MKSP) for promoting tasar based livelihoods are being supported by Central Silk Board 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. These projects are implemented in six states *viz*., Jharkhand, Odisha, West Bengal and Chhattisgarh in coordination with PRADAN, Maharashtra by BAIF, Pune, and Bihar in coordination with BRLPS & PRADAN. MKSP project in AP is discontinued by the SERP, Govt. of Andhra Pradesh since 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 Action Plan.

MoRD has released its first and second installments of 75% amounting to Rs. 29.34 crore to CSB under multistate project, of which Rs. 29.61 crore has been released by CSB to the PIAs, PRADAN & BAIF and Rs.28.11 crore has been utilized by the PIAs. MoRD share is released directly to BRLPS and SERP in respect of Bihar and Andhra Pradesh. 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: As on March, 2019, a total of 33,093 farmers were covered against the target of 36,108 including 26,352 STs (79.6%), 1,845 SCs (5.6%), 3,568 OBC (10.8%) and 1328 others (4.0%) under the project, since inception from 709 revenue villages, 64 blocks and 27 districts of the project states.

Augmentation of tasar host plants: 2,738 Mahila kisans established 1,521 ha. of 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 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 1.782 lakh dfls of nucleus seed to produce 94.33 lakh seed cocoons @ 52.9 seed cocoons per dfl. 1704 seed rearers brushed 10.86 lakh dfls of basic seed procured from BTSSO and BSPUs, to produce 320.81 lakh seed cocoons@ 29.54 seed cocoons per dfl. 360 private graineurs processed 222.587 lakh seed cocoons and produced 50.95 lakh commercial dfls @ cocoon:dfl ratio of 4.37 : 1 and 13933 commercial rearers brushed 53.52 lakh dfls procured from the private grainages under the special projects, to produce 1806.72 lakh reeling cocoons.

Capacity building & Institution Building: Under human resource programme various capacity & institution building training programmes were organized under the project. Major ones being the technical training (30,849), training on sectoral activities *viz.,* sustainable agriculture, vegetable cultivation etc., (40,139), Community Resource Persons Training (1446 nos.), On-field training to CRPs (78,052) etc. Further, 5,221 mahila kisans were taken on exposure visits (under producer collectives), and two trainers training programmes were organized. Six training modules for various HRD activities and technical protocol were prepared and submitted to NRLM, under the projects. Also, 687 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 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. About 50,000 mahila kisans will be supported 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.

11. Oak Tasar Development Project in Uttarakhand

CSB has sanctioned a project for Oak Tasar Development in Uttarakhand for a period of four years from 2016-17 to 2019-2020 with a total financial outlay of Rs.28.36 crore. Out of which, CSB share is Rs.19.55 crore under TSP / CSS, State share is Rs.6.83 crore (State Plan & MGNREGS) and beneficiary share is Rs.1.98 crore. The main objective of the project is to augment oak tasar silk production in the state. The project envisages addressing the infrastructure development for streamlining the seed sector, chawki rearing, equipment / infrastructure support for conducting seed crop and commercial crops rearing, reeling / spinning capacity building of various stakeholders, etc., for forward integration to increase oak tasar silk production and create sustainable livelihood for tribal people inhabiting hilly areas. Apart from this, raising of new *Quercus serrate* plantations in 500 ha has been envisaged with support from MGNREGA 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 from 0.05 to 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 2,290 project beneficiaries. The project is being implemented by Department of Sericulture, 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 Department of Sericulture, Govt. of

Uttarakhand for implementation of the project. State has identified four NGOs namely AT India, Suvidha, Sanjeevani & Hifeed for implementation of the project. Besides, RTRS, Bhimtal and DOS, Uttarakhand are also involved in implementation of oak tasar project.

The activities carried out under the project include raising of 10 kisan nurseries, capacity building for 35 beneficiaries (20 ASRs, 10 kisan nursery owners and 5 private graineurs). Besides, one workshop, one resource development programme and 2 awareness programmes were conducted.

12. Japan Overseas Cooperation Volunteers Programme [JOVC]

Central Silk Board 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. Initially six JOCVs were posted in cluster locations in Karnataka (1), Tamil Nadu (1), Andhra Pradesh (2) and Uttarakhand (2). Further, after completion of their assignment for period of two years, JICA has deputed three new JOCVs, to one each in the bivoltne clusters of Karnataka, Tamil Nadu and Uttarakhand during 2018-19 to continue the JOCV activities in those clusters. The programme will continue up to December, 2020.

13. Support from other Govt. of India Schemes through Convergence

Central Silk Board under Ministry of Textiles, GoI has made continued efforts for sourcing funds from other ministries of Govt. of India through convergence of schemes like RKVY, MGNREGA etc., and from state plan schemes to support plantation activities and infrastructure - both for pre- and post-cocoon operations upto yarn production and to create sustainable livelihood through tasar culture for tribal women under MKSP through SRLMs. Central Silk Board facilitated state govt. for preparation of convergence projects for developing plantations and infrastructure and monitored the progress were also extended Technical recommendations for the projects submitted by the state to concerned Ministry.

As reported from Department of Sericulture of states, during the current financial year 2018-19 have submitted 169 proposals for Rs.687.65 crore and received sanction for an amount of Rs.600.89 crore and funds worth Rs.411.06 crore released to sericulture departments to support the sector.

14. Application of Remote Sensing & Geographical Information System in Sericulture

SILKS (Sericulture Information Linkage Knowledge System) has been developed in collaboration with North Eastern Space Applications Centre (NESAC), Shillong to find out potential areas for development of sericulture in the country. “SILKS” is a single window ICT (Information and Communication Technology) based information and advisory services system for planners, field staff and farmers practicing sericulture. A total of 108 districts in 24 States were covered in first phase of the project and 70 districts are being covered under second phase. A “Project Atlas” for Sericulture Development (Phase II: NE States) for the selected 20 districts was released during the workshop held at Guwahati, Assam on 22.10.2018. The study in the remaining 50 districts in 18 sericulture practicing states (other than North eastern states) is in final stage.

Central Silk Board has also taken-up a collaborative project with NESAC, Shillong in geo-tagging of the assets (plantation and infrastructure) created by CSB and states with support of various govt. funded projects by utilizing the equipment *viz.,* "Navshare", a self-contained Gagan enabled Global Positioning System (GPS) data recorder at a total project cost of Rs.13.00 lakh.

A two-day Workshop on Applications of Geospatial Technology for Sericulture Development was organized by NESAC and Central Silk Board at Assam Administrative Staff College, Guwahati during October 22-23, 2018. About 60 Scientists and officials from CSB, State Directorates of Sericulture, State Remote Sensing Application Centres and NESAC participated in the workshop.

Under this Project, NESAC has developed a mobile app. *viz.,* "SILKS" for geo-tagging of the assets and it is under testing mode. NESAC and CSB are in the process of organizing training programmes state and CSB officers and scientists of NE states on geo-tagging of assets through mobile application.

A review meeting was also convened on 28-12-2018 at CSB, Bengaluru under the Chairpersonship of the Member Secretary, CSB on implementation of the NESAC project *viz.,* "geo-tagging of assets created with the support of various government-funded projects from Central Silk Board in north eastern Region" with Shri P.L.N. Raju, Director, NESAC, Shillong and Scientists of NESAC & CSB.

15. Mysuru Mega Silk Cluster Project

The Government of India during the budget announcement for 2014-15, had proposed to set up seven textile mega clusters in the country with an allocation of Rs.200 crore, with one such cluster for silk at Mysuru (Karnataka). Accordingly, it was proposed to set up a Mega Silk Cluster at Mysuru following the guidelines of Comprehensive Powerloom Cluster Development Scheme of Govt. of India. The main objective of the project is to create infrastructure and common facility required for carrying out silk weaving and processing activities.

Ministry of Textiles, Govt. of India had appointed the Karnataka State Textile Infrastructure Development Corporation Ltd., Bengaluru as Cluster Management & Technical Agency (CMTA) for the project. Ten acres of land identified for the purpose near Mysuru was handed over to the Department of Handlooms & Textiles, Govt. of Karnataka. The SPV has been registered during March 2017. The SPV has prepared the Detailed Project Report and submitted to Ministry of Textiles for consideration. The state govt. is in the process of transferring the land to the SPV on lease.

