

CENTRAL SILK BOARD
BANGALORE – 560 068

**A BRIEF NOTE ON
RESEARCH MONITORING SYSTEMS IN CENTRAL SILK BOARD.**

A. RESEARCH AND DEVELOPMENT ACTIVITIES.

The Central Silk Board [CSB] has established several R & D Institutes throughout the country covering mulberry, non-mulberry and post-cocoon technology sectors of sericulture industry. In order to coordinate the functioning of these research Institutes and monitoring the research projects and activities, CSB has also evolved various systems as described below:

I. RESEARCH CO-ORDINATION SECTION (RCS):

Central Silk Board in 1995 established the Research Co-ordination Section at the Head Quarters with a specific purpose of co-coordinating various activities of research monitoring and evaluation through research management information system where information regarding projects, sub projects, experiments, scientific details, budget details, infrastructure availability etc., are provided to the management to take appropriate decisions. Additionally, RCS generates regular reports; organizes meetings, evaluates project proposals & final project reports, coordinates all India experiments on silkworms and their host plants, and monitors progress of research projects. This section also supports the management in preparation of technical reports for submission to the Ministry of Textiles (MoT) periodically and also for clarification of technical points raised in the Parliament.

II. RESEARCH INSTITUTE AND SUB UNITS:

The main R&D institutes of CSB are headed by Directors and Regional Sericultural Research Stations by senior Scientists. Each division at the main institute i.e. Moriculture, Sericulture, Post cocoon technology, Training and Extension is headed by senior Scientists. Each division has several sections which includes biotechnology, biomaterial research units, mulberry breeding and genetics, agronomy, soil science, plant pathology, plant physiology, silkworm breeding and genetic, rearing technology, entomology, silkworm pathology, reeling technology, extension, training, project monitoring cell etc.

1. Central Sericultural Research & Training Institute (CSR&TI), Mysore:

This research Institute cater to the needs of the sericulture in Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu and Telengana through 4 RSRS, 19 REC and 28 subunits. It undertakes various R & D activities covering crop improvement, production and protection of both mulberry and silkworm, extension and training activities. It has developed a number of silkworm hybrids viz., CSR2xCSR4, PMxCSR2, CSR50xCSR51, (CSR6xCSR26)x(CSR2xCSR27), CSR16xCSR17, (CSR50xCSR52)x(CSR51xCSR53); mulberry varieties i.e., V1, Anantha, S13, S36,G4, RC1, RC2, biofertilizers and chemicals such as Poshan, Raksha, Bionema, Chetak, Serinutrid, Vijetha, besides making several machines and processes. In December 2013, the Institute has been accredited with ISO 9001: 2008 certification as a testimony of excellence in quality management in R&D, training and service support to sericulture Industry.

2. Central Sericultural Research & Training Institute (CSR&TI), Berhampore:

CSR&TI, Berhampore is a premier Institute catering to the scientific and technical needs of Mulberry silk industry in the Eastern and North Eastern India since its inception in 1943. Eastern & North Eastern states of India have divergent agroclimatic conditions different from that of the Southern belt. This institute along with its nested units viz., 4 RSRS, 12 RECs and 2 sub units, strives relentlessly to meet the demands of the sericulture sector of this zone. The Institute has developed several silkworm hybrids among which Nx(SK6xSK7), M6DP(c)xSK4C, M.con1xB.con4, M.con4xB.con4, M.con1xM.con4. It also excelled in the development of mulberry varieties as it developed varieties for all the major agroclimatic conditions. Some of the important mulberry varieties developed by this Institute are C2038, C2028, C1730, S1, S799, S1635, Tr10, C776, and BC₂59. In addition to this, a number of technologies have been developed to cater to the need of the sericulture in Eastern and North-Eastern regions.

3. Central Sericultural Research & Training Institute (CSR&TI), Pampore:

Central Sericultural Research and Training Institute, Central Silk Board, Pampore serves the needs of R&D and Transfer of Technology of sericulture through a network of 3 RSRSs and 18 Extension Centers across the seven North Western states J&K, H.P., Punjab, Haryana, UP. Besides, under bivoltine production program, 49 clusters are operating under XII plan across North West India. It has developed silkworm hybrids and

mulberry varieties along with suitable cultural practices. Important silkworm hybrids developed by this institute are Dun 17xDun 18, Dun6 x Dun22, SH6xNB4D2, SOH1 and the mulberry varieties are S140, S146. Further, the institute has developed several technologies for the region.

