

MINUTES OF MEETING
ON THE JAPANESE TERMINAL EVALUATION TEAM
AND
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE REPUBLIC OF INDIA
FOR
THE PROJECT FOR STRENGTHENING EXTENSION SYSTEM FOR BIVOLTINE
SERICULTURE IN INDIA

The Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Project Terminal Evaluation Team, headed by Mr. Hideki TOMOBE, to the Republic of India (hereinafter referred to as "India") from March 15 to 22, 2007, for the purpose of conducting terminal evaluation of the Project for Strengthening Extension System for Bivoltine Sericulture in India (hereinafter referred to as "the Project").

The Joint Evaluation Team, which consists of members from JICA and members from the Government of India, was jointly organized for the purpose of conducting the terminal evaluation and preparation of necessary recommendations to the respective governments.

After intensive study and analysis of the activities and achievements of the Project, the Joint Evaluation Team prepared the Joint Terminal Evaluation Report (hereinafter referred as "the Report"), which was presented to the Joint Coordinating Committee.

The Joint Coordinating Committee discussed the major issues pointed out in the Report, and agreed to recommend to the respective governments the matters attached hereto.

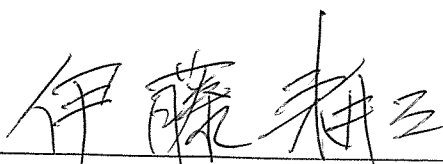
Bangalore, March 22, 2007



Mr. Hideki TOMOBE
Leader,
The Japanese Terminal Evaluation Team
Japan International Cooperation Agency



Mr. Bhupendra Singh
Project Director
Joint Secretary (Silk)
Ministry of Textiles
Government of India



Mr. Kozo Ito
Deputy Resident Representative
India Office
Japan International Cooperation Agency

Attached Document

1. The Joint Evaluation Team, which was jointly organized by JICA and India, has prepared the Report to the Joint Coordinating Committee.
2. The Joint Coordinating Committee has accepted the Report and members of the JCC will take notes of the recommendations aimed at successfully sustaining and extending the achievement of the Project.
3. Indian side mentioned that new application for “Project for Strengthening Quality Silk Production & its Promotion” had been already submitted to Ministry of Textile, and they asked Japanese side to consider the documents and to start the new technical assistance.
4. Japanese side replied that after receiving of the official request thorough the diplomatic channel, JICA will take into consideration of the request in consultation with related organizations of the Government of Japan.



FIFTH JOINT COORDINATING COMMITTEE MEETING OF PEBS.

Date & Venue: 22.03.2007, CSB Board Room,
Time:- 10.30 hrs

ATTENDANCE SHEET.

INDIAN SIDE

#	NAME
1	Mr. Bhupendra Singh, IAS, Chairman, JCC Joint Secretary(Silk), Ministry of Textiles, Govt. of India, New Delhi.
2	Dr.H.Basker, IAS, CEO & Member Secretary, Central Silk Board, Bangalore
3	Ms. C.S. Ramalakshmi, IFS Commissioner of Sericulture, Govt. of Andhra Pradesh, Road No:74, Prashannan Nagar, Jubilee Hills, Hyderabad- 500 033 A.P
4	Mr.Harmander Singh, IAS, Commissioner of Sericulture, Govt. of Tamil Nadu, Foulks Compound, Annaimedu, Salem -636 001, TN
5	Prof.N.Narasimha, Sericulture Extension Prof. Extension Technology, UAS, GK.V.K.Post Bangalore
6	Prof..M.C.Devaiah, Sericulture Planning # 27, Saismaran, 1st B cross, Chikbomasandra, G.K.V.K, Post, Bangalore - 65
7	Dr.K.V.Benchamin, Sericulture Technology, CSB Staff quarters, Lal Bagh West Gate, Bangalore
8	Dr.T.H.Somasekhar, Director, Central Silk Technological Research Institute, BTM Layout, Madivala, Bangalore-68.
9	Dr.S.B.Dandin, Director, CSR & TI, Mysore
10	Dr.B.saratchandra, Director, Central Silk Board Bangalore.
11	Mr.Jayant Jayaswal, Director I/c, N.S.S.O Central Silk Board, BTM Layout, Madivala, <u>Bangalore-560 068</u>
12	The Director, Dept. of economic Affairs, Ministry of Textiles, Government of India, New Delhi.

