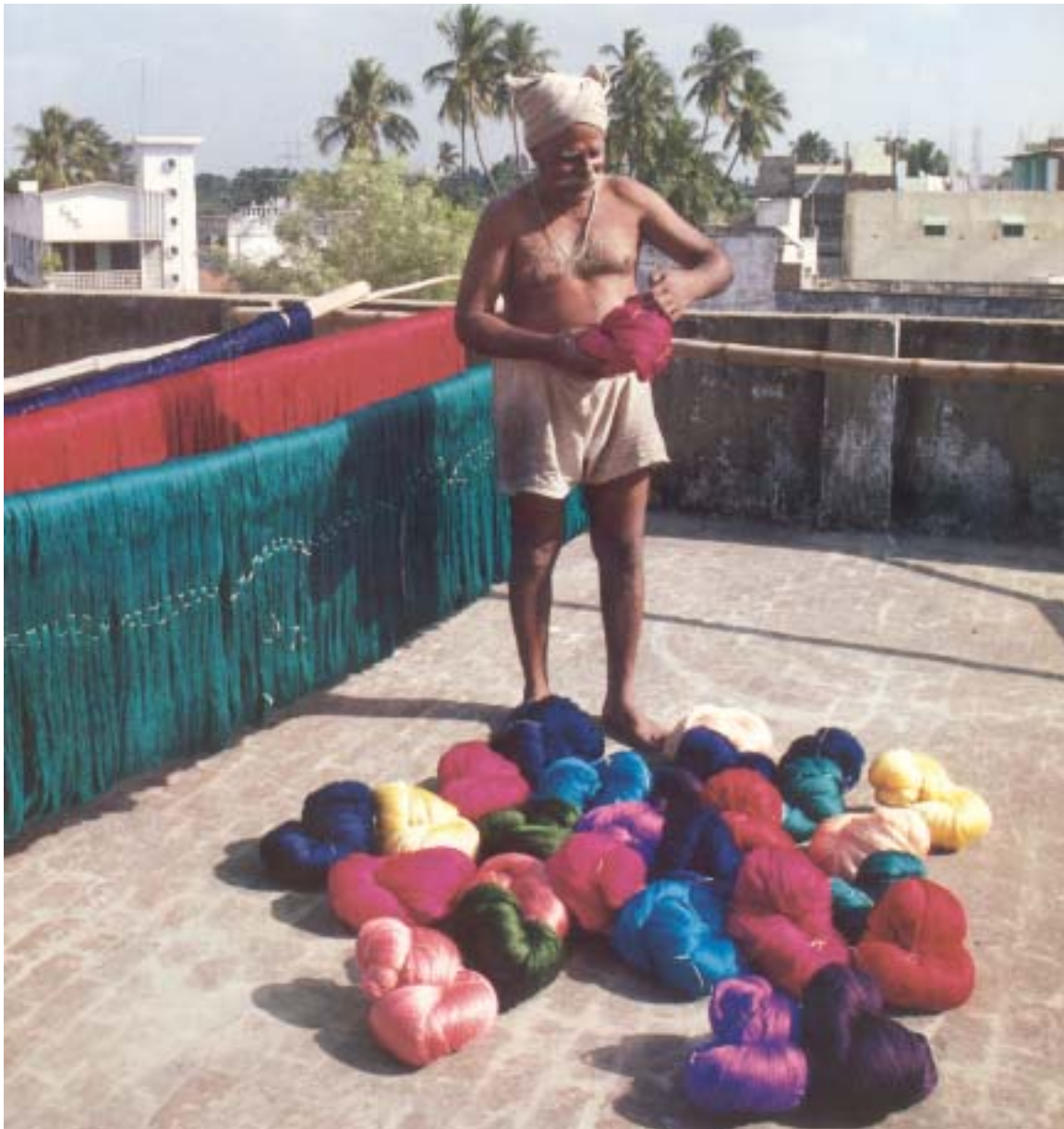


CHAPTER VII

THE SERICULTURE & SILK TEXTILES INDUSTRY



The weaver on the roof top drying freshly dyed silk for sarees in Tamil Nadu.