4. Central Tasar Research and Training Institute, Ranchi (Jharkhand)

The mandates of this institute are to organize and promote Tasar silk industry through basic and applied research, extension and technology transfer and generation of trained human power in tasar industry. It has developed a number of technologies and innovations in silkworm rearing, cocoon preservation, seed production and preservation, control of pests and diseases of both host plants and silkworms, race maintenance etc. The Institute also strives to improve post-cocoon aspects of vanya silk for increasing the rate of production and refining the process to increase the quality of yarns and fabrics. Demonstration and dissemination of the developed technologies through organizing various extension programmes and commercialization efforts are also part of the institute activities. It also extends consultancy services to different agencies like DOS, NGOs and others. CTR&TI has 8 RTRS and 11 RECs.

5. The Central Muga and Eri Research & Training Institute (CMERTI), Lahdoigarh. Jorhat (Assam).

Central Muga and Eri Research & Training Institute, Lahdoigarh, Jorhat, Assam along with its subunits viz., Regional Muga Research Station, Regional Eri Research Stations, and Regional Extension Centers provides research and developmental support to Muga and Eri sericulture. Muga and Eri culture is a rural based industry of all the North Eastern states and parts of West Bengal. It conducts basic, strategic and applied research to increase production and productivity of silkworms and their host plants. It also conducts socio-economic research for assessing sustainability of newly developed technologies and consistently strives to disseminate the research findings to the end users through extension and training mechanisms.

6. Seribiotech Research Laboratory (SBRL), Bangalore

Seri Biotech Research Laboratory (SBRL) Kodathi) is established to conduct intensive basic and applied research in the frontier areas on silkworms and their host plants utilizing modern biotechnological tools to improve quality and productivity and of silk, diversify utilization of silk in biomedical and biomaterial applications to strengthen the value chain of sericulture. 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 transgenic silkworm, identification and utilization of molecular markers, 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 health care benefits.

7. The Silkworm Seed Technology Laboratory (SSTL), Kodathi, Bangalore

The Silkworm Seed Technology Laboratory is perhaps the only such institute in the world which works exclusively for developing technologies to tackle issues pertaining to silkworm seeds. Broadly SSTL is engaged in developing the embryonic chart for mulberry and vanya silkworm breeds, standardization of silkworm seed preservation schedules and seed handling techniques. The institute is also engaged in disease monitoring and generation of trained manpower for the silkworm seed sector.

8. Central Sericultural Germplasm Resource Centre, Hosur

Central Sericultural Germplasm Resources Centre (CSGRC), Hosur is established with the objective of conserving the Seri-biodiversity of country. The major mandates of it are collection, characterization, evaluation, conservation and exchange of the sericultural germplasm resources for their utilization in future breeding programmes as being done by NBPGRI (ICAR). The Centre has been recognized as a National Active Germplasm Site (NAGS) for mulberry by National Bureau of Plant Genetic Resources (NBPGR), New Delhi and silkworm by National Bureau of Agriculturally Important Insects (NBAII), Bangalore.

9. Central Silk Technological Research Institute, Bangalore

In order to provide scientific and technical support to the reeling and weaving sectors of the silk industry, Central Silk Technological Research Institute, along with 11 Demonstration Cum Technical Service Centers (DCTSC), 6 Silk Conditioning and Testing Houses (SCTH), 4 Textile Testing Laboratories (TTL), 1 zonal office, 2 Raw Silk Testing Centers (RSTC), 2 Cocoon Testing Centers (CTC) and 1 Regional Silk Technological Research Station (RSTRS) was established. This institute has been focusing on all aspects of yarn production, fabric formation, designing, wet processing, training, extension and market information dissemination in all the four commercially known varieties of silks viz., mulberry, tasar, muga and eri. Based on the requirements, it has developed a number of innovative machines and processes for the silk industry.

III. SILKWORM SEED ORGANIZATIONS

Besides the above stated Research Institutes and their subunits, to facilitate production and distribution of disease free laying of the mulberry silkworms, under high hygienic conditions, in a well organized manner, silkworm seeds organizations were established with highly ramified network of production and distribution units and subunits. The important such organizations are:

1. National Silkworm Seed Organization (NSSO), Bangalore.

National Silkworm Seed Organization, established in 1975, looks after the production and supply of high quality Bivoltine and Multivoltine mulberry silkworm eggs to the farmers. It maintains, multiplies and supplies authorized silkworm stocks for the production and supply of silkworm eggs in a commercial level.

