













Cluster Promotion Programme 2008-12

A New Dimension in the Promotion of Bivoltine Sericulture

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150 copies
July, 2012

Published by
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Director,
Central Sericultural Research and Training Institute
Central Silk Board, Ministry of Textiles, Govt. of India
Manandavadi Road, Srirampura
Mysore - 5700008

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Computer support
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Printing Co-ordination by :
Dr. Satish Verma
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Printed at :
M/s Ready Printers
Mysore

FOREWORD

Sericulture- a rural based, high employment generating, profitable enterprise plays a vital role in the socio- economic development of a country like India. Also being an excellent foreign exchange earner, silk industry ought to excel by producing quality bivoltine silk to beat the challenges of the changed global marketing trends especially in the backdrop of the post-*Multi Fiber Arrangement* (MFA) and *WTO* regime.

For pursuing such an ambitious goal of bivoltine sericulture development, a well knit/planned extension system was the need of the hour, in order to effectively transfer the new bivoltine technologies to the stakeholders so as to reach the targeted production of quality bivoltine silk. To achieve this task, a full proof extension mechanism that is holistic, decentralized, loaded with information, and participatory in nature, with demand driven system was on exploration by Central Silk Board. Adding to it over the years CSRTI, Mysore was quietly test verifying various extension approaches to widen its transfer of technology (ToT) ambit among sericulturists. Towards this "Cluster approach" based on strong "Researcher – Extension worker – Farmer" (R-E-F) linkage proved the best.

Instilling this very "Cluster approach" confidence among all the players in sericulture development in the country, an ambitions "Cluster Promotion Programme" (CPP) was launched by Central Silk Board and implemented during XI jointly with state sericultural departments organizing 50 sericulture clusters covering both mulberry and *Vanya* sectors spread over 17 states for the promotion of sericulture especially the bivoltine. Of these 31 clusters pertained to mulberry sector in the entire country including 22 of them to be implemented in Southern India.

It is most heartening to place on record that the Cluster Promotion Programme is concluded most successfully with an ever highest quantum of 1 crore 11 lakh Bivoltine Dfls reared harvesting on an average 65 kg of cocoons/100 dfls against the overall benchmark of 49.18 kg/100 dfls recording an amazing improvement of 32%.

In the peninsular India, Karnataka, AP, TN and Maharashtra, the programme was launched in the year 2008-09 in 14 clusters followed by eight more in 2009-10.It's contribution towards promotion and sustenance of bivoltine silk especially in South India with first time crossing 1000 MT BV silk production mark during the project period has been remarkable! CSRTI Mysore was responsible for the successful handling of 22 clusters out of 50 in close coordination of respective DOS in the region. The program in fact, has also supported the continuance of the benefits derived in the JICA assisted projects as well as Institute Village Linkage Programs in promotion of bivoltine sericulture.

I sincerely hope this unique publication **"Cluster Promotion Programme 2008-12 – A New Dimension in the Promotion of Bivoltine Sericulture"** on documentation of CPP work done in southern India encompassing few success stories, documents the lessons learnt during its implementation brought out hereby shall be effectively utilized by planners, policy makers, scientists, academia, extension personnel and all others concerned for the development of bivoltine sericulture in other sericulture states of the country as well.

Place : Mysore **Dr. S.M.H. Qadri**
Date : 17.07.2012 **Director**

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INTRODUCTION

Sericulture plays a pivotal role in economic development of the developing economies and least developed economies by generating employment, incomes as well as foreign exchange. Its structure comprises of mulberry cultivation, silkworm rearing, silk reeling and fabric weaving spreads across the agriculture sector, industrial sector as well as cottage industries and export units. By the very nature of its structure, sericulture faces the problems associated with both agriculture and industries, especially cottage industries.

Sericulture being a long chain industry with backward and forward linkages ranging from egg producers to farmers in cocoon production, to reelers, to twisters, to weavers, to dyers, to garment makers and to traders before reaching the consumers, requires a holistic approach for its overall development. Any weak link in the chain may affect the the growth and prospects industry adversely. In this context, for pursuing the goal of sericulture development systematically and meeting the current and future demand of the sericulture industry, a well-organized/planned extension system is very much essential for and to achieve the target of production. The extension system should incorporate participatory, decentralized, holistic, market oriented and information based and demand driven approaches. In this direction, many extension approaches have been followed in the transfer of sericultural technologies to the farmers from time to time. Among them, cluster development approach is found most successful with the participatory extension mode with Research-Extension-Farmer (R-E-F) linkage and yielded fruitful results.

Bivoltine silk production through cluster approach :

To achieve incremental production of 7525 MT of raw silk, of which, about 6775 MT i.e., 93% of total to come from Mulberry sector during XI plan period ending 2011-12 was the major area of concern for the Central Silk Board as well as all the State Departments of Sericulture in the country. Within mulberry, to achieve this target of the incremental production the major share has to come basically from the South and North-Western sericulture regions and West Bengal. But yet bivoltine silk production in the country remained an uphill task. With a number of limitations in the North and North-Western belts the onus of bivoltine production was

laid on southern states again. Now since horizontal expansion of sericulture to new and non-traditional areas has not been much successful during earlier attempts, vertical expansion, by way of increased production and productivity in the existing sericulture regions with adequate backward and forward linkages in place was only a practical and viable approach for sericulture development in general and bivoltine promotion in particular.

Towards this, when a close analysis was made on the issues hindering production and productivity, the productivity of West Bengal and North West has not improved appreciably whereas in the southern region, except Tamil Nadu, the other two giants of sericulture namely, Karnataka and Andhra Pradesh have to scale up their intake of dfls per unit area, average production and productivity, in general and bivoltine, in particular. In this context certain major constraints observed during the analysis at the end of X Plan period are enumerated as under :-

1. Fast industrialization and urbanization especially in Bangalore Rural, Mysore, Tumkur and Kolar districts of Karnataka, which are the major areas of production resulting into reduction in mulberry area and higher labour wages.

2. Fast depletion of underground water availability coupled with non-availability of sufficient electric power for irrigation.

3. Inadequate quality egg production especially by Andhra Pradesh, Tamil Nadu, Maharashtra, Jammu & Kashmir, Uttar Pradesh etc.,

4. Frequent crop failures both during rainy and winter seasons, which are considered to be favorable for cocoon production.

5. Non-attractive cocoon price and poor marketing facility in Maharashtra and North India.

6. Poor reeling facilities available locally which discourage the farmers because of additional burden of marketing, cost and uncertainty.

All the above factors have indirectly resulted in the higher cost of production and reelers were not in a position to afford this, as price of silk does not allow the activity to run profitably. This has forced the weavers to get attracted towards imported silk from China where quality is assured, besides availability of raw silk in bulk at comparatively cheaper price.

Under above scenario the bivoltine production in southern India even though demonstrated and also practiced with good success under PEBS project of JICA could not be sustained. At this juncture, dovetailing the resources available under CDP (Catalytic Development Programme) an ambitious **"Cluster Promotion Programme" (CPP)** involving the major R&D institutes of CSB and respective state departments of sericulture was launched by Central Silk Board during the beginning of XI Plan and implementation initiated during the first week of July 2008.

Suggested modalities of CPP implementation :

Each cluster will have one or two CRCs as per the need (Mulberry area / number of farmers) and a Farmers' Field School. Proportionate funds of CDP amount earmarked for each State shall be released to the Heads of the Task Force in charge of each State to create facilities on par with the regular programme and following steps were suggested.

1. A meeting of the Task Force comprising four Directors viz., Director, CSR&TI, Mysore, Director, NSSO, Director, CSRTI Pampore, Director, CSRTI Berhampore was called to select and finalize the name of the clusters and work out the modalities of implementation.

2. The approaches followed for implementation of IVLP were decided to be followed in this programme and Directors of CSB Main R & D Institute was decided to oversee the implementation and monitoring of the programme in their jurisdictions.

3. Preparation of profile of each selected cluster by the group identified with the help of REC/SSPC staff of CSR&TI and NSSO based on IVLP requirement.

4. Selection of Lead Farmer to run FFS and also selection of a suitable farmer to establish CRC.

5. Supply of the required quantity of incubated eggs to each CRC by NSSO.

6. Farmers training under each cluster at respective CSR&TI / RSRSs.

7. Working together of all the field units of CSB namely, RECs, CDC, SSCs and SSUs in the field under the common type of approach, policy and monitoring system.

What is cluster approach?

Cluster promotion approach has emerged during the last decade as one of the most innovative and effective ways for the development of land based enterprises among the developed as well as the developing countries. In the cluster promotion approach, a cluster of villages and families located nearby are selected and adopted so as to have area/mass effect of the improved technologies introduced under the programme and the programmes are manageable by the limited scientists and extension workers jointly with the active involvement of local stakeholders.

Under this programme, contiguous villages (if more than one village) within the radius of around 20 km in order were selected to save time and money on transport and to facilitate closer interactions of scientists and extension personnel of CSB and DOS with the adopted families. This helped in effective supervision and guidance by the scientists extension personnel of CSB and DOS. One village or a cluster of villages located nearby was selected in such a way that as far as possible all eligible families of village/cluster of villages were covered under the programme. About 100 to 200 families (beneficiaries) were selected from such village /villages. Adopted village/villages were regarded as a field operational unit and all eligible farm families including big, medium and small farmers irrespective of caste and creed were the beneficiaries of the programme. The inputs to support plantation, rearing houses construction and silkworm rearings were provided under CDP scheme of CSB through respective DOS in each state where as training and guidance were provided by main Institute to all farmers of the field operational units.

Advantages of cluster approach :

1. The cluster approach ensured an integrated thematic response, drawing upon the comparative advantages of all the agencies working for sericulture development, fund and programme and leveraging resources through inter-agency partnerships.

2. The cluster approach ensured coordination among different agencies, joint programming, information sharing, knowledge sharing on technical and policy issues, joint formulation of

sectoral/ thematic strategies, promoted implementation synergies by combining support and common services.

3. In cluster approach, effective R-E-F (Researcher – Extension worker – Farmer) linkage was maintained and the technology spread was effected from farmer to farmer.

4. As the ratio between farmer and extension worker was widening, the cluster approach could be implemented with the limited number of scientists and extension workers.

5. The cluster approach is a need based and target based approach, unlike the traditional approach. Here the technologies were provided to farmers as a module based on the requirement unlike individual technologies provided to the farmers in the traditional approach.

6. The needs of the farmers varied from area to area in terms of the agro-climatic conditions, social and economic conditions, availability of infrastructure facilities etc. Hence, the cluster approaches are preferred to address the constraints and satisfy the needs of the local farmers.

7. Experience sharing and lead farmer's interaction builds confidence and ensures mistake correction in the cluster promotion programme.

8. Competitive spirit and collective efforts is promoted in the group approach. Further, bargaining power is improved.

9. Resource augmentation and sharing of resources or implements such as power sprayers, mountages is facilitated in the cluster approach.

10. Orderly development of different segments of the industry in a particular cluster with proper infrastructure facilities is provided.

Basic requirements of a cluster :

Each sericulture cluster should have adequate facilities with adequate forward and backward linkages covering all the activities at least up to the production of raw silk. The requirement of ideal cluster was meticulously adopted as detailed below

1. Farmers numbering 100-200 in nearby villages as a cluster to start with and 300 farmers covering 300-400 acres at the end of the programme was achieved.

2. Assured supply of planting materials and quality silkworm seed was facilitated.

3. Commercial CRC with the brushing capacity of 1.25 lakh dfls/year and compulsory supply of chawki worms to the farmers was established.

4. One farmers' filed school, one mobile disinfection unit, one seri-polyclinic and one bio-control agent multiplication unit to provide input support and services to the farmers were established.

5. Vehicles, computer and communication facilities were provided for the extension centers for effective functioning. Two scientists/extension staff were provided for conducting and monitoring the programme

6. Provision of financial assistance under CDP for the farmers and for establishment of CRCs, separate rearing houses, sprayers, mountages, vermi-composting units and reeling units in the cluster areas were made.

7. Marketing system for the sale of cocoons for the farmers and purchase of adequate quantity of quality cocoons by the reelers were facilitated.

Methodology adopted for implementation of Cluster Promotion Programme :

1. Identification of the cluster :

- The clusters, which had congenial agro-climatic conditions and ideal conditions (such as labour) for silk production, were identified jointly by DOS officials and CSRTI scientists.

2. Problems identification :

- A benchmark survey was conducted by CSB-DOS joint team with farmers and the problems of the sericulturists were identified. The survey covered the following aspects:
    - Profile of the farmers
    - Technology status (moriculture /silkworm rearing) with the farmers

- Inputs usage – manures, fertilizers, dfls/chawki worms, chemicals, disinfectants etc.,
- Yield obtained in mulberry and silkworm rearing
- Facilities and equipment required for each farmer for conducting bivoltine silkworm rearing

- The major problems were prioritized and technology intervention (both monetary and non-monetary inputs) was decided based on the farmers' needs. The objectives of the programme and the targets to be achieved were decided accordingly.

3. Creation of facilities and capacity building :

- The major technology intervention with the farmers was drawn in mulberry cultivation and silkworm rearing.
- Commercial CRCs were established in each cluster for the compulsory supply of chawki worms to the beneficiaries.
- One Farmer's Filed School, one mobile disinfection unit, one seri-polyclinic and one bio-control agent multiplication unit were established in each cluster under Catalytic Development Programme to provide input support and services to the farmers on need based situation.
- The lead farmers, CRC owners/operators, quality club members identified to run and manage above units were trained adequately.

Implementation of the programme :

- Awareness programmes, group discussions and training programmes were conducted for the farmers to make the farmers aware of the project goals and objectives.
- The technology modules were implemented for 5 crops in a year for the mulberry holding of one acre and 10 crops for the farmers having the mulberry plantation of 2 acres and above.
- For each crop, the chawki worms were reared and supplied to the farmers. The subject matter specialists made regular visit to the farmers at critical stages and provided technical guidance.

- The bivoltine hybrids were reared in this programme. However, under tropical conditions bivoltine (single/double) hybrids were reared during favourable seasons in all the 22 clusters and cross breed during the summer season in few clusters.

- After completion of each crop, the results of the crop performance were collected.

- Extension programmes such as field days, group discussions, seminar and workshops were conducted regularly as per the requirement to solve the technical problems and diffuse the results to other farmers. In the extension programmes, priority was provided for the farmer-to-farmer communication, as it is more effective in diffusion of technologies.

5. Monitoring of the programme :

- A Joint Level Cluster Promotion Committee (JLCPC) was constituted for each cluster. The Scientist In-charge of local CSB unit was the Chairman of JLCPC. The members of JLCPC included local DOS officers, technical staff working in nearby CSB unit and two progressive farmers of the cluster. The JLCPC met once in fortnight regularly and drawn action plan and programmes for conducting the activities. It also reviewed the performance of the silkworm crops regularly, took remedial measures and solved the problems encountered.

- The crop review meetings were conducted once in a quarter at CSRTI, Mysore, in which all the chairpersons of clusters, DOS officers, silkworm seed suppliers, scientists of CSRTI, Mysore and CSTRI, Bangalore attended the meeting. Director, CSR&TI, Mysore conducted review of overall crop performance and addressed the problems related to technical in nature.

- Problems/ issues pertaining to finance and are administration were addressed by Member Secretary whenever required and solved suitably.

- The entire programme was conducted with Researcher-Extension worker-Farmer (R-E-F) linkage. Hence, the research institutions, Government agencies involved in sericulture development and farmers were involved in all the stages of the programme namely, planning, implementation and monitoring stages.

Cluster Promotion Programme in sericulture under XI Plan :

Under Cluster Promotion Programme implemented during XI Plan, Central Silk Board and State Sericulture Departments had jointly organized 50 sericulture clusters covering both mulberry (31), vanya (14) and post cocoon (5) sectors spread over 17 states. In the peninsular India (Karnataka, Andhra Pradesh, Tamil Nadu and Maharashtra), which comprises the major silk producing states, the programme was launched in 2008-09 in 14 clusters, later 8 more clusters were added in 2009-10. Finally, the programme was implemented by CSRTI, Mysore jointly with DOS of respective states in all the 22 clusters as programmed (7 clusters in Karnataka, 6 clusters each in Andhra Pradesh and Tamil Nadu and 3 clusters in Maharashtra). The details of clusters are presented in Fig. 1

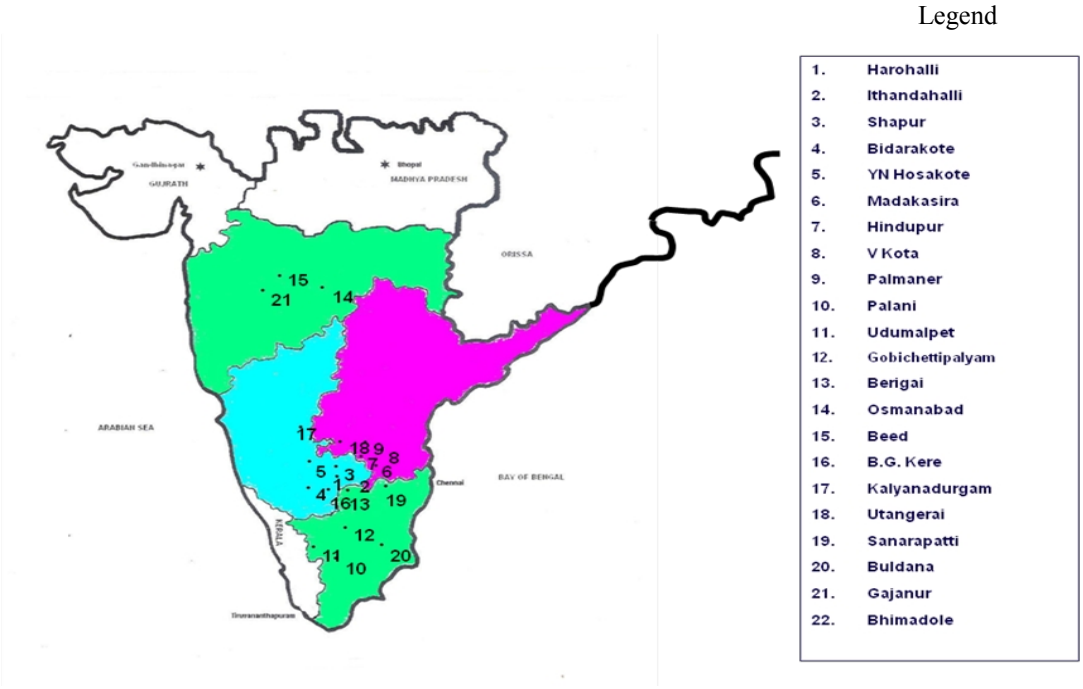


Fig. 1. Cluster Promotion Programme – Location Map

Each cluster was directly looked after by one scientist and one technical staff of CSB. In addition to this, the extension officers and staff of state sericulture department extended support for conducting the extension programmes for the sericulture development in the cluster. The farmers' equipment and technological needs were identified through a benchmark survey and the required equipments were provided under Catalytic Development Programme (CDP). A Chawki Rearing Centre (CRC), Farmers Field School (FFS), mobile disinfection unit, seri-polyclinic and

bio-control agent multiplication unit were allocated and established under CDP in each cluster to provide input support and services to the farmers.

Farmers Field School :

Farmers Field School (FFS) is a platform of "Learning Centre" in the farmers' situation and technology transfer is made through the concept of "Seeing is Believing" and Learning by Doing". It is a farmer to farmer's extension teaching method and helps the farmers who can not undergo training at CSRTI, Mysore. The demonstration and teaching are being conducted at the lead progressive farmers' garden / rearing house in the village and facilitate all the nearby farmers to participate in the event. Extension workers and subject matter specialists will teach the participants about the sericulture technologies. The main objectives of FFS were to empower the farmers with knowledge and skills and to make them experts in their own field.

One lead farmer who had adopted all the sericulture technologies to harvest successful crop was selected and imparted special training to conduct FFS by scientists of CSR&TI, Mysore he sensitized the other farmers through demonstration at his own mulberry garden and rearing house. 25-30 sericulturists were benefitted in each session conducted. Audio-visual aids like projectors, DVD players, laptops., materials for demonstration, course materials, charts, teaching materials, refreshment etc. to conduct the training programme were provided for each FFS in a cluster.

Seri-polyclinics :

Seri-polyclinics were established and maintained by one of the progressive farmer of the CPP area with technical and financial assistance from DOS and Central Silk Board. The units served as a guidance centre for the day to day problems faced by the farmers in mulberry cultivation and silkworm rearing and also facilitated for sale of disinfectants, chemicals, appliances etc., required for sericultural activities. The owner was also imparted training in disease management at CSR&TI, Mysore.

Bio-control production units :

Under CPP in each cluster a Bio control production unit was established to meet the special demand of local needs. The identified beneficiaries of the clusters were trained at

CSR&TI, Mysore for the production of various bio-control agents like *Nesolynx thymus* (for Uzi), *Cryptolaemus montrouzieri*, *Scymnus coccivora* (for tukra), *Acerophagus papayae* (for Papaya mealy bug) etc. The training helped the bio control unit farmer to multiply the bio control agents and supply to the needy farmers.

Soil testing laboratories :

Under CPP in each RSRS viz. Ananthapur, Salem and Kodathi, adequately equipped soil testing laboratories were established to analyze the soil samples from the garden of CPP farmers and guided them to maintain soil nutrients at required level by application recommended dosage of requisite manures and fertilizers. During the project period RSRS Kodathi in Karnataka, RSRS Salem in Tamil Nadu and RSRS Ananthapur in Andhra Pradesh has analysed 1079, 1815 and 989 soil samples. This facility was extended free of cost for cluster farmers during project period.

Establishment of Chawki Rearing Centres :

The silkworm seed was directly distributed to the farmers in the initial stages of the programme. From each cluster selected farmers were trained at CSRTI, Mysore to establish CRCs and later the chawki reared worms were supplied to the farmers by establishing model CRCs in each cluster by the trained farmers. The batch brushing was encouraged, which was convenient for crop inspection and monitoring of crops. The scientists and extension workers extended technical guidance to the farmers in mulberry cultivation and silkworm rearing through joint crop inspection.

Extension communication programmes :

The CPP farmers were sensitized through different extension communication programmes such as awareness programmes, group discussions, film show, exhibitions, training programmes, enlightenment programmes, demonstrations, study tours, field days and farmers meet. This helped them to improve their knowledge and adoption level and ultimately lead to increase the productivity.

CLUSTER PROMOTION PROGRAMME IN KARNATAKA

During the year 2008-09, when CPP was initiated in Karnataka the extent of mulberry cultivation was 77329 hectares in 11431 villages. 140959 farmer families were engaged in mulberry cultivation and silkworm rearing. The cocoon production was 50968 MT and silk production was 7238 MT. The Department has well established infrastructure network facilities. In the pre-cocoon sector, 91 silk farms, 211 chawki Rearing Centers, 63 Government Grainages, 326 Private Grainages, 246 Technical Service Centers, 66 Cocoon Markets, 6 Sericulture Training centres are established across the State. 7195 Silk reeler families are engaged in post cocoon activities. Directly and indirectly sericulture is providing jobs for about 10.67 lakh people in the state.

Karnataka stands first among the Indian states in mulberry raw silk production producing 49.05% (7338 MT – 2010-11) of the total production. However, with 311 M.T of the production of bivoltine silk it stands at second position in the country. The CPP was implemented in seven clusters in traditional sericulture belt viz., Harohalli, Bangalore (Rural), Ithandahally, Shapur in Kolar, B.G. Kere in Chitradurga, Bidarakote, Gajanur in Mandya and Y.N. Hosakote in Tumkur districts (Figure 2). The details of number of beneficiaries, area covered under mulberry plantation in different clusters during the year 2008 – 2012 is presented in Table 1.