13	Dr. H. S. Prakash, Deputy Director & Head, BV Cell, IV Floor, Multistoried Building, Dr.B.R.Ambedkar Veedhi, Bangalore-560 001
14	Mr.G.Rajappa, Joint Director & Head, BV Cell, Foulks Compound, Annaimedu, Salem -636 001
15	Mr.B. Chandra Sekhar, Joint Director & Head, BV Cell, Road No:74, Prashannan Nagar, Jubilee Hills, Hyderabad- 500 033 A.P
16	Dr.K.Giridhar, Deputy Director, N.S.S.O Central Silk Board, BTM Layout, Madivala, <u>Bangalore-560 068</u>
17	Mr.Ramesh Chandra Das, Superintendent (Tech) Central Silk Board, BTM Layout, Madivala, <u>Bangalore-560 068.</u>
18	Sri.S.S.Sindagi, Joint Director I/c, SSTL, Kodathi



JAPANESE SIDE

#	NAME
1	Mr.Hideki TOMOBE, Team Leader Director, Group I, Rural Development Department ,JICA
2	Mr.Michio MASUDA, Extension, Regional Products and Industrial Crops division, Ministry of Agriculture, Forestry and Fisheries,JICA
3	Dr.Kiyoshi KAWAKAMI, Sericulture Technology Expert, The Dainippon Silk Foundation, JICA
4	Mr.Yusuke MORI, Cooperation Planning Staff, Poverty reduction/paddy field based farming area Team I, Group I Rural Development Department, JICA
5	Mr.Taku SEO, Evaluation Analysis Junior Expert, Poverty reduction/paddy field based farming area Team I, Group I Rural Development Department, JICA
6	Mr.K.Ito, Deputy Resident Representative, JICA INDIA OFFICE, New Delhi.
7	Mr.K.Kamiyama, Counsellor, Embassy of Japan, New Delhi
8	Dr. H. Yanagawa, Chief Advisor,PEBS assisted by JICA,CSRTI, Srirampuram, Manandavadi Road, Mysore
9	Dr.T.Yamamoto, Expert in Training, PEBS, JICA,CSR&TI, Srirampuram, Manandavadi Road, Mysore
10	Ms Eriko Kawaguchi, Coordinator,PEBS, JICA, Central Silk Board, Bangalore
11	Mr. K. Kojima, Expert in Sericulture Extension PEBS, JICA,CSR&TI, Srirampuram, Manandavadi Road, Mysore
12	Mr.Yoshihiro OZAKI, Country Officer in India, JICA INDIA OFFICE, 3A, 3rd Floor, Lotus Towers, Community Centre, New Friends Colony, <u>NEW DELHI- 110 065</u>

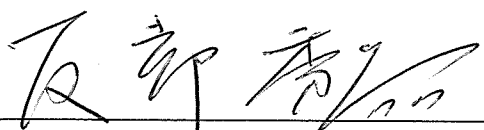




JOINT TERMINAL EVALUATION REPORT
ON
THE PROJECT FOR STRENGTHENING EXTENSION SYSTEM
FOR
BIVOLTINE SERICULTURE IN INDIA

Bangalore, March 21, 2007

JAPANESE-INDIAN
JOINT TERMINAL EVALUATION COMMITTEE



Mr. Hideki TOMOBE

Leader

The Japanese Terminal Evaluation Team



Dr. K. V. Benchamin

Leader

The Indian Terminal Evaluation Team



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ABBREVIATIONS

BSF	Basic Seed Farm
BVC	Bivoltine Cell
CB	Cross Breed
CDP	Catalytic Development Programme
C/Ps	Counterparts
CRC	Chawki Rearing Centre
CSB	Central Silk Board
CSR&TI	Central Sericulturural Research and Training Institute
CSTRI	Central Silk Technological Research Institute
DOS	Department of Sericulture
GSF	Government Seed Farm
Imp.CB	Improved Cross Breed
NSSO	National Silkworm Seed Organization
PEBS	The Project for Strengthening Extension System for Bivoltine Sericulture in India
Reeling TSC	Reeling Technical Service Centre
SEO	Sericulture Extension Officer
SSPC	Silkworm Seed Production Centre
SSTL	Silkworm Seed Technology Laboratory
STS	Sericulture Training School
TSC	Technical Service Centre




1. OUTLINE OF THE PROJECT

1-1 Background of the Project

In India, the production of raw silk was approximately 14,600 mt in 2003 against an estimated requirement of 22,000 mt. The gap in supply and demand is met by import, which is mainly for warp. Since over 98 % of raw silk produced in India is out of multivoltine variety which is not suitable for warp, the government of India is according high priority for improving the quality of Indian silk and also to enhance production and productivity. Under this plan and scheme of the Government of India, CSB implemented the Bivoltine Sericulture Technology Development Project (BSTDP) to improve bivoltine sericulture technology in the research institute of CSB through Project-type technical cooperation from JICA between 1991 and 1997.