FINANCE AND ACCOUNTS

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 2018-19, for enabling it to exercise the powers and discharge its functions under the Act. The details of the Grants-in-Aid released by the Govt. of India, Ministry of Textiles, New Delhi and the expenditure booked by Central Silk Board during the financial year 2018-19 and also the provisions approved by the Ministry in BE 2019-20 are given in Table 4.1.

Table 4.1: Grants-in-Aid released by Govt. of India and expenditure booked by CSB during 2018-19

[Rs. in lakh]

Budget Head		GIA released by MOT during 2018-19	Expenditure booked during 2018-19	Outlay [BE] Approved by MOT for 2019-20
I. PLAN				
	Central Sector Schemes			
I- A	**Grants towards Development of Silk Industry**			
i.	Grants-in-Aid - Salaries [36]	40,429	40,429	40,500
ii.	Grants-in-Aid - General (Revenue) [31]	5,800	5,800	5,800
iii.	Grants-in-Aid - Creation of Capital Assets [35]	800	800	1,650
	Sub-total	47,029	47,029	47,950
I-B	**Grants towards Development of Silk Industry: Special Component Plan for Scheduled Caste [SPSC]**			
i.	Grants-in-Aid - Salaries [36]	3,100	3,100	8,500
ii.	Grants-in-Aid - General (Revenue) [31]	2,500	2,500	4,000
iii.	Grants-in-Aid - Creation of Capital Assets [35]	0	0	0
	Sub-total	5,600	5,600	12,500
I-C	**Grants towards Development of Silk Industry : Tribal Area Sub Plan [TSP]**			
i.	Grants-in-Aid - Salaries [36]	1,500	1,500	3,000
ii.	Grants-in-Aid - General (Revenue) [31]	1,500	1,500	5,500
iii.	Grants-in-Aid - Creation of Capital Assets [35]	0	0	0
	Sub-total	3,000	3,000	8,500
	TOTAL - PLAN	**55,629**	**55,629**	**68,950**

Contd..

Budget Head		GIA released by MOT during 2018-19	Expenditure booked during 2018-19	Outlay [BE] Approved by MOT for 2019-20
II. Grants towards Development of Silk Industry in North Eastern Areas [NEA]				
i.	Grants-in-Aid - Salaries [36]	3,100	3,100	1,000
ii.	Grants-in-Aid - General (Revenue) [31]	616	616	500
iii.	Grants-in-Aid - Creation of Capital Assets [35]	700	441	550
iv.	Scheduled Tribal Component- GIA-Gen [31]	84	84	100
v.	Grants-in-Aid-Salaries [ST component in NEA]	--	--	1,900
	Sub-total	4,500	4,241	4,050
TOTAL - NE - PLAN		**4,500**	**4,241**	**4,050**
GRAND TOTAL [I+II]		**60,129**	**59,870**	**73,000**

As against the Grants-in-Aid of Rs.60,129 lakh sanctioned and released by the Ministry, expenditure to the extent of Rs.59,870 lakh has been booked by CSB during 2018-19 and the balance of Rs.259 lakh has been surrendered to Govt. of India, as unspent GIA under the Budget Head NEA-Capital for 2018-19.

Loan for the year 2018-19

No loan amount was released by the Ministry of Textiles to Central Silk Board towards House Building Advance during 2018-19.

Internal Audit

Central Silk Board through its Internal Audit Section at Board Secretariat along with five Zonal Audit Teams is conducting internal audit of all the units of CSB every year. The designated teams conducted the internal audit during 2018-19 and achieved the target as on March 2019 as per the approved programme. The details are given in Table 4.2.

In addition, the Internal Audit Section had also given audit opinion on 40 files referred by different Sections of CSB on service matters and other subjects during the year.

Besides, the PDC, MAB, Hyderabad has also conducted the audit of 10 CSB units situated in different parts of the country during 2018-19 and submitted inspection reports. Suitable replies were furnished to concerned AGs from time-to-time.

Table 4.2: Internal audit conducted during 2018-19

#	I.A. Team	Units covered		Total
		Delegated	Non-delegated	
1	C.O. I.A. Team	45	06	51
2	ZAT - A, CTR&TI, Ranchi	20	03	23
3	ZAT - B, CSR&TI, Berhampore	16	13	29
4	ZAT - C, CSR&TI, Mysuru	17	13	30
5	ZAT - D, RSRS, Jammu	13	06	19
6	ZAT - E, MSSO, Guwahati	02	13	15
Total		**113**	**54**	**167**

SERICULTURE STATISTICS

Raw Silk Production

The year 2018-19 was an eventful year in raw silk production in the country. The annual raw silk production reached a record high of 35,468 MT during 2018-19, of which, mulberry raw silk production aggregated to 25,345 MT (71.5%) and the remaining 10,124 MT (28.5%) was *Vanya* silks (Table 5.1).

The total raw silk production in the country increased by 11.2% during 2018-19 over 2017-18. The mulberry raw silk production in the country was 25,344 MT (BV–6,987 MT and CB– 18,358 MT) in 2018-19 compared to 22,066 MT (BV–5,874 MT and CB–16,192 MT) in 2017-18.

The bivoltine raw silk has shown an increase of 18.9% during 2018-19 over the previous year. Eri and muga silks achieved a production level of 6,910 MT and 233 MT, respectively. State-wise and variety-wise raw silk production during 2018-19 compared to 2017-18 is given in Annexure-IV (A) & IV (B).

Table 5.1: Raw Silk Production in India

#	Particulars	2018-19		2017-18	% increase over 2017-18
		Target	Achievement		
A	Mulberry plantation (ha)	245600	235001	223926	4.9
B	**Mulberry Raw Silk (MT)**				
	Bivoltine	7200	6987	5874	18.9
	Cross breed	18100	18358	16192	13.4
	Sub-Total (B)	**25300**	**25345**	**22066**	**14.9**
C	**Vanya Silk (MT)**				
	Tasar	3650	2981	2988	-0.3
	Eri spun silk	6750	6910	6661	3.7
	Muga	260	233	192	21.9
	Sub-Total (C)	**10660**	**10124**	**9840**	**2.9**
	Total (B+C)	**35960**	**35468**	**31906**	**11.2**

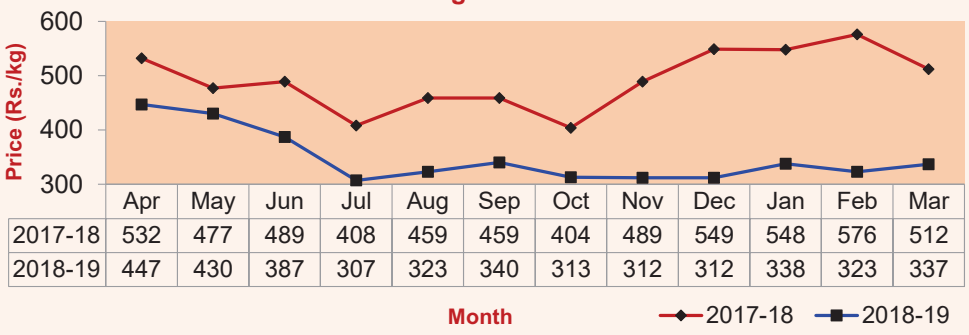
Source: *Compiled from the reports received from the State Sericulture Departments*

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 2017-18 are depicted in Figs.5.1 to 5.3.