Globally, India is the second largest producer of silk and has the distinction of producing all the four varieties of silk viz mulberry, eri, tasar and muga. In 2005-06, mulberry accounted

for 89.3%, eri 8.3%, tasar 1.8% and muga 0.6%, of the total raw silk production of 17305 MTs in the country.

Sericulture is an important labour-



intensive, agro-based cottage industry, providing gainful occupation to around six million persons in rural and semi-urban areas. Of these, a sizeable number belongs to the economically weaker sections of society, including women.

PHYSICAL PROGRESS

The physical progress achieved by the sector is at Table 7.1.

Budget

For 2006-07, Rs 125.98 crores under plan and Rs 65.89 crores under non-plan has been ear-marked for Central Silk Board (CSB).

SILK EXPORTS

The earnings from silk exports during the period 2004-07 (upto June 2006) are at Table 7.2.

CENTRAL SILK BOARD (CSB)

The Central Silk Board was set up in 1949 for the development of the silk

industry with the enactment of the Central Silk Board Act, 1948. CSB headquartered at Bangalore and is headed by a Chairman and has 35 members. The Board activities include Research & Technology Development, Seed Maintenance, and Development of Sericulture & Silk Industry through which it supports, supplement & facilitates the efforts of State Governments. The Board extends support to the States in the form of joint projects and development assistance under the plan schemes. The Board undertakes voluntary quality inspection of exportable silk goods.

RESEARCH AND DEVELOPMENT

1. The Central Silk Board through its main Research & Training Institutes provide R&D and training support for development of Sericulture. The Institutes at Mysore (Karnataka), Berhampore (West Bengal) and Pampore (J&K) deal with mulberry Sericulture. The Institute at Ranchi (Jharkhand) deals with tasar culture and at Ladoigarh, Jorhat (Assam)

Table 7.1

Sl.No.	Particulars	2005-06	2006-07 (Anticipated)
I	Standing Area under Mulberry (Lk Ha)	1.79	2.00
II	Production of Rawsilk (Tons)	17305	18653
III	Employment (Lakh Persons)	59.50	60.03

Table 7.2

(Rs. in crore)

Sl. No.	Items	2004-05	2005-06	2006-07(P) (April-June)
1	Natural Silk Yarn Fabrics Made ups	2008.33	2228.88	469.34
2	Readymade Garments	746.29	842.06	274.94
3	Silk Carpets	123.65	103.36	21.80
4	Silkwaste	1.29	19.90	4.39
	TOTAL	2879.56	3194.20	770.47



Practical demonstration of technologies like rain water harvesting, use of organic manure, preparation of vermicompost, etc., to the delegates attending the workshop on “Soil Health and Water Management for Sustainable Sericulture” held at Regional Sericultural Research Station Kodathi, Karnataka.

deals with muga and ericulture. The Regional Sericultural Research Station (RSRS / RTRS) for mulberry and non-mulberry disseminates research findings and tackles the regional field issues of the industry. Besides, a network of Research Extension Centres (REC) & its sub-units for mulberry and non-mulberry provide extension support to sericulturists. To provide R&D support in the post-cocoon sector, the Board has established the Central Silk Technological Research Institute (CSTRI) at Bangalore, the Silkworm Seed Technology Laboratory (SSTL) at Bangalore, the Central Sericultural Germplasm Resources Centre (CSGRC) at Hosur (Tamil Nadu), and the Seri-Biotech Research Laboratory (SBRL) at Bangalore.