Based on the achievement of the BSTDP, the Project for Promotion of Popularizing Practical Bivoltine Sericulture Technology (PPPPBST) was initiated from April 1997 for a period of five years for verification of technology developed by BSTDP under field conditions and to demonstrate the improved technology to the selected farmers and reelers. Adopting this newly proven technology, farmers could increase their yield and income by two to three times as the quality improvement to 4A grade with a renditta of 5.5 to 7.

With the success PPPBST, and mounting pressure from the farmers and reelers, the State Government of Karnataka, Andhra Pradesh and Tamil Nadu have prepared ambitious plan for large scale expansion of bivoltine sericulture. Since expansion and promotion of bivoltine sericulture demands proper planning, systematic approach for training, and organized system of extension, the Ministry of Textiles submitted a proposal to JICA for a technical cooperation Project for Strengthening Extension System for Bivoltine Sericulture in India (hereinafter referred to as “the Project”) with aiming at developing functional extension system for bivoltine sericulture. In response, JICA dispatched the Preparatory Study Team in December 2001 and the Project commenced from 11 August, 2002 and to be completed in five years. Since the Project terminates on 10 August, 2007, it was planned to conduct the terminal evaluation of the Project.

1-2 Summary of the Project

1-2-1 Overall Goal

Enhancing production and quality of bivoltine raw silk and thereby raising the income levels of farmers and reelers.

1-2-2 Project Purpose

Extension system for bivoltine sericulture will be functional.



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1-2-3 Outputs

- (1) Action Plan for promotion of bivoltine sericulture will be formulated.
- (2) Coordination/Collaboration mechanism amongst various institutions of the CSB for extension of bivoltine sericulture will be established.
- (3) System for mass production of quality seed will be established.
- (4) DOS staff will be equipped with necessary skills and knowledge for extension of bivoltine sericulture, and training facilities will be improved for bivoltine sericulture. System for mass production of quality seed will be established.
- (5) Extension model for bivoltine sericulture will be established.

2. SUMMARY OF EVALUATION

2-1 Objective of the Evaluation

- (1) To review the degree of achievement of Input, Output, and Project Purpose based on the Project Design Matrix attached as ANNEX 2 (hereafter referred to as "PDM"). Plan of Operation (hereafter referred to as "PO") was also reviewed for the evaluation.
- (2) To evaluate the Project for Strengthening Extension System for Bivoltine Sericulture in India in terms of five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability).
- (3) To make recommendations regarding measures to be taken for the improvement of the Project as well as to draw lessons for the improvement in planning and implementation of similar Technical Cooperation Projects.

2-2 Members of the Evaluation Team

Name	Job Title	Occupation
Japanese Side		
Mr. Hideki Tomobe	Team Leader	Group Director, Group I, Rural Development Department, JICA
Mr. Michio Masuda	Extension	Deputy Director, Regional Products and Industrial Crops Division, Ministry of Agriculture, Forestry and Fisheries
Dr. Kiyoshi Kawakami	Sericulture Technology	Expert, The Dainippon Sericulture Foundation
Mr. Yusuke Mori	Cooperation Planning	Staff, Poverty Reduction / Paddy Field Based Farming Area Team I, Group I, Rural Development Department
Mr. Taku Seo	Evaluation Analysis	Junior Expert, Poverty Reduction / Paddy Field Based Farming Area Team I, Group I, Rural Development Department



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Name	Job Title	Occupation
Indian Side		
Dr. K. V. Benchamin	Team Leader	Former Director of NSSO
Prof. M.C. Devaiah	Sericulture Technology	Former Prof. of Sericulture, Department of Sericulture, University of Agricultural Sciences, GKVK, Bangalore
Prof. N. Narasimha	Sericulture Extension	Prof. of Extension, Department of Agriculture Extension, University of Agricultural Sciences, Bangalore