2. Basic Tasar Silkworm Seed Organization (BTSSO), Bilaspur (C.G.)

In order to facilitate the production and supply of quality seeds of tasar silkworm BTSSO was established. It co-ordinates and monitors the basic tasar seed production in the country. It also provides all types of technical knowhow pertaining to tasar seed production.

3. Muga Silkworm Seed Organization (MSSO), Guwahati, Assam.

Muga silkworm is mostly confined to the North-Eastern part of India and it has very unique place in sericulture industry. In order organize the activities to meet the

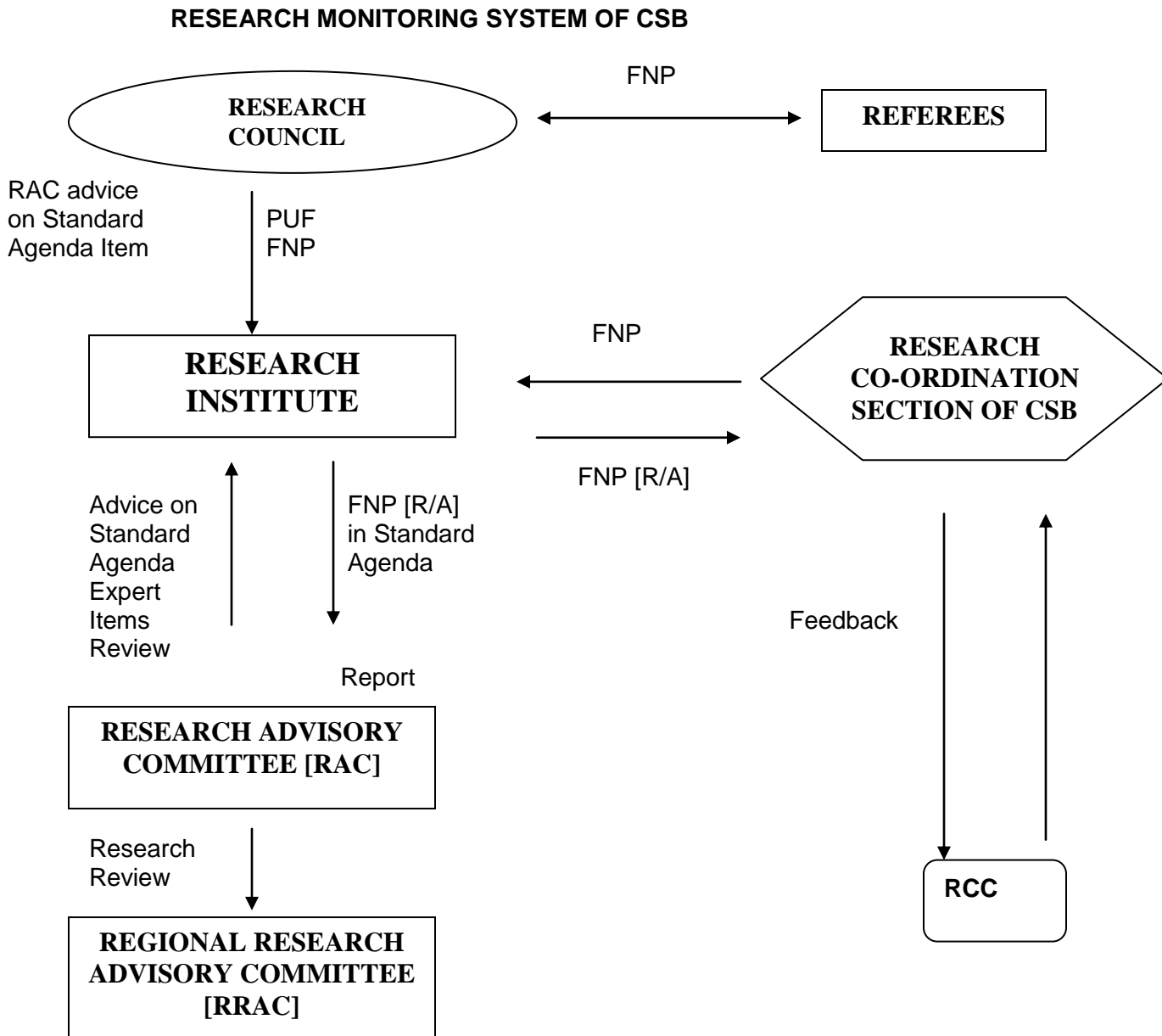
requirement of quality silkworm seed in this sector, MSSO with two P4 units, six P3 units and one muga silkworm seed production centre was created.