2. The on-farm sector research work is geared to evolve stress tolerant mulberry varieties, which give higher leaf yield, superior silkworm hybrids, besides evolving improved techniques of silkworm rearing and integrated control of pests and disease for both mulberry and silkworms. During 2006-07, 230 research projects are in various stages of implementation, i.e. 175 in mulberry, 44 in non-mulberry and 11 in post cocoon technology. Eight (8) mulberry varieties evolved by CSB & State Research Institutes are under authorization trial at 18 test Centres covering all the zones, and eight (8) bivoltine x bivoltine, seven (7) multivoltine x bivoltine and three (3) multivoltine x multivoltine hybrids evolved by CSB and State Research Institutes are under authorization trial



at 26 test centres spread throughout the country in different seri-zones.

3. For sustainable sericulture development project like "Integrated Nutrient Pest and Disease Management" and "Mulberry Sericulture based Intensive Farming System Research - farmers' participatory mode" are being undertaken in Karnataka, Andhra Pradesh and Tamil Nadu. A Protocol for in-vitro technique has been developed for callus induction and differentiation in mulberry, and studies on In-vitro screening of mulberry genotypes for abiotic and biotic stress are in progress. The technology for use of salicylic acid (anti-transparent) has been developed, which increases the mulberry leaf yield upto 14% during spring and autumn seasons with a cost benefit ratio of 1:19.7. The Institute Village Linkage Programme (IVLP) is being implemented in several non-traditional sericulture States like Orissa, Jharkhand, Chattisgarh, Assam, Tripura, Meghalaya, Manipur, Mizoram, Nagaland, Sikkim, Uttranchal and Maharashtra, besides traditional states.
4. During 2006-07 several technology trials are being taken up at the Regional Research Stations, to test new productive Bivoltine Hybrids, new bed disinfectant formulations, plant product formulation, improved tillage methods, new mountages, chawki rearing practices, temperature tolerant bivoltine hybrids, mulberry package for seed cocoon crop, testing of complete package of practices of mulberry cultivation and silkworm rearing at farmer's level under irrigated and non irrigated conditions. The demonstration of technologies at farms and farmer's field were taken up by the Research Institutes (13 technologies by Mysore, 4 by Berhampore and 2 by Pampore and 26 by SSTL, Bangalore).
5. The Research work is being undertaken in tasar, oak tasar, muga and eri sector for host plant improvement, production, protection and silkworm crop production, improvement, protection and post-cocoon technology disciplines. Attempts have been made to increase the productivity potential of non-mulberry silk through transfer of new technologies developed from Institutes and in 2006 -07, 44 projects are in progress to evolve suitable technology to meet the challenges in non mulberry sericulture.
6. The network of Demonstration-cum-Technical Service Centres (DCTSCs) to impart training in silk reeling and spinning and technical services in processing and finishing are also provided in some of the weaving clusters. Besides, Silk Conditioning & Testing Houses (SCTHs) test raw silk. The Textile Testing Laboratories (TTLs) at Bangalore, Jammu, Varanasi and Bhagalpur undertake testing of physical, chemical and eco-parameters of textiles products.

SILKWORM SEED ORGANISATION

A network of 21 Basic Seed Farms (BSF), under the National Silkworm Seed Organization (NSSO), produce and supply the basic seed for production of commercial silkworm seed in the 19 Silkworm Seed Production Centres (SSPCs) are functioning under CSB and State Departments. During 2005-06, these commercial SSPCs made a record production of 249.80 lakh Disease Free Layings (DFLs) against the target of 247.64 and achieved 100.87%. During 2005-06, NSSO implemented ISO 9001:2000 certification in Quality

Management System for six Silkworm Seed Production Centers. During 2006-07, (till September 2006) SSPCs have produced 139.46 commercial dfls against the target of 254.66 lakh dfls.