2-3 Schedule of the Evaluation Study

No	Date	Day	Details of Visits and Meetings
1	14 Mar	Wed	10:55 Depart Narita 15:55 Arrive at Bangkok 18:05 Depart Bangkok 21:05 Arrive at Delhi
2	15 Mar	Thu	09:00 Meeting with JICA India Office 10:00 Courtesy Call to Embassy of Japan 11:00 Courtesy Call Ministry of Textiles 17:50 Depart Delhi 20:30 Arrive at Bangalore
3	16 Mar	Fri	10:00-11:00 Meeting with JICA Experts at CSB Project Office 12:00-13:00 The 1st Joint Evaluation Team meeting, including discussion with the Indian evaluation team on evaluation methods. 14:00-16:00 Meeting on Project Progress with CSB, DOS (CSB, related officers from the three states)
4	17 Mar	Sat	10:00-10:45 Visit Ramanagaram Reeling TSC 11:15-12:00 Visit Channapatna STS 12:30-13:15 Visit Mandya Grainage 14:30-15:15 Visit Koppa TSC 15:45-16:30 Visit Koppa CRC
5	18 Mar	Sun	10:00-10:45 Visit Ramanagaram Reeling Factory 11:00-12:00 Visit Ramanagaram Cocoon Market 14:15-15:30 Visit TSC Koppa farmers
6	19 Mar	Mon	9:30-10:15 Visit Hosur STS 10:15-11:00 Visit Hosur TSC 12:00-12:45 Visit Krishnagiri CRC 12:45-13:30 Visit JICA farmers

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No	Date	Day	Details of Visits and Meetings
7	20 Mar	Tue	10:00-11:30 TSC Hosur farmers 14:00-15:00 The 2nd Joint Evaluation Team meeting 15:00-15:30 Courtesy Call to CSB Member Secretary
8	21 Mar	Wed	AM Visit Seed Farmers (Bangalore) 14:00-15:00 The 3rd Joint Evaluation Team meeting
9	22 Mar	Thu	10:30-11:30 Joint Coordination Meeting, Signing of the Minutes

3. METHODOLOGY OF EVALUATION

The Project was evaluated by the Japanese and Indian Joint Evaluation Team (hereafter referred to as "Team"). The Team was composed of five members from Japan and three members from India respectively. The Team visited CSB, DOS and Project sites, and carried out a series of interviews and discussions with Indian counterpart personnel, farmers and Japanese experts.

3-1 Items evaluated and indicators

The evaluation grid with findings is attached as Annex 3, which was developed and finalized through discussions by the evaluation team and concerned persons.

3-2 Data collection method and analysis

3-2-1 Data collection method

(1) Interviews

The Team carried out a field survey in the Project site, and conducted interviews with the Indian counterparts, the Japanese experts engaged in the Project and other people concerned including farmers.

(2) Questionnaire survey

The Team also collected information through a questionnaire survey with concerned persons including farmers.

Evaluation analysis was made on five evaluation criteria described below:

3-2-2 Items of analysis

(1) Project performance

Progress of each Project activity was identified through the study. Based on the results, achievement of the outputs and the Project purpose was measured in terms of the objectively verifiable indicators of the PDM.




(2) Implementation process

Implementation process of the Project was reviewed to see if the activities have been implemented according to the schedule, and the Project has been managed properly; and to identify promoting and/or prohibiting factors that have affected the implementation process.

(3) Evaluation based on the five evaluation criteria

a) Relevance

Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with the development policy of the Republic of India (hereafter referred to as “India”) as well as the needs of beneficiaries.

b) Effectiveness

Effectiveness refers to the extent to which the expected benefit was brought about as a result of the Project (not of the external factors).

c) Efficiency

Efficiency refers to the productivity of the implementation process, examining if the input of the Project was efficiently converted into the output.

d) Impact

Impact refers to direct and indirect, positive and negative impacts caused by implementing the Project, including the extent to which the Overall Goal has been attained.

e) Sustainability

Sustainability refers to the extent to which India can further develop the Project, and the benefits generated by the Project can be sustained under the Indian policies, technology, systems, and financial state.

4. PROJECT PERFORMANCE AND IMPLEMENTATION PROCESS

4-1 Input

The Team confirmed that most administrative and operational cost that the Indian side was supposed to provide in accordance with the R/D and PDM had been borne by the Japanese side. The details of the input is shown in Annex 5.

4-2 Activities



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The Team confirmed that the Project had conducted most of the activities up to this time in accordance with the PDM and PO. The details of the progress of the activities are shown in Annex 4.