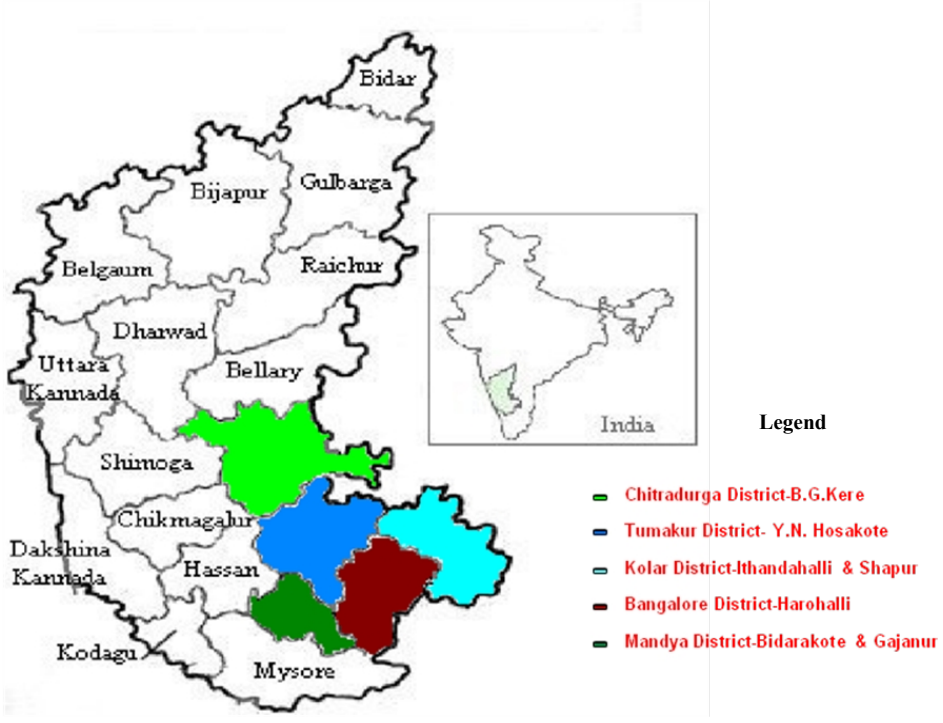


Fig 2 : The distribution of CPP clusters in different districts of Karnataka

Table 1 : No. of beneficiaries and area covered under mulberry plantation in (acres) different clusters

#	Name of the cluster	No. of beneficiaries (progressive)				Mulberry acreage		
		2008-09	2009-10	2010-11	2011-12	2008-11	2011-12	2011-12 (Cumulative)
1	Harohalli	95	194	225	272	385	15	400
2	Y.N.Hosakote	125	143	153	179	138	54	192
3	Shapur	79	226	372	372	357	-	357
4	Ithandahally	66	121	144	274	228	187	415
5	B,.G.Gere	-	127	142	157	297	18	315
6	Gajanur	-	130	142	275	259	221	480
7	Bidarkote	-	61	74	278	135	278	413
	Total	**365**	**1002**	**1252**	**1807**	**1799**	**773**	**2572**

Crop performance of the CPP clusters in Karnataka :

1. Harohalli cluster : The CPP was initiated in Harohally cluster in Bangalore district in the year 2008-09 and by the end of the project period a total number of 272 farmers with 400 acres of mulberry were covered. At the initiation of the project the benchmark survey indicated an average yield of 49.5 kg / 100 dfls. During the project period the cluster brushed 3,64,445 dfls with an average yield of 66.35 kg/100 dfls and recorded an overall improvement of 34.04% over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon recorded was 5.68%. The detail of farmers (nos.), dfls brushed, cocoon production (kg) yield/ 100 dfls, defective cocoons % and the average cocoon price obtained during the period are presented in Table 2.

Table 2 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Harohalli cluster

Year	No of Farmers	No of dfls	Hatch-ing %	No. of dfls harvested	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
2008-09	95	30525	91.0	30525	13801	45.21	49.5	- 8.66	6.5	190.00
2009-10	194	59550	91.4	57475	34070	59.30	49.5	19.79	5.9	204.35
2010-11	225	116720	90.1	110120	76319	69.32	49.5	40.00	5.8	285.80
2011-12	272	157650	92.9	156600	111166	70.98	49.5	43.39	4.5	230.76
Total/ Average	**786**	**364445**	**91.35**	**354720**	**235356**	**66.35**	**49.5**	**34.04**	**5.68**	**227.73**

During the project period, Harohalli cluster recorded an achievement of 104.64%, 112.63 % and 110.58/ % against the target of dfls brushing, cocoon production and yield(kg)/100 dfls respectively. The details are presented in Table 3.

Table 3 : Annual targets and achievements of Harohalli cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	25000	30525	122.1	15000	13801	92.01	60.00	45.21	75.35
2	2009-10	73000	59550	81.58	43800	34070	77.79	60.00	59.30	98.83
3	2010-11	100085	116720	116.62	60039	76319	127.12	60.00	69.32	115.53
4	2011-12	150200	157650	104.96	90120	111166	123.35	60.00	70.98	118.30
	Total/Avg	**348285**	**364445**	**104.64**	**208959**	**235356**	**112.63**	**60.00**	**66.35**	**110.58**

2. Y.N. Hosakote cluster : The cluster located in Tumkur district took up the CPP in the year 2008-09. The cluster was able to support 179 farmers with 192 acres of mulberry by the end of the project period. The benchmark survey conducted before the initiation of the project indicated an average yield of 49.5 kg / 100 dfls. By the end of the project period (2008-2012) the cluster brushed 2,16,550 dfls by harvesting an average yield of 59.29 kg/100 dfls and

recorded an overall improvement of 19.77% over the benchmark. The average defective cocoon recorded was 6.15%. The rearing performance details of the cluster is presented in Table 4.

Table 4 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Y.N. Hosakote cluster

Year	No of Farmers	No of dfls	Hatch-ing %	No. of dfls harvested	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
2008-09	125	27225	92.5	27225	14570	53.50	49.5	8.08	7.0	177.66
2009-10	143	48200	92.1	41150	24429	59.20	49.5	19.59	6.7	203.09
2010-11	153	53025	93.6	47900	25157	52.50	49.5	6.06	6.6	309.27
2011-12	179	88100	94.2	78950	51597	65.40	49.5	32.12	4.3	239.80
Total/Avg	**600**	**216550**	**93.1**	**195225**	**115753**	**59.29**	**49.5**	**19.77**	**6.15**	**232.46**

During the project period, Y.N. Hosakote cluster has recorded 84.94% achievement in the no. of dfls brushed, 75.67 % achievement in cocoon production and 98.81 % achievement yield(kg)/100 dfls. The details are presented in Table 5 .

Table 5 : Annual targets and achievements of Y.N. Hosakote cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	20000	27225	136.13	12000	14570	121.42	60.00	53.50	89.18
2	2009-10	59950	48200	80.40	35970	24429	67.91	60.00	59.20	98.67
3	2010-11	75000	53025	70.70	45000	25157	55.90	60.00	52.50	87.50
4	2011-12	100000	88100	88.10	60000	51597	86.00	60.00	65.40	109.00
	Total/Avg	**254950**	**216550**	**84.94**	**152970**	**115753**	**75.67**	**60.00**	**59.29**	**98.81**

3. Shapur cluster : Shapur cluster in Kolar district took up the CPP in the year 2008-09. The cluster was able to support 372 farmers with 357 acres of mulberry by the end of the project

period. The benchmark survey conducted on the set of programme indicated an average yield of 50.0 kg / 100 dfls. The cluster recorded an average yield of 60.39 kg/100 dfls by brushing 2,77,245 dfls during the period and recorded an improvement of 20.78 % over the benchmark. The average defective cocoon was reduced to 4.4% which was higher during the initial phase of the project viz., 5.0 to 6.5% by adopting improved rearing technologies. The year wise crop performance is detailed below in Table 6.

Table 6 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Shapur cluster

Year	No of Farmers	No of dfls	Hatch-ing %	No. of dfls harvested	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
2008-09	79	21950	91.3	21950	10335	47.10	50.0	- 5.8	5.0	179.00
2009-10	226	53750	92.7	46900	28096	59.90	50.0	19.8	4.8	198.73
2010-11	372	106475	92.0	76650	46293	60.40	50.0	20.8	6.5	275.75
2011-12	372	95070	93.6	91780	58582	63.82	50.0	27.6	4.4	230.00
Total/Avg	**1049**	**277245**	**92.4**	**237280**	**143306**	**60.39**	**50.00**	**20.78**	**5.18**	**220.87**

The achievement against the target of brushing , cocoon production and cocoon yield(kg)/ 100 dfls is 65.23 %, 56.20 % and 100.62 % respectively in the cluster. The details are presented in Table 7.

Table 7 : Annual targets and achievements of Shapur cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achiev e-ment	% of achieve -ment	Target	Achieve-ment	% of achieve -ment
1	2008-09	25000	21950	87.80	15000	10335	68.90	60.00	47.10	78.47
2	2009-10	100000	53750	53.75	60000	28096	46.83	60.00	59.90	99.83
3	2010-11	150000	106475	70.98	90000	46293	51.44	60.00	60.40	100.67
4	2011-12	150000	95070	63.38	90000	58582	65.09	60.00	63.82	106.37
	Total/Avg	**425000**	**277245**	**65.23**	**255000**	**143306**	**56.20**	**60.00**	**60.39**	**100.62**

4. Ithandahally cluster : The CPP was initiated in Ithandahally cluster in Kolar district in the year 2008-09 and by the end of the project period a total number of 274 farmers with 415 acres of mulberry was covered. At the initiation of the project the benchmark survey indicated an average yield of 60.0 kg / 100 dfls. During the project period the cluster brushed 8,37,440 dfls with an average yield of 64.03 kg/100 dfls and recorded an overall improvement of 6.71 % over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon recorded was 3.53 %. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 8.

Table 8 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Ithandahally cluster

Year	No of Farmers	No of dfls	Hatch-ing %	No. of dfls harvested	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
2008-09	66	60900	93.2	60900	39251	64.50	60.0	7.50	3.9	188.89
2009-10	121	210550	93.0	191275	109771	57.75	60.0	-3.75	3.5	205.78
2010-11	144	245515	92.0	222335	141641	63.70	60.0	6.16	3.4	291.00
2011-12	274	320475	93.0	299125	204741	68.40	60.0	14.0	3.3	233.00
Total/Avg	**605**	**837440**	**92.8**	**773635**	**495404**	**64.03**	**60.0**	**6.71**	**3.53**	**229.67**

During the project period, Ithandahally cluster has achieved 128.64 %, 126.83 % and 106.72 % against the target of dfls brushing, cocoon production and yield(kg)/100 dfls respectively. The details are presented in Table 9 .

Table 9 : Annual targets and achievements of Ithandahally cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	45000	60900	135.33	27000	39251	145.37	60.00	64.50	107.50
2	2009-10	176000	210550	119.63	105600	109771	103.95	60.00	57.75	96.25
3	2010-11	200000	245515	122.76	120000	141641	118.03	60.00	63.70	106.17
4	2011-12	230000	320475	139.34	138000	204741	148.36	60.00	68.40	114.00
	Total/Avg	**651000**	**837440**	**128.64**	**390600**	**495404**	**126.83**	**60.00**	**64.03**	**106.72**

5. B.G.Kere cluster : The cluster located in Chitradurga district took up the CPP in the year 2008-09. The cluster was able to support 157 farmers with 315 acres of mulberry by the end of the project period. The benchmark survey conducted on the set of programme indicated an average yield of 50.5 kg / 100 dfls. The cluster achieved an average yield of 61.54 kg/100 dfls by brushing 2,07,000 dfls during the period and recorded an improvement of 21.12 % over the benchmark. The average defective cocoon was reduced to 4.0 % from 6.8% which was higher during the initial phase of the project. The year wise crop performance is detailed below in Table 10.

Table 10 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at B.G. Kere cluster

Year	No of Farmers	No of dfls	Hatch-ing %	No. of dfls harvested	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
2009-10	186	42600	93.0	41800	24880	59.50	50.5	17.82	6.8	232.17
2010-11	300	72200	95.0	71500	43878	61.40	50.5	21.58	5.5	303.45
2011-12	261	92200	94.0	86050	53915	62.60	50.5	23.96	4.0	239.60
Total/Avg	**747**	**207000**	**94.0**	**199350**	**122673**	**61.54**	**50.5**	**21.12**	**5.43**	**258.41**

During the project period, the cluster has recorded 72.53% achievement in the no. of dfls brushed, 71.64 % achievement in cocoon production and 102.56 % achievement in yield(kg)/ 100 dfls. The details are presented in Table 11 .

Table 11 : Annual targets and achievements of B.G. Kere cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
2	2009-10	65340	42600	65.20	39204	24880	63.46	60.00	59.50	99.17
3	2010-11	95040	72200	75.97	57024	43878	76.95	60.00	61.40	102.33
4	2011-12	125000	92200	73.76	75000	53915	71.89	60.00	62.60	104.42
	Total/Avg	**285380**	**207000**	**72.53**	**171228**	**122673**	**71.64**	**60.00**	**61.54**	**102.56**

6. Gajanur cluster : The cluster located in Mandya district took up the CPP in the year 2009-10. The cluster was able to support 275 farmers with 480 acres of mulberry by the end of the project period. The benchmark survey conducted on the set of programme indicated an average yield of 44.45 kg / 100 dfls. The cluster achieved an average yield of 57.84 kg/100 dfls by brushing 2,07,625 dfls during the period and recorded an improvement of 30.12 % over the benchmark. The average defective cocoon recorded was 5.77 %. The year wise crop performance is detailed below in Table 12.

Table 12 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Gajanur cluster

Year	No of Farmers	No of dfls	Hatch-ing %	No. of dfls harvested	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
2009-10	130	21550	94.2	21550	11232	52.20	44.45	17.43	4.5	241.15
2010-11	142	43600	95.9	33100	19334	58.40	44.45	31.38	6.5	310.92
2011-12	275	142475	96.1	111925	65777	58.80	44.45	32.28	6.3	214.50
Total/Avg	**547**	**207625**	**286.2**	**166575**	**96343**	**57.84**	**44.45**	**30.12**	**5.77**	**255.52**

The achievement against the target of brushing , cocoon production and cocoon yield(kg)/ 100 dfls is 58.06 %, 44.87 % and 96.4 % respectively in the cluster. The details are presented in Table 13 .

Table 13 : Annual targets and achievements of Gajanur cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2009-10	101170	21700	21.45	60702	11232	18.50	60.00	52.20	87.00
2	2010-11	106700	43600	40.86	64020	19334	30.20	60.00	58.40	97.35
3	2011-12	150000	142475	94.98	90000	65777	73.09	60.00	58.80	98.00
	Total/ Average	**357870**	**207775**	**58.06**	**214722**	**96343**	**44.87**	**60.00**	**57.84**	**96.40**

7. Bidarakote cluster : The CPP was initiated during 2008-09 in Bidarakote cluster in Mandya district and during the period a total of 278 farmers with 413 acres of mulberry was covered. The benchmark survey conducted recorded an average yield of 55.0 kg / 100 dfls. The cluster has brushed 2,29,450 dfls and harvested an average yield of 62.72 kg/100 dfls and achieved 14.03 % improvement over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon percentage was 4.87. The overall crop performance for the period is presented in Table 14.

Table 14: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Bidarakote cluster

Year	No of Farmers	No of dfls	Hatch-ing %	No. of dfls harvested	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
2008-09	183	43325	90.0	43325	25730	59.39	55.00	7.98	4.8	187.00
2009-10	277	55425	91.0	52125	33977	65.18	55.00	18.51	5.50	225.64
2010-11	207	53275	91.5	41675	25542	61.29	55.00	11.43	4.59	311.00
2011-12	404	77425	91.2	58125	37214	64.02	55.00	16.40	4.60	227.00
Total/ Average	**1071**	**229450**	**90.93**	**195250**	**122463**	**62.72**	**55.00**	**14.03**	**4.87**	**237.66**

During the project period, Bidarakote cluster has achieved 68.69 %, 66.41 % and 114.04 % against the target of dfls brushing, cocoon production and yield(kg)/100 dfls respectively. The details are presented in Table 15 .

Table 15 : Annual targets and achievements of Bidarakote cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	54000	43325	80.23	32400	25730	79.41	55.00	59.39	107.98
2	2009-10	70000	55425	79.18	42000	33977	80.90	55.00	65.18	118.51
3	2010-11	110000	53275	48.43	50000	25542	51.08	55.00	61.29	111.44
4	2011-12	100000	77425	72.43	60000	37214	62.02	55.00	64.02	116.40
	Total/ Average	**334000**	**229450**	**68.69**	**184400**	**122463**	**66.41**	**55.00**	**62.72**	**114.04**

Farmers Field School, Seri-polyclinic and Bio-control agents multiplication units :

a. Farmers Field School

During the project period all the cluster except Bidarakote established Farmers field schools to provide in-situ training to the farmers. All the FFS were equipped with DVD player, LCD projector and Laptops to conduct the classes. During the period a total of 113 sessions were conducted as per the curriculum provided by the CSRTI, Mysore and 225 farmers were benefitted and enabled them to adopt the sericulture technologies. The facilities provided through the FFS greatly helped the farmers to improve their crop performance. The details is presented in Table 16.

Table 16 : Details of facilities and activities of FFS

#	Clusters	Status of equipments supplied			No. of sessions conducted	No. of participants/ session
		DVD Player	Projector	Laptop		
1	Harohalli	1		1	28	50
2	Y.N. Hosakote	1	1	1	27	50
3	Shapura	1	1	1	14	25
4	Ithandahally	1	1	1	16	50
5	B.G.Kere	1	1	1	14	25
6	Gajanur	1	1	1	14	25
7	Bidarkote	-	-	-	-	-
	Total	6	5	6	113	225

b.& c. : Seri-polyclinic and Bio-control agents multiplication units

The selected farmers of Karnataka clusters were trained at CSRTI, Mysore for establishment of Seri-polyclinic and Bio-control agents multiplication units. However, all the clusters of Karnataka were in close proximity to the main research station and RSRS, Kodathi, their need based requirements were facilitated by the Institute and RSRS. Therefore the need for establishment of Seri-polyclinic and Bio-control agents multiplication units did not arise.

Extension communication programmes:

During the project period the clusters conducted extension communication programmes such as Awareness programme, Enlightenment programme, Field days, Group discussion, Training programmes, Study tour, Farmers meet etc. A total of 16000 farmers were sensitized through these programmes. These programmes were helpful in changing their attitude towards the acceptance of new sericultural technologies, besides faster percolation and adoption of technologies. Increased awareness and technology adoption resulted in the successful implementation of the cluster promotion programmes through which the objective of increased production of quality bivoltine silk was achieved. Details of the extension programmes conducted under Cluster Promotion Programme for the period from 2008-2012 is presented in Table 17.

Table 17 : Details of extension programmes conducted under CPP in different clusters in Karnataka

#	Clusters	A P	E P	F D	G D	Demo	TP	ST	FM	Total
1	Harohalli	63	03	09	55	38	04	06	-	**178**
2	Y.N. Hosakote	34	04	11	58	61	-	06	-	**174**
3	Shapura	24	03	-	30	06	02	04	01	**70**
4	Ithandahally	09	04	06	25	-	05	03	-	**52**
5	B.G.Kere	19	01	-	-	-	-	01	-	**21**
6	Gajanur	26	03	01	07	14	-	02	-	**53**
7	Bidarkote	-	01	04	39	30	04	05	-	**83**
	Total	**175**	**19**	**31**	**214**	**149**	**15**	**27**	**01**	**631**

Note: AP=Awareness programme, EP= Enlightenment programme, FD= Field days, GD=Group discussion TP=Training programmes, ST=Study tour, FM = Farmers meet

During the project period, seven clusters of Karnataka have brushed 23,34,905 dfls against the target of 26,56,485 achieving 88.08 % of the target and produced 13,31,298 kg of cocoons against the target of 15,77,879 kg achieving 84.37 % of the target. Similarly 100.87% achievement was recorded in cocoon yield/ 100 dfls. During the project period the Karnataka clusters produced 204.81 MT of raw silk. The details are presented in Table 18 .

Table 18 : Achievement of Karnataka clusters against annual targets during the project period (2008 – 2012)

#	Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	Harohalli	348285	364445	104.64	208959	235356	112.63	60.00	66.35	110.58
2	Y.N.Hosakote	254950	216550	84.94	152970	115753	75.67	60.00	59.29	98.81
3	Shapur	425000	277245	65.23	255000	143306	56.20	60.00	60.39	100.62
4	Ithandahally	651000	837440	128.64	390600	495404	126.83	60.00	64.03	106.72
5	B,.G.Kere *	285380	207000	72.53	171228	122673	71.64	60.00	61.54	102.56
6	Gajanur *	357870	207775	58.06	214722	96343	44.87	60.00	57.84	96.40
7	Bidarkote	334000	229450	68.69	184400	122463	66.41	55.00	62.72	114.04
	Total/ Average	**2656485**	**2339905**	**88.08**	**1577879**	**1331298**	**84.37**	**59.29**	**62.73**	**105.80**

* Cluster identified during 2009-10

Impact of CPP on socio-economic status of farmers in different clusters of Karnataka :

A study was conducted to know the impact of CPP on socio-economic status of farmers. The data obtained from two clusters provides an overview of the improvement in economic status of the farmers. The utilization of the earnings from sericulture for improving the socio economic status is presented in Table 19.

Table 19 : Utilization pattern of the money earned from sericulture by the adopted farmers under CPP clusters in Karnataka

Particulars	Chitradurga		Harohally	
	% of farmers	Money spent (Rs.)	% of farmers	Money spent (Rs.)
Rearing house	9	200000	9	300000
Shoot rearing stands	9	80000	9	15000
Sericulture equipment/ machineries	27	50750	18	20000
House	18	362500	9	450000
Land	9	300000	-	-
Bore Well	18	57500	-	-
Tractor/power tiller	9	600000	18	157500
Vehicles (car, bike, etc)	36	48750	45	38820
Household items (TV, VCR, VCD, computer etc)	36	16000	55	14000
Jewels	9	200000	9	15000
Kitchen items (Fridge, grinder, LPG stove etc)	18	7500	18	1675
Furniture	18	4000	64	17143
Children's education	36	17500	45	45000
Marriage	27	183333	27	170667
Repayment of loans	73	32125	27	46667

Success stories :

The Karnataka produced 204.81 MT bivoltine raw silk during the project period and occupies second place in bivoltine raw silk production in the country. The CPP was implemented in seven clusters from 2008 to 2012. The success stories of few farmers who have become role model for the sericulturists are presented below.

1. Sri. S. C. Veerabhadrappa – B.G. Kere Cluster, Chitradurga dist.

Sri. S. C. Veerabhadrappa is 70 years old and studied B.Sc (Agri). He is practicing sericulture since 1979. He is having 8.0 acres V1 mulberry garden with IJS and 3' x 3' spacing. For his entire garden drip irrigation is adopted. He is having a separate chawki building, two late age rearing houses & a mounting hall. He is adopting shoot rearing for late age rearing. He uses rotary mountage for mounting the matured silkworms. He rears 12-13 crops in a year and in each crop 400-450 dfl are brushed and bivoltine hybrids are reared throughout the year. He has adopted mechanization in many sericulture activities. viz., power sprayer for disinfection of rearing house, leaf chopping machine for chawki leaf, manual worm separator for separating matured silkworms , composite cocoon harvester for harvesting the cocoons from the rotary mountages & deflosing machine for deflosing the cocoons.

He practices many other avocations other than sericulture viz., horticulture, bee keeping, goat rearing, organic farming, dairy etc., He received many awards like **Krishi Pandit** from Govt. of Karnataka, **Best coconut farmer** from Coconut Board, Govt. of India.

He is one of the farmers selected for CPP. During the period from 2009 to 2012, he reared 39 bivoltine crops with 15,750 Dfls and obtained average cocoon yield of 67.66 kg per 100 Dfls and his cocoons fetched average cocoon price of Rs.263.10 per kg. The details are presented in following Table.