CSB, on the tasar side, has established 21 Basic Seed Multiplication & Training Centres (BSM&TC) and one Central Tasar Silkworm Seed Station (CTSSS) for supply of tropical tasar basic seed & 1 oak tasar grainage and 3 REC-cum-BSM&TCs for supply of oak tasar basic seed. Under muga sector, 8 Basic Seed Farms and 1 Silkworm Seed Production Centre are functioning. For production and supply of eri seed, CSB has established 5 Silkworm Seed Production Centres. In the year 2006-07 (upto Sept.-2006), 18.55 lakh tasar basic seed, 1.77 lakh oak tasar basic seed, 0.88 lakh muga basic seed have been produced and supplied to State Departments for further multiplication. The muga and eri SSPCs have produced a quantity of 0.95 lakh and 0.52 lakh commercial seeds, respectively during the year 2005-06.

TRAINING

CSB organizes a number of training programmes at its Research and Training Institutes. The total number of persons trained during 2005-06 and 2006-07 (up to September, 06) is at Table 7.3.

A. EXTERNAL AIDED PROJECTS

1. PROJECT FOR STRENGTHENING EXTENSION SYSTEM FOR BIVOLTINE SERICULTURE (PEBS)(2002-07) PHASE III OF JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) PROJECT

The expansion, promotion and sustainability of bivoltine sericulture demands proper planning, systematic approach on training and organized system of extension, therefore, Govt. Of India, in coordination with JICA and Department of Sericulture (DOS) of Karnataka, Andhra Pradesh & Tamil Nadu, is implementing the "Project for Strengthening Extension System for Bivoltine Sericulture" with effect from August 11, 2002, for a period of five years.

The objectives of the project are to :

1. Strengthen Training System for staff of DOS & farmers
2. Establish a System of Mass Production of quality seed.
3. Establish an Extension Model for promotion of bi-voltine sericulture in identified states.
4. Establish coordination/collaboration mechanism among CSB and DOS for extension of bivoltine sericulture.

Table 7.3

S. No.	Training courses	2005-06		2006-07 [up to Sept'06]		Category of Trainees
		No. of courses conducted	No. of trainees trained	No. of courses conducted	No. of trainees trained	
1	Structured Courses	2	26	3	39	DOS (Deptt. of Sericulture)/NGOs
2	Capsule Courses	21	364	20	145	CSB/DOS / NGOs
3	Adhoc Courses	47	2,161	31	1,002	Students/Staff/ Entrepreneurs
	TOTAL	70	2551	54	1186	



2. THE JAPAN BANK OF INTERNATIONAL COOPERATION (JBIC)

a. MANIPUR SERICULTURE PROJECT

The Japanese aided sericulture project is being implemented by the Govt. of Manipur with a financial assistance from JBIC at a cost of Rs.490.59 crores. The approved cost the first phase of the project is Rs.134.52 crores (4587 Million Yen). The revised Overall Development and Implementation Plan of the project was approved at a cost of Rs.93.28 crores excluding the staff component of Rs.20.44 crores. From 2003-04, the first phase of the Project is under implementation.

b. CHHATTISGARH SERICULTURE PROJECT (1998-05)

The Directorate of Sericulture, Govt. of Chhattisgarh since 1998, had been implementing a seven years 'Chhattisgarh Sericulture Project' with financial assistance from Japanese Bank for International Co-operation (JBIC) in the seven districts of Bilaspur Division of Chhattisgarh, viz. Bilaspur, Korba, Janjgir, Raigarh, Jashpur, Surguja and Korea. The basic cost of the Project was Rs. 117.16 crores (3993.11 Million Yen) which includes a loan component of Rs 64.87 crores from JBIC and State share of Rs 52.29 crores. The loan agreement for funding the first phase of the project was signed between OECF/JBIC, Japan and Govt. of India on December 12, 1997, which came into effect from February 05, 1998.

B. INTERNAL AIDED PROJECTS

1. IMPLEMENTATION OF CATALYTIC DEVELOPMENT PROGRAMME (CDP) AND OTHER PROGRAMMES DURING Xth PLAN (2002-07)

The focus of Xth Plan is to create greater opportunities for gainful employment in rural areas, through the spread of scientific

sericultural practices and by promoting modernization and quality up-gradation of the Silk Textiles industry, Special attention is being given to improve the productivity of all stages of silk production to ensure higher income to the stake holders, especially the vulnerable section of the society.