4-3 Output

The Team confirmed that the Project had fulfilled the following output in accordance with the R/D and PDM (The achievement of the output by indicators in the PDM is shown Annex 4.).

(1) Output 1: Action plan for promotion of bivoltine sericulture will be formulated.

Indicator: 1-1.CSB and DOSs will jointly formulate action plan with necessary budget allocation.

CSB and DOSs jointly formulate the plan of CDP for the promotion and extension of bivoltine sericulture, such as provision and maintenance of facilities, price support of cocoon and other critical areas.

Indicator: 1-2.Infrastructure development/improvement plan for extension of bivoltine sericulture will be formulated with necessary budget allocation on annual basis.

Provisions made under CDP for construction of rearing houses etc. for the farmers were completed.

(2) Output 2: Coordination/Collaboration mechanism among CSB and DOSs for extension of bivoltine sericulture will be formulated.

Indicator: 2-1.Information/data regarding bivoltine sericulture will be compiled annually at Bivoltine Cells in CSB and DOSs

Bivoltine Cell in CSB and DOSs are functioning as the Project coordination office. The information such as the progress of the Project, situation of activities, trainings, extension programmes and so on, are collected and shared in BVC. Besides, Group Meetings, Joint Meetings, and Quarterly Meetings were organized and held for the effective implementation of the Project.

Indicator: 2-2.Monthly Bivoltine Cell Meetings will be held regularly during the Project period in order to share plan and challenges with CSB and DOSs.

24 Bivoltine Cell meetings were held until March 2007.

(3) Output 3: System for mass production of quality seed will be established.

Indicator: 3-1.Hatching will be over 90 % in selected BSFs and F1 seed will also have 90 % and above hatching.

9 BSFs and 11 Grainages were selected by the Project and the Project provided machineries and improved the facilities in accordance with the standard of JICA model. Average hatching in BSFs in



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2005 was 92.0 % (90.1 % in 2003 and 91.7 % in 2004). Average hatching in Grainages in 2005 was 92.5 % (91.7 % in 2003 and 91.8 % in 2004). Average hatching in BSFs was 92.0 % and in Grainages it was 92.1 % during 2005.

Indicator: 3-2. Defective cocoon rate will be less than 5 % in selected BSFs.

Defective cocoon rate on an average was 3.9 % in 2005 (6.5 % in 2003 and 3.9 % in 2004). The rate is decreasing every year.

Indicator: 3-3. Mixing of different races and sex will not occur in selected Grainages.

Mixing of sex rate on an average was 1.8 % in 2005 (4.4 % in 2003 and 2.0 % in 2004). The rate is decreasing every year.

Indicator: 3-4. Pupation rate will be over 85 % in selected Grainages.

Pupation rate on an average was 90.3 % during 2005 (89.1 % in 2003 and 91.3 % in 2004).

Indicator: 3-5. Recovery rate of seed from seed cocoons will be over 45 g/kg in selected Grainages.

Recovery rate of seed from seed cocoons on an average was 50.4 g/kg in 2005 (41.1 g/kg in 2003 and 45.4 g/kg in 2004). The rate increased every year and it reached more than 60 g/kg in CSB grainages.

Indicator: 3-6. Training Programme will be conducted for BSF/Grainage staff (200 participants /year) and seed farmers (30 farmers/year) in CSR&TI and SSTL.

A total of 524 staff of BSFs and Grainages have been trained in CSR&TI and SSTL, respectively (52 %). At the beginning of the Project, each BSF staff was to undergo 5 training programmes. However, each staff had 2 or more than 2 training programmes. The reasons were 1) the start of the training was delayed, and 2) depending on the volume of work, 5 training programmes was not found necessary for the staff. 237 seed farmers have been trained as on today (158 %).

(4) Output 4: DOS staff will be equipped with necessary skills and knowledge for extension of bivoltine sericulture, and training facilities will be improved for bivoltine sericulture.

Indicator: 4-1. TSC staff (350 participants / 5 years), STS staff (60 participants / 5 years) and Reeling TSC staff (100 participants/5 years) will be trained by CSR&TI and CSTRI.

330 TSC staff and 77 STS staff have been trained (105 %, 128 % target achievement). Since the budget allocation was delayed for the improvement of facilities, 64 Reeling TSC staff have been trained at present (74 %). Since there will be 2 more trainings to be held by July 2007, the total staff training will cover 99 participants. It is ensured that the indicator will be almost accomplished by the end of the Project period i.e., August 2007.