Year	No. of crops	No. of dfls	Yield/ 100Dfls(kg)	Rate/ kg(Rs)	Total returns(Rs)
2009-10	08	3250	67.50	247.50	5,42,953.00
2010-11	15	6350	67.90	278.75	12,01,872.00
2011-12	16	6150	67.58	263.00	10,93,072.00
Total/Avg.	**39**	**15,750**	**67.66**	**263.10**	**28,37,897.00**

Farmer is discussing with the scientist regarding estimation of silkworm density in the rearing bed

2. Shri. Manjunath Ithandahalli cluster, Kolar dist.

Sri. Manjunath is one of the best farmer among 274 bivoltine farmers under this programme. Initially, the family with the available land was practicing paddy cultivation-vegetables – floriculture in the order. He started practicing sericulture since 1977. Earlier he was rearing 50 dfls of CB and used to harvest 30- 40 kg per 100 dfls. He used to practice sericulture based on the availability of suitable mulberry leaves.

When he was selected as one of the JICA farmer, he switched over to V1 mulberry variety and rearing of bivoltine hybrids. He was rearing 150-200 dfls per acre/ crop with a cocoon yield of 50 to 65 kg / 100 dfls. He is having 4 acres of V1 mulberry plantation under 3' x3' and IJ spacing. Under the CPP program at Bangarpet, the popular hybrid, CSR2 x CSR4 did not yield the desired results and he could harvest only 50-60 kg/100 dfls. He could not gain full harvest of cocoons during the initial period and he was so much frustrated he wanted to discontinue bivoltine rearing. The technologies and the practices delivered by the cluster chairman and his team helped him in a better way to have much hopes of continuing bivoltine rearing and gradually improved his harvest from 65 kg to 92 kg per 100 dfls in his last crop.

The mulberry leaf yield has increased from 40,000 kg to 55,000 kg/ha/year. Presently he is rearing 10 crops (only bivoltine) in a year and brushes 1200 to 1250 dfls per acre per year. He is harvesting an average cocoon yield of 72 kg/ 100 dfls and a maximum of 92 kg /100 dfls. All technologies viz., trenching–mulching, green manure, disinfection, bed disinfectants, biological

control for Uzi and use of plastic chandrike. At present his annual profit per acre is more than Rs.75,000/-

He is interested to start vermiculture and already practicing green manuring, trenching and mulching under MGNREGA scheme in his garden to improve the quality of leaf and yield. He is also practicing effective disinfection in and around the rearing house and takes all proper care to maintain hygiene during rearing.

3. Sri. Marigowda Chowedegowda Gajanur cluster, Mandya dist.

A farmer residing at D.Cennepura aged 50 years is practicing sericulture for the past 25 years. He is not educated. He has 4 sons who are educated upto SSLC are also also agriculturist practicing sericulture. He is also cultivating paddy in 2 acres of land. Prior to CPP , he was rearing only CB and not confident on bivoltine crops. He was following 3-4 feeds per day for silkworm rearing and faced incidence of silkworm diseases and crop losses. After the CPP programme was introduced in Gajanur area he started BV rearing. Now, he is confidently following 2 feeds technology which has helped him in reducing labour cost but also has helped in improving quality of cocoon production.

Sri Marigowda at his mulberry garden & rearing house

Due to technical support and rearing chawki reared worms obtained from CSRTI, Mysore, Sri Byresweswara CRC, Kempaiahanahundi and concentrating on hygiene and proper disinfection, he is able to harvest good BV crops. He has been provided with subsidy for

constructing rearing house. During the period of 3 years the farmer reared 5050 DFls in 13 crops with an average yield of 65.3 kg/ 100 Dfls. He also rears CB in unfavorable seasons. All the technical staff of CSB and DOS have put their best efforts by providing technical services through various extension activities which has helped him in developing confidence for rearing BV. Through his experience he has stated that sericulture is better than cultivating paddy. Based on the positive results obtained in sericulture he has motivated one of his sons for practicing sericulture. The farmer became a model for other farmers and his son has achieved model farmer award from DOS, Malavalli. Considering his field experience, he always says that the profits are guaranteed/assured in case of sericulture compared to other crops. He says that he can successfully take up sericulture with confidence and make all his sons involved in sericulture. He is grateful to CSB and DOS for identifying him as one of the farmer for CPP and providing him with technical guidance and other forms of assistance.

4. Sri. Srinivas, CPP, Gajanur

Sri. Srinivas, a farmer residing at H.Basapur aged 45 years is practicing sericulture for the past 20 years. His sole income is from sericulture with a mulberry acreage of 3.5 acres. Prior to CPP , he was rearing only CB and had no confidence for rearing bivoltine crops. He has reared 4700 dfls of bivoltines in 15 crops over a period of three years and obtained an average yield of 62.6 kg/ 100 Dfls. He has been assisted under CDP for construction of

Sri. Srinivas, H.Basapur.

rearing house and equipments like sprayer, chandrikae etc. During unfavourable seasons he rears CB dfls. He confidently states that sericulture can increase farmers revenue. He acknowledges the DOS and CSB staff for providing awareness and transfer of sericulture technologies to improve his crop performances. He conducts rearing by procuring chawki reared worms from CRC of CSRTI, Mysore, Sri

Byraweswara CRC, Kempaiahanahundi and follows proper hygiene and disinfection. He believes that attending to the various extension communication programmes will help him in adopting the latest technologies of bivoltine rearing which in turn will help in producing quality cocoons. The farmer has adopted energy production through Gobar gas for the past 15 years by using silkworm litter. Through his experience he states that the utilization of silkworm litter in Gobar gas production has given best results.

5. Mr. K.L. Krishanegowda CPP Bidarakote

Mr. K.L. Krishanegowda S/o late Shri Lingegowda belongs to Kothanahalli village (Koppa Hobli), Maddur taluk, Mandya Dist. He had 5 acre land with coconut and acquired another 5 acre land in about 2 years back and planted mulberry.. He started sericulture with cross breed rearing about 3-4 years back and rearing was conducted in dwelling house. He was conducting rearing 5 – 6 times / year and obtaining an average 50 – 55 kg yield/100 dfls. Later he switched over to bivoltine rearing and following the new sericulture technologies developed by CSRTI, Mysore. Since last 2 years he is rearing CSR hybrids and he got average 80.00 kg yield/100 dfls during 2009-10. He was selected in the CPP Bidarakote programme and all technical guidance was given to him.

He has gained the knowledge about sericulture technology from CSB & DOS officials and following them has helped him to increase his leaf and cocoon yield. Under CDP, he has been given assistance for the construction of rearing house and equipments. Silkworm rearing practices are meticulously followed by him by providing sufficient rearing space for rearing and mounting

Sri Krishne Gowda at his mulberry garden & rearing house.

At present he is taking up 10 to 12 crops / year (10 crops CSR hybrid rearing in favorable seasons and 2 crops cross breed rearing). Now he is rearing about 400dfls / crop by adopting all the packages of practices of mulberry and silkworm rearing and his average cocoon yield is 80 kg/ 100 dfls.

6.Sri Chandrasekhara Reddy, CPP cluster Y.N.Hosakote

Sri Chandrasekhara Reddy S/o Sri Balasubha reddy, of Polenahalli village in Pavagada taluk is one of the progressive farmer. He has been practicing sericulture since 1978. Earlier he used to rear 5 crops of CB with 1000 dfls / acre / annum in dwelling house from 0.75 acre of V1 mulberry with 3 x 3 Spacing. Besides , he also cultivates paddy / Ground nut in 3.5 acres, coconut in 2.5 acres, mango in 5 acres and Ragi / Jowar in 1 acre.

Now with technical guidance of Scientists from RSRS, Kodathi and DOS, Pavagada, he could enhance his brushing capacity to 1600 dfls /acre / crop. Further, he has increased average cocoon yield to 78 kg / 100 dfls. The improvement in the cocoon yield was possible because he has adopted all the new technologies in mulberry cultivation and silk worm rearing.

Mulberry garden of Sri Chandrasekhar Reddy of Polenahalli

Rearing performance of bivoltine hybrids reared by Sri Chandrasekhara Reddy

Month	No of Dfls	Actual yield (Kg)	Yield/100 dfls	Defective cocoon %	Rate/kg (Rs)	Returns/ 100 dfls (Rs)
Dec,2009	250	168.0	67.2	4	285.00	19152.00
Mar,2010	250	160.0	64.0	5	235.00	15040.00
Aug,2010	250	175.0	70.0	5	263.00	18410.00
Sept,2010	250	175.0	70.0	4	341.00	23870.00
Feb,2011	200	164.0	82.0	4	254.00	20828.00
June,2011	250	216.0	86.4	4	250.00	21600.00
Oct,2011	150	140.0	93.3	2	237.00	22112.00
Dec,2011	300	273.0	91.0	3	289.00	26299.00
Mar,2012	300	249.0	83.0	3	287.00	23821.00
Total/Ave	**2200**	**1720.0**	**78.18**	**3.7**	**271.23**	**21204.76**

Use of rotary mountages for quality cocoons by Sri Chandrasekhara Reddy

Recently he has increased his mulberry garden with 0.5 acres of V1 variety following paired row system 5x3x3 and single stump maintenance. Because of usage of rotary mountages for mounting matured larvae, he is always getting higher price of Rs 40 to Rs 45/Kg of cocoons when compared to the cocoons harvested from bamboo mountages. He has reared 2200 dfls of CSR hybrids in 9 crops and obtained an average yield of 78.18 kg/100 dfls with an average returns of Rs 21204.00/100 dfls. The average defective cocoon percentage was found to be 3.7 % as a result of usage of rotary mountages.

CLUSTER PROMOTION PROGRAMME IN TAMIL NADU

During the year 2008-09, when CPP was initiated in Tamil Nadu the extent of mulberry cultivation was 36482 acres in 4435 villages. 23691 farmer families were engaged in mulberry cultivation and silkworm rearing. The cocoon production was 9949 MT and raw silk production was 1411 MT. The department has well established infrastructure network facilities. In the pre-cocoon sector, 30 silk farms, 22 chawki rearing centers, 11 Government grainages, 6 Private grainages, 3 NSSO (CSB) grainages, 19 Cocoon Markets, one Sericulture Training Institute are established across the State. 338 Silk reeler families are engaged in post cocoon activities. This gives employment opportunities to 1,82,410 persons as on 31.03.2012.

Tamil Nadu stands fourth among the Indian states in mulberry raw silk production (1182 MT – 2010-11). In the production of bivoltine silk however, it enjoys first position for the last three years (377 MT - 2008-09, 351 MT 2009-10, 414MT -2010-11). The CPP was implemented in six clusters in traditional sericulture belt viz., Berigai and Uthangarai in Krishnagiri district, Palani and Sanarpatty in Dindigul district, Udumalpet in Tirupur District, Gobichettipalayam in Erode district, (Figure 3). The details of number of beneficiaries, area covered under mulberry plantation in different clusters during the year 2008 – 2012 is presented in Table 20.

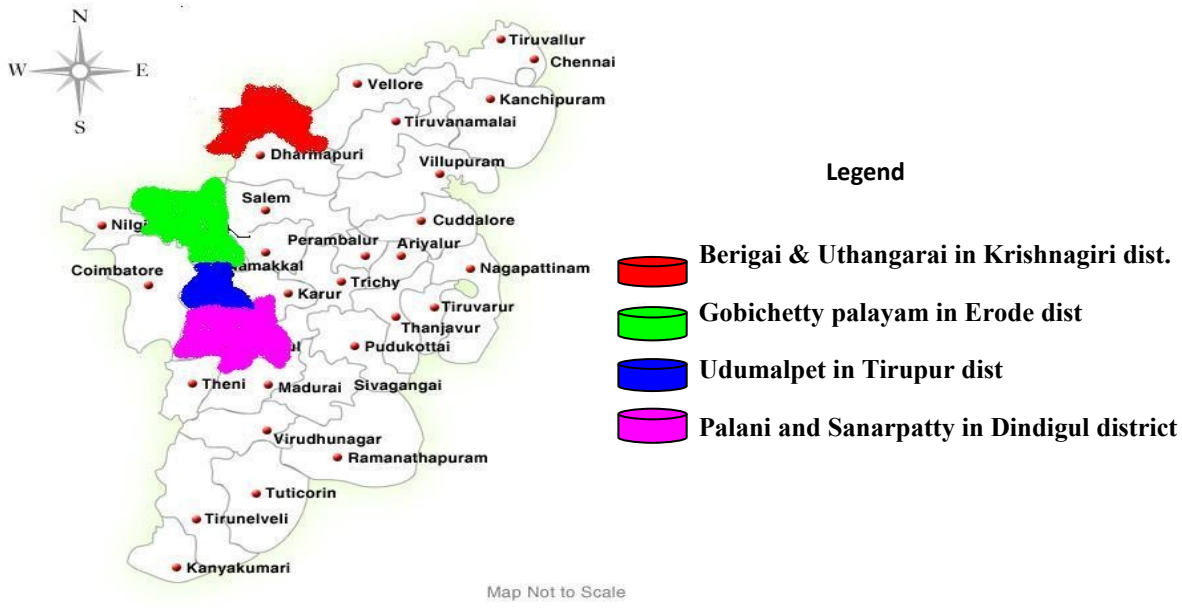


Figure 3 – The distribution of CPP clusters in different districts of Tamil Nadu

Table 20 : No. of beneficiaries and area covered under mulberry plantation in (acres) different clusters

#	Name of clusters	No.of beneficiaries (progressive)				Area under plantation Covered (in acres)		
		2008-09	2009-10	2010-11	2011-12	2008-11	2011-12	2011-12 (cumulative)
1	Berigai	200	240	309	348	401	125	526
2	Palani	200	253	326	366	689	125	814
3	Sanarpatty	-	200	225	252	392	94	486
4	Udumalpet	225	395	398	437	736	-	736
5	Gobi	200	200	200	225	510	50	560
6	Uthangarai	-	200	295	333	361	125	486
	Total	**825**	**1388**	**1753**	**1961**	**3089**	**519**	**3608**

Crop performance of the CPP clusters in Tamil Nadu

1. Berigai cluster : Berigai cluster in Krishnagiri district initiated the CPP in the year 2008-09 and 348 farmers with 526 acres of mulberry were covered. The benchmark survey conducted at the beginning of the project indicated an average yield of 54.20 kg / 100 dfls. During the project period the cluster brushed 5,27,155 dfls against the target of 4,80,000 dfls and the average yield was 66.68 kg/100 dfls with an overall improvement of 23.02% over the benchmark during the period. The average defective cocoon percentage was brought down from 6.0 to 3.95 and the average percent of 4.85 was recorded during the project period. The detail of farmers, no. of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 21.

Table 21: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Berigai cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	105	34230	90.00	16351	47.76	54.20	11.88	6.00	194.00
2009-10	150	98750	91.00	64039	64.85	54.20	19.64	5.60	206.00
2010-11	200	175000	91.00	118966	67.21	54.20	23.90	3.83	294.00
2011-12	220	219175	92.00	152158	69.42	54.20	28.08	3.95	229.00
Total/Average	**675**	**527155**	**91.00**	**351514**	**66.68**	**54.20**	**23.02**	**4.85**	**230.75**

During the project period, Berigai cluster has achieved 109.82 %, 112.66 % and 102.58 % against the target of dfls brushing, cocoon production and yield(kg)/ 100 dfls respectively. The details are presented in Table 22 .

Table 22 : Annual targets and achievements of Berigai cluster

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
2008-09	30000	34230	114.10	19500	16351	83.85	65.00	47.76	73.48
2009-10	100000	98750	98.75	65000	64039	98.52	65.00	64.85	99.77
2010-11	150000	175000	116.67	97500	118966	122.02	65.00	67.21	103.40
2011-12	200000	219175	109.59	130000	152158	117.04	65.00	69.42	106.80
Total/ Average	**480000**	**527155**	**109.82**	**312000**	**351514**	**112.66**	**65.00**	**66.68**	**102.58**

2. Palani cluster : The CPP was initiated in Palani cluster in Dindigul district in the year 2008-09 and by the end of the project period a total number of 366 farmers with 814 acres of mulberry were covered. At the initiation of the project the benchmark survey indicated an average yield of 63.70 kg / 100 dfls. During the project period (2008-2012) the cluster brushed 14,68,195 dfls with an average yield of 71.23 kg/100 dfls and recorded an overall improvement of 11.82% over the benchmark yield. The average defective cocoon recorded was 5.0%. The

number of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 23.

Table 23: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Palani cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	182	135375	92.3	92087	68.00	63.70	6.75	5.3	191.00
2009-10	226	343260	94.6	242546	70.60	63.70	10.83	5.4	228.00
2010-11	300	406350	93.6	288302	71.00	63.70	11.45	5.3	305.00
2011-12	376	583210	94.1	422910	73.00	63.70	14.60	4.0	238.00
Total/Average	**1084**	**1468195**	**93.6**	**1045845**	**71.23**	**63.70**	**11.82**	**5.0**	**240.50**

In Palani cluster 137.21% achievement was recorded against the target of brushing, 149.41 % in cocoon production and 109.58 % in cocoon yield(kg)/100 dfls respectively. The details are presented in Table 24 .

Table 24 : Annual targets and achievements of Palani cluster

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of – achieve-ment	Target	Achieve-ment	% of Achieve -ment	Target	Achieve-ment	% of achieve-ment
2008-09	100000	135375	135.38	65000	92088	141.67	65.00	68.00	104.62
2009-10	300000	343260	114.42	195000	242546	124.38	65.00	70.60	108.62
2010-11	300000	406350	135.45	195000	288302	147.85	65.00	71.00	109.23
2011-12	370000	583210	157.62	245000	422910	172.62	65.00	73.00	112.31
Total/Average	**1070000**	**1468195**	**137.21**	**700000**	**1045846**	**149.41**	**65.00**	**71.23**	**109.58**

3. Sanarpatty cluster : The CPP was initiated in Sanarpatty cluster in Dindigul district in the year 2009-10 and by the end of the project period a total number of 252 farmers with 486 acres of mulberry was covered. At the initiation of the project the benchmark survey indicated an

average yield of 54.38 kg / 100 dfls. During the project period the cluster brushed 3,36,885dfls with an average yield of 69.61 kg/100 dfls and recorded an overall improvement of 28.00 % over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon recorded was 4.95 %. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 25.

Table 25: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Sanarpatty cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2009-10	200	51640	92.29	34603	67.01	54.38	23.26	5.43	203.91
2010-11	189	111810	92.12	77035	68.90	54.38	26.70	4.75	279.94
2011-12	221	173435	94.25	122872	70.80	54.38	30.19	4.67	225.40
Total/Average	**610**	**336885**	**278.66**	**234510**	**69.61**	**54.38**	**28.00**	**4.95**	**236.42**

The cluster has achieved 95.17 %, 106.40 % and 112.87 % against the target of dfls brushing, cocoon production and yield(kg)/ 100 dfls respectively. The details are presented in Table 26.

Table 26 : Annual targets and achievements of Sanarpatty cluster

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of Achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
2009-10	64000	51640	80.69	38400	34603	90.11	60.00	67.01	111.67
2010-11	130000	111810	86.01	78000	77035	98.76	60.00	68.90	114.83
2011-12	160000	173435	108.40	104000	122872	118.15	65.00	70.80	108.92
Total/Average	**354000**	**336885**	**95.17**	**220400**	**234510**	**106.40**	**61.67**	**69.61**	**112.87**

4. Udumalpet cluster : The Udumalpet cluster located in Thirpur district was identified for implementation of CPP in the year 2008-09 and a total number of 437 farmers with 814 acres of mulberry was covered by the end of the project period. The benchmark survey prior to the CPP

implementation indicated an average yield of 62.5 kg / 100 dfls. The cluster brushed 17,41,725 dfls with an average yield of 75.33kg/100 dfls and recorded an improvement of 20.52 % over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon percentage was brought down from 6.1 to 3.6 by adoption of improved rearing and mounting technologies by the farmers. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 27.

Table 27: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Udumalpet cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	225	189625	93.0	131123	69.10	62.50	10.56	6.1	182.14
2009-10	272	378375	94.6	279142	73.80	62.50	18.00	3.7	219.37
2010-11	383	515800	94.4	386338	74.90	62.50	19.84	3.8	305.36
2011-12	398	657925	94.2	515398	78.30	62.50	25.30	3.6	233.96
Total/Average	**1278**	**1741725**	**94.05**	**1312001**	**75.33**	**62.50**	**20.52**	**4.3**	**235.21**

The Udumalpet cluster stood exemplary and in first among all the clusters and also in all the targeted parameters. The achievement recorded is 151.45 %, 175.52 % and 113.89 % against the target of dfls brushing, cocoon production and yield(kg)/ 100 dfls respectively. The details are presented in Table 28.

Table 28 : Annual targets and achievements of Udumalpet cluster

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of achieve-ment	Target	Achieve -ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
2008-09	150000	189625	126.42	97500	131124	134.49	65.00	69.10	106.31
2009-10	300000	378375	126.13	195000	279142	143.15	65.00	73.80	113.54
2010-11	300000	515800	171.93	195000	386338	198.12	65.00	74.90	115.23
2011-12	400000	657925	164.48	260000	515398	198.23	65.00	78.30	120.46
Total/ Average	**1150000**	**1741725**	**151.45**	**747500**	**1312002**	**175.52**	**65.00**	**75.32**	**115.88**

5. Gobichettypalayam cluster: The CPP was initiated during 2008-09 in Gobichettypalayam of Erode district and a total number of 225 farmers were covered with 560 acres of mulberry. At the initiation of the project the benchmark survey indicated an average yield of 58.40 kg / 100 dfls. During the project period the average cocoon yield of 65.81 kg/100 dfls was recorded in the cluster with an overall improvement of 12.69 % over the benchmark. During the period the brushing of dfls was 6,52,125. The average defective cocoon recorded was 4.21 %. The detail are presented in Table 29.

Table 29: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Gobichettipalayam cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	200	141625	94.50	90255	63.72	58.40	9.10	5.56	181.70
2009-10	200	160575	93.85	100067	62.56	58.40	7.12	3.50	217.50
2010-11	258	149700	95.15	98085	65.52	58.40	12.19	3.20	289.00
2011-12	258	200225	97.00	140758	70.29	58.40	20.35	4.57	229.00
Total/Average	**916**	**652125**	**95.13**	**429165**	**65.81**	**58.40**	**12.69**	**4.21**	**229.30**

In spite of the severe infestation of papaya mealy bug to the mulberry gardens the Gobichettypalayam cluster is in third position among the six Tamil Nadu clusters and has achieved 104.34 %, 109.69 % and 105.30 % against the target of dfls brushing, cocoon production and yield(kg)/100 dfls respectively. The details are presented in Table 30.

Table 30 : Annual targets and achievements of Gobichettypalayam cluster

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
2008-09	150000	141625	94.42	90000	90255	100.28	60.00	63.72	106.20
2009-10	150000	160575	107.05	90000	100067	111.19	60.00	62.56	104.27
2010-11	150000	149700	99.80	97500	98085	100.60	65.00	65.52	100.80
2011-12	175000	200225	114.41	113750	140758	123.74	65.00	70.29	108.14
Total/Average	**625000**	**652125**	**104.34**	**391250**	**429165**	**109.69**	**62.50**	**65.81**	**105.30**

6. Uthangarai cluster : The CPP was initiated in Uthangarai of Krishnagiri district in the year 2009-10 and by the end of the project period a total number of 333 farmers with 486 acres of mulberry was covered. At the initiation of the project the benchmark survey indicated an average yield of 55.48 kg / 100 dfls. During the project period (2009-12) the cluster brushed 3,98,035 dfls with an average yield of 68.28 kg/100 dfls and recorded an overall improvement of 23.07 % over the benchmark yield. The average defective cocoon recorded was 3.3 %. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 31.

Table 31: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Uthangarai cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2009-10	200	101435	90.4	67925	67.10	55.48	20.94	3.3	190.50
2010-11	295	131980	92.2	85922	69.30	55.48	24.90	3.7	257.00
2011-12	387	164620	91.5	117948	71.60	55.48	29.05	2.9	210.15
Total/Average	**882**	**398035**	**91.4**	**271795**	**68.28**	**55.48**	**23.07**	**3.3**	**219.22**

During the project period, Uthangarai cluster has achieved 114.28 % against the target of dfls brushing, 132.54 % against the target of cocoon production and 117.06 % in cocoon yield(lg)/100 dfls. The details are presented in Table 32.