To achieve above objectives and targeted production of 26,450 M.T of mulberry and non-mulberry silks and generate a cumulative employment of 60.03 lakhs persons by March 31, 2007, CSB is implementing Catalytic Development Programme (CDP) in a modified version. The programme gives greater thrust to bivoltine sericulture and market orientation to non-mulberry sector. The schemes encourages Quality Service Clubs and NGOs i) effective extension and propagation of the technologies, ii) enterprise development iii) clusters development, iv) free and organized marketing systems for non-mulberry sector, v) quality linked pricing of cocoons and silk, vi) up-gradation and propagation of improved reeling technologies and machines, vii) design development and product diversification, viii) introduction of quality certification system for silkworm seed, cocoon and yarn to boost the quality concept, ix) eco-friendly and integrated approaches for the better management of soil, pest and diseases, x) encouraging integrated farming system.

Special attention is being given to North-Eastern States, Jammu & Kashmir, Jharkhand, Chhattisgarh, Uttaranchal and Himachal Pradesh. Of Rs.526.99 crores approved by Govt. of India for implementation of central sector programmes during Xth plan, an outlay of Rs.244.47 crores has been earmarked for implementation of CDP Components.

These includes provisions for implementation of two more projects viz., "IT initiatives" and "Quality Certification

Systems for Silk" by CSB during the Xth Plan. The "IT Initiatives" project aims to disseminate and transfer technical information to rearers, reelers and others involved in the silk trade. The objective viz., "Quality Certification Systems of Silk" is to ensure quality maintenance at different levels of production process, through the quality assessment and certification.

2. JAMMU & KASHMIR- PM'S SPECIAL PACKAGE

The then Hon'ble Prime Minister of India announced a package for the State of Jammu & Kashmir during his visit to the State between May 21-23, 2002. The package includes a special assistance for development of Sericulture and silk textiles Industry in the state during the Xth five year plan.

The cost of implementation of the above package during Xth Plan is Rs.16.35 crores. Since J&K is a special status State, it is entitled to 90% central assistance from sericulture schemes of Central Silk Board. Accordingly, the CSB will provide Rs.14.71 crores as Central Assistance, and the amount of Rs.1.64 crores is to be provided by the State Government. Under the package, Rs.226.25 lakhs, Rs.178.49 lakhs, Rs.169.20 lakhs, Rs.424.83 lakhs and Rs.31.34 lakhs have been released by CSB during 2002-03, 2003-04, 2004-05, 2005-06 and 2006-07 (upto October 06), respectively. The expenditure of J&K Special Package is booked under Catalytic Development Programme.

CLUSTER DEVELOPMENT PROJECTS

CSB has been assisting various States in formulation and implementation of Cluster Development Projects in selected pockets by dovetailing Catalytic Development Programme (CDP). Thirteen Cluster Development Projects which include, three

in Kerala (Mulberry), three in Bihar (two Mulberry and one Eri), two in Assam state (one Eri and one Muga), two in West Bengal (one Eri and one Muga), two in Mizoram (Mulberry) and one in Himachal Pradesh (Mulberry) are under implementation. These projects involve an outlay of Rs.15.45 crores which include CSB share of Rs.6.75 crores under CDP. These Cluster Development Projects will benefit 2320 beneficiaries in selected clusters and cover 1795 acres under mulberry and Vanya silk host plantation.

ENTERPRISE PROMOTION AND TRAINING PROGRAMME

The various training programmes conducted under the "Enterprise Promotion and Training Programme" during 2006-07 are:

1. Entrepreneurship Development Programmes in Silk Reeling, Twisting, Weaving, Dyeing and Printing for the prospective entrepreneurs.
2. Resource Development Programme to develop a core team of resource persons who can train the second line of officials and the beneficiaries.
3. Technology Up-gradation Programmes for existing entrepreneurs for upgrading technology and management, modernization, consolidation and diversification.
4. Bankers Training Programmes for officers of commercial banks and financial institutions to create awareness about the viability of sericulture and ensure smooth flow of credit.
5. Management Development Programme to create awareness and develop Inter-personal relationships, team building, managing conflicts,



developing vision, goals, objectives etc.