4. Eri Silkworm Seed Organization (ESSO), Guwahati, Assam

Located at Guwahati, Assam, armed with only a single SSPC, this organization takes care of the eri silkworm sericulture sector.

IV. RESEARCH MONITORING SYSTEMS OF CENTRAL SILK BOARD:

Central Silk Board has evolved an effective research monitoring system as depicted below.



Abbreviations :

PUF	:	Project under formulation
FNP	:	Formulated new project
FNP [R/A]	:	Formulated new project [Rejected or Accepted by RAC]
RCC	:	Research Co-ordination Committee

V. COMMITTEES OF CSB TO REVIEW RESEARCH ACTIVITIES

In order to facilitate proper monitoring and reviewing of research projects and other programs, CSB has constituted various Committees viz., Research Council (RC), Regional Research Advisory Committee (RRAC), Research Advisory Committee (RAC), and, the Research Co-ordination Committee (RCC). The functionings of these committees are as follows:

a. RESEARCH COUNCIL (RC) :-

Every Institute/Station has a Research Council that functions under the Chairpersonship of the concerned Director/Head of the Institute/Station. It is an in-house Review Committee to review and monitor the progress of all on-going research projects/programs and acts as a body to peer review the new projects proposals at the Institute level. It meets once in every 6 months.

b. REGIONAL RESEARCH ADVISORY COMMITTEE (RRAC):-

This Committee under the Chairmanship of an eminent scientist from nearby University/Research Institute guides, monitors and evaluates the research and extension work of RSRS/RTRS/RMRS/RERS in Mulberry, Tasar, Muga and Eri respectively and also the extension units. The meeting is conducted once in 6 months and the tenure of the committee is three years.

c. RESEARCH ADVISORY COMMITTEE (RAC):-

To review the progress of on-going projects, technologies under trial/demonstration/commercialization, training, new project under formulation etc and to suggest guidelines in priority areas the Committee has been constituted under the Chairmanship of an external expert for all main Research Institutes/Stations. The Committee meets once in 6 months and the tenure is 3 years.

d. RESEARCH CO-ORDINATION COMMITTEE (RCC) :-

It is an apex research body constituted under the Chairmanship of a renowned scientist to guide the detailing of research agenda and to undertake strategic planning for sericulture development. It also suggests appropriate measures to intensify sericulture research in priority areas and evaluate the R&D activities of all CSB research

institutes/stations besides review the working of RCs and RACs. The Committee meets once in 6 months and the tenure is for 3 years.

e. MULBERRY VARIETY AUTHORIZATION COMMITTEE

In order to bring the mulberry varieties under one umbrella and to evaluate their performance under similar cultural practices and agroclimatic conditions, All India Co-ordinated Experimental trial for Mulberry (AICEM) was started. Based on the performance of the varieties in each test centre, region specific varieties are selected and authorized by the Mulberry Variety Authorization Committee, an apex committee set by Central Silk Board, Bangalore. Two such trials have already been completed and 15 mulberry varieties have been authorized for commercial exploitation (Annexure-1). The third phase of the trial with four new mulberry varieties is under progress since 2012. The trial is being conducted at 22 test centers located in different agro climatic zones of the country and is supervised by zonal coordinators at zonal levels (Directors of CSR&TIs) and the overall supervision is made by the Chief Coordinator (Director, Tech) at the Head Quarter, Central Silk Board Bangalore.

f. HYBRID AUTHORIZATION COMMITTEE:

In order to identify region specific and season specific silkworm hybrids developed by various research Institutes and universities in India, it was felt necessary to test them under identical rearing conditions. Keeping this requirement in view, Central Silk Board started the Race Authorization program in 1995. Under this program, silkworm hybrids are reared in selected test centers under strict scientific and technical monitoring. A set of guidelines (Annexure-2) has been followed strictly to facilitate smooth conducting of the trial. Data on various important rearing and reeling parameters are collected during the trial and subjected to rigorous statistical analysis. The Hybrid Authorization Committee, after thorough assessment, identifies the silkworm hybrids which are suitable to specific regions and seasons and recommend them for authorization. Based on the recommendations, the Central Silkworm Seed Committee authorizes the silkworm hybrids through a Govt. India gazette notification. So far 61 silkworm hybrids have been authorized for commercial exploitation as detailed in Annexure-3.