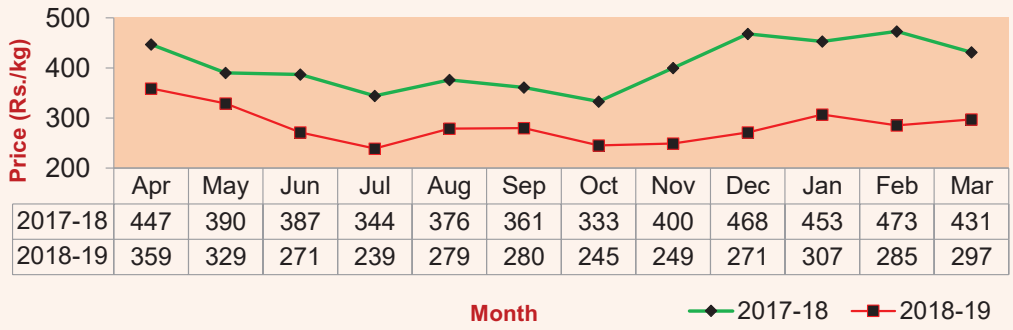
Fig. 5.1: Average Prices of Bivoltine Hybrid Cocoons at Ramanagaram Market



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2017-18	532	477	489	408	459	459	404	489	549	548	576	512
2018-19	447	430	387	307	323	340	313	312	312	338	323	337

Data Source: Department of Sericulture, Karnataka

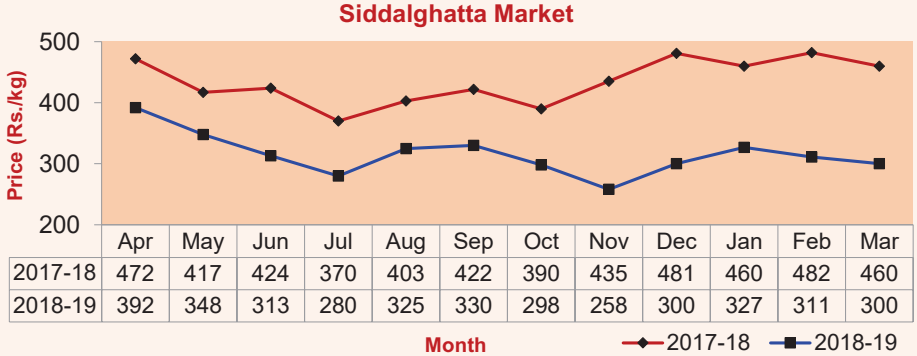
Fig. 5.2: Average Prices of Cross Breed Cocoons at Ramanagaram Market



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2017-18	447	390	387	344	376	361	333	400	468	453	473	431
2018-19	359	329	271	239	279	280	245	249	271	307	285	297

Data Source: Department of Sericulture, Karnataka

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



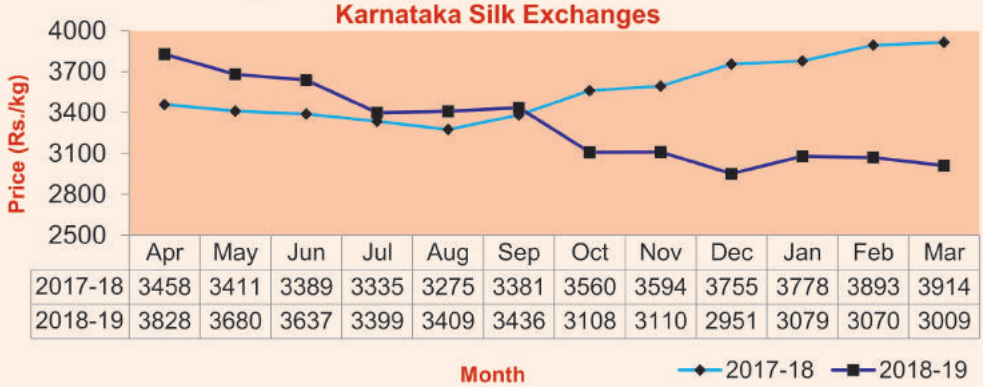
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2017-18	472	417	424	370	403	422	390	435	481	460	482	460
2018-19	392	348	313	280	325	330	298	258	300	327	311	300

Data Source: Department of Sericulture, Karnataka

Mulbery 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

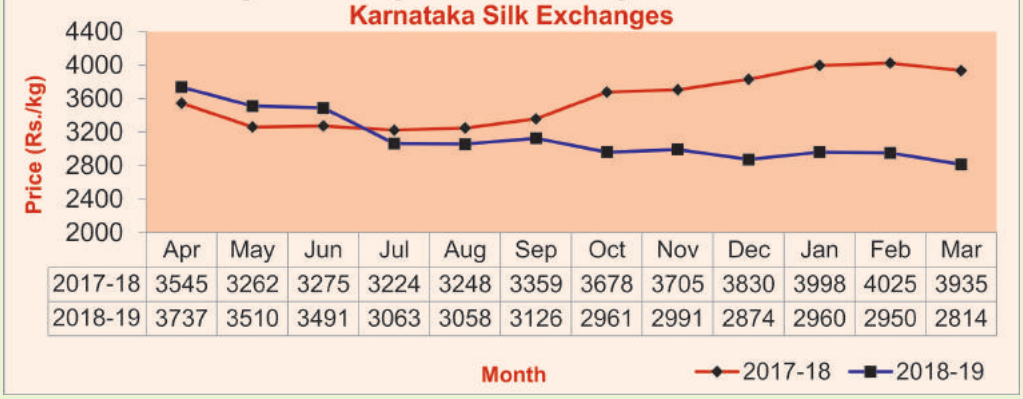
Fig. 5.4: Average Prices of Multi-end Silk in Karnataka Silk Exchanges



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2017-18	3458	3411	3389	3335	3275	3381	3560	3594	3755	3778	3893	3914
2018-19	3828	3680	3637	3399	3409	3436	3108	3110	2951	3079	3070	3009

Data Source: Department of Sericulture, Karnataka

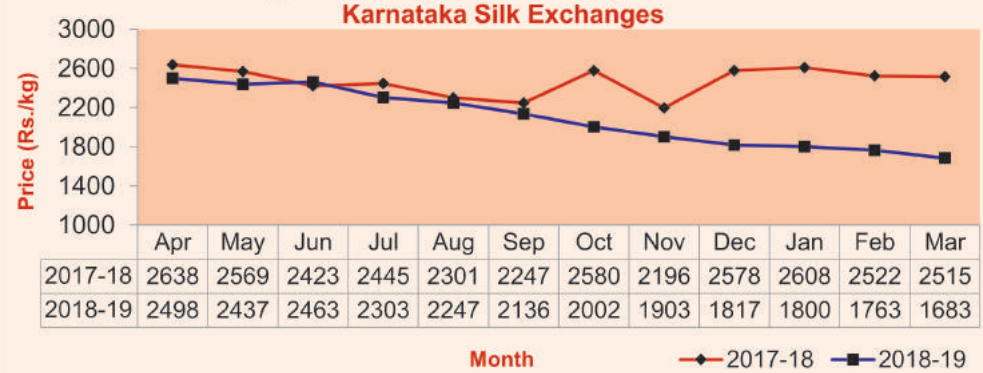
Fig. 5.5: Average Prices of Cottage Basin Silk in Karnataka Silk Exchanges



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2017-18	3545	3262	3275	3224	3248	3359	3678	3705	3830	3998	4025	3935
2018-19	3737	3510	3491	3063	3058	3126	2961	2991	2874	2960	2950	2814

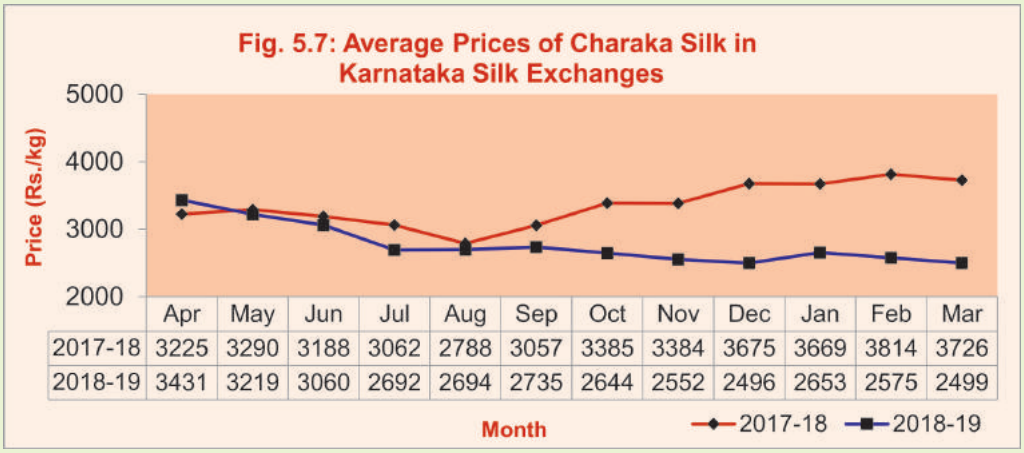
Data Source: Department of Sericulture, Karnataka

Fig. 5.6: Average Prices of Dupion Silk in Karnataka Silk Exchanges



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2017-18	2638	2569	2423	2445	2301	2247	2580	2196	2578	2608	2522	2515
2018-19	2498	2437	2463	2303	2247	2136	2002	1903	1817	1800	1763	1683

Data Source: Department of Sericulture, Karnataka



	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2017-18	3225	3290	3188	3062	2788	3057	3385	3384	3675	3669	3814	3726
2018-19	3431	3219	3060	2692	2694	2735	2644	2552	2496	2653	2575	2499

Data Source: Department of Sericulture, Karnataka

Vanya Cocoon and Silk Prices

Prices of cocoon and raw silk of tasar, eri and muga in important markets of Vanya silk producing States for the year 2018-19 and 2017-18 are given in Table 5.2.