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Indicator: 4-2. Field oriented bivoltine sericulture training courses will be formulated in selected STSs (more than 2 courses/ STS)

Bivoltine sericulture training courses were formulated (3 courses in Channapatna, 2 courses in K.R. Pet, 3 courses in Hassan and 4 courses in Kuderu). Totally 5086 farmers were trained and their knowledge improved.

Indicator: 4-3. Training materials will be improved and developed (textbooks in 5 subjects in local languages, training videos in 5 subjects in local languages and picture panels for selected STSs)

6 textbooks, 6 video films, 10 panels, 5 booklets in 4 or 5 languages were developed / printed.

Indicator: 4-4. DOS staff (600 participants /5 years) will be trained at selected STSs

Totally 863 DOS staff were trained (144 %).

(5) Output 5: Extension model for bivoltine sericulture will be established.

Indicator: 5-1. 9 booklets and 5 pamphlets developed in English and local languages will be utilized

9 booklets for mulberry cultivation, seed rearing, reeling and so on were developed in 4 languages, 6 pamphlets for extension in TSC, Reeling TSC and CRC. 4 TSCs published their own pamphlets for extension, for improvement of the situation in each TSC.

Indicator: 5-2. The number of Chawki Rearing Centres managed by Quality Clubs in selected area will be increased from 40 as of 2002 to 100 in 5 years' time.

The number of Chawki Rearing Centres managed by Quality Clubs in selected areas has increased to 102 by the end of February, 2007. 50 non-Quality Club CRCs are also in operation and 11 more are being planned to be put in place.

Indicator: 5-3. Sericulture related tools (rotary moutage, cocoon deflossing machine, cocoon cutting machine, leaf chopping machine and incubation frame) will be developed and introduced to BSFs, Grainages and Farmers

- a. CSR&TI developed cocoon cutting machine, leaf chopping machine and other tools / machinery with the support of CSB experts and TSC staff.
- b. Rotary moutage, sprayer and cocoon deflossing machine were introduced to the farmers.
- c. Cocoon cutting machine and incubation frame were introduced to BSFs and Grainages.
- d. Leaf chopping machine was introduced to CRC.
- e. There were 35 private companies which produce sericulture related tools in 2002. The number of the companies increased to 50 in 2005.



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(6) Others

- a. There are some requests for textbooks, video films, panels, booklets in local language from DOS of other States / Universities.
- b. BV sericulture workshops were held in Kerala and Maharashtra by CSB based on the requests from these States.
- c. 16 Enlightenment Programmes, 4 Interaction Meetings, 15 Study Tours and 35 Group Discussions, 5 Quality Awareness Programmes, 4 Field Days, 10 Chawki Rearing Management courses and 8 Rotary Mountage Management courses for farmers have been organized. Project contributed for upgrading of skill not only at extension officers' level but also covered farmers.
- d. Technical transfer from JICA farmers to non-JICA farmers has been observed. Some JICA farmers are playing a role as consultants for improving silkworm rearings with non-JICA farmers.

4-4 Project Purpose: Extension system for bivoltine sericulture will be functional.

Indicator: 1. The number of bivoltine sericulture farmers will be increased to 3,600 by the end of the Project in target area

According to the report of Joint Meeting, the number of bivoltine sericulture farmers is now 3698 (103 % of the indicator).

Indicator: 2. The quantity of bivoltine cocoon transaction in cocoon markets in target States increased to about 2000 MT from base year 2002 by the end of Project

There are 3 statistics of the number of bivoltine cocoon quantity. The statistics of 2006 haven't been surveyed. After the selection of farmers, it usually takes time to start producing bivoltine cocoon on regular basis.

- (1) Baseline Survey: Production in 2002 was 3829t. The production increased to 4956t in 2005 which is 56.4 % of the indicator.
- (2) Report of Joint Meeting: JICA selected farmers started to produce bivoltine cocoon systematically in 2002, and the production in 2003 was 375t. The production increased to 1176t in 2005, which is 58.8 % of the indicator.
- (3) Market Transaction Data in 3 states: There are 4 cocoon markets in 3 Project States, namely Ramanagaram and Kolar in Karnataka, Hindupur in Andhra Pradesh, Dharmapuri in Tamil Nadu. Ramanagaram cocoon market is the biggest cocoon market in India. The total transaction was 1148t in 2005, which is 57.4 % of the indicator. However, each farmer can rear 400 dfls (100 dfls=65 kg) at a time and rear five times per year, therefore the total production will be 4807t in the future, produced by JICA farmers. Consequently, it is assumed that the quantity of bivoltine cocoons will increase to 2000t.