Table 32 : Achievement against the annual target during the project period in Uthangarai cluster

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
2009-10	78300	101435	129.55	43065	67925	157.73	55.00	67.10	122.00
2010-11	110000	131980	119.98	66000	85922	130.18	60.00	69.30	115.50
2011-12	160000	164620	102.89	96000	117948	122.86	60.00	71.60	119.33
Total/ Average	**348300**	**398035**	**114.28**	**205065**	**271795**	**132.54**	**58.33**	**68.28**	**117.06**

Farmers Field School, Seri-polyclinic and Bio-control agents multiplication units :

a. Farmers Field School

During the project period each cluster established Farmers field schools to provide in-situ training to the farmers. The FFS were equipped with DVD player, LCD projector and Laptops to conduct the classes. During the period a total of 122 sessions were conducted as per the curriculum provided by the CSRTI, Mysore and 228 farmers were benefitted and enabled them to adopt the sericulture technologies. The facilities provided through the FFS greatly helped the

farmers to improve their crop performance. The details is presented in Table 33.

Table 33 : Details of facilities and activities of FFS

#	Clusters	Status of equipments supplied			No. of sessions conducted	No. of participants/ session
		DVD Player	Projector	Laptop		
1	Berigai	1	1*	1	19	48
2	Palani	1	-	1	29	50
3	Udumalpet	1	1	1	30	50
4	Gobi	1	1	1	15	45
5	Sanarpatti	1	-	1	17	20
6	Uthangarai	1	-	1	12	15
	Total				122	228

b.Seri-poly clinic : The seri-ploy clinics were established in all the clusters of Tamil Nadu by the progressive farmer of the CPP area and a total of 2174 rearing houses were disinfected during the project period. The details are presented in Table 34.

Table 34 : Details of number of rearing houses disinfected in different clusters

#	Clusters	No. of rearing houses disinfected				
		2008-09	2009-10	2010-11	2011-12	
1	Berigai	--	47	429	414	890
2	Palani	-	29	204	64	297
3	Udumalpet	-	115	261	135	511
4	Gobi	--	--	115	128	243
5	Sanarpatti	-	-	65	85	150
6	Uthangarai	-	7	34	42	83
	Total		**198**	**1108**	**868**	**2174**

c. Bio control agent multiplication units

All the clusters in Tamil Nadu (except Uthangarai) established Bio-control agent multiplication units to cater the needs of sericulturists. The identified beneficiaries

produced need based bio control agents and sold to control the pests of silkworm and mulberry. The details are presented in Table 35.

Table 35 : Details of production and supply of bio control agents in different clusters

#	Clusters	Quantity of bio-control agents sold					
		N. thymus **(pouches)**	***C. monrtouzieri*** **(boxes)**	***Scymnus coccivora boxes***	***Trich-ograma chillonis*** **(Trichocard)**	***Crysoperla*** **sps. (No. of eggs)**	***Bracon brevicornis*** **(No. of adults)**
1	Berigai	59601	708	5806	5909	451	-
2	Palani	1197	-	-	-	-	-
3	Udumalpet	778	-	-	-	-	-
4	Gobi	1572	1935	-	-	-	93500
5	Sanarpatti	3315	623	-	2460		
6	Uthangarai	-	-	-	-	-	-
	Total	**66463**	**3266**	**5806**	**8369**	**451**	**93500**

Extension communication programmes:

During the project period the clusters conducted extension communication programmes such as Awareness programme, Enlightenment programme, Field days, Group discussion, Training programmes, Study tour, Farmers meet, Exhibition, Film shows etc. A total of 551 different programmes were conducted during the project period and around 12800 farmers were sensitized through these programmes. These programmes were helpful in changing their attitude towards the acceptance of new sericultural technologies, besides faster percolation and adoption of technologies. Increased awareness and technology adoption resulted in the successful implementation of the cluster promotion programmes through which the objective of increased production of quality bivoltine silk was achieved. Details of the extension programmes conducted under Cluster Promotion Programme for the period from 2008-2012 is presented in Table 36.

Table 36 : Details of the extension programmes conducted under Cluster Promotion Programme for the period from 2008-2012

#	Clusters	A P	E P	F D	G D	Demo	FT	TP	ST	FM	FS/ Video	Exhi
1	Berigai	26	6	13	50	10	24	5	4	15		8
2	Palani	26	4	10	25	13		14	2	-	9	
3	Udumalpet	27	3	6	28	7		9	2		8	2
4	Gobi	24	04	11	24	05		05	02	11		
5	Sanarpatti	18	3	11	19	04						
6	Uthangarai	2	2	4	9	4		5	1			
	Total	**123**	**22**	**55**	**155**	**43**	**24**	**38**	**11**	**26**	**17**	**10**

Note: AP=Awareness Programme; EP=Enlightenment Programme; FD=Field Days; GD=Group Discussion; Demo=Technology Demonstration; ST=Study Tour; FM=Farmers' Meet, FT = Farmers Training

Chawki rearing centres

Chawki rearing centres were established in all the clusters to supply the chawki worms to the CPP farmers. More than 90% of the eggs were distributed as chawki reared worms which helped the farmers to concentrate on mulberry cultivation, disinfection of rearing house etc. and also in harvesting successful crops. The details of mode of distribution of eggs is presented in Table 37.

Table 37 : Detail of distribution of bivoltine hybrids in clusters of Tamil Nadu

Clusters		Berigai	Palani	Udumalpet	Gobi	Sanarpatti	Uthangarai	Total
2008-09	No.of dfls distributed	34230	135375	189625	141625	--	--	359230
	Direct in %	11.77	17.00	5.80	0	--	--	10.58
	Chawki in %	88.22	83.00	94.20	100	--	--	89.42
2009-10	No.of dfls distributed	98750	343260	378375	160575	51640	101435	902825
	Direct in %	20.40	15.00	2.00	0	55.00	--	11.91
	Chawki in %	79.59	85.00	98.00	100	45.00	100	98.09
2010-11	No.of dfls distributed	175000	406350	515800	149700	111810	131980	1236760
	Direct in %	11.42	13.80	0.80	0	20.00	--	8.29
	Chawki in %	66.57	86.20	99.20	100	80.00	100	91.71
2011-12	No.of dfls distributed	219175	583210	657925	200225	173435	164620	2321060
	Direct in %	32.47	11.80	1.30	0	4.30	--	6.72
	Chawki in %	67.52	88.20	98.70	100	95.70	100	93.28
Total	No.of dfls distributed	527155	1468195	1741725	652125	336885	398035	5124120
	Direct in %	21.88	13.60	1.79	--	17.29	--	7.89
	Chawki in %	78.12	86.40	98.21	100	82.71	100	92.11

During the project period, seven clusters of Tamil Nadu have brushed 51,24,120 dfls against the target of 40,27,300 achieving 127.23 % of the target and produced 36,44,832 kg of cocoons against the target of 25,76,215 kg achieving 141.48 % of the target. Similarly 113.05% achievement was recorded in cocoon yield/ 100 dfls by harvesting an average cocoon yield of 71.13 kg/ 100 dfls. Under the project the Tamil Nadu clusters produced 560.74 MT of raw silk. The details are presented in Table 38.

Table 38 : Achievement of Tamil Nadu clusters against annual targets during the project period (2008 – 2012)

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
Berigai	480000	527155	109.82	312000	351514	112.66	65.00	62.31	95.86
Palani	1070000	1468195	137.21	700000	1045846	149.41	65.00	70.65	108.69
Udumalpet	1150000	1741725	151.45	747500	1312002	175.52	65.00	74.03	113.89
Gobi	625000	652125	104.34	391250	429165	109.69	62.50	65.52	104.83
Sanarpatty	354000	336885	95.17	220400	234510	106.40	61.67	68.97	111.84
Uthangarai	348300	398035	114.28	205065	271795	132.54	58.33	69.33	118.86
Total/Average	**4027300**	**5124120**	**127.23**	**2576215**	**3644832**	**141.48**	**62.92**	**71.13**	**113.05**

Impact of CPP on socio-economic status of farmers in different clusters of Tamil Nadu

Studies on the impact of CPP on socio-economic status of farmers have been done in few clusters. The results obtained from three clusters indicated that the farmers earned higher income due to adoption of improved technologies demonstrated under CPP. The utilization of the revenue earned from sericulture by the farmers of on various activities pertaining to sericulture, agriculture and domestic aspects is given in Table 39.

Table 39 : Utilization pattern of the money earned from sericulture by the adopted farmers under CPP

Particulars	Udumalpet		Sanarpatty		Hosur	
	% of farmers	Money spent (Rs.)	% of farmers	Money spent (Rs.)	% of farmers	Money spent (Rs.)
Rearing house	0	0	80	69083	73	152841
Shoot rearing stands	43	14917	93	9582	73	33182
Sericulture equipment/ machineries	20	247500	73	38400	24	37168
House	3	35000	7	200000	17	840003
Land	37	77909	13	125000	3	65000
Well	3	100000	17	87000	27	61500
Tractor/power tiller	30	121111	3	146000	13	775000
Vehicles (car, bike, etc)	10	16333	27	72100	93	86946
Household items (TV, VCR, VCD, computer etc)	3	100000	70	14548	57	14294
Jewels	3	20000	10	75000	27	120000
Kitchen items (Fridge, grinder, LPG stove etc)	13	17000	30	3411	30	13411
Furniture	43	36538	0	0	10	6667
Children's education	17	145000	27	173500	77	46957
Marriage	0	0	7	150000	23	407143
Repayment of loans	0	0	0	0	3	300000

Success stories :

Tamil Nadu with 560.74 MT of bivoltine raw silk production occupied the first position in the country under Cluster Promotion Programme and also emerged as a model for bivoltine silk production. The CPP was implemented in six clusters during the project period. The clusters have therefore become role model centres for bivoltine sericulture. Farmers from other states of the country are visiting the clusters for the purpose of learning and to know the success of the

Tamil Nadu farmers particularly under CPP. Few success stories selected among the cluster farmers are presented below.

1. Shri M.Palanisamy, Uthangarai Cluster

Sericulture has turned out to be a lifeline for Shri M.Palanisamy , who was finding it extremely difficult to manage his big family with low income from practicing agriculture. Shri Palanisamy (45) hailing from Nadar Theru Village in Uthangarai Taluk, Krishnagiri District is a traditional farmer. His father had 2 acres land and they grew millets as major crops and vegetables including fodder crops are as additional crops with irrigation facility, they had throughout the year.

Despite hard work and round the year efforts in growing these crops, it was at time becoming increasingly difficult for Shri Palanisamy to meet the needs of his family, as the cost of cultivation and output were not matching. The hardship and low returns for the efforts compelled him to opt for something different, so that he could shoulder the responsibility of the family with ease.

In such a scenario about three years ago, Shri Palanisamy incidentally learnt about higher returns from sericulture. Without any delay, he visited the local office of the state sericulture department and also the Research Extension Centre, Central Silk Board at Krishnagiri who apprised him about better utilization of his agricultural land. Enthused by the advantages,, he decided to venture into sericulture as a part-time agribusiness. And, since then, he never looked back, and life started changing for better day-by-day.

To begin with Shri Palanisamy planted improved mulberry variety V-1 for establishment of one acre mulberry garden under the Cluster Development Programme. Heeding to advice of the scientists of REC, Krishnagiri, first he got done the testing of soil of his land, soon after harvesting the existing millets.

Shri Palanisamy, though planted mulberry, was not getting enough yield due to lack of awareness about improved technologies. He was pursued to attend training on improved sericulture technologies and extension/tot programmes organized by REC,, Krishnagiri. With the success he got in his initial crops, Shri Palanisamy decided to go full swing in sericuture and

make a full time agri-business in his own farm and extended the mulberry garden from one acre to two acres, so that he could earn better. Shri Palanisamy harvesting bivoltine cocoon yield which ranges from 72-75 kg/100 dfls out of 2700-3000 dfls in a year in two acres mulberry farm. Besides, Shri Palanisamy the mulberry and rearing wastes utilized as feed to rearing five milk yielding cattle's which gives additional revenue of Rs. 70,000/year.

Shri Palanisamy believes that sericulture is more profitable than any other cash crop like millets,paddy, sugarcane etc., Encouraged with the impressive returns out of sericulture he became a motivator for fellow farmers in his village for adopting sericulture with new technologies and reaping the best benefits. Inspired by the success that sericulture has brought, Shri Palanisamy had additional plans to accomplish and successfully converted himself as an Entrepreneur to start "Seri-Polyclinic" in Uthangarai cluster too.

2. Shri V. Arunachalam - Sanarpatty Cluster

Shri V. Arunachalam is a 26 years old young man and his educational qualification is S.S.L.C. He is a progressive farmer in the Sanarpatti cluster. He has six years experience in sericulture. He owns 6 acre of land, out of which 2.5 acres is mulberry plantation and he is having a good and very simple rearing house with a rearing capacity of 250 Dfls/crop. Three years before during summer, he started to rear bivoltine Dfls and had a successful crop which fetched a good price. Since then he always prefers to rear bivoltine dfls only through out the year. He is rearing 10 to 11 crops in a year. He has planted V1 and MR2 mulberry variety. because of his efficient management of the mulberry garden as well as the rearing house, his average yield /100 Dfls is always more than 70 Kg and the cocoons he produces also will get the maximum price on the marketing day. Seeing the success he has achieved in bivoltine sericulture throughout the year even in non favorable hot conditions, other sericulturists in his village have slowly converted into bivoltine farmers.

Shri V. Arunachalam getting guidance from the scientist and farmer at his garden

Now in his village all the farmers are rearing bivoltine Dfls throughout the year. Because of his hard and dedicated work in the bivoltine sericulture he earned sufficient money and constructed a good RCC house and has purchased one motorcycle. During the year 2011-12, he has taken 11 crops rearing 2150 dfls and harvesting an average yield/100 Dfls of 72.9 kg. He got the average rate/kg of 227.00 and receiving an average return / acre of 1.42 lakhs.

Cocoon yield and income details of Shri. V. Arunachalam

Sl.No	Particulars	Value
1	No of crops/year-Bivoltine hybrids	11
2	No of dfls brushed/acre/year	860
3	Yield/100 dfls (Kg)	72.90
4	Cocoon production(Kg/acre/year)	627.20
5	Gross revenue from sericulture (Rs/acre/year)	1,42,374.00
6	Cost of production (Rs/acrre/year)	87,808.00
7	Net revenue from sericulture (Rs/acre/year)	54,566.00
8	Net revenue from sericulture for 2.5 acres (Rs/year)	1,36,415.00

3. Sri. Shanmugam - Gopichettypalayam Cluster

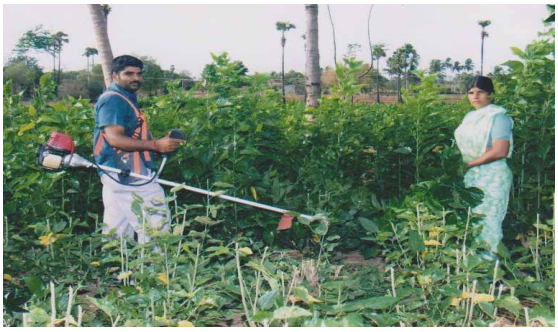
Sri. S.Balaji, S/O. Sri. Shanmugam, Dasampalayam, Gobichettipalayam of Erode district practices sericulture in 8.50 acre of V1mulberry garden with raingun irrigation. He has constructed a good silkworm rearing shed of size 220'x 45' with garware tape woven shoot racks. He is covered under Cluster promotion Programme from 2008-09 and being guided with recent sericulture technologies of Bivoltine rearing.

During 2008-09, his benchmark cocoon yield was 61.90 kg / 100 Dfls. After being brought under CPP, the production and productivity had improved over benchmark. During the CPP period he reared totally 52800 dfl's of CSR hybrids and 1000 dfl's of CB and obtained an average yield of 69.40 kg and 70.00 kg / 100 dfls respectively with less defective cocoon percentage (<5.00) fetching higher price in the cocoon market. The improvement in cocoon yield over benchmark

was 12.11 %.in CSR and 13.08 % in CB. Overall the returns per 100 dfls was Rs.114510/-. During the CPP period, the average income was Rs.243765.00 / acre / year @ 1580 dfls / acre / year, 69.67 kg yield / 100 dfls and Rs. 208.76/kg of cocoon. Through CPP he has systematized the rearing programme by employing permanent labourers and mechanization for most of the field activities. He feels proud in saying that he has repaid the loan amount of Rs. 25 lakhs obtained from Nationalized Bank, Erode for establishing sericulture activities.

4. Smt.R.Nachammal - Palani Cluster

Smt.R.Nachammal W/o.Shri.Ramaswamy of TKN Pudur village in Palani taluk is an enterprising farmer practicing sericulture since 2003. She is covered by Palani cluster under Cluster Promotion Programme jointly executed by REC, Udumalpet and DOS, Dindigul. Initially, she was taking 7 crops with 1200 dfls/acre/year in a separate rearing house from 2.5 acre of V1 mulberry garden with 3' x 3'spacing and harvested 65 kg/100 dfl. Besides, she also raises maize in 2 acre land.



She received support for construction of a rearing house of 60' x 22', power sprayer to conduct disinfection of rearing house and pruning machine and drip irrigation facility besides ensuring supply of chawki worms from Annai CRC. She has resorted to increased larval spacing, regular proper disinfection and feeding.

She is also provided regular technical guidance by the REC, Udumalpet and DOS Dindigul. With the above support, she is able to increase mulberry leaf yield from 45,000 kg to 55,000 kg/ha/yr enabling herself to take up 10 bivoltine crops with 1480 dfls/acre/year. The average yield of 75.44 kg/100 dfls fetches her an annual income of Rs.1,33,920. She could build a house, purchase land after taking up sericulture. She has developed enough skill to grow seed cocoons in demand season which enables her to earn more money.

She has adopted mechanization in sericulture to minimize labour and time. She opined that sericulture is highly profitable by adoption of cost-effective technologies and uses the resources on rational basis through recycling farm and sericultural wastes. Her success and high returns from sericulture motivated many farmers for further expansion of sericulture in the village. She actively participates in providing guidance to fellow farmers to take up bivoltine sericulture for stability, enhanced social and financial status.

5. Shri A. Kuppusamy - Udumalpet

Shri A. Kuppusamy, Aged 49 years, is a progressive farmer in Udumalpet Cluster of Tamil Nadu. He owns 28 acres of land, out of which he allocated 2.5 acres for mulberry cultivation. Mango, Coconut and vegetables are other crops cultivated by the farmer. Shri A. Kuppusamy started sericulture after seeing other farmers and motivated by DOS officials three years back. He has planted V1 variety in the paired row system to supply quality mulberry leaf to the silk worm, which he rears. He is using drip irrigation system for irrigating mulberry garden.

He has constructed a separate silkworm rearing house and shoots rearing system measuring 4800 Sq .ft floor area to rear 500 dfls/batch. He has procured all the necessary appliances and equipment required for silkworm rearing and adopted all the latest technologies evolved in mulberry cultivation and Bivoltine silkworm rearing. Besides, he has prepared a trolley and leaf transportation vehicle to transport the mulberry shoots from mulberry garden to silkworm rearing house with minimum labour. He reared 2750 dfls of Bivoltine hybrids/ year at an average of 350 Dfls per batch in 8 batches.

His benchmark cocoon yield was 61.90 kg / 100 Dfls. After being brought under CPP, the production and productivity had improved over benchmark. During the CPP period from 2008-09 to 2011-12, he reared totally 52800 dfl's of CSR hybrids and 1000 dfl's of CB and obtained an average yield of 69.40 kg and 70.00 kg / 100 dfls respectively with less defective cocoon percentage (<5.00) fetching higher price in the cocoon market.

Like majority of the farmers in Udumalpet cluster, Shri A. Kuppusamy rears only Bivoltine hybrids throughout the year. He rears on an average of 1100 Dfls/acre/year and obtains an average yield of 79.60 kg/100 Dfls. He earned net revenue of 3,86,673.00 from 2.5 acres of mulberry garden. Though he has a lot of land and cultivating many other crops in his farm, because of his involvement and commitment, he has emerged as a progressive model sericulture farmer in this area. Cocoon yield and income details of Shri A. Kuppusamy is presented below.

Sl. No.	Particulars	Value
1	No. of crops/year – Bivoltine hybrids	8
2	No. of dfls brushed /acre/year	1100
3	Yield/100 dfls [kg]	79.60
4	Cocoon production [kg/acre/year]	875.60
5	Gross revenue from Sericulture [Rs./acre/year]	2,75,502.00
6	Cost of production [Rs./acre/year]	1,20,832.80
7	Net revenue from sericulture [Rs.acre/year]	1,54,669.20
8	Net revenue from sericulture for 2.50 acres[Rs./year]	3,86,673.00

CLUSTER PROMOTION PROGRAMME IN ANDHRA PRADESH

In Andhra Pradesh the sericulture activity is well established in traditional belt and gradually is being extended to the non traditional area also. The mulberry is cultivated in 37010 hectares covering 6483 villages. 1,15,565 farmer families are engaged in mulberry cultivation and silkworm rearing. The total employment generated by the sericultural activities is around 4.88 lakhs. The cocoon production was 46105 MT with an average yield of 54.5 kg/ 100 dfls. and silk production was 5161 MT. The Department has well established infrastructure network facilities. In the pre-cocoon sector, 39 silk farms, 13 Government grainages, 85 Technical Service Centers, 17 Cocoon Markets, one Sericulture Training centres are established across the State. 1612 Silk reeler families are engaged in post cocoon activities.

The CPP was initiated in Andhra Pradesh during the year 2008-09. The Andhra Pradesh stands second among the Indian states in mulberry raw silk production producing 34.49 % (5160 MT – 2010-11) of the total production. However, in the production of bivoltine silk it stands at third position for the last three years (130 MT-2008-09, 105 MT 2009-10, 170 MT 2010-11). The CPP was implemented in six clusters of Andhra Pradesh viz., V.Kota and Palamaner in Chittoor dist, Madakasira, Kalyanadurga and Hindupur in Anantapur dist and Bhimadole in West Godavari dist (Figure 4). The details of number of beneficiaries, area covered under mulberry plantation in different clusters during the year 2008 – 2012 is presented in Table 40.