Table 5.2: Prices of Vanya cocoons and raw silk

(Unit: Price: Rs./kg)

Variety	2018-19	2017-18
A) Tasar Prices *		
1. Reeling cocoon (1000 No.) (Gr I)		
a) Raily	4000-5000	4000-5000
b) Daba	3000-3450	3000-3700
2. Reeled yarn	3200-3500	3200-3500
3. Ghicha yarn	1800-2100	1800-2100
B) Eri Prices**		
1. Cut cocoons (Superior Quality)	700-900	700-890
2. Spun yarn	2250-2800	2100-2700
C) Muga Prices **		
1. Reeling cocoon (1000 No.)	1800-6000	1800-4000
2. Raw silk		
A) Warp yarn	18000-25000	13000-22000
B) Weft yarn	16500-20000	12000-20000

Note: ** Tasar prices pertain to Chaibasa (Jharkhand), Champa & Raigarh (Chhattisgarh) and Bhagalpur (Bihar) markets*

*** Eri and muga prices pertain to Guwahati (Assam) market*

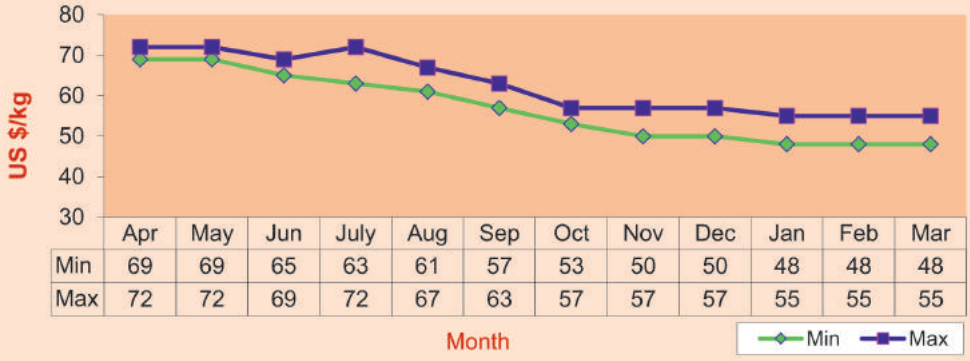
Source: *Raw Material Bank, CSB, Chaibasa and Regional Office, CSB, Guwahati*

Data Source: Department of Sericulture, Karnataka

Prices of imported Chinese Mulberry Raw Silk

Landed price range of imported Chinese mulberry raw silk of 4A and above grades along with its sale price at Varanasi market during 2018-19 are shown in Figs. 5.8 and 5.9.

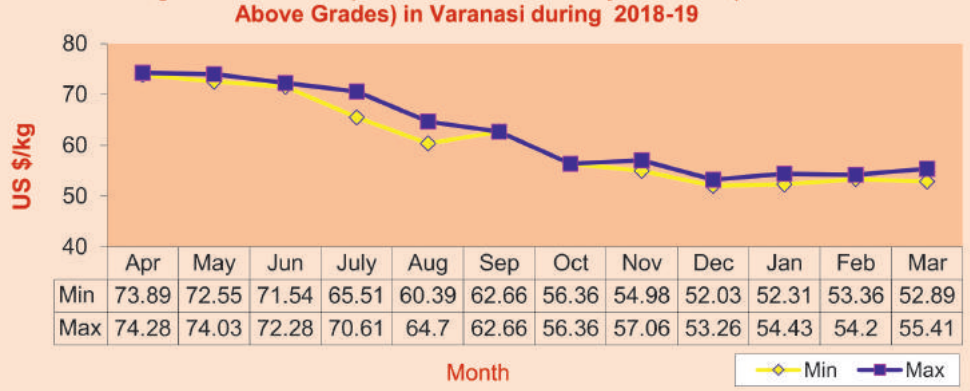
Fig.5.8: Prices of Imported Chinese Mulberry Raw Silk (4A & Above Grades) during 2018-19



	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Min	69	69	65	63	61	57	53	50	50	48	48	48
Max	72	72	69	72	67	63	57	57	57	55	55	55

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 2018-19



	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Min	73.89	72.55	71.54	65.51	60.39	62.66	56.36	54.98	52.03	52.31	53.36	52.89
Max	74.28	74.03	72.28	70.61	64.7	62.66	56.36	57.06	53.26	54.43	54.2	55.41

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 silk goods during 2018-19 was Rs.2031.88 crore (US$291.36 million) compared to Rs.1649.48 crore (US$ 255.93 million) in 2017-18. Variety-wise export earnings from silk and silk goods during 2018-19 and 2017-18 are given in Table 5.3.

Table 5.3: Export earnings from silk during 2018-19 and 2017-18

Items	2018-19		2017-18		% change	
	Crore Rs.	Mn.US$	Crore Rs.	Mn.US$	Crore Rs.	Mn.US$
Raw silk	1.36	0.19	-	-		
Natural silk yarn	23.34	3.35	15.61	2.42	49.50	38.43
Fabrics and made-ups	1022.43	145.85	864.81	134.18	18.23	8.70
Readymade garments	742.27	107.30	650.48	100.93	14.11	6.31
Silk carpets	113.09	16.11	17.34	2.69	552.17	498.88
Silk waste	129.39	18.56	101.24	15.71	27.81	18.15
Total	**2031.88**	**291.36**	**1649.48**	**255.93**	**23.18**	**13.84**

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

The UAE, the USA, the UK are the major importers of Indian silk goods. The export earnings from top ten importing countries put together accounted for 69.23% of total exports. Country-wise export earnings from silk goods during 2018-19 and 2017-18 are given in Table 5.4.

Table 5.4: Country-wise export earnings from silk during 2018-19 and 2017-18

Sl. No.	Country	2018-19		2017-18		% of Change	
		Crore Rs.	Mn. US$	Crore Rs.	Mn. US$	Crore Rs.	Mn. US$
1	UAE	372.76	53.72	377.13	58.47	-1.16	-8.12
2	USA	372.66	53.07	218.22	33.84	70.77	56.83
3	UK	107.39	15.39	131.81	20.43	-18.52	-24.67
4	China	102.12	14.60	78.56	12.16	30.00	20.07
5	Sudan	97.68	14.20	41.29	6.39	136.58	122.22
6	Nigeria	96.37	13.74	52.62	8.15	83.15	68.59
7	Germany	72.25	10.29	63.08	9.79	14.53	5.11
8	France	67.24	9.58	57.24	8.87	17.46	8.00
9	Australia	60.55	8.58	45.12	6.98	34.20	22.92
10	Italy	57.78	8.22	53.84	8.37	7.32	-1.79
Other countries		625.09	89.97	530.57	82.48	17.81	9.08
Total		**2031.88**	**291.36**	**1649.48**	**255.93**	**23.18**	**13.84**