6. Competence Enhancement Training Programme to develop the desired skills in the participants to make them more confident and well equipped for carrying out their duties smoothly.
7. Other Training Programmes (Workshop, Skill Development Programme, Empowerment Programme etc.) to create awareness about the improved technology, address the field problems, Building confidence, thereby empowering the stake holders.

RESEARCH AND DEVELOPMENT PROJECTS

1. Eri Culture in Tamil Nadu, Pondicherry & Kerala States in India: A Study on Feasibility, Technology Development, Refinement and Transfer

To introduce sustainable Eri culture in the southern states CSB has sanctioned an R&D project, "Eri Culture in Tamil Nadu, Pondicherry & Kerala States in India to study the feasibility, technology development, refinement and transfer" for development of Eri culture. The project was awarded to S. Jayaraj Research Foundation, Chennai for a period of four years (2003-07) at a cost of Rs.15.66 lakhs. The Central Silk Board has released Rs.10.012 lakhs up-to October 2006.

2. Evaluation of the Nutritional Potential of Eri Silkworm Pupae

The project titled 'Evaluation of the Nutritional Potential of Eri Silkworm Pupae' is being implemented by National Institute of Nutrition,

Hyderabad for a period of one year i.e. 2005-06, funded fully by Central Silk Board at a cost of Rs.5.75 lakhs.

The objective of the project is to undertake studies on nutritional potentials of Eri silkworm pupae by determining the chemical composition of Eri silkworm pupae/pre-pupae, nutritional and short-term toxicological evaluation and development of recipe using Eri pupae and pre-pupae. The final report is awaited.

3. Explorative studies on Eri pupae and pre-pupae oil and surface waxes

A project on 'Explorative studies on Eri pupae and pre-pupae oil and surface waxes' is under implementation by Indian Institute of Chemical Technology, Hyderabad is fully funded by Central Silk Board for a period of eight months from May 2005-Dec. 2005 at a total cost of Rs.5.00 lakhs.

4. Increasing the cocoon productivity in western zone of Tamilnadu

A project entitled, 'Increasing the cocoon productivity in western zone of Tamil Nadu' is under implementation by Centre for Plant Protection Studies, Department of Sericulture, Tamil Nadu Agriculture University, Coimbatore, Tamil Nadu for a period of three years (2005-08) at a total cost of Rs.10.85 lakhs being funded together by Central Silk Board and NABARD.

5. Product Design, Development and Diversification and Market Support Cell

The Central Silk Board has set up a 'Product Design, Development and Diversification and Market Support Cell', a R&D activity to envisage

revival of traditional products, development and diversification of products, market information and support to entrepreneur and exporters, particularly, in the area of non-mulberry (Tasar, Eri and Muga) or Vanya silks with the coordination and involvement of the government agencies, such as AIFD, NIFT, WSC, ISEPC, NID, NGOs, representatives of different stakeholders of the sericulture industry and designers for development of new and diversified silk products. During the period under report, a Core Group has been re-constituted to oversee the implementation of this R&D activity and as suggested in the first core group meeting, the display centre, a Centre of Excellence is being created in the CSB Complex, Bangalore to promote the Design, Development and Diversification of silk products. The Army Institute of Design and Fashion, Bangalore has extended the Technical Support to set up the Centre.

6. 'Vanya' Production cum Training Centres

As a part of the Central Silk Board's efforts to consolidate the initial success achieved in product development, diversification and marketing of Vanya silks, four Vanya Silks Production-cum- Training Centres (VPCTCs) are proposed to be established in the states of Chattisgarh, Assam & Uttaranchal. The VPCTCs would function as Field Level Partners of the Product Development Cell of the Central Silk Technological Research Institute (CSTRI), Central Silk Board, Bangalore in introducing new designs, products and technologies in post-cocoon sector in a cost effective manner.