Table 40 : No. of beneficiaries and area covered under mulberry plantation in (acres) different clusters

#	Name of the cluster	No. of beneficiaries (progressive)				Area under plantation covered (in acres)		
		2008-09	2009-10	2010-11	2011-12	2008-11	2011-12	2011-12 (cumulative)
1	V.Kota	105	175	186	194	385	181	585
2	Madakasira	75	150	225	305	300	101	401
3	Palamaner	200	266	266	266	402	402	402
4	Hindupur	100	200	300	321	426	142	562
5	Kalyandurg	-	207	292	416	309	106	415
6	Bhimdole	60	124	168	213	387	102	489
	Total				**1715**			**2854**

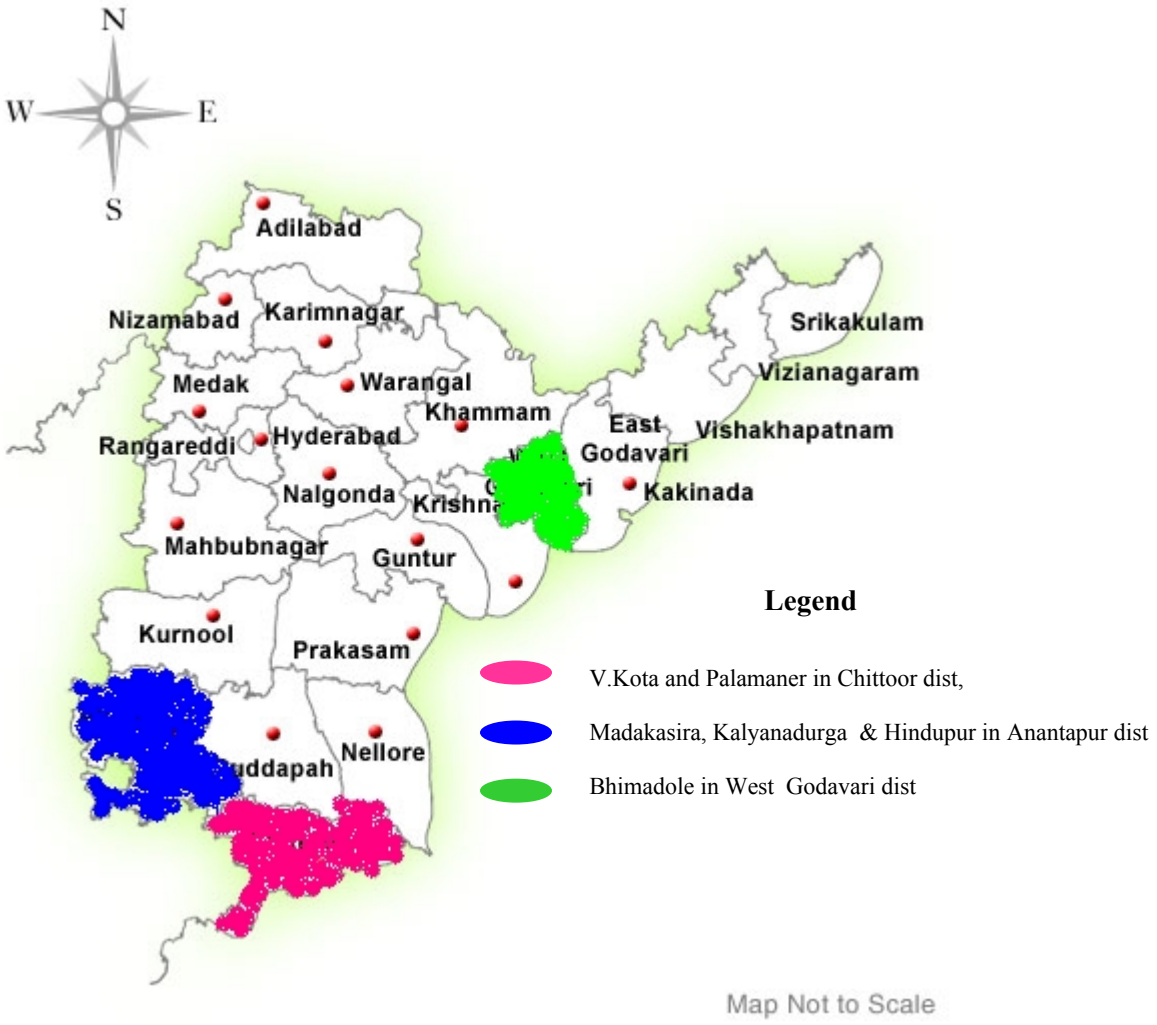


Figure 4 – The area of implementation of CPP in different districts of Andhra Pradesh

Crop performance of the CPP clusters in Andhra Pradesh

1. V. Kota cluster : The CPP was initiated in V.Kota cluster in Chittoor district in the year 2008-09 and by the end of the project period a total number of 194 farmers with 585 acres of mulberry was covered. At the initiation of the project the benchmark survey indicated an average yield of 60.0 kg / 100 dfls. During the project period the cluster brushed 9,63,975 dfls with an average yield of 64.39 kg/100 dfls and recorded an overall improvement of 7.31 % over the benchmark. The average defective cocoon recorded was 4.8 %. The detail of farmers, no.of dfls

brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 41.

Table 41 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at V.Kota cluster

Year	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	136	113400	93.4	72236.00	63.70	60.00	6.17	5.0	173.00
2009-10	300	243300	92.2	148900.00	61.20	60.00	2.00	4.9	194.00
2010-11	385	260975	92.5	170369.00	65.28	60.00	8.80	4.7	265.00
2011-12	410	346300	92.6	229218.00	66.19	60.00	10.32	4.6	222.00
Total/ Average	**1231**	**963975**	**92.68**	**620723.00**	**64.39**	**60.00**	**7.31**	**4.8**	**213.50**

During the project period, V.Kota cluster has achieved 129.22 %, 138.68 % and 107.31% against the target of dfls brushing, cocoon production and yield(kg)/100 dfls respectively. The details are presented in Table 42.

Table 42 : Annual targets and achievements of V.Kota cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve ment
1	2008-09	18000	113400	630.00	10800	72236	668.85	60.00	63.70	106.17
2	2009-10	180000	243300	135.17	108000	148900	137.87	60.00	61.20	102.00
3	2010-11	248000	260975	105.23	148800	170369	114.50	60.00	65.28	108.80
4	2011-12	300000	346300	115.43	180000	229218	127.34	60.00	66.00	110.00
	Total/ Avg	**746000**	**963975**	**129.22**	**447600**	**620723**	**138.68**	**60.00**	**64.39**	**107.31**

2. Madakasira cluster : The Madakasira cluster located in Anantapur district was identified for implementation of CPP in the year 2008-09 and a total number of 305 farmers with 401 acres of

mulberry was covered by the end of the project period. The benchmark survey prior to the CPP implementation indicated an average yield of 50.20 kg / 100 dfls. The cluster brushed 5,22,750 dfls with an average yield of 63.61 kg/100 dfls and recorded an improvement of 26.68 % over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon percentage was maintained below 5.0% by adoption of improved rearing and mounting technologies by the farmers. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 43.

Table 43 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Madakasira cluster

Year	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	75	58200	92.3	35900.00	61.70	50.20	22.91	4.9	186.00
2009-10	150	140500	93.1	90500.00	64.36	50.20	28.21	4.8	195.00
2010-11	225	142300	93.5	88500.00	63.60	50.20	26.70	4.8	298.00
2011-12	305	181750	92.50	117621.00	64.70	50.20	28.88	4.6	248.00
Total/Avg	**755**	**522750**	**92.85**	**332521**	**63.61**	**50.20**	**26.68**	**4.78**	**231.75**

In Madakasira cluster the achievement of brushing of dfls was 124.46 % and total cocoon production was 131.95 % against the target. There was an achievement of 106.00 % in cocoon yield(kg)/100 dfls . The details are presented in Table 44.

Table 44 : Annual targets and achievements of Madakasira cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of Achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	50000	58200	116.40	30000	35900	119.67	60.00	61.70	102.83
2	2009-10	100000	140500	140.50	60000	90500	150.83	60.00	64.36	107.27
3	2010-11	120000	142300	118.58	72000	88500	122.92	60.00	63.60	106.00
4	2011-12	150000	181750	121.17	90000	117621	130.69	60.00	64.70	107.83
	Total/Avg	**420000**	**522750**	**124.46**	**252000**	**332521**	**131.95**	**60.00**	**63.61**	**106.00**

3. Palamaner cluster : The Palamaner cluster in Chittor district the CPP was implemented in the year 2008-09 and the cluster covered a total number of 266 farmers having 402 acres of mulberry plantation. The benchmark survey conducted before the implementation of the project indicated an average yield of 46.0 kg / 100 dfls. The cluster brushed 451025 dfls harvesting an average yield of 56.39 kg/100 dfls and recorded an overall improvement of 22.58 % over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon percentage was reduced from 7.6 to 5.8. This was due to effective adoption of new sericultural technologies demonstrated under the programme. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 45.

Table 45 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Palamaner cluster

Year	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	200	89100	90.4	41699.00	46.80	46.00	1.74	7.6	145.30
2009-10	266	64175	92.3	29007.00	45.20	46.00	-1.74	5.3	184.00
2010-11	266	147650	91.6	88263.00	59.80	46.00	30.00	5.2	277.00
2011-12	266	150100	92.2	95351.00	63.50	46.00	38.04	5.1	217.20
Total/Avg	**998**	**451025**	**91.62**	**254320**	**56.39**	**46.00**	**22.58**	**5.8**	**205.88**

During the project period, Palamaner cluster has recorded an achievement of 120.27 %, 113.03 % and 93.98 % against the target of dfls brushing, cocoon production and cocoon yield(kg)/100 dfls respectively. The details are presented in Table 46.

Table 46 : Annual targets and achievements of Palamaner cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	50000	89100	178.20	30000	41699	139.00	60.00	46.80	78.00
2	2009-10	100000	64175	64.18	60000	29007	48.35	60.00	45.20	75.33
3	2010-11	75000	147650	196.87	45000	88263	196.14	60.00	59.80	99.67
4	2011-12	150000	150100	100.07	90000	95351	105.95	60.00	63.50	105.83
	Total/ Avg	**375000**	**451025**	**120.27**	**225000**	**254320**	**113.03**	**60.00**	**56.39**	**93.98**

4. Hindupur cluster : The Hindupur cluster located in Ananthapur district was selected for the implementation of CPP in the year 2008-09 and by the end of the project period a total number of 321 farmers with 562 acres of mulberry was covered. At the beginning of the project the benchmark survey conducted revealed an average cocoon yield of 50.0 kg / 100 dfls. During the project period the cluster brushed 5,42,850 dfls with an average cocoon yield of 59.13 kg/100 dfls and recorded an overall improvement of 18.26 % over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon recorded was 5.2%. The detail of

farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 47.

Table 47 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Hindupur cluster

Year	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	100	51200	94.00	25548.80	50.00	50.00	--	5.6	183.00
2009-10	185	127000	93.50	68742.00	54.00	50.00	8.00	4.8	203.00
2010-11	255	163000	94.40	102690.00	63.00	50.00	26.00	5.0	272.00
2011-12	321	201650	93.80	124015.00	62.00	50.00	24.00	5.4	213.00
Total/Avg	**861**	**542850**	**93.93**	**320996**	**59.13**	**50.00**	**18.26**	**5.2**	**217.75**

During the project period, in Hindupur cluster the achievement was 104.39 %, with respect to No. of dfls brushed, 102.88 % in total cocoon production and 118.26 % in cocoon yield(kg)/100 dfls. The details are presented in Table 48.

Table 48 : Annual targets and achievements of Hindupur cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	50000	51200	102.40	30000	25549	85.16	50.00	50.00	100.00
2	2009-10	120000	127000	105.83	72000	68742	95.48	50.00	54.00	108.00
3	2010-11	150000	163000	108.67	90000	102690	114.10	50.00	63.00	126.00
4	2011-12	200000	201650	100.83	120000	124015	103.35	50.00	62.00	124.00
	Total/ Avg	**520000**	**542850**	**104.39**	**312000**	**320996**	**102.88**	**50.00**	**59.13**	**118.26**

5. Kalyandurga cluster : The CPP was initiated in Kalyanadurga cluster in Anantapur district in the year 2009-10 and by the end of the project period a total number of 416 farmers with 415 acres of mulberry was covered. The benchmark survey carried out in the cluster indicated an

average yield of 45.0 kg / 100 dfls. The cluster brushed 1,58,275 dfls during the project period and harvested an average yield of 58.95 kg/100 dfls and recorded an overall improvement of 31.0 % over the benchmark yield by the end of the project period (2008-2012). The average defective cocoon recorded was 3.87 %. The details are presented in Table 49.

Table 49 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Kalyandurga cluster

Year	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2009-10	98	22500	93.21	9736.00	43.27	45.00	-3.84	4.30	192.00
2010-11	242	59600	92.62	36528.00	61.29	45.00	36.20	3.32	274.00
2011-12	293	76175	92.22	47041.00	62.89	45.00	39.76	4.00	203.00
Total/Avg	**633**	**158275**	**92.68**	**93305.00**	**58.95**	**45.00**	**31.00**	**3.87**	**223.00**

During the project period, Kalyandurg cluster has achieved 102.11 %, 102.53 % and 104.02 % against the target of dfls brushing, cocoon production and yield(kg)/100 dfls respectively. The details are presented in Table 50.

Table 50 : Annual targets and achievements of Kalyandurg cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2009-10	20000	22500	112.50	10000	9736	97.36	50.00	43.27	86.54
2	2010-11	60000	59600	99.33	36000	36528	101.47	60.00	61.29	102.15
3	2011-12	75000	76175	101.57	45000	47041	104.54	60.00	62.89	104.82
	Total/Avg	**155000**	**158275**	**102.11**	**91000**	**93305**	**102.53**	**56.67**	**58.95**	**104.02**

6. Bhimdole cluster : The Bhimdole cluster located in West Godavari district was selected for the implementation of CPP in the year 2009-10. During the project the cluster covered 213 farmers with 489 acres of mulberry plantation. At the initiation of the project the benchmark survey indicated an average cocoon yield of 55.0 kg / 100 dfls. During the project period the

cluster brushed 4,23,100 dfls and recorded an average cocoon yield of 62.19 kg/100 dfls with an improvement of 13.07 % over the benchmark yield. The average defective cocoon percentage was brought down from 5.81 to 2.54. The reduction in defective cocoon percentage was achieved by the farmers after complete adoption of demonstrated sericulture technologies. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 51.

Table 51: Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Bhimdole cluster

Year	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2009-10	124	25425	89.00	15465	61.00	55.00	10.91	5.81	169.00
2010-11	168	175675	92.00	111328	63.17	55.00	14.9	3.45	206.00
2011-12	213	222000	92.00	136340	61.41	55.00	11.65	2.54	203.00
Total/Avg	**505**	**423100**	**91.00**	**263133**	**62.19**	**55.00**	**13.07**	**3.93**	**192.67**

During the project period, Bhimdole cluster recorded an achievement of 121.58 % in number. of dfls brushed, 125.90 % in total cocoon production and 112.47 % in cocoon yield(kg)/100 dfls. The details are presented in Table 52.

Table 52 : Annual targets and achievements of Bhimdole cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2009-10	20000	25425	127.13	12000	15464	128.87	55.00	61.00	110.91
2	2010-11	128000	175675	137.25	77000	111328	144.58	55.00	63.17	114.85
3	2011-12	200000	222000	111.00	120000	136340	113.62	55.00	61.41	111.65
	Total/Avg	**348000**	**423100**	**121.58**	**209000**	**263132**	**125.90**	**55.00**	**62.19**	**113.07**

Farmers Field School, Seri-polyclinic and Bio-control agents multiplication units :

a. **Farmers Field School**

During the project period each cluster established Farmers field schools to provide in-situ training to the farmers. The FFS were equipped with DVD player, LCD projector and Laptops to conduct the classes. During the period a total of 133 sessions were conducted as per the curriculum provided by the CSRTI, Mysore and 3168 farmers were benefitted and enabled them to adopt the sericulture technologies. The facilities provided through the FFS greatly helped the farmers to improve their crop performance. The details is presented in Table 53.

Table 53 : Details of facilities and activities of FFS

#	Clusters	Status of equipments supplied			No. of sessions conducted	No. of participants/ session
		DVD Player	LCD Projector	Laptop		
1	V.Kota	1	1	1	32	800
2	Madakasira	1	0	1	21	546
3	Palamaner	1	0	1	22	550
4	Hindupur	1	0	0	16	400
5	Kalyanadurg*	1	-	0	16	352
6	Bhimdole	1	0	0	26	520
	Total	**6**	**1**	**3**	**133**	**3168**

b. Seri-poly clinic :

The seri-ploy clinics were established in all the clusters of Andhra Pradesh by the progressive farmer of the CPP area and a total of 8444 rearing houses were disinfected during the project period. The details are presented in Table 54.

Table. 54 : Details of number of rearing houses disinfected in different clusters

#	Clusters	No. of rearing houses disinfected				
		2008-09	2009-10	2010-11	2011-12	Total
1	V.Kota	1020	1060	1240	2135	**5455**
2	Madakasira	-	-	127	639	**766**
3	Palamaner	-	-	120	506	**626**
4	Hindupur	-	-	525	622	**1147**
5	Kalyanadurg	-	-	-	110	**110**
6	Bhimdole	-	62	118	160	**340**
	Total	**1020**	**1122**	**1894**	**4172**	**8444**

c. Bio-control agent multiplication units:

Three clusters in Andhra Pradesh established Bio-control agent multiplication units to cater the needs of sericulturists. The identified beneficiaries produced need based bio control agents and supplied to control the pests of silkworm and mulberry. The details are presented in Table 55.

Table 55 : Details of bio control agents produced and sold in different clusters

#	Clusters	Quantity of bio-control agents sold		
		N. thymus **(pouches)**	***C. monrtouzier i*** **(boxes)**	***Scymnus coccivora*** **(boxes)**
1	V.Kota	3136	28	20
2	Madakasira	140	-	-
3	Hindupur	2130		
	Total	**1146**	**28**	**20**

Extension communication programmes:

During the project period the clusters conducted various extension communication programmes such as Awareness programme, Enlightenment programme, Field days, Group discussion, Training programmes, Study tour, Farmers meet, Exhibition, Film shows etc. A total of 656 different programmes were conducted during the project period and around 22340 farmers were sensitized through these programmes. These programmes were helpful in changing their attitude towards the acceptance of new sericultural technologies, besides faster percolation and adoption of technologies. Increased awareness and technology adoption resulted in the successful implementation of the cluster promotion programmes through which the objective of increased production of quality bivoltine silk was achieved. Details of the extension programmes conducted under Cluster Promotion Programme for the period from 2008-2012 is presented in Table 56.

Table 56 : Details of the extension programmes conducted under Cluster Promotion Programme for the period 2008-2012

	Clusters	A P	E P	F D	G D	Demo	Exhi	TP	ST	FM	F.S	Total
1	V.Kota	24	4	21	50	12	-	39	8	19	-	177
2	Madakasira	30	4	21	35	12	-		5	12	-	119
3	Palamaner	18	4	22	41	23	-	23	7	-	-	138
4	Hindupur	20	3	9	23	13	-	16	3	-	-	87
5	Kalyanadurga	8	3	8	18	40	4	-	6	-	9	96
6	Bhimdole	5	2	5	9	10	-	5	1	2	-	39
	Total	**105**	**20**	**86**	**176**	**110**	**4**	**83**	**30**	**33**	**9**	**656**

Note: AP: Awareness Programme; EP: Enlightenment Programme; FD: Field Days; GD: Group Discussion; Demo: Technology Demonstration; Exhi : Exhibition; TP : Training Programme; ST: Study Tour; FM: Farmers' Meet; F.S : Film show

Chawki rearing centres :

All the clusters established Chawki rearing centres to supply the chawki worms to the CPP farmers. Out of the six clusters two clusters viz., Hindupur and Bhimdole distributed 100% chawki reared worms to the farmers and overall distribution of chawki worms in the state was

80.26%. The distribution of chawki reared worms to the farmers helped them to concentrate on other sericultural activities like mulberry cultivation, disinfection of rearing house etc. The details of mode of distribution of dfls is presented in Table 57.

Table 57 : Detail of distribution of bivoltine hybrids in clusters of Andhra Pradesh

Year	Clusters/ Particulars	V.Kota	Madakasira	Palamaner	Hindupur	Kalyandurg	Bhimdole	Total
2008-09	No.of dfls distributed	419700	58200	89100	51200	--	--	618200
	Direct in %	26.57	-	-	-	-	-	32.46
	Chawki in %	73.42	100	64.61	100	--	--	89.42
2009-10	No.of dfls distributed	407800	140500	64175	127300	--	25000	739775
	Direct in %	20.31	63.06	77.28	100	-	-	48.81
	Chawki in %	79.68	36.93	22.71		--	--	48.81
2010-11	No.of dfls distributed	671200	142300	147650	163000	-	82600	1206750
	Direct in %	13.08	45.18	48.93	-	-	-	18.59
	Chawki in %	86.19	54.81	51.06	100	-	100	81.37
2011-12	No.of dfls distributed	950035	181750	150100	201650	76175	109200	1668910
	Direct in %	0.74	52.79	16.65	-	86.87	-	11.63
	Chawki in %	99.25	47.2	83.24	100	13.12	100	88.36
Total	No.of dfls distributed	2511735	522750	451025	543150	76175	216800	4321635
	Direct in %	12.02	47.6	52.31	-	86.87	-	19.73
	Chawki in %	87.97	52.39	47.68	100	13.12	100	80.26

Impact of CPP on socio-economic status of farmers in different clusters of Andhra Pradesh :

A study was conducted to know the impact of CPP on socio-economic status of farmers. The data obtained from two clusters provides an overview of the improvement in economic status of the farmers. The utilization of the earnings from sericulture for improving the socio economic status is presented in Table 58.

Table 58 : Utilization pattern of the money earned from sericulture by the adopted farmers under CPP

Particulars	Hindupur		V.Kota	
	% of far-mers	Money spent (Rs.)	% of far-mers	Money spent (Rs.)
Rearing house	0	0	0	0
Shoot rearing stands	3	18000	55	41167
Sericulture equipment/ machineries	7	2650	64	14286
House	3	150000	0	0
Land	3	180000	0	0
Well	7	50000	73	42500
Tractor/power tiller	7	250000	0	0
Vehicles (car, bike, etc)	63	44579	73	45125
Household items (TV, VCR, VCD, computer etc)	97	14828	82	13222
Jewels	83	161000	0	0
Kitchen items (Fridge, grinder, LPG stove etc)	83	3040	73	4213
Furniture	3	100000	82	12222
Children's education	67	136000	27	30000
Marriage	60	316389	0	0
Repayment of loans	83	49200	18	60750

Success stories :

Andhra Pradesh with 290 MT of silk production stands second in the country under Cluster Promotion Programme with respect to bivoltine silk production producing around 19 lakh kg of cocoons during the project period. The V.Kota cluster of the state has become one of model cluster by brushing maximum number of dfls and harvesting around 64 kg of cocoons per 100 dfls. A few success stories of the different cluster farmers are presented below.

1. **Shri T. Govindappa, Madakasira cluster, Anantapur District**

Sri. T.G. Govindappa, H.M.Palli of Madakasira cluster is a progressive farmer of the Cluster. He is practicing sericulture since 1990. The farmer is having one acre of irrigated mulberry garden with V1 variety in 3'x3' spacing. The yield/100 dfls was only 46 kg. The farmer is also cultivating groundnut in five acres and paddy in three acres.

During the project period under the CDP, the farmer was was assisted for the construction of Rearing house, one power sprayer and drip irrigation facilities to the garden. The farmer is covered under INM and he is able to increase his mulberry productivity from 35,000 to 45,000 kg/ ha/year. He is adopting all the technologies for mulberry cultivation and silkworm rearing.

Presently, the farmer is rearing 5 crops of bivoltine hybrids in a year and harvesting successful crop and his average yield is 70.0 kg yield/100 dfls. His annual profit per acre is Rs.1,75,000/-.

The farmer has planned to increase mulberry plantation with V1 variety and planned to construct one more rearing house to rear 800 dfls of Bivoltine hybrids. Further, he wants to increase dfls consumption from 1000 to 1250/ acre/ year by adopting all the new technologies for mulberry cultivation.

2. **Sri. K. R. Krishna Reddy, V.Kota cluster, Chittoor District.**

Sri K. R. Krishna Reddy is a progressive farmer in V. Kota Cluster. Sericulture is the only source of income for the family. He has 2.25 acres of irrigated V-1 variety mulberry plantation with 3' x 3' spacing and also paired row system. He irrigates the garden with drip irrigation. He applies fertilizers according to the recommendations of soil test results. He is adopting Integrated Nutrient Management for application of fertilizers and management of soil fertility. He is producing the farm yard manure by composting the sericulture wastes and applies to his garden.

He has a separate rearing house and follows shoot rearing method for silkworm rearing and he obtains chawki worms from CRC. He is conducting rearing by adopting all the rearing technologies and integrated management of pests.

He rears 10 crops per year @ 1422 dfls /acre/year and obtains an average cocoon yield of 73.90 kg/100 dfls (Table.1). He has harvested 1050.60 kg cocoons/acre/year and earned a net revenue of Rs.3,73,826 from his 2.25 acres farm. The details of silkworm rearing and revenue generation is presented below.