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

Silk Imports

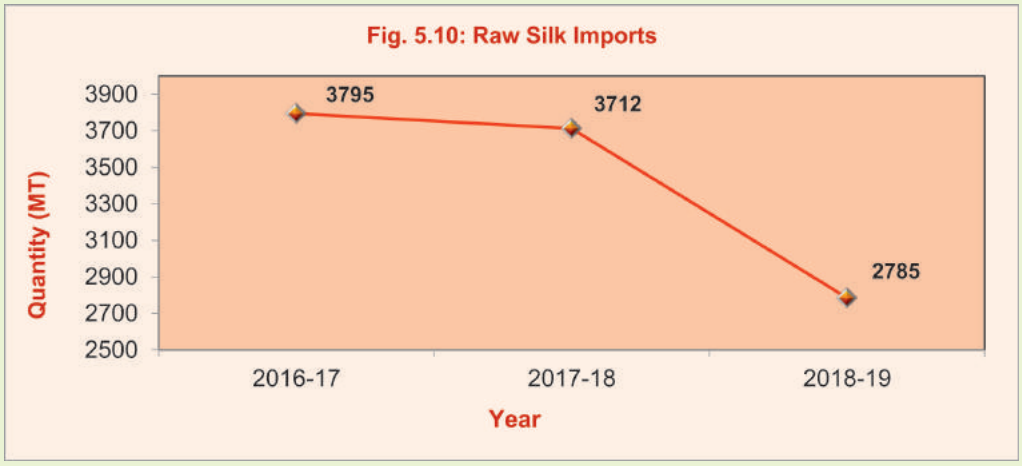
Raw silk is the major item of imports, which account for about 69.54% of the total imports followed by fabrics and made-ups. During 2018-19, the value of silk goods imports was Rs.1497.46 crore (US$228.49 million) compared to Rs. 1652.39 Crore (US$256.38 million) in 2017-18, indicating a decrease of 9.38% in Rupee terms and 10.88% in US Dollar terms. The import value of raw silk and silk goods during 2018-19 and 2017-18 are given in Table 5.5.

Table 5.5: Value of import of silk during 2018-19 and 2017-18

Item	2018-19		2017-18		% Change	
	Crore Rs	Mn.US$	Crore Rs	Mn.US$	Crore Rs.	Mn.US$
Raw silk	1041.40	148.38	1218.14	189.01	-14.51	-21.50
Silk yarn	114.26	16.34	111.85	17.35	2.16	-5.82
Fabrics and made-ups	249.85	35.78	292.77	45.43	-14.66	-21.24
Readymade garments	55.55	22.77	17.41	2.70	219.08	743.33
Silk carpets	0.03	0.002	0.23	0.04	-86.26	-100.00
Silk waste	36.37	5.22	11.99	1.86	203.30	180.65
Total	**1497.46**	**228.49**	**1652.39**	**256.38**	**-9.38**	**-10.88**

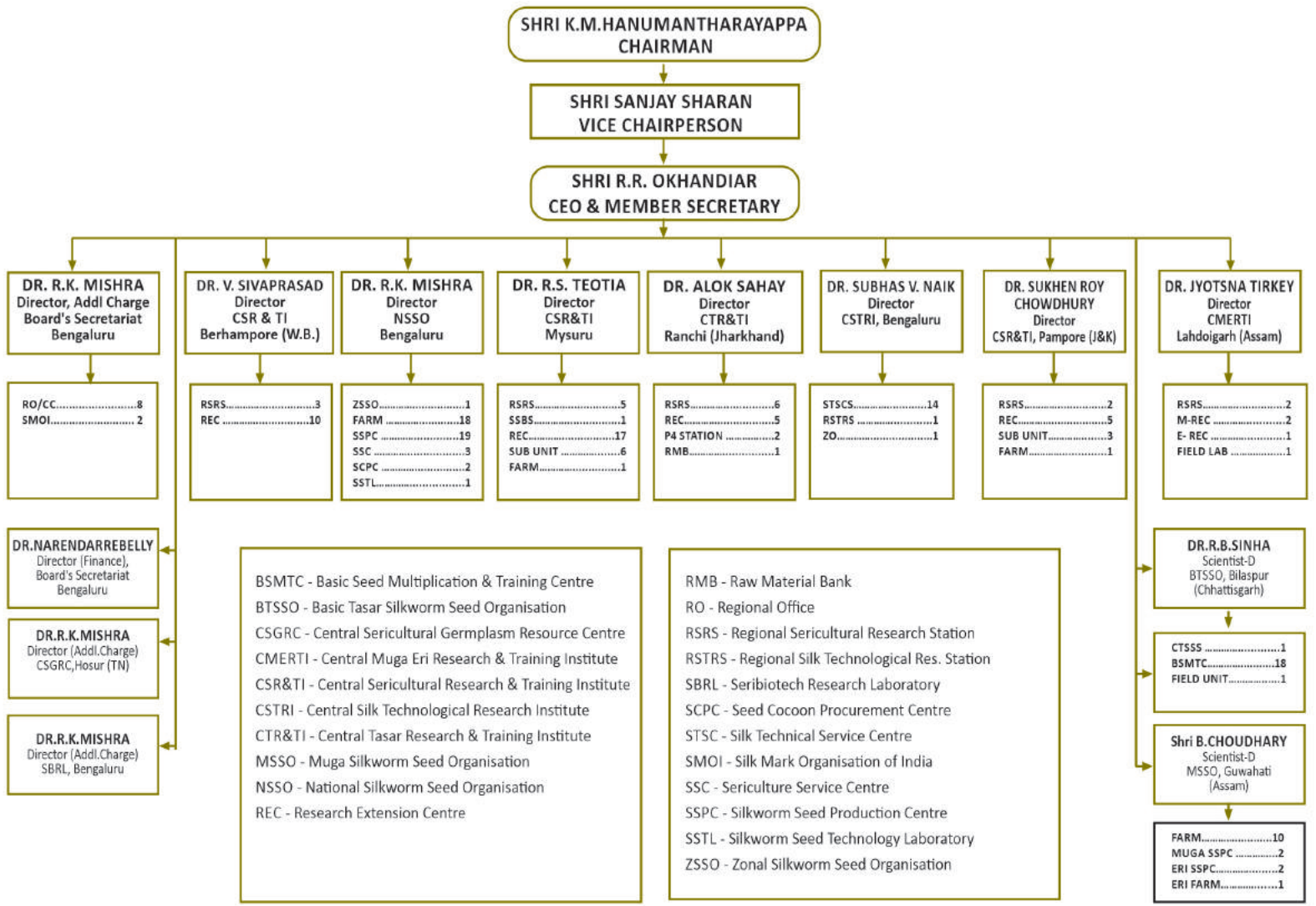
Source: *Compiled from the HS code statistics downloaded from the websites of DGCIS, Kolkata and Ministry of Commerce & Industries.*

The raw silk import decreased by 24.97% from 3712 MT in 2017-18 to 2785 MT in 2018-19. The quantity of raw silk import during last three years is depicted in Fig. 5.10.



Data Source: DGCIS, Kolkata

ORGANISATION CHART OF CENTRAL SILK BOARD



INSTITUTE-WISE UNITS OF CENTRAL SILK BOARD BENGALURU AS ON 31.03.2019

CSR & TI Mysuru (31)

RSRS Bengaluru (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 (Mah)
REC Baramati (Mah)
REC V.Kota (AP)
REC Udumalpet (TN)
REC Eluru (AP)
REC G.palayam (TN)
REC Amaravathi (Mah)
REC Hoshangabad (MP)
REC Palakkad (Ker)
REC Aurangabad (Mah)
REC Koppal (Kar)

S-unit Bidar (Kar)
S-unit Maddur (Kar)
S-unit Osamanabad (Mah)
S-unit Burhanpur (MP)
S-unit Atmakur (AP)
S-Unit Kudlagi (Kar)

P4 Hassan (Kar)

RSRSs	5
SSBS	1
RECs	17
S-Unit	6
Farm	1
Total	**30**

CSR&TI PAMPORE (13)

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

REC Ghumarwin (HP)
REC Bamoti (J & k)
REC Lamberi (J&K)
REC Basti (UP)
REC Varanasi (UP)
REC Haldwani (Utr)

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

RSRSs	2
RECs	6
S-Unit	3
Farm	1
Total	**12**

CSR & TI BERHAMPORE (14)

RSRS Koraput (Odi)
RSRS Kalimpong (WB)
REC Mongoldai (Assam)
REC Dhenkikote (Odi)
REC Rangpoo (Sikkim)
REC Bhandra (Jha)
REC Bagmara (WB)