Indicator: 3. Production and supply of quality bivoltine seed will increase to 36 lakh dfls by the end of the Project

Bivoltine silk seed are supplied to farmers by SSPC and DOS Grainages. SSPC supply only to JICA farmers to control the quality of seed and DOS Grainages supply to non-JICA farmers. SSPCs of CSB supplied the entire quantity of silkworm seed required under the Project. It supplied 46 lakh CSR dfls though it produced more than 11.2 million silkworm seed in 2006-07.

Indicator: 4. Selected TSCs, CRCs, STSs, BSFs and Grainages will acquire requisite facilities.

The Project selected 18 TSCs, 18 CRCs, 6 STSs, 2 Reeling TSCs, 9 BSFs, and 11 Grainages. After the selection, the Project made "Strengthening plans for the selected units under PEBS" in July 2003 and April 2004, about the improvement points of facility, training system and so on in accordance with the standard of JICA model. To implement the plans, JICA and DOS provided machineries and improved the facilities from 2002-2003 to TSC, CRC and STS and started their activities; to BSFs and Grainages, from 2003-2005 both JICA and DOS provided machineries and improved the facilities and started activities. To Reeling TSC, JICA and DOS Karnataka provided machineries and improved the facilities in 2003 and started activities. In 2005, the Project surveyed the situation and further improved facilities, and requested BVC to take necessary measures for upgrading the required infrastructure. According to the request, each state has completed provisions of machineries and improvement of facilities by 2006-2007.

4-5 Overall Goal: Enhancing production and quality of bivoltine raw silk and thereby raising the income levels of farmers and reelers.

Indicator: 1. Bivoltine sericulture farmers in target areas will increase income form sericulture.

- a. According to the research on the present situation of 70 bivoltine sericulture farmers which was selected on second phase, 70% of the farmers increased their income. The Project also conducted survey on the present situation of selected sericulture farmers. Although the sample size was limited, many farmers has increased their income after becoming the selected farmers.
- b. The bivoltine sericulture extension system has been strengthened. And the number of bivoltine sericulture farmers has increased 3698 by the Project. Bivoltine cocoon quantity increased every year. Therefore it is assumed that bivoltine sericulture farmers in target areas will increase their income.
- c. The training for reelers have been implementing in Reeling TSC.
- d. The grade of raw silk which is made from cocoon produced by JICA farmers is from 2A to 4A, and 4A raw silk is increasing.



Indicator: 2. The production of quality raw silk (above 2A level) in target areas will be increased.

The grade of raw silk that is made from cocoon produced by JICA farmers is from 2A to 4A, and 4A raw silk is increasing.

4-6 Implementation Process

Implementation process was evaluated based on the evaluation grid. (The detailed information on implementation process is shown in Annex 3.)

5. Evaluation based on the five evaluation criteria

Through the evaluation study, the Team assessed the Project's relevance, effectiveness, efficiency, impact, and sustainability. (The detailed information on evaluation by five criteria is shown in Annex 3.)

5-1 Relevance

The Project is highly relevant for the following reasons:

(1) Consistency with Indian policy:

- The 10th Five-Year Economic Development Plan (2002-2007) includes a plan that focuses on the promotion of bivoltine sericulture.
- The Catalytic Development Programme (CDP), which is subsidy for the sericulture farmers, started from 2002 as a five year plan for the purpose of the promotion of sericulture by the government of India.

(2) Needs for local people:

- According to baseline survey, there are 796,685 farmers in target 3 states and they produce 86% of national production in India.
- According to the survey of sericulture farmers conducted on the occasion of the terminal evaluation, all the farmers interviewed are highly satisfied with the Project, and their income have increased.
- The Project conducted survey on the present situation of sericulture farmers of the second phase and 70 of 142 selected farmers in phase II Project were covered. Most of the farmers continue to rear bivoltine sericulture. 67 % of the farmers increased their income. The number of bivoltine sericulture farmers rose 12.5 times from 142 to 1776 farmers.

(3) Consistency with Japan's aid policy:

- Poverty reduction, especially increase of income in rural areas, is one of the focal issues in JICA Country Programme and Country Assistance Programme and Country Assistance