Sl. No.	Particulars	Value
1	No. of crops/year – Bivoltine hybrids	10
2	No. of dfls brushed / acre/ year	1422
3	Yield/100 dfls (kg)	73.90
4	Cocoon production (kg/acre/year)	1050.60
5	Revenue from Sericulture (Rs. /acre/year)	2,66,872.00
6	Cost of production (Rs. Acre/year)	1,00,727.00
7	Net revenue from sericulture (Rs. Acre/year)	1,66,145.00
8	Net revenue from sericulture from 2.25 acres (Rs./year)	3,73,826.00

The farmer constructed a dwelling house worth of Rs. 3,00,000 in 2009 and dug a bore well also. He has invested his earning towards purchase of house hold articles, furniture, LMV for transportation of mulberry shoot and cocoons to the market etc. By adoption of the sericulture technologies he is obtaining higher yield than other sericulturists in the cluster.

The farmer got the highest rate in Hindupur Cocoon Market five times in the year out of ten crops marketed. The farmer also received the "Best Bivoltine Farmer Award" from the Government of Andhra Pradesh during 2012. He is also motivating the fellow sericulturists to practice bivoltine rearing. Majority of the sericulturists of Kanumanayanapalle village are rearing only bivoltine hybrids.

He always interacts with the scientists and DOS officials to improve the yield levels and reduction in the production cost and eco-friendly materials. He also rears pure races (CSR2 / CSR4) of bivoltine for seed purposes.

3. **Sri. D. R. Sathyanarayana, V. Kota cluster, Chittoor District**

Sri. D. R. Sathyanarayana is a progressive farmer in V. Kota Cluster. He has 10 years experience in sericulture and started bivoltine rearing from 2008.

He owns 10.0 acres of irrigated V-1 mulberry plantation with 3' x 3' spacing. He is planning to cultivate 6 more acres of mulberry plantation. He has adopted drip irrigation method for irrigating the mulberry garden. He applies fertilizers according to the recommendations of soil test results. He is adopting Integrated Nutrient Management for application of fertilizers and management of soil fertility. He is producing the farm yard manure by composting the sericulture wastes and applies to his garden.

Sri. D. R. Sathyanaraya has constructed a large rearing house in the middle of mulberry plantation and gave priority for sufficient ventilation. The rearing house facilitate rearing of 1200 to 1500 dfls per crop with facility to movement of a trolley in between the rearing stands of the rearing house for easy transportation of mulberry shoots and movement of tractor for removal of bed refuse. The use of tractor has helped the farmer in saving time, labour and drudgery. Adoption of these methods has reduce the cost of production of cocoons and improving his profitability.

He uses chawki worms reared in CRcs. He uses bleaching powder + lime, Chlorin-dioxide, Asthra for disinfection of rearing house. He uses bed disinfectants like Vijetha, Ankush regularly and Capton during winter for protecting the silkworm crops from diseases. He also adopts integrated method for management of uzi fly infestation by using anti-chamber, nylon nets, uzi trap and *Nesolynx thymus*, a uzi fly parasitoid. He reared upto July 2011 in a 100' x 20' size rearing house and shifted the rearing activity to newly constructed rearing house. He reared 11 crops per year @ 1325 dfls /acre/year and obtained an average cocoon yield of 70.2 kg/100 dfls. He harvested 930.15 kg cocoons/acre/year and earned net revenue of Rs. 3,73,826 from his 2.25 acres farm. The details of silkworm rearing and revenue generation is presented below.

Sl. No.	Particulars	Value
1	No. of crops/year – Bivoltine hybrids	11
2	No. of dfls brushed / acre/ year	1325
3	Yield/100 dfls (kg)	70.2
4	Cocoon production (kg/acre/year)	930.15
5	Revenue from Sericulture (Rs. /acre/year)	2,04,633
6	Cost of production (Rs. Acre/year)	85,946
7	Net revenue from sericulture (Rs. Acre/year)	1,18,687
8	Net revenue from sericulture from 10 acres (Rs./year)	11,86,870

Sri. D. R. Sathyanaraya has constructed above mentioned rearing house investing Rs. 30 lakhs. He has purchased a tractor investing 5 lakhs. He has acquired another 8 acres of mulberry plantation with V-1 to increase the brushing capacity. He plans to adopt composting of waste material to adopt organic cultivation. The farmer is keen in adopting all the technologies recommended for bivoltine sericulture. He is obtaining higher yield with less man power due to labour saving technologies. He has become a role model in motivating other sericulturists to practice bivoltine silkworm rearing.

4. Sri. C. B. Ramakrishnappa, V. Kota cluster, Chittoor District

Sri. C. B. Ramakrishnappa is a progressive farmer in V. Kota cluster. He owns 8 acres of land, out of which V-1 mulberry is in 6 acres with 3' x 3' spacing. He is practicing sericulture for the past 7 years. He irrigates the garden through drip system and applies fertilizers as per the recommendations based on soil test report. He is practicing Integrated Pest Management to control uzi in silkworm rearing and tukra/ leaf roller etc., in mulberry cultivation. He has constructed a separate rearing house with the size of 70' x 20' , a separate room for leaf preservation and adopted shoot rearing method for silkworm rearing. He normally rears 10 crops @ 650 dfls/ crop of bivoltine hybrids.

The farmer always rears silkworm procured from commercial private CRC owned by him along with catering to the needs of fellow farmers.

The details of silkworm rearing and revenue generation is presented below.

#	Particulars	Value
1	No. of crops/year – Bivoltine hybrids	11
2	No. of dfls brushed / acre/ year	1290
3	Yield/100 dfls (kg)	70.20
4	Cocoon production (kg/acre/year)	905.58
5	Revenue from Sericulture (Rs. /acre/year)	1,94,968.00
6	Cost of production (Rs. Acre/year)	82,542
7	Net revenue from sericulture (Rs. Acre/year)	1,12,426
8	Net revenue from sericulture from 2.25 acres (Rs./year)	5,62,130

Using the income earned from sericulture Sri. C.B. Ramakrishnappa, has constructed a Residential/commercial complex at V. Kota with expenditure of one crore. He also dug a tube well and purchased a tractor during 2008. He has spent more than 10 lakhs towards his children education. He was felicitated by the Department of Sericulture and ATMA as best Bivoltine farmer in 2009.

5. Sri S. Rajareddy, Hindupur cluster, Anantapur District

Shri S. Rajareddy is practicing sericulture for the past 15 years with 3.50 acres of mulberry with 3'x3' spacing. The farmer is having V1 variety in 2 acres and S-36 variety in one acre . The source of irrigation is tube well and irrigates the land through drip system. The farmer before CPP was adopting the sericulture technologies partially which he has adopted fully after CPP. The adoption of all the sericulture technologies in full has helped the farmer in increasing his productivity. The farmer rears bivoltine hybrids five times and cross breeds three times in a year respectively. The details of silkworm rearing and revenue generation is presented below.

#	Particulars	Value
1	**No of crops/year** Bivoltine hybrids Multivoltine hybrids	8 5 3
2	No of dfls brushed/acre/year	1160
3	Yield/100 dfls (kg)	68.900
4	Cocoon production (kg)	2397.800
5	Revenue from sericulture (Rs./acre/year)	180000.00
6	Cost of production (Rs./acre/year)	30000
7	Net revenue from sericulture (Rs./acre/year)	150000.00

Important technologies/innovations adopted

The farmer is keenly adopting the Bivoltine Sericulture Technologies recommended. He always interacts with the scientists and officials to improve the yield levels. The farmer was awarded with **UGADI PURASKARALU** and incentives for highest rates in the market for 2 times.

6. Sri K. Sureshbabu, Parigi village, Hindupur cluster, Anantapur District

Shri Sureshbabu is a progressive farmer and science graduate. He is practicing sericulture for the past five years in four acres of irrigated mulberry garden planted with V1 variety with a spacing of 3 □ x3. The source of irrigation is bore well. The farmer rears 7 crops of 350 dfls/crop in a year. The farmer's adoption of sericulture technologies which remained partial before CPP has been upgraded to complete adoption under CPP. The details of silkworm rearing and revenue generation is presented in Table-64.

#	Particulars	Value
1	**No of crops/year** Bivoltine hybrids	7 7
2	No of dfls brushed/acre/year	940
3	Yield/100 dfls (kg)	61.000
4	Cocoon production (kg)	1435.48
5	Revenue from sericulture (Rs./acre/year)	201225.00
6	Cost of production (Rs./acre/year)	35000.00
7	Net revenue from sericulture (Rs./acre/year)	166225.00

The income earned from sericulture Sri Suresh Babu, has constructed a rearing house and dwelling house and well equipped the rearing house with shoot rearing racks, power sprayer. To increase his earnings he dug one more bore well. To elevate his comforts and social status, he has also purchased a car and modern house hold articles.

The farmer is enthusiastic to adopt new sericulture technologies whenever recommended and by interacting with the scientists and DOS officials to improve the yield levels. He has received award as Best Bivoltine Farmer Award on the eve of Independence day celebrations at Anantapur.

7. Shri. G. Subramanyam, Maredupalli village, Palamaner cluster, Chittoor District.

Sri. G. Subramanyam, a progressive farmer from Maredupalli village in Palamaner cluster is conducting bivoltine hybrid silkworm rearing in large scale, the farmer is cultivating V1 mulberry in 8 acres and irrigates from three borewells by using drip system. He has adopted partial mechanization for mulberry cultivation by using tractor owned by him. He has adopted all the new technologies advocated by CSR&TI, Mysore for mulberry cultivation and silkworm rearing. To reduce the temperature of rearing house, he has applied anti-radiation material on the roof-top and able to reduce 4-5°C temperature inside the rearing house. He is living with a large joint family of 12 members and during exigencies, he hires extra labour from outside. He is brushing 1500-1700 dfls/crop. He takes up five crops in a year. To rear the more no.of dfls, he has constructed a rearing house measuring 148’ x 23’ x 16’ (LxWxH) and his average yield/100 dfls is 75 kg of cocoons. A Field Day was organized on the occasion of the successful

completion of the rearing of 1400 dfls of CSR hybrid and he has become a role model for the other bivoltine sericulturists.

8. Shri T. Govindappa, Madakasira cluster, Anantapur District

Sri. T.G. Govindappa, H.M.Palli of Madakasira cluster is a progressive farmer of the Cluster. He is practicing sericulture since 1990. The farmer is having one acre of irrigated mulberry garden with V1 variety in 3'x3' spacing. The yield/100 dfls was only 46 kg. The farmer is also cultivating groundnut in five acres and paddy in three acres.

During the project period under the CDP, the farmer was was assisted for the construction of Rearing house, one power sprayer and drip irrigation facilities to the garden. The farmer is covered under INM and he is able to increase his mulberry productivity from 35,000 to 45,000 kg/ ha/year. He is adopting all the technologies for mulberry cultivation and silkworm rearing.

Presently, the farmer is rearing 5 crops of bivoltine hybrids in a year and harvesting successful crop and his average yield is 70.0 kg yield/100 dfls. His annual profit per acre is Rs.1,75,000/-.

The farmer has planned to increase mulberry plantation with V1 variety and planned to construct one more rearing house to rear 800 dfls of Bivoltine hybrids. Further, he wants to increase dfls consumption from 1000 to 1250/ acre/ year by adopting all the new technologies for mulberry cultivation.

Cluster Promotion Programme in Maharashtra

In 2005 there were 3,000 families practicing sericulture in 4,200 acres of mulberry plantations. The sericulture activities were spread over in 1,004 villages of 20 districts3 in Maharashtra. In 2008, the number of families adopting sericulture had increased to 8,000 with over 10,000 acres of mulberry plantations, however with low productivity (30kg/100dfls). Among the mulberry silk producing states in India, Maharashtra occupies the seventh position.

During the year 2008-09, when CPP was initiated in Maharashtra the extent of mulberry cultivation was 10000 acres in 1004 villages. 3000 farmer families were engaged in mulberry cultivation and silkworm rearing. The cocoon production was 9330 MT and raw silk production was 155 MT. The department has well established infrastructure network facilities. In the pre-cocoon sector, 1 Government grainage, 15 DCTC (reeling centres), 10 silk farms are established across the State. The sericulture gives employment opportunities around 50000 persons under pre-cocoon and post-cocoon sector.

Maharashtra stands seventh among the Indian states in mulberry raw silk production. The CPP was implemented in three clusters in non-traditional sericulture belt viz., Districts of Beed, Buldhana and Osmanabad (Figure 5). The details of number of beneficiaries, area covered under mulberry plantation in different clusters during the project period 2008–2012 is presented in Table 59.

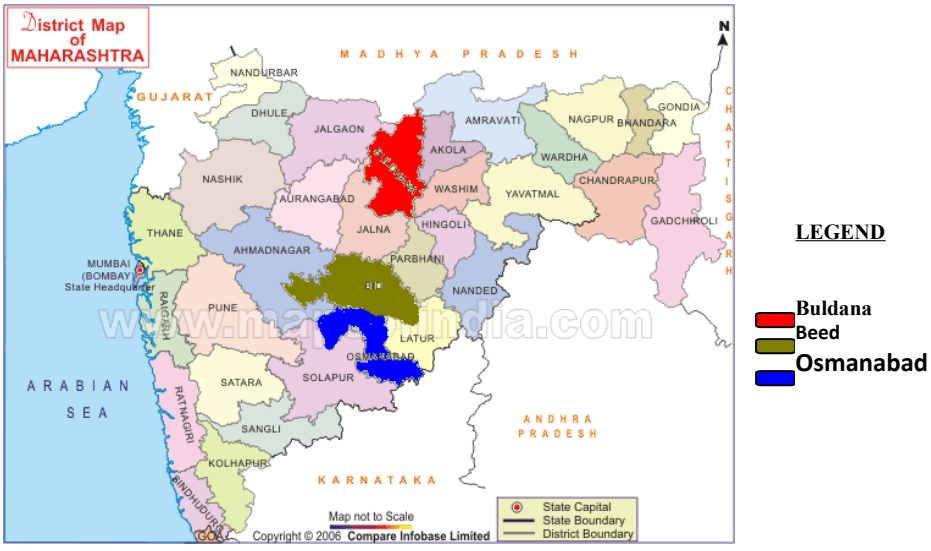


Figure 5 : The distribution of CPP clusters in Maharashtra

Table 59 : No. of beneficiaries and area covered under mulberry plantation in (acres) different clusters

Sl. No	Name of clusters	No.of beneficiaries (progressive)				Area under plantation Covered (in acres)		
		2008-09	2009-10	2010-11	2011-12	2008-11	2011-12	2011-12 Cumulative
1	Beed	100	250	342	409	565.0	115.5	680.5
2	Buldhana	-	53	86	133	110.5	175.5	263.5
3	Osmanabad	109	245	322	274	376.0	78.0	454.0
	Total	**209**	**548**	**750**	**816**	**1051.5**	**369.0**	**1398**

1. Beed Cluster : The Beed cluster located in Beed district was selected for the implementation of CPP in the year 2008-09. During the project the cluster covered 409 farmers with 680.5 acres of mulberry plantation. At the initiation of the project the benchmark survey indicated an average cocoon yield of 38.50kg / 100 dfls. During the project period the cluster brushed 336658 dfls and recorded an average cocoon yield of 64.25 kg/100 dfls with an improvement of 66.88 % over the benchmark yield. The average defective cocoon percentage was brought down from 6.5 to 4.0. The reduction in defective cocoon percentage was achieved by the farmers after complete adoption of demonstrated sericulture technologies during the project period. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 60.

Table 60 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Beed cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	100	21605	90.20	8115	37.56	38.50	-2.44	6.50	140.00
2009-10	100	22723	93.70	13408	59.00	38.50	53.25	6.22	155.00
2010-11	274	123400	95.30	78331	63.47	38.50	64.86	4.15	236.00
2011-12	303	168930	94.60	116446	69.00	38.50	79.22	4.00	196.00
Total/Avg	**777**	**336658**	**93.45**	**216300**	**64.25**	**38.50**	**66.88**	**5.22**	**181.75**

During the project period, Beed cluster has achieved 90.01 %, 127.3 % and 128.50 % against the target of dfls brushing, cocoon production and yield(kg)/100 dfls respectively. The details are presented in Table 61.

Table 61 : Annual targets and achievements of Beed cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	30000	21605	72.02	15000	8115	54.10	50.00	37.56	75.10
2	2009-10	30000	22723	75.74	15000	13408	89.33	50.00	59.00	118.00
3	2010-11	90000	123400	137.11	45000	78330	174.00	50.00	63.47	126.90
4	2011-12	190000	168930	88.91	95000	116446	122.57	50.00	69.00	138.00
	Total/Avg	**340000**	**336658**	**90.01**	**170000**	**216300**	**127.23**	**50.00**	**64.25**	**128.50**

2. Buldhana Cluster : The Buldhana cluster located in Buldhana district was selected for the implementation of CPP in the year 2008-09. During the project the cluster covered 133 farmers with 263.5 acres of mulberry plantation. At the initiation of the project the benchmark survey indicated an average cocoon yield of 32.30 kg/ 100 dfls. During the project period the cluster brushed 48000 dfls and recorded an average cocoon yield of 52.24 kg/100 dfls with an improvement of 61.73 % over the benchmark yield. The average defective cocoon percentage was brought down from 5.36 to 4.46. The reduction in defective cocoon percentage was achieved by the farmers after complete adoption of demonstrated sericulture technologies. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 62.

Table 62 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Buldhana cluster

Year	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2009-10	54	12750	87.50	5480	44.60	32.30	38.08	5.36	133.71
2010-11	43	12300	87.69	6949	56.49	32.30	74.89	2.67	213.15
2011-12	94	22950	89.00	12648	55.59	32.30	72.10	4.46	163.00
Total/Avg	**191**	**48000**	**88.06**	**25077**	**52.24**	**32.30**	**61.73**	**4.16**	**169.95**

During the project period, Buldhana cluster recorded an achievement of 69.87 % in number of dfls brushed, 65.64 % in total cocoon production and 104.48 % in cocoon yield(kg)/ 100 dfls. The details are presented in Table 63.

Table 63 : Annual targets and achievements of Buldhana cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
2	2009-10	30000	12750	42.50	15000	5480	36.53	50.00	44.60	89.20
3	2010-11	20000	12300	61.50	10000	6949	69.49	50.00	56.49	112.98
4	2011-12	26400	22950	86.93	13200	12648	95.81	50.00	55.10	110.20
	Total/Avg	68700	48000	69.87	38200	25077	65.64	50.00	52.24	104.48

3. Osmanabad Cluster : The Osmanabad cluster located in Osmanabad district was selected for the implementation of CPP in the year 2009-10. During the project the cluster covered 274 farmers with 454 acres of mulberry plantation. At the initiation of the project the benchmark survey indicated an average cocoon yield of 36.50 kg /100 dfls. During the project period the cluster brushed 194200 dfls and recorded an average cocoon yield of 56.75 kg/100 dfls with an improvement of 55.47% over the benchmark yield. The average defective cocoon percentage

recorded was 4.19 %.. The detail of farmers, no.of dfls brushed, cocoon production, yield/ 100 dfls, defective cocoon percentage and the average cocoon price obtained for the period is presented in Table 64.

Table 64 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period at Osmanabad cluster

Year	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
2008-09	51	13650	93.00	7603	55.70	36.50	52.60	3.51	168.00
2009-10	115	46500	92.00	25415	55.80	36.50	52.87	4.53	195.00
2010-11	205	69050	93.00	39349	56.90	36.50	55.89	4.05	217.00
2011-12	237	65000	91.00	37844	58.22	36.50	59.50	4.68	198.00
Total/Avg	**608**	**194200**	**92.25**	**110211**	**56.75**	**36.50**	**55.47**	**4.19**	**194.50**

During the project period, Osmanabad cluster recorded an achievement of 67.55 % in number of dfls brushed, 76.67 % in total cocoon production and 113.50 % in cocoon yield(kg)/100 dfls. The details are presented in Table 65.

Table 65 : Annual targets and achievements of Osmanabad cluster

#	Year	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	2008-09	15000	13650	91.00	7500	7603	101.37	50.00	55.70	111.40
2	2009-10	40000	46500	116.25	20000	25415	127.08	50.00	55.80	111.60
3	2010-11	112500	69050	61.38	56250	39349	69.95	50.00	56.90	113.80
4	2011-12	120000	65000	54.17	60000	37844	63.07	50.00	58.22	116.44
	Total/Avg	**287500**	**194200**	**67.55**	**143750**	**110211**	**76.67**	**50.00**	**56.75**	**113.50**

Farmers Field School, Seri-polyclinic and Bio-control agent multiplication units:

a. Farmers Field School

During the project period each cluster established Farmers field schools to provide in-situ training to the farmers. The FFS were equipped with DVD player, LCD projector and Laptops to conduct the classes. During the period a total of 63 sessions were conducted as per the curriculum provided by the CSRTI, Mysore and 160 farmers were benefitted and enabled them to adopt the sericulture technologies. The facilities provided through the FFS greatly helped the farmers to improve their crop performance. The details is presented in Table 66.

Table 66: Details of facilities and activities of FFS

#	Clusters	Status of equipments supplied			No. of sessions conducted	No. of participants/ session
		DVD Player	Projector	Laptop		
1	Beed				58	88
2	Buldhana	Not supplied	-	--	02	30
3	Osmanabad	1	1	1	3	42
	Total	**1**	**1**	**1**	**63**	**160**

b. Seri-poly clinic:

The seri-ploy clinics was established in the Osmanabad cluster of Maharashtra by the progressive farmer of the CPP and a total of 194 rearing houses were disinfected during the project period.

c. Bio-control agent multiplication units:

Due to the less number of farmers and scattered manner in the clusters the farmers did not show any interest to establish Bio-control agent multiplication units as the venture could not be profitable.

Extension communication programmes:

During the project period the clusters conducted various extension communication programmes such as Awareness programme, Enlightenment programme, Field days, Group discussion, Training programmes, Study tour, Farmers meet, Exhibition, Film shows etc. A total of 272 different programmes were conducted during the project period and around 6170 farmers were sensitized through these programmes. These programmes were helpful in changing their attitude towards the acceptance of new sericultural technologies, besides faster percolation and adoption of technologies. Increased awareness and technology adoption resulted in the successful implementation of the cluster promotion programmes through which the objective of increased production of quality bivoltine silk was achieved. Details of the extension programmes conducted under Cluster Promotion Programme for the period from 2008-2012 is presented in Table 67.

Table 67 : Details of the extension programmes conducted at the CPP clusters for the period 2008-2012

#	Clusters	A P	E P	F D	G D	Demo	TP	ST	FM	Exhi	Total
1	Beed	18	1	7	28	18	7	1	1	-	**81**
2	Buldhana	1		14	56	4	10	5		4	**94**
3	Osmanabad	9		2	60	17	4	3	2	-	**97**
	Total	**28**	**1**	**23**	**144**	**39**	**21**	**9**	**3**	**4**	**272**

Note: AP=Awareness Programme; EP=Enlightenment Programme; FD=Field Days; GD=Group Discussion; Demo=Technology Demonstration; ST=Study Tour; FM=Farmers' Meet, FT = Farmers Training

Summary

The Cluster Promotion Programme was implemented jointly by Central Silk Board and respective State Sericulture Departments covering both mulberry and vanya sectors spread over 17 states. A total of 50 clusters were organized across the country which consisted of 31 clusters in pre cocoon mulberry and 14 in vanya silks where as 5 clusters exclusively in post cocoon sector. Out of 31 pre cocoon mulberry sectors, a lions share, comprising of 22 clusters was jointly organized and implemented by CSRTI, Mysore and respective DOSs viz., Karnataka, Andhra Pradesh and Tamil Nadu the major silk producing states of southern India and Maharashtra which is a non traditional state. The programme was launched in 2008-09 in 14 clusters, later 8 more clusters were added in 2009-10 with 7 clusters in Karnataka, 6 each in Andhra Pradesh and Tamil Nadu and 3 clusters in Maharashtra. The CSRTI, Mysore co-ordinated and monitored entire programme and concluded it in a highly successful manner with the co-operation of all partners on 31.03.2012.

Before implementation of the programme bench mark survey was conducted for cocoon yield / 100 dfls in all the identified clusters of four states. The survey revealed that the cocoon yield in kg/ 100 dfls varied much in each state and cluster. In Karnataka it ranged from 44.45 to 60.00 kg, in Tamil Nadu 54.2 to 62.5 kg, Andhra Pradesh 45.0 to 60.0 kg and in Maharashtra it was 32.3 to 38.5 kg of cocoons per 100 dfls (Table 68).