RSRS Jorhat (Assam)
REC.Agartala (Tripura)
REC Shillong (Megh)
REC Dimapur (Nagaland)
REC Aizwal (Mizoram)
REC Sille (Ar P)

RSRSs	3
RECs	10
Total	**13**

CTR & TI RANCHI (15)

RSRS Jagadalpur (Chh)
RSRS Baripada (Odi)
RSRS Warrangal (AP)
RSRS Bhandara (Mah)
RSRS Bhimtal (Utr)
RSRS Dumka (Jha)
REC Palampur (HP)
REC Champa (Chh)
REC Robertsganj (UP)
REC Kapista (W3)
REC T. Kullen (Manipur)
P4 Station Katghore (Chh)
P4 Station Chakradharpur (Jha)
RMB Chaibasa (Jha)

RSRSs	6
P4 Station	2
RECs	5
RMB	1
Total	**14**

CSTRI BENGALURU (KAR) (17)

STSC Varanasi (UP)
STSC Dharmavaram (AP)
STSC Kancheepuram (TN)
STSC Jammu (J&K)
STSC Malda (WB)
STSC Ramanagaram (Kar)
STSC Sidlaghatta (Kar)
STSC Kollegal (Kar)
STSC Rayapura (Kar)
STSC Salem (TN)
STSC Bhandara (Mah)
STSC Cuttack (Odi)
STSC Dehradun (Utr)
STSC Bhagalpur (Bihar)
Zonal Office Bilaspur (Chh)
RSTRS Guwahati (Assam)

ZO	1
RSTRS Guwahati	1
STSC	14
Total	**16**

NSSO Bengaluru (45)

KARNATAKA

SCPC Kunigal
SCPC K.R.Pet

P3 Mysuru
P2 Dharmapura (BV)
P2 Gavimata (BV)
P2 Nagenahalli (MV)
Grainage/P1 Chikkamalavadi

SSPC Bengaluru
SSPC Mysuru
SSPC Ramanagaram
SSPC Vijayapura
SSPC Chintamani
SSPC K.R.Nagar
SSPC Malavalli

SSC K.R.Pet

SSTL Kodathi

ASSAM

SSPC Jorhat

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

WEST BENGAL

ZSSO Raiganj

P3 A Falkata
P2 Karnasubarna
P2 Dhubulia
P2 Banguria (# #)
SSPC Berhampore
SSPC DB Pur
SSPC Kolitha
SSPC Raiganj

SSC Patelnagar

UTTARANCHAL

P3 Majra
P2 Sheeshambara
SSPC Dehradun

SSTL	1
ZSSOs	1
BSFs	18
SSPCs	19
SSCs	3
SCPCs	2
Total	**44**

ROs (8)

RO New Delhi (Delhi)
RO Mumbai (Mah)
RO Kolkata (WB)
RO Patna (Bihar)
RO Hyderabad (Tel)
RO Bhubaneswar (Odi)
RO Guwahati (Assam)
RO Lucknow (UP)

CSGRC Hosur (TN)

SBRL Bengaluru (Kar)

BTSSO BILASPUR (Chh) (21)

CTSSS Kargi Kota (Chh)
BSMTC Chinnoor (AP)
BSMTC Rampachodavaram (AP)
BSMTC Kharswan (Jha)
BSMTC Kathlikund (Jha)
BSMTC Madhupur (Jha)
BSMTC Ambikapur (Chh)
BSMTC Pali (Chh)
BSMTC Bastar (Chh)
BSMTC Balaghat (M.P)
BSMTC Boirdadar (Chh)
BSMTC Bhandara (Mah)
BSMTC Nowrangpur (Odi)
BSMTC Sundargarh (Odi)
BSMTC Patelnagar (WB)
BSMTC Bhagalpur (Bihar)
BSM&TC Bilaspur (Chh)
BSM&TC Baripada (Odi)
BSM&TC Kendujhar (Odi)
Field Unit Pallahara (Odi)

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

CO Bengaluru (Kar)

SMOI Palakkad (Ker)
SMOI Chennai (TN)

MSSO GUWAHATI (16)

P3 Nongpah (Megh)
P3 Rompara (Megh)
P3 Adokgiri (Megh)
P3 Hahim (Assam)
P3 Mendipathar (Megh)
P3 Naryanapur (Assam)
P3 Kowabill (Assam)
P3 Pallispool (Assam)
P3 Kobulong (Nagaland)
P4 Tura (Megh)

Muga-SSPC Kaliaberi (Assam)
Muga-SSPC Tura (Megh)

Eri BSF Topatali (Assam)

Eri-SSPC Azara (Assam)
Eri-SSPC Hosur (TN)

Farms	10
M-SSPC	2
E-SSPC	2
E-BSF	1
Total	**15**

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	8
SMOI	2
RSTRS	1
RSRS	18
SSBS	1
REC	41
REC S-unit	9
RMB	1
ERI-BSF	1
STSC	14
BTSSO	1
CTSSS	1
BSM&TC	18
Field Unit	1
ZSSO	1
SCPC	2
SSPC	23
SSCs	3
Field Lab	1
P4 Stations	5
P3 Stations	12
P2 Stations	14
P1 Station	1
ZO	1
Total	**192**

BTSSO - Basic Tasar Silkworm Seed Organization
CMER&TI - Central Muga Eri Rec. & Trg. Institute
CSGRC - Central Sericultural Germplasm Res. Centre
CSR & TI - Central Sericultural Research & Trg. Institute
CSTRI - Central Silk Technological Research Institute
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
RMB - Raw Material Bank
RO - Regional office
RSTRS - Regional Silk Technological Research Station
SBRL - Seri-Biotech Research Laboratory

SMOI - Silk Mark Organisation of India
STSC - Silk Technical Service Centre
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
ZSSO - Zonal Silkworm Seed Organisation

ZO - Zonal Office
M-SSPC/M-REC - Muga SSPC/ Muga REC
E-SSPC/E-REC - Eri SSPC/ Eri REC
To be closed in the month of April 2019

ANNEXURE II

COMPOSITION OF BOARD AS ON 31.03.2019

Sl. No.	Name & Address of the Member
I	**UNDER SECTION 4(3)(a)**
1	**Shri K.M. Hanumantharayappa** Chairman, Central Silk Board Bengaluru - 560 068, Karnataka (08.08.2016 to 07.08.2019)
II	**UNDER SECTION 4(3)(b)**
2	**Shri Sanjay Sharma** Joint Secretary (Silk) & Vice-Chairman, CSB Ministry of Textiles, Govt.of India "Udyog Bhavan" New Delhi - 110 011 (26.02.2019 to 25.02.2022)
3	**Dr. Shakuntala Devi** Chief Controller of Accounts Ministry of Textiles, Govt. of India "Udyog Bhavan", New Delhi - 110011 (25.09.2018 to 24.09.2021)
4	**Shri Rajit Ranjan Okhandiar, IFS** Member Secretary Central Silk Board Bengaluru - 560 068 Karnataka (06.11.2017 to 05.11.2020)
III	**UNDER SECTION 4(3)(C)**
5	**Shri P.C. Mohan** Member of Parliament (Lok Sabha) 1928, 30th Cross, 12th Main Banashankari 2nd stage, Monotype G.K.Kalyana Mantapam Bengaluru - 560 050, Karnataka No.160, South Avenue New Delhi - 110 011. (10.08.2017 to 09.08.2020)
6	**Dr. Mahendra Nath Pandey** Member of Parliament (Lok Sabha) No.B-22/157-7, Saraswathi Nagar Vinayaka, Varanasi - 221 010 Uttar Pradesh. No.302, Narmada Apartment Dr. B.D. Marg, New Delhi - 110 001 (21.12.2017 to 20.12.2020)
7	**Shri Jugal Kishore** Member of Parliament (Lok Sabha) Government Quarters No.14 New Rehari, Jammu - 180 005 No. 91, South Avenue New Delhi - 110 011 (10.08.2017 to 09.08.2020)
8	**Shrimati Sampatiya Uikey** Member of Parliament (Rajya Sabha) No.156-K, Village-Tikarwara Tehsil & Dist. - Mandal Madhya Pradesh - 481 663 No.16-C, Ferozeshah Road New Delhi (03.04.2018 to 02.04.2021)
9	**Shri Neeraj Shekhar Singh** Member of Parliament (Rajya Sabha) Village & Post - Ibrahim Patti District Balia, Pin: 221 716 Uttar Pradesh No.3, Gurudwara Rakabganj Road New Delhi - 110 001 (08.05.2018 to 07.05.2021)