OTHERS

Collaborative Projects of the Central Silk Board and Wool Research Association

1. To develop quality spun yarn of Eri silk/wool blend yarn and its products.
2. To develop suitable machinery for spinning of Eri silk wool and its blends for cottage industry.

The main objectives of these projects are:

- 1) To study spinning processes in the major Eri silk producing centres for development of Eri silk / wool blended yarn of various fine counts adopting worsted spinning technology and development of value added products from the above yarn.
- 2) To develop appropriate technologies and fabricate machinery for processing of Eri silk and its blends with wool and to train and transfer the technical know how to the spinners and artisans.

These collaborative projects sanctioned by the Ministry of Textiles, Govt. of India, are under implementation and execution by Wool Research Association, Thane. The achievements under the projects are as under.

Project-I: Blending and spinning process conditions for wool/silk & wool/silk/polyester material were optimized. Different blends and yarn counts were produced and tested for quality. It was possible to produce counts in the range from 2/28 to 2/90s NM. Based on initial R&D work, bulk processing on industrial floor having worsted spinning system was carried out in coordination with the Central Silk Board.

Project-II: Development of miniature ring frame and roving frame machine for processing of quality wool/silk blended yarns is undertaken. Discussions were also held with the manufacturer for design



and development of other miniature machines for the cottage industry, suitable for manufacture of Eri silk and Eri silk/wool blended yarn of good quality and required count. The development and miniature machines and their designs were finalised.

INFORMATION TECHNOLOGY INITIATIVES

Database Development

The Central Silk Board has recently introduced Sericulture Information Kiosks to provide useful information on Sericulture Technology and services for the benefit of Sericulturists. Presently 28 have been established in Karnataka, Tamilnadu, Andhra Pradesh, Kerala, Maharashtra, West Bengal and Jammu & Kashmir. These Kiosks work on **Touch Screen Technology** and have user friendly information which is available in English and the local language, which includes Kannada, Tamil Telugu, Malyalam. The version in Kashmiri, Marathi and Bengali are under preparation.

SILK MARK ORGANIZATION OF INDIA (SMOI)

The Silk Mark Organization of India (SMOI), a registered Society under the Karnataka Society Registration Act, sponsored by the Central Silk Board, had introduced the "Silk Mark Scheme" under the Quality Certification Systems. The broad objectives of the Silk Mark Scheme are - generic promotion of silk, consumer protection, and promotion of Indian silk in global markets.

During 2005-06, 229 new members were enrolled in the Silk Mark Scheme and approx. 8.12 lakh nos. of Silk Mark labels were sold to about 174 authorized users. During 2006-07 (upto October, 06) around 148 new members were enrolled and over 9.00 lakh of Silk mark labels have been sold to about 151 authorized users.

SMOI participates in various exhibitions and conducts awareness programmes for consumers and trade across the country to promote the Silk Mark Scheme. During 2005-06, SMOI participated in 68 exhibitions / Workshops. During 2006-07 (upto October 06), SMOI participated in 61 exhibitions / Workshops and had organized 16 Road Shows.

INDIAN SILK EXPORT PROMOTION COUNCIL

The Indian Silk Export Promotion Council (ISPEC), Mumbai was incorporated on June 16, 1983, to promote exports of natural silk goods from India and to act as the registration authority for silk exporters. The council registered 103 members in 2005-06, and the total members registered since inception are 5849. The Council produces and disseminates information to its members about global market developments, changes in the trade policies, etc. through its monthly magazines known as the "Silk Net". The silk sample catalogues containing sample swatches of the full range of silks available in India brought out by the Council are available to potential buyer, importing textile agents and Indian Mission abroad.