Table 68 : The bench mark cocoon yield(kg)/100 dfls in different clusters of different states

Karnataka		Tamil Nadu		Andhra Pradesh		Maharashtra	
Cluster	Cocoon yld/ 100 dfls (kg)	Cluster	Cocoon yld/ 100 dfls (kg)	Cluster	Cocoon yld/ 100 dfls (kg)	Cluster	Cocoon yld/ 100 dfls (kg)
Harohally	49.50	Berigai	54.20	V.Kota	60.00	Beed	38.50
Y.N. Hosakote	49.50	Palani	63.70	Madakasira	50.20	Buldhana	36.50
Shapur	50.00	Sanarapatty	54.79	Palamaner	46.00	Osmanabad	32.30
Ithandahally	60.00	Udumalpet	62.50	Hindupur	50.00	-	-
B.G. Kere	50.50	Gobi	58.53	Kalyanadurga	45.00	-	-
Gajanur	44.45	Uthangarai	58.33	Bhimadole	55.00	-	-
Bidarakote	55.00	-	-	-	-	-	-
Average	**51.28**	**-**	**58.68**	**-**	**51.03**	**-**	**35.76**

The reason for the gaps in cocoon yield in different clusters were analysed linking with the infrastructure facilities available with the identified farmers both in mulberry cultivation and silkworm rearing. In order to rectify the lacunae required additional facilities were provided to the farmers under CDP in order to enable them rear bivoltine hybrids successfully. Overall impact of CPP is clearly evident particularly in the improvement of cocoon yield over bench mark which exceeded 20% in all the clusters of southern states and 63.98% in Maharashtra (Table 76 and 77). The details of improvement in cocoon yield/ 100 dfls and achievement against the target of different clusters and states are presented below.

Karnataka :

During the project period, the seven clusters of Karnataka have brushed 23,39,905 dfls against the target of 26,56,485 achieving 88.08 % of the target and produced 13,31,298 kg of cocoons against the target of 1577879 kg registering 88.08 % achievement. The average cocoon yield/ 100 dfls realized was 62.73 kg against the average bench mark of 51.28 kg/ 100 dfls and recording 22.32% improvement. However an achievement of 105.80% was recorded against the target yield of 59.29 kg/100 dfls. Among different clusters of Karnataka in the order of performance, Ithandahally cluster stood first followed by Harohally and Y.N. Hosakote. The estimated raw silk production during the project period was 204.81 MT. The details are presented in Table 68 and 69.

Table 68 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period in Karnataka clusters

Centre	No of Far-mers	No of dfls	Hatch-ing %	No.of dfls harves-ted	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
						Actual	Bench mark	% Imp.		
Harohalli	786	364445	91.35	354720	235356	66.35	49.50	34.04	5.68	227.73
Ithandahally	605	837440	92.80	773635	495404	64.03	60.00	6.71	3.53	229.67
Shapur	1049	277245	92.40	237280	143306	60.40	50.00	20.78	5.18	220.87
Y.N. Hosakote	600	216550	93.10	195225	115753	59.29	49.50	19.77	6.15	232.46
Gajanur	547	207625	95.40	166575	96343	57.84	44.45	30.12	5.77	255.52
B.G.Kere	747	207000	94.00	199350	122673	61.54	50.50	21.86	5.43	258.41
Bidarkote	1071	229450	90.93	195250	122463	62.72	55.00	14.03	4.87	237.66
Total/Average	**5405**	**2339905**	**92.85**	**2122035**	**1331298**	**62.73**	**51.28**	**22.32**	**5.23**	**237.47**

Table 69 : Achievement against the target in clusters of Karnataka during the project period

#	Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achievement	% of Achievement	Target	Achieve-ment	% of achieve-ment	Target	Achievement	% of achievement
1	Harohalli	348285	364445	104.64	208959	235356	112.63	60.00	66.35	110.58
2	Ithandahalli	651000	837440	128.64	390600	495404	126.83	60.00	64.03	106.72
3	Shapur	425000	277245	65.23	255000	143306	56.20	60.00	60.39	100.62
4	Y.N.Hosakote	254950	216550	84.94	152970	115753	75.67	60.00	59.29	98.81
5	Gajanur *	357870	207775	58.06	214722	96343	44.87	60.00	57.84	96.40
6	B,.G.Gere *	285380	207000	72.53	171228	122673	71.64	60.00	61.54	102.56
7	Bidarkote	334000	229450	68.69	184400	122463	66.41	55.00	62.72	114.04
	Total/ Average	**2656485**	**2339905**	**88.08**	**1577879**	**1331298**	**84.37**	**59.29**	**62.73**	**105.80**

* Cluster identified during 2009-10

Tamil Nadu :

During the project period, six clusters of Tamil Nadu have brushed 51,24,120 dfls against the target of 40,27,300 achieving 127.23 % of the target and produced 36,44,832 kg of cocoons against the target of 25,76,215 kg registering 141.48 % achievement. The average cocoon yield / 100 dfls realized was 71.13 kg/ 100 dfls against the bench mark of 58.68 kg/ 100 dfls and recording an improvement of 21.21%. However an achievement of 113.05% was recorded against the target yield of 62.92 kg/ 100 dfls. Among different clusters of Tamil Nadu in the order of performance Udumalpet stood first followed by Palani and Gobichettypalayam clusters. The estimated raw silk production during the project period was 560.74 MT. The details are presented in Table 70 and 71.

Table 70 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period in Tamil Nadu clusters

Centre	No of Farmers	No of dfls	Hatching %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
Berigai	675	527155	91.00	351514	66.68	54.20	23.02	4.85	230.75
Palani	1084	1468195	93.65	1045845	71.23	63.70	11.82	5.00	240.50
Udumalpet	1278	1741725	94.05	1312001	75.33	62.50	20.52	4.30	235.21
Gobi	916	652125	95.13	429165	65.81	58.53	12.43	4.21	229.30
Sanarpatty	610	336885	278.66	234510	69.61	54.79	27.04	4.95	236.42
Uthangarai	882	398035	91.37	271795	68.28	58.33	17.05	3.30	219.22
Total/Average	**5445**	**5124120**	**123.98**	**3644832**	**71.13**	**58.68**	**21.21**	**4.44**	**231.90**

Table 71 : Achievement against the target in clusters of Tamil Nadu during the project period

Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achievement	% of achievement	Target	Achievement	% of achievement	Target	Achievement	% of achievement
Berigai	480000	527155	109.82	312000	351514	112.66	65.00	66.68	95.86
Palani	1070000	1468195	137.21	700000	1045846	149.41	65.00	71.23	108.69
Udumalpet	1150000	1741725	151.45	747500	1312002	175.52	65.00	75.33	113.89
Gobi	625000	652125	104.34	391250	429165	109.69	62.50*	65.81	104.83
Sanarpatty	354000	336885	95.17	220400	234510	106.40	61.67*	69.61	111.84
Uthangarai	348300	398035	114.28	205065	271795	132.54	58.33*	68.28	118.86
Total/Average	**4027300**	**5124120**	**127.23**	**2576215**	**3644832**	**141.48**	**62.92**	**71.13**	**113.05**

***The targets were revised upwards**

Andhra Pradesh :

During the project period, six clusters of Andhra Pradesh have brushed 30,61,975 dfls against the target of 25,64,000 dfls achieving 119.42 % of the target and produced 18,84,997 kg of cocoons against the target of 15,36,600 kg registering 122.67% achievement. The average cocoon yield / 100 dfls realized was 59.40 kg/ 100 dfls against the bench mark of 51.03 kg/ 100 dfls and recording an improvement of 20.63%. However an achievement of 107.11 was recorded against the target yield of 56.95 kg/ 100 dfls. Among different clusters of Andhra Pradesh in the order of performance V.Kota stood first followed by Hindupura and Madakasira clusters. The estimated raw silk production during the project period was 290 MT. The details are presented in Table 72 and 73.

Table 72 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period in Andhra Pradesh clusters

Centre	No of Far-mers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
V.Kota	1231	963975	92.68	620723	64.39	60.00	7.31	4.8	213.50
Madakasira	755	522750	92.85	332521	63.61	50.20	26.68	4.78	231.75
Palamaner	998	451025	91.62	254320	56.39	46.00	22.58	5.8	205.88
Hindupur	861	542850	93.93	320996	59.13	50.00	18.26	5.2	217.75
Kalyanadurg	633	158275	92.68	93305	58.95	45.00	31.00	3.87	223.00
Bhimdole	505	423100	91.00	263133	62.19	55.00	13.07	3.93	192.67
Total/Average	**4983**	**3061975**	**92.46**	**1884997**	**61.56**	**51.03**	**20.63**	**4.73**	**214.09**

Table.73 Achievement against the target in clusters of Andhra Pradesh during the project period

#	Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achiev e-ment	% of achieve-ment
1	V.Kota	746000	963975	129.22	447600	620723	138.68	60.00	64.39	107.31
2	Madakasira	420000	522750	124.46	252000	332521	131.95	60.00	63.61	106.00
3	Palamaner	375000	451025	120.27	225000	254320	113.03	60.00	56.39	93.98
4	Hindupur	520000	542850	104.39	312000	320996	102.88	50.00	59.13	118.26
5	Kalyanadurg	155000	158275	102.11	91000	93305	102.53	56.67*	58.95	104.02
6	Bhimdole	348000	423100	121.58	209000	263132	125.90	55.00	62.19	113.07
	Total/Avg	**2564000**	**3061975**	**119.42**	**1536600**	**1884997**	**122.67**	**56.95**	**61.56**	**107.11**

***The targets were revised upwards**

Maharashtra :

During the project period, three clusters of Maharashtra have brushed 5,78,858 dfls against the target of 6,96,200 dfls achieving 83.14 % of the target and produced 3,51,588 kg of cocoons against the target of 3,51,950 kg registering 99.89 % achievement. The average cocoon yield / 100 dfls realized was 60.73 kg/ 100 dfls against the bench mark of 35.76 kg/ 100 dfls and recording an improvement of 69.80 %. However an achievement of 121.46% was recorded against the target yield of 50.00 kg/ 100 dfls. Among different clusters of Maharashtra in the

order of performance Beed stood first followed by Osmanabad and Buldhana clusters. The estimated raw silk production during the project period was 54.09 MT. The details are presented in Table 74 and 75.

Table 74 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period in Maharashtra clusters

Clusters	No of Farmers	No of dfls	Hatch-ing %	Cocoon prodn (kg)	Yield/ 100 dfls (kg)			Def coc %	Cocoon price (Rs/kg)
					Actual	Bench mark	% Imp.		
Beed	777	336658	93.45	216300	64.25	38.50	66.88	5.22	181.75
Buldhana	191	48000	88.06	25077	52.24	32.30	61.73	4.16	169.95
Osmanabad	608	194200	92.25	110211	56.75	36.50	55.47	4.19	194.50
Total/Avg	**1576**	**578858**	**91.25**	**351588**	**60.73**	**35.76**	**69.80**	**4.52**	**182.07**

Table.75 Achievement against the target in clusters of Maharashtra during the project period

#	Clusters	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
		Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment
1	Beed	340000	336658	90.01	170000	216300	127.23	50.00	64.25	128.50
2	Buldhana	68700	48000	69.87	38200	25077	65.64	50.00	52.24	104.48
3	Osmanabad	287500	194200	110.88	143750	110211	76.66	50.00	56.75	113.50
		696200	**578858**	**83.14**	**351950**	**351588**	**99.89**	**50.00**	**60.73**	**121.46**

To conclude :

By the end of the project period the continuous efforts and monitoring of the clusters resulted into successful brushing of over one crore i.e. 110,99,858 bivoltine hybrid dfls and production of 72,12,715 kg of cocoons with an average cocoon yield of 64.98 kg/ 100 dfls (Table 76 and 77). There was an average improvement of cocoon productivity ranging from 21.46% in southern states and 69.81% in Maharashtra against respective bench mark yields. Overall improvement in the yield of all four states put together was 32.1% with an average cocoon yield of 64.98kg/ 100 dfls which is a remarkable achievement till date.

Table 76 : Rearing performance of the bivoltine hybrid dfls brushed and market price of cocoons during the project period in Southern states and Maharashtra

State	No of	No of dfls	Hatch-	Cocoon	Yield/ 100 dfls (kg)	Def	Cocoon

	Far-mers		ing %	prodn (kg)	Actual	Bench mark	% Imp.	coc %	price (Rs/kg)
Karnataka	5405	2339905	92.85	1331298	62.73	51.28	23.85	5.23	237.47
Andhra Pradesh	4983	3061975	92.46	1884997	61.56	51.03	20.63	4.73	214.09
Tamil Nadu	5445	5124120	93.02	3644832	71.13	58.68	21.21	4.44	231.90
Sub Total/ Avg.	**15833**	**10521000**	**92.78**	**6861127**	**65.18**	**53.66**	**21.46**	**4.80**	**227.82**
Maharashtra	1576	578858	91.25	351588	60.73	35.76	69.81	4.52	182.07
Grand Total/Avg.	**17409**	**11099858**	**92.39**	**7212715**	**64.98**	**49.18**	**32.10**	**4.73**	**216.38**

Table 77 : Achievement against the target in southern states and Maharashtra during the project period

State	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achi eve-ment	% of achieve-ment
Karnataka	2656485	2339905	88.08	1577879	1331298	84.37	59.29	62.73	100.87
Andhra Pradesh	2564000	3061975	119.42	1536600	1884997	122.67	56.95	61.56	108.09
Tamil Nadu	4027300	5124120	127.23	2576215	3644832	141.48	62.92	71.13	113.05
Maharashtra	696200	578858	83.14	351950	351588	99.89	50.00	60.73	121.47
Total/ Average	**9943985**	**11099858**	**111.62**	**6042644**	**7212715**	**119.36**	**57.29**	**64.98**	**113.42**

Though the aim of CPP was to promote bivoltine sericulture, during the unfavourable season to maintain the continuity of the programme and the system of monitoring the farmers were encouraged to rear cross breed. Accordingly few clusters had taken up cross breed (PM x CSR2) rearings and able to brush 49.16 lakh dfls and harvested an average cocoon yield of 54.11 kg/ 100 dfls and produced 30.81 lakh of cocoons during the unfavourable season of the project period. The details are presented in table 78.

Table 78 : Rearing performance of the Cross breed (PM x CSR2) dfls brushed during the project period.

States	No of dfls			Cocoon production (kg)			Yield/ 100 dfls (kg)		
	Target	Achieve-ment	% of achieve-ment	Target	Achieve-ment	% of achieve-ment	Target	Achi eve-ment	% of achieve-ment
Andhra Pradesh	2564000	3061975	119.42	1536600	1884997	122.67	57.33	58.87	102.68
Tamil Nadu	1000000	1368202	136.82	60000	928883	154.81	60.00	67.89	113.15
Maharashtra	300000	486333	162.11	1350000	267151	197.88	45.00	54.93	122.06
Total/Avg	**3864000**	**4916510**	**127.24**	**2946600**	**3081031**	**104.56**	**54.11**	**62.66**	**115.80**

Tamil Nadu - The Bivoltine Leader

The estimated bivoltine raw silk production by the four states during the project period was 1109.64 MT. Among the different states Tamil Nadu stood first in raw silk production by producing 560.74 MT viz., 50.53% of total production and emerged as a model bivoltine sericulture state. During the project period the farmers and scientists, officers of DOS and Extension workers involved in CPP clusters of different states were exclusively taken on study tour to the model clusters of Tamil Nadu to interact with the farmers and to learn the technologies adopted by them during the favourable and unfavourable season to harvest successful crops. The CPP farmers and extension workers of Karnataka and Andhra Pradesh were immensely impressed about the sericultural practices taken up by the Tamil Nadu and replicated the technologies suitable at their respective sites to harvest successful crops.

CPP – The successful approach :

Of the few bivoltine sericulture promotion programmes under taken to popularize and promote bivoltine sericulture in southern India, the programmes such as the PPPBST, PEBS and CPP remains in the history of bivoltine as major events and the last one viz., CPP may be considered as a mega project where in vast number of farmers, scientists and officers of DOS and CSB from the southern states of India and Maharashtra took active participation in implementing the project successfully. Though the PPPBST and PEBS were taken up in southern states the magnitude remains smaller compared to the events of CPP. In PPPBST the number of beneficiaries was miniscule with only 142 farmers in 10 clusters who have reared 2.84 lakh dfls

and in PEBS it was higher and the number of beneficiaries were 3698 farmers in 18 clusters and they brushed 52.7 lakh dfls. The highest number of farmers viz., 5682 were covered under CPP in 22 clusters and brushed 110.99 lakh of bivoltine dfls and 49.16 lakh dfls of cross breeds also. In spite of such a huge quantum of dfls brushed the yield of 64.98 kg/ 100 dfls obtained was on par with earlier two bivoltine programmes conducted under JICA. The CPP is therefore created a record of achievement with highest ever number of dfls brushed i.e. over one crore obtaining an average yield of 64.98 kg/100 dfls under a project mode. The details are presented in Table 79.

Table 79 : Crop performance in different bivoltine sericulture promotion programmes in Southern India

Particulars	PPPBST	PEBS	CPP
Period	1997-2002	2002-2007	2008-2012
No.of TSCs	10	18	22
No.of farmers	142	3698	5682
No. of dfls in lakhs	2.84	52.7	110.99
Yield (kg)/100 dfls	66.46	65.70	64.98
Cocoon price (Rs/kg)	201.29	161.49	216.38

PPPBST : Project for Pronmotion of Popularizing the Practical Bivoltine Sericulture Technology
PEBS : Project for strengthening Extension System for Bivoltine Sericulture
CPP : Cluster Promotion Programme

Success *Mantra* :

The success of the CPP was due to the meticulous planning, dedicated implementation, prompt and timely support of CSB and DOS authorities and above all very close and joint working by the scientists and officials of CSRTI, NSSO, CSTRI, DOS Karnataka, Tamil Nadu, Andhra Pradesh and Maharashtra and the Joint Local Cluster Promotion Committee (JLCPC) members in all the clusters (Annexure 1). The success is also attributed to regular review of crop performance and technical guidance at CSRTI, Mysore under the Chairmanship of Director, CSRTI, Mysore. During these review meeting apart from analyzing progress made, the problems faced by the cluster implementation officers and the beneficiaries were also solved to make the programme very much successful.

The success of the mega project paved way for organizing a National Level Brainstorming Workshop on CPP, RKVY and MGNREGS at CSRTI, Mysore on 30th & 31st,

January, 2012. During the two day workshop deliberations were made with regard to future mode of continuing the existing clusters and also to replicate the programme to new clusters during the XII plan period. During the workshop it was also deliberated that how best the national programmes such as RKVY and MGNREGS can be dovetailed for the expansion of sericulture both in traditional and non traditional area to boost up the production of bivoltine silk.

Annexure

Annexure 1

LIST OF JLCPC MEMBERS / SCIENTISTS / OFFICERS / STAFF ASSOCIATED IN THE IMPLEMENTATION OF CPP IN KARNATAKA

1	Dr.Jaishankar, Scientist-D, RSRS, Kodathi Programme Coordinator for Karnataka	
I	**Harohalli cluster**	
1	Dr. K.V. Anantharaman, Scintist-C, RSRS Kodathi	Chairman
2	Shri Valke, DDS, Bangalore Rural	Member
3	Shri B. Rudhrappa, ADS, Hosakote	Member
4	Dr. Shanbhag, Scientist-C, SSPC, Chinthamani	Member
5	Smt. Manjuladevi, ADS, H.Kote	Member
6	Shri Chandrashekar Gangi, SEO, DOS, Hosakote	Member
7	Shri Srinivas Gowda, SEO, DOS, Nandagudi	Member
8	Shri B. Ranganath, TA, Harohalli	Member
9	Shri N.K. Murthy, TA, SSU, Chinthamani	Member
10	Shri Krishnappa, Progressive Sericulturist, Balkunte	Member
11	Shri Narayanaswamy, Progressive Sericulturist, Balkunte	Member
II	**Y.N. Hosakote cluster**	
1	Shri N. Shivashankar, Scientist-C, RSRS Kodathi	Chairman
2	Shri Munshi Basaiah.J.M., ADS, DOS, Pavagada	Member
3	Shri Murlidhar, SEO, TSC, Pavagada	Member
4	Shri G. Papaiah, TA, CSB, Pavagada	Member
5	Shri Ramachadnraiah, TA, SSC, NSSO, Madakasira	Member
6	Shri M. Chandrashekar Reddy, Progressive Sericulturist, Polenahalli,	Member
7	Shri Ramanjuna Reddy, Progressive Sericulturist, Lingadahalli	Member
III	**Shapur cluster**	
1	Shri J.B. Narendra Kumar, Scientist-C, CSRTI, Mysore	Chairman
2	Dr. Koundinya, Scientist-C, RSRS Kodathi	Chairman
3	Shri Sanath Kumar, Scientist-B, REC Madivala	Chairman
4	Shri B. Rudrappa, ADS, DOS, Kolar	Member
5	Shri G. Ramakrishnappa, SEO, TSC, Kolar	Member
6	Shri Basavaraj, TA, REC, Madivala	Member
7	Shri M. Krishnappa, Progressive Sericulturist, Yaranghatta	Member
8	Shri M. Krishnappa, Progressive Sericulturist, Thippasandra	Member
IV	**Ithandahalli cluster**	
1	Dr. Noble Morrison, Scientist-C, REC Madivala	Chairman
2	Shri C.D. Basavaraju, ADS, DOS, Bangarpet	Member
3	Shri S.N. Sreenivas, SEO, TSC, Bangarpet	Member

	(Aug-2008 to Sept. 2009; May 2011 to till date)	
4	Shri G. Ramakrishnappa, SEO, TSC, Bangarpet (April 2010- April 2011)	Member
5	Shri A.K. Nagaraj, STA (SG), REC, Madivala (till December, 2011)	Member
6	Shri Jayaram, TA, SSPC, Chintamani	Member
7	Shri Sathyanarayana, Progressive sericulturist, Ithandahalli, Bangarpet	Member
8	Shri Narayanagowda, Progressive sericulturist, Kamandahally, Bangarpet	Member
9	Shri Raghupathygowda, Progressive sericulturist, Karahally, Bangarpet	Member
V	**B.G.Kere cluster**	
1	Dr. M.T.Himantharaj, Scientist-D, REC Chitradurga	Chairman
2	Shri A. Umesha, Scientist-B, REC Chitradurga	Member
3	Shri A. Jagadeesh Prabhu, Scientist-C, SSPC, Bangalore	Member
4	Shri B.G. Kapinipathi Shastry, ADS, TSC, DOS Chitradurga	Member
5	Shri Z.A. Qurram, ADS, DOS, Challakere	Member
6	Shri K.B. Nagaraj, TA, SSU, Hiriyur	Member
7	Shri K.S. Eshwarappa, Progressive Sericulturist, Khandenahalli playa	Member
8	Shri B.K. Prakash, Progressive Sericulturist, B.G.Kere	Member
VI	**Gajanur cluster**	
1	Dr. M.R. Subramanyam, Scientist-C, REC Kanakapura (upto	Chairman
2	Shri N. Shivashankar, Scientist-C, REC Kanakapura (upto	Chairman
3	Shri C. Puttamallu, ADS, DOS, Malavalli	Member
4	Shri M. Macckajjuvaswamy, ADS, DOS, Malavalli	Member
5	Dr. Y.V. Ramanjaneyulu, Scientist-C, NSSO, Ramanagar	Member
6	Shri Anand, SEO, Govt. Cocoon Market, Malavalli	Member
7	Shri Basavaraj, TA, SSU, K.M. Doddi, Malavalli	Member
8	Shri M. Hanumanthaia, TA, REC SU, Kanakapura	Member
9	Shri Umesh, SEO, TSC, Halagur	Member
10	Shri Raju (Eregowda), Progressive sericulturists, Gajanur	Member
VI	**Bidarkote cluster**	
1	Dr. Vinod B. Mathur , Scientist – C, REC SU Maddur	Chairman
2	Dr. Shantha rau, DDS, DOS, Mandya,	Coordinator
3	Shri. Bheemenna, ADS, DOS, Maddur	Member
4	Shri T. Balliya, ADS, DOS, Maddur	Member
5	Shri Mallikarjuna Swamy, ADS, DOS, Maddur	Member
6	Shri Basuraju, SEO, TSC, Koppa	Member
7	Shri Sidharaju, Sericulturist , Bidarkote	Member
8	Shri Prakesh, Sericulturist , Gulur	Member