Sl. No.	Name & Address of the Member
IV	**UNDER SECTION 4(3)(d)**
10	**Shri M. Maheshwar Rao, IAS** Secretary Horticulture, Agriculture & Sericulture Department Govt. of Karnataka, Room No.404 4th Floor, 3rd Gate, M.S. Building Bengaluru - 560 001, Karnataka (31.01.2018 to 30.01.2021)
11	**Shri K.S. Manjunath, IAS** Commissioner for Sericulture Development & Director of Sericulture Government of Karnataka Dr. Ambedkar Veedi, MS Building Bengaluru - 560 001 Karnataka (31.01.2018 to 30.01.2021)
12	**Shri Yogesh,** S/o Sri Shivananjappa, Grama: Rangepura PO: Marithammena Halli Dodda Madda Hobli, Arakalagudu Tq. Hassan Dist. Karnataka (31.01.2018 to 30.01.2021)
13	**Shri K. Mudde Gowda** S/o Sri Kempe Gowda Kempaiana Hundi, T. Narasipura Taluk Mysore District, Karnataka (31.01.2018 to 30.01.2021)
14	**Shri P. Somanna** S/o Late Puttaswamy Suttur Vilage, Biligere Hobli Nanjangud Taluq, Mysore District Karnataka (31.01.2018 to 30.01.2021)

Sl. No.	Name & Address of the Member
V	**UNDER SECTION 4(3)(e)**
15	**Smt. P. Sri Venkada Priya, IAS** Director (Sericulture) Department of Sericulture Government of Tamil Nadu Nethaji Nagar, Hasthampatty Salem - 636 007 Tamil Nadu (27.10.2017 to 26.10.2020)
VI	**UNDER SECTION 4(3)(f)**
16	**Smt. Madhumita Choudury, IAS** Commissioner of Textiles and Sericulture Government of West Bengal New Secretariat Building, 6th Floor Block-A, Kiran Sharkar Ray Road Kolkata - 700 001 West Bengal (31.01.2018 to 30.01.2021)
17	**Janab Mohammad Sohrab** S/o Late Yar Mohammad Village-Mongolian, P.O.Charsale P.S.Raghunathganj - 742 235 Dist. Murshidabad West Bengal (17.03.2017 to 16.03.2020)
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, Chuttugunta Besides Mini Raythu Bazar Guntur - 522 007 Andhra Pradesh (31.01.2018 to 30.01.2021)

Sl. No.	Name & Address of the Member
19	**Shri Mukta Nath Saikia, ACS** Director of Sericulture Government of Assam Directorate of Sericulture (Near Research Gate) Gauhati - 781 022, Assam (08.12. 2017 to 07.12. 2020)
20	**Shri Narendra Kumar Sinha, IAS** Director Handloom & Sericulture Dept Government of Bihar Vikas Bhavan, Patna - 800 015, Bihar (08.12. 2017 to 07.12. 2020)
21	**Shri Shyam Lal Dhawde** Director Directorate of Rural Industries (Sericulture Sector) Government of Chhattisgarh, 4th Floor Block-A, Indravathi Bhawan New Raipur Chhattisgarh (16.09.2016 to 15.09.2019)
22	**Shri Sandeep Kumar (IAS)** Principal Secretary and Commissioner Cottage & Rural Industries Govt. of Gujarat Block - 7, Udyog Bhavan Gandhinagar - 382 011, Gujarat 30.05.2018 to 29.05.2021
23	**Shri Uday Pratap, IAS** Director Directorate of Handloom Sericulture and Handicrafts Department of Industries Mines & Geology, Govt. of Jharkhand Udyog Bhavan, 3rd Floor, Near All India Radio, No.5, Ratu Road Ranchi-834 001. Jharkhand (02.06.2016 to 01.06.2019)

Sl. No.	Name & Address of the Member
24	**Shri Vibhas Tahkur, IFS** Commissioner of Sericulture Government of Madhya Pradesh Lower Basement, Satpura Bhawan Bhopal - 462 004, Madhya Pradesh (27.10.2017 to 26.10.2020)
25	**Shri Madan Pal Arya** Directorate of Sericulture Government of Uttar Pradesh D A Commercial Complex, 1st Floor VishwasKhanda - III, Gomti Nagar Lucknow - 226 010. Uttar Pradesh (14.10.2015 to 13.10.2018)
26	**Shri Anand Yadav** Director of Sericulture Directorate of Sericulture Government of Uttarakhand Premnagar, Dehradun - 248 007 Uttarakhand (02.06.2016 to 01.06.2019)
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(J&K) (31.01.2018 to 30.01.2021)
IX	**UNDER SECTION 4(3)(i)**
28	**Shri Baldev Chauhan** Deputy Director of Industries (Sericulture) Directorate of Industries Udyog Bhavan, Govt. of Himachal Pradesh, Shimla - 171 001 Himachal Pradesh (02.06.2016 to 01.06.2019)

Sl. No.	Name & Address of the Member
29	**Shri Salam Kunjakishore Singh, MCS** Director of Sericulture Manipur Sericulture Project Complex Govt. of Manipur Imphal East - 795 001, Manipur (02.06.2016 to 01.06.2019)
30	**Shri S.K. Barchung,** Director Department of Sericulture and Weaving, Government of Meghalaya Nokrak Building, Lower Lachumiene Shillong - 793 001, Meghalaya 15.06.2018 to 14.06.2021
X	**PERMANENT INVITEES**
1	Textile Commissioner Ministry of Textile, Govt. of India New CGO building, # 48 New Marine Line, P.B.No. 11500 Mumbai - 400 020, Maharashtra
2	**Shri Satish Gupta** Chairman Indian Silk Export Promotion Council B-1 Extension, A-39 Mohan Co-operative Industrial Estate Mathura Road, New Delhi - 110 044

Sl. No.	Name & Address of the Member
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, Telangana
4	**Shri Sanjay Meena, IAS** Director of Sericulture Government of Maharasatra Administrative Building No.2 6th Floor B-Wing, Civil Lines Commissionarate Office Area Nagpur - 440 001, Maharashtra
5	**Ms. Shubha Sarma, IAS** Commissioner–cum–Secretary Handlooms, Textiles & Handicrafts Department, Govt of Odisha Bhubaneswar - 751 001, Odisha
6	**Dr. S. Ayyappan** (Chairman, RCC, CSB) No. 172, Shreepadam Ground Floor, 5th Main Avalahalli, BDA Extension Girinagar, Bengaluru - 560 085 Karnataka

ANNEXURE III (A)

STATE-WISE DETAILS OF FUNDS RELEASED AND UTILISATION CERTIFICATE RECEIVED DURING 2017-18 AND 2018-19 UNDER BENFICIARY COMPONENTS OF SILK SAMAGRA

Rs. in lakhs

#	State	CSS - 2017-18			CSS - 2018-19		
		Fund Released	*UC Received*	*Pending Balance*	*Fund Released*	*UC Received*	*Pending Balance*
1	Karnataka	--	--	--	9.06	--	9.06
2	Andhra Pradesh	857.74	--	857.74	496.39	--	496.39
3	Telangana	210.83	--	210.83	497.07	--	497.07
4	Tamilnadu	1110.44	552.42	558.02	622.42	309.90	312.519
5	Maharashtra	81.52	--	81.52	16.17	--	16.17
6	Kerala	--	--	--	--	--	--
7	Uttar Pradesh	267.94	--	267.94	624.12	--	624.12
8	Madhya Pradesh	--	--	--	98.18	--	98.18
9	Chhattisgarh	1119.69	41.57	1078.12	4.73	--	4.73
10	West Bengal	115.47	--	115.47	40.41	--	40.41
11	Bihar	301.33	--	301.33	--	--	--
12	Jharkhand	396.26	59.51	336.75	370.01	--	370.01
13	Odisha	115.67	--	115.67	214.76	--	214.76
14	Jammu & Kashmir	631.88	--	631.88		--	
15	Himachal Pradesh	1037.20	--	1037.20	1298.97	--	1298.97
16	Uttarakhand	1554.12	86.63	1467.49	173.60	--	173.60
17	Punjab	128.52	30.19	98.33	--	--	--
18	Assam	--	--	--	19.04	--	19.04
19	BTC	--	--	--	2.52	--	2.52
20	Arunachal Pradesh	--	--	--	5.04	--	5.04
21	Manipur	--	--	--	--	--	--
22	Meghalaya	--	--	--	2.10	--	2.10
23	Mizoram	--	--	--	5.04	--	5.04
24	Nagaland	--	--	--	63.00	--	63.00
25	Tripura	--	--	--	--	--	--
26	CSB Institutes	120.63	120.63		70.85		70.85
Total for All States		**8049.24**	**890.95**	**7158.29**	**4633.48**	**309.90**	**4323.58**

ANNEXURE III (B)

COMPONENT WISE TARGET VS ACHIEVEMENTS MADE UNDER BENEFICIARY COMPONENTS OF SILK SAMAGRA DURING 2017-18 & 2018-19

#	Components	2017-18		2018-19		Remarks
		Targ.	Ach.	Targ.	Ach.	
1	Area under mulberry food plantation(Ha)	2.27	2.27	2.46	2.45	The set targets for some of the components could not be achieved during 2018-19 and 2018-19 due to paucity of funds. The CCEA has approved Rs.181.41 crore and Rs.280.88 crores as scheme cost towards implementation of "Silk Samagra" for the years 2017-18 and 2018-19 respectively, against which, the Ministry has sanctioned only Rs.161.50 crore and Rs.120.00 crore for the respective years leaving total shortage of Rs. 180.79 crores. Therefore the states could not be supported as per the envisaged targets. Hence the shortfall in achievements during the years 2017-18 and 2018-19.
2	Kissan Nurseries (Lakh Nos.)	133	24	160	87	
3	Irrigation & other water conservation tech.	1000	1997	2000	1041	
4	Construction of separate rearing house (Nos.)	1515	2200	2647	1619	
5	Rearing appliances (Nos.)	1750	2710	2773	936	
6	Production units for biological inputs (Nos.)	20	24	32	8	
7	Popularisation of Chawki Rearing Centre(Nos.)	35	35	48	11	
8	Multi-end Reeling Machines (Nos.)	40	33	45	3	
9	Automatic Reeling Units-400 Ends (Imported) (Nos.)	3	5	4	1	
	Automatic Reeling Units-(200 ends) Indigenous (Nos.)	2	1	4	--	
10	Automatic Dupion Silk Reeling Units (142 ends) (Nos.)	1	1	3	--	
11	Assistance for Twisting Units (480 ends) (No.)	5	12	9	8	
12	Eco Degumming Machines (Nos.)	2	--	4	--	
13	Pupae Processing Units (Nos.)	2	1	3	1	
14	Vanya Reeling/Spinning Machine (Nos.)	1292	152	1653	1092	
15	Buniyaad Reeling Machines (Nos.)	2500	450	690	3280	
16	Master Technician /Reelers (Nos.)	15	9	30	32	
17	Hot Air Driers (Nos.)	25	3	28	6	
18	Loom Up-gradation-different equipments (Nos.)	630	--	1415	--	
19	CFC for silk dyeing & fabric processing and accessories (Nos.)	11	--	22	--	
20	Cocoon & Silk Testing units (Nos.)	8	--	10	--	
21	Mobile Disinfection units (Nos.)	15	--	20	--	
22	Support to Adopted Seed Rearers (Nos.)	200	80	400		
23	Seed Testing Equipment for Private & State Grainages (Nos.)	30	1	44	--	
24	Upgradation or setting up new Industrial Seed Production unit by state & private RSPs (Nos.)	1	2	4	--	
25	Support to Private Tasar Graineurs(Nos.)	200	285	330	49	
26	Strengthening of tasar seed multiplication centres (Nos.)	12	54	13	--	
27	Skill Development (Nos.)	15270	17292	15500	13885	

ANNEXURE IV (A)

STATE-WISE SILK PRODUCTION DURING 2018-19

State	Mulberry plantation (Hectare)	Mulberry Raw Silk (MT)			Vanya Silk (MT)				Total (M+V) (MT)
		Bivoltine hybrids	Cross Breed	Total	Tasar	Eri	Muga	Total	
Andhra Pradesh	41915	1465	6011	7476	5			5	7481
Arunachal Pradesh	300	3		3	0.002	54	3	56	59
Assam & Bodoland	2783	69		69		4764	193	4957	5026
Bihar	598	0.38	7	8	38	9		47	55
Chhattisgarh	261	1	8	9	340			340	349
Haryana	206	1		1					1
Himachal Pradesh	2743	34		34					34
Jammu & Kashmir	8183	118		118					118
Jharkhand	502		3	3	2372			2372	2375
Karnataka	104578	2067	9525	11592					11592
Kerala	148	16		16					16
Madhya Pradesh	3088	60	21	82	18			18	100
Maharashtra	7913	489	8	496	23			23	519
Manipur	3300	124	13	137	5	320	2	327	464
Meghalaya	3209	49		49		1104	34	1138	1187
Mizoram	4094	65	18	83	0.05	8	1	9	92
Nagaland	394	10	3	13	0.06	606	1	607	620
Odisha	537	2	1	3	123	5		128	131
Punjab	1159	3		3					3
Sikkim	185	0.35		0.4					0.4
Tamil Nadu	20128	1926	146	2072					2072
Telangana	4383	214	0	214	10			10	224
Tripura	1935	90	140	230					230
Uttar Pradesh	3754	107	123	231	22	37		59	289
Uttarakhand	3305	36	1	36	0.04	0.4		0.4	36
West Bengal	15400	36	2329	2365	25	4	0.16	29	2394
Grand Total	**235001**	**6987**	**18358**	**25345**	**2981**	**6910**	**233**	**10124**	**35468**

Source: Compiled from MIS reports received from State Sericulture Departments

ANNEXURE- IV (B)

STATE-WISE SILK PRODUCTION DURING 2017-18

State	Mulberry plantation (Hectare)	Mulberry Raw Silk (MT)			Vanya Raw Silk (MT)				Total (M+V) (MT)
		Bivoltine hybrids	Cross Breed	Total	Tasar	Eri	Muga	Total	
Andhra Pradesh	36638	1216	5559	6775	3.48			3	6778
Arunachal Pradesh	140	2	0.3	2.3		50	1.5	51.5	54
Assam & Bodoland	8594	59		59		4645	157	4802	4861
Bihar	557	5	12	17	36	10		46	63
Chhattisgarh	261	0.3	8	8.3	523			523	532
Haryana	94	0.7		0.7					1
Himachal Pradesh	2454	32		32					32
Jammu & Kashmir	8104	132		132					132
Jharkhand	472		3	3	2217			2217	2220
Karnataka	98135	1651	7671	9322					9322
Kerala	149	15		15					15
Madhya Pradesh	2765	71	14	85	18			18	103
Maharashtra	4327	350	3	353	19			19	373
Manipur	3590	84	8.5	92.5	4.8	290	1.17	296	388
Meghalaya	3209	39		39		1006.8	30.4	1037	1076
Mizoram	4094	61	14.2	75	0.05	8	0.8	9	84
Nagaland	290	11	1	12	0.002	602	1	603	615
Odisha	464	2	1	3	106	7		113	116
Punjab	1129	3		3					3
Sikkim	185	0.001		0.001					0.001
Tamil Nadu	18854	1775	210	1984					1984
Telangana	3517	158	0.04	158	4.5			5	163
Tripura	2184	28	59	87					87
Uttar Pradesh	4044	110	123	233	22	37		58	292
Uttarakhand	3197	33		33		2		2	35
West Bengal	16480	36	2504	2540	35	3	0.19	37	2577
Grand Total	**223926**	**5874**	**16192**	**22066**	**2988**	**6661**	**192**	**9840**	**31906**

Source: Compiled from MIS reports received from State Sericulture Departments