LIST OF JLCPC MEMBERS / SCIENTISTS / OFFICERS / STAFF ASSOCIATED IN THE IMPLEMENTATION OF CPP IN TAMIL NADU

#	Name of the Scientists / Officers / Staff
1	Dr.R.Balakrishna, Scientist-D, RSRS, Salem Programme Coordinator for Tamil Nadu
2	Dr.S.Radhakrishna, Scientist-C, RSRS, Salem
3	Sri.J.Ravikumar, Scientist-C, RSRS, Salem
4	Sri.R.Gopinathan, Jr. Steno, RSRS, Salem
5	Smt.C.A.Mary Flora, Scientist-C, RSRS, Salem
6	Sri.N.Ravi, Scientist-C, RSRS, Salem
7	Sri.R.Anbazhagan, Scientist-C, RSRS, Salem
8	Smt.S.Balasaraswathi, Scientist-C, REC, K'giri
9	Smt.N.Dhahira Beevi, Scientist-C, REC, Gobi
10	Sri.J.Ravikumar, Scientist-C, RSRS, Salem
11	Sri.S.Rajakumar, Scientist-C, RSRS, Salem
12	Sri.B.Mohan, Scientist-C, REC, Srivilliputhur
13	Sri.Avijit Ghosh, Superintendent, RSRS, Salem
14	Sri.G.Balasubramaniam, Asst., RSRS, Salem

I	**Berigai Cluster**	
1	Dr.P. Samuthiravelu, Scientist-C , REC, Hosur	Chairman
2	Shri.K.Jeyakumar, ADS, Hosur (Upto 31.7.09)	Member Convenor
3	Shri. P.K Ponnusamy, ADS, Hosur (1.8.09 to 31.1.10)	-do-
4	Shri. S. Syed Manzir, ADS, Hosur (1.2.10 to 31.5.11)	-do-
5	Shri. Mathivanan, ADS, Hosur (1.6.12 to 31.3.12)	-do-
6	Shri.Govind Shetty, AIS, TSC, Berigai (Up to 28.2.11)	Member
7	Shri.Venkataramanan, AIS, TSC, Berigai (1.3.11 to 31.3.12)	Member

8	Shri.G.D.Krishnasamy, TA, REC, Hosur	Member
9	Shri. M.V.Chowdappa, (Farmer), Muduguriki	Member
10	Shri. M.N.Narasimmaiah (Farmer), Muduguriki	Member
11	Shri. Giridhar Singh, STA, SSU, Bagalur	Invitee
II	**Sanarpatty Cluster**	
1.	Sri. T. Sivasubramonian, Scientist-c, REC,Samayanallur	Chairman
2.	Sri. B. Sundar, Asst. Director, DOS, Dindugul (up to 31-3-10)	Member
3	Sri. C. Sivasamy, Asst. Director, DOS, Dindugul (up to 31-3-11)	Member
4	Sri.V.Panneerselvam Asst. Director, DOS, Dindugul (up to 10.9.2011)	Member
5	Sri. I. Natarajan, Asst. Director, DOS, Dindugul (from to 11.9.2011)	Member
6	Sri.B.Venkatakrishnan, AIS, TSC, Sanarpatty (up to 30-11-2010)	Member
7	Sri. D. Balasubramanian, AIS, TSC, Sanarpatty (from 23-2-2011)	Member
8	Sri. R. Krishnamoorthy, TA, REC, Samayanallur (up to 30-6-2011)	Member
9	Sri. P.S.Selwyn, STA, REC, Samayanallur (from 18-7-2011)	Member
10	Sri.D.Samuvel, S/o. Daniel, Notchodaipatti –Progressive Farmer	Member
11	Sri.T. Irullappan, S/o. A. Thembadi, Koovanathuputhoor- Progressive Farmer	Member
III	**Uthangarai Cluster**	
1.	Dr.S.Masilamani, Scientist-C, REC,Krishnagiri	Chairman
2.	Sri. Kollappa pillai, Asst. Director, DOS, Krishngiri	Member
3	Sri. A. Govindasamy, AIS, TSC, Uttangarai	Member
4	Sri.P.S.Selwyn, STA, REC, Krishnagiri	Member
5	Sri.Kolliappan, Progressive Farmer, Thagarapatty	Member
6	Sri. K.M. Palanisamy, Progressive Farmer, Nadartheru.	Member
IV	**Udumalpet Cluster**	

1.	Shri N.G. Selvaraju, Scientist – C, REC- CSB, Udumalpet	Chairman
2.	Shri B. Krishnan, Assistant Director, DOS, Udumalpet	Member
3	Shri K. Shanmuga Sundaram, AIS. TSC, DOS, Udumalpet	Member
4	Shri M. Chellaiah, Technical Assistant, REC- Udumalpet	Member
5	Shri C. Thanikachalamani, Farmer, Manupatty	Member
6	Shri P.V. Raju, Farmer, Bodipatty	Member
V	**Palani Cluster**	
1.	Smt. G. Punithavathy, Scientist – C, REC-CSB, Udumalpet	Chairman
2.	Shri L. Natarajan, ADS, DOS, Dindigul	Member
3	Shri M. Natarajan, AIS, TSC, Palani	Member
4	Shri K.V. T. Baskaran, Technical Assistant, REC, Udumalpet	Member
5	Shri P. Elango, Farmer, Kalikkanayakanpatty	Member
6	Shri R.P. Durairaj, Farmer, Vepanavalasu	Member
VI	**Gobichettypalayam Cluster**	
1.	Sri. T. Thirunavukkarasu, Scientist-C, REC, Gobichettipalayam	Chairman
2.	Sri. Kollappa pillai, Asst. Director, DOS, Erode	Member
3	Sri. Madeshwaren T.A., REC, Gobi	Member
4	Sri..Mani, NSSO, SSPC, Gobi	Member
5	Sri.Gnanasekaran, Inspector of Sericulture, DOS, Gobichettipalayam.	Member
6	Sri. Balasubramanian, Progressive Farmer, Gobichettipalayam.	Member
7.	Sri. Chandrasekaran, Progressive Farmer, Gobichettipalayam.	Member

LIST OF JLCPC MEMBERS / SCIENTISTS / OFFICERS / STAFF ASSOCIATED IN THE IMPLEMENTATION OF CPP IN ANDHRA PRADESH

1	Sri. Ch. Sathyanarayana Raju, Scientist-D, RSRS, Ananthapur Programme Coordinator for Andhra Pradesh	
I	**V. Kota Cluster**	
1	Dr. T. Mogili, Scientist-C, REC, V. Kota	Chairman
2	Shri. U. Shivashankar Goud, ADS, Kuppam (From July 2011 to 31.3.2012)	Member
3	Shri. O. Dhanaraj, (2008-09 to June 2011) ADS, Kuppam	Member
4	Shri M. Gajendra, Technical Officer, TSC. V. Kota	Member
5	Shri. A. Gopal, Technical Assistant, REC, V. Kota	Member
6	Shri. Thilakaraju, Technical Assistant, REC, V. Kota	Member
7	Shri. Ramachandar Rao, SO, TSC, Kuppam	Member
8	Shri. V. Somashekar Reddy, Progressive farmer, Padigelakuppam	Member
9	Shri. R. N. Hanumanthu, Progressive farmer, V. Kota	Member
10	Shri. K. R. Krishna Reddy, Progressive farmer, Kanumanayanapalle	Member
	Invitees	
11	Shri.N. Subbaraju, TA, SSC, NSSO, Kuppam	
12	Dr. V. Venkata Reddy, Scientist-C, SSPC, Chittoor (up to July 2011)	
13	Shri. R. Venkataramappa, Sri Venkateswara CRC, V. Kota	
14	Shri. A. Harikrishna, Yaswanth Bivoltine CRC, Dayalapalle	
II.	**Madakasira Cluster (From 01.08.2008 – 31.05.2009)**	
1	Dr. N.Sivarami Reddy, Scientist-C, REC, Madakasira	Chairman
2	Sri. D.Subramanyam, AD, DOS Madakasira	Member
3	Sri. M. Mahaboob Basha, ASO, Madakasira	Member
4	Sri. S.N.Murthy, TA, REC, Madakasira	Member
5	Sri. Ramakrisha, Progressive Farmer, Gudibanda	Member
6	Gangadhar gowda, Progressive Farmer, Rekulakunta	Member
	From 01.08.2008 – 31.05.2009	
7	Dr. B.Kasi Reddy, Scientist-C, REC, Madakasira	Chairman
8	Sri.B.Hemachandran, AD, DOS Madakasira	Member
9	Sri. KNagaraju, AD, DoS Madakasira (02.09.-2011 – 31.03.2012)	Member
10	Sri. D.S. Unish Badusha, ASO, Gudibandara	Member
	Sri. S.N.Murthy, TA, REC, Madakasira(01.06.2009- 31.05.2011	Member
11	Sri.K. Ramakrisha, Progressive Farmer, Gudibanda	Member
12	Sri. P. Sankaranarayana Rao, TA, REC, Madakasira (01.06.2001-31.03.2012)	Member
13	Sri.P.G.Govindappa, Progressive Farmer, K.N.Palli	Member
14	Sri. E. Puttarangappa, Progressive Farmer, Rekulakunta	Member
III	**Palamaner Cluster**	
1	Dr. G.V. Prasad, Scientist-C, CPC, Palamaner	Chairman
	Members From 2008-09 and 2009-10:	Member

2	Sri.P. Sadasiva Reddy, ADS, Palamaner	Member
3	S. Noor Basha, Asst Sericulture Officer, DOS, Palamaner	Member
4	S.K. Suryaprakash Rao, Tech Asst, REC, Rayachoti	Member
5	Sri.D.Venkatrami Reddy(Farmer), TS Agraharam, Palamaner Mandal	Member
6	Sri. D Krishna Murthy(Farmer), Thavadapalli, Gangavaram Mandal	Member
7	Sri. B.K. Narayana Swami, TA, SSC, NSSO, Palamaner	Invitee
	Members during 2010-11 and 2011-12	
	Sri.N. Dhilli Babu, ADS, Palamaner	Member
	Sri. S. Noor Basha, Asst Sericulture Officer, DOS, Palamaner,	Member
	Sri. D. Surendra Reddy, Tech Asst, REC, Rayachoti	Member
	Sri. G. Gurumurthi Setty(Farmer), Eduru, Gangavaram Mandal	New Member
	Sri. P. Subramanyam(Farmer), TS Agraharam, Palamaner Mandal	New Member
	Sri. B.K. Narayana Swami, TA, SSC, NSSO, Palamaner	Invitee
IV	**Hindupur Cluster**	
1	Shri S. Purushotham , Scientist-C. REC, Penukonda (From Sep 2008 to June 2009)	Chairman
2	Dr. M.P.Reddy, Scientist-C, CPC, Hindupur (From July 2009 to March 2010)	Chairman
3	Sri M.Durga Prasa, ADS, DoS, Hindupur (from Sept 2009 to June 2011)	Member
4	Shri O. Dhanraj, ADS, DOS, Hindupur (From July 2009 to March 2010)	Member
5	Dr. D.Dayananda Reddy, Scientist-C, SSPC, Hindupur (From July 2009 to March 2010)	Member
6	Sri M. Sakarappa ,ASO,DoS,TSC, Lepakshi	Member
7	Sri B.Ramakrishna. ASO,TSC, Hindupur	Member
8	Sri M. Krishnareddy,ASO, Parigi	Member
9	Sri T.Venkataramana,aso, TSC, Gorantla	Member
10	Shri Sk. Md. Shareef, ASO, DOS, TSC, Lepakshi	Member
11	Shri Y. Jayaraj, ASO, TSC, Parigi	Member
12	Sri A.Sivaiah, T.A., CPC, Hindupur	Member
13	Sri K.Basireddy ,Farmer,Mittameedapalli	Member
14	Sri Chandrasekharreddy, Farmer, Gollapuram	Member
15	Sri Nanjappa, Farmer, Parigi	Member
16	Sri S.N. Dattatreya, Farmer, Sirivaram	Member
V	**Kalyanadurga Cluster**	
1	Sri S.Purushotham, Scientist - C, REC, Penukonda - (April 2009 to August, 2010)	Chairman
2	Sri B.Vijaya Naidu, Scientist - C, CPC, Kalyandurg	Chairman
3	Sri D. Subramanyam, Asst. Director of Sericukture, Kalyandurg	Member
4	Sri S.K.Suryaprakash Rao, Tech. Assistant, CPC, Kalyandurg	Member
5	Sri N.Ramamurthy Naidu, Asst. Sericulture Officer, Kalyandurg	Member
6	Sri J.Niranjan Kumar, Farmer, Yenumuladoddi	Member
7	Sri P.Nagaraju, Farmer, Nizavalli	Member

8	Sri K.Ramakrishna Reddy, Asst. Sericulture Officer, Kalyandurg	Member
VI	**Bhimadole Cluster**	
1	Dr. W. Damodar Naidu, Scientist-C, (January, 2010 to 17th July, 2011)	Chairman
2	Dr. M. Venkateswara Rao, Scientist-C, REC,CSB, Eluru, (18th July, 2011 to till date)	
3 4 5	Sri. B. Malakonda Reddy, DDS/ Sri. M. Eswaraiah, DDS/ Sri.N. Manoharan, Deputy Director of Sericulture, DoS, Eluru,	Member Conveners
6	Sri. N.Satyanarayana, Sericulture Officer, TSC, DoS, Bhimadole	Member
7	Sri. Sk. Jonny Pasha, TA, REC, Eluru/	Member
8	Sri.T. Venkata swamy, TA, REC, Eluru	
9	Sri. K.V. Acharyulu, TO, TSC, DoS, Bhimadole	Member
10	Sri. G.V. Harikrishna, TA, TSC, DoS, Bhimadole	Member
11	Sri.P.V.V.Suryaprakasha Rao, Farmer, K.Kannapuram, Pedavegi Mandal	Member
12	Sri.K.Chittiah, Farmer, Sarabhapuram, Dwaraka Tirumala Mandal	Member
13	Staff involved in CPP: Sri. T. Venkataswamy, TA (22.6.2010 to till date)	

LIST OF JLCPC MEMBERS / SCIENTISTS / OFFICERS / STAFF ASSOCIATED IN THE IMPLEMENTATION OF CPP IN MAHARASHTRA

I	**Osmanabad cluster**	
1	Shri A.J. Karande, Scientist – C, REC Parbhani	Chairman
2	Shri P. N. Chalpelwar, Nodal Officer, DOS, Amravati	Member
3	Shri P. G. Madane, SDO & Member, DOS, Osmanabad	Member
4	Shri S.P. Ingle, T. A. CSB	Member
5	Shri R.T. Patil, T.A. DOS	Member
6	Shri B.S. Andhare, Progressive Sericulturist	Member
7	Shri S.N. Mule, Progressive Sericulturist	Member
II	**Beed cluster**	
1	Dr. R.L. Katiyar, Scientist-C, REC Aurangabad	Chairman
2	Shri P.N. Chalpelwar, ADS, RSO Amravthi, Nodal Officer	Member
3	Shri D.A. Hake, ADS, RSO, Aurangabad, Nodal Officer	Member
4	The Deputy Director, RO, CSB, Mumbai	Invitee
5	A.D. Gutte, SDO, DOS Beed,	Member
6	Shri P.M. Nayak, SDO, DOS, Beed	Member
7	Shri A.P. Mohite, STA, DOS, Aurangabad	Member
8	Shri N.L. Barde, STA, REC, Aurangabad	Member
9	Shri S.E. Ippar, FA, DOS, Beed	Member
10	Shri Lakul Baburao Kadam, Nagpur (Br), Beed, Progressive sericulturist	Member
11	Shri Umakant T. Appa Thonte, Progressive sericulturists, Gadhe Pimpalgaon, Parali	Member
III	**Buldhana cluster**	
1	Shri R.V. Kushwaha, Scientist-C, REC, Amravathi	Chairman
2	Shri P.N. Chalpelwar, ADS, RO, DOS, Amravathi	Member
3	Shri R.T. Jogdand, Dist.Seri.Officer-Gr.I, Buldhana	Member
4	Shri Dinesh Chandra, TA, REC Amravathi (upto Aug, 2011)	Member
5	Shri B.L. Kumawat, TA (From Sept 2011)	Member
6	Shri A.V. Sulker, TA	Member
7	Shri Mukutrao Bhise, Progressive sericulturist - Umra village, Taluk Khamgaon, District Buldhana,	Member
8	Shri Kailash Vithal Dhole, Progressive sericulturist - Umra village, Taluk Khamgaon, District Buldhana,	Member

List of officers / officials of CSB and DOSs involved in implementation of Cluster Promotion Programme

Member Secretary

1 Smt. Ishita Roy, I.A.S., CEO & Member Secretary, CSB, Bangalore

Commissioners & Directors of DOSs

1 Dr. Nagambikadevi, I.A.S., Commissioner & Director of Sericulture, Karnataka
2 Smt. Ramalakshmi, I.F.S., Director of Sericulture, DOS, Andhra Pradesh
3 Thiru V. Prabhakaran, I.F.S., Director of Sericulture, DOS, Tamil Nadu
4 Dr. Hiware, Director of Sericulture, DOS Maharashtra

Former Member Secretary / Commissioners

1 Smt. M. Sathiyavathy, I.A.S., Former Member Secretary, CSB, Bangalore.
2 Dr. H. Basker, I.A.S., Former Commissioner & Director of Sericulture, DOS, Karnataka
3 Shri S.K. Sinha, I.A.S., Former Commissioner of Sericulture, DOS, Andhra Pradesh
4 Shri Harmandersingh, I.A.S., Former Commissioner of Sericulture, DOS, Tamil Nadu.
5 Capt. Dr. L.B. Kalanthri, Former Director of Sericulture, DOS Maharashtra

Directors / Nodal Officers

1. Dr. S.M.H. Qadri, Director, CSR&TI, Mysore
2. Dr. V. Shivaprasad, Director, NSSO, Bangalore.
3. Dr. Arindam Basu, Director, CSTRI, Bangalore.
4. Dr. A. Manjula, Director, CSGRC, Hosur
5. Dr. S. Raje Urs, Former Director, NSSO and Co-ordinator, CPP, CSB, Bangalore
6. Dr. C.K. Kamble, Former Director, CSR&TI, Mysore.
7. Shri Subrato Roy, Former Director I/C, CSTRI, Bangalore.
8. Dr. H.S. Prakash, Deputy Director of Sericulture and Nodal Officer for CPP, DOS, Karnataka
9. Shri B. Malakonda Reddy, RJD and Nodal Officer for CPP, DOS Andhra Pradesh.
10. Mr. Jayaramappa, JDS & Nodal Officer, Andhra Pradesh
11. Shri N. Manoharan, DDS and Nodal Officer for CPP, DOS, Andhra Pradesh.
12. Shri Chokkalingam, DDS , PRC, and Nodal Officer for CPP, DOS, Tamil Nadu.
13. Shri P.M. Chalpelwar, SDO & Nodal Officer CPP, Amaravathi, DOS Maharashtra.
14. Shri P.G. Madne, SDO & Nodal Officer CPP, Osamanbad, DOS Maharashtra.
15. Shri A.D. Gutte, SDO & Nodal Officer CPP, Beed, DOS Maharashtra.
16. Shri D. Jayaramappa, Joint Director of Seri., Anantapur, AP

Scientists / Officers / Officials

17. Shri Rajendra, Additional Director, DOS, Karnataka
18. Shri Nagesh, Former Additional Director, DOS, Karnataka.
19. Shri K. K. Shetty, Deputy Secretary (Tech), CPP Cell, CSB, Bangalore.
20. Mr. S. Chandramohan Singh, Deputy Secy (Tech), CSB, CPP Cell, Bangalore
21. Mr. R.C.Das, Asst Secy (Tech), CSB, CPP Cell, Bangalore.
22. Dr. Satish Verma, Scientist-E, SED, CSR&TI, Mysore.
23. Dr. B.R. Dayakar Yadav, DC (PMCE), CSR&TI, Mysore.
24. Dr. S. Nirmal Kumar, DC (Sericulture), CSR&TI, Mysore.
25. Dr. Mala V. Rajan, Scientist-D, CSR&TI, Mysore.

26. Dr. G.S. Vindhya, DC (SEEM), CSR&TI, Mysore
27. Dr. K.S. Chandrakanth, Scientist-D, (SEEM), CSR&TI, Mysore
28. Dr. P. Kumaresan, Scientist-D, CSB, Bangalore.
29. Dr. Chikkanna, Scientist-D, CSR&TI, Mysore.
30. Dr. M. Balavenkatasubbaiah, Scientist-D, CSR&TI, Mysore.
31. Dr. M.A. Shekar, Scientist-D, PML, CSR&TI, Mysore.
32. Shri B. Nagaraj, Scientist-D, Agronomy, CSR&TI, Mysore.
33. Dr. P.G. Joge, Scientist-D, RTI, CSR&TI, Mysore.
34. Dr. A. Naseema Begum, Scientist-D, SWBG
35. Shri K. Vedavyas, Scientist-C, CSR&TI, Mysore.
36. Smt. M.G. Sabitha, Scientist-C, Mul.Physiology, CSR&TI, Mysore.
37. Dr. Dasappa, Scientist-C, (SEEM), CSR&TI, Mysore
38. Dr. B. Gangadhar, Scientist-C, (SEEM), CSR&TI, Mysore
39. Shri S.B. Nagaraja, Scientist-C, (SEEM), CSR&TI, Mysore
40. Dr. G.S. Geetha, Scientist-C, (SEEM), CSR&TI, Mysore
41. Shri M.V. Kirsur, Scientist-C, CSR&TI, Mysore.
42. Dr. K. Bhogesh, Scientist-C, SSPC, NSSO, Mysore.
43. Dr. S.B. Magadum, Former Scientist-D, CSR&TI, Mysore.
44. Dr. R.K. Subramaniam, Former Scientist-D, CSR&TI, Mysore
45. Shri T.S. Mahadevamurthy, Former Scientist-D, CSR&TI, Mysore.
46. Shri P. Gopalakrishnan, Former Scientist-D, SSPC, Palakkad, Kerala
47. Shri Syed Samiulla, Former Scientist-D, CSR&TI, Mysore
48. Shri N.M. Biram Saheb, Former Scientist-D, SSPC, Mysore.
49. Shri D. Jayaramappa, Joint Director of Seri., Anantapur, AP
50. Dr Shankar, Scientist-C, NSSO, Mysore.
51. Shri H. Jagadish Prabhu, Scientist-C, SSPC, Bangalore.
52. Dr. V. Venkatareddy, Scientist-C, NSSO, Chittoor.
53. Shri V. Arumugam, Scientist-C, SSPC.
54. Shri T. Ramanaiah, Scientist-C, SSPC, Hindupur
55. Mr. J.V. Krishnarao, Former Scientist-E, RSRS Anantapur
56. Mr. D. Kirubagaran, Deputy Secretary, RO, CSB, Chennai.
57. Shri R.B. Tandav, Deputy Secretary (Tech), R.O., CSB, Mumbai.
58. Shri K.R. Lakshmikantharaje Urs, JDS, Mysore
59. Shri Puttalingaiah, DDS, Tumkur, Karnataka
60. Dr. K.B. Shanthamurthy, DDS, Kolar
61. Shri K. Hanumantharayappa, DDS, Bangalore Rural
62. Smt. B. Lakshmi Kanthamma, Steno, SEEM, CSRTI, Mysore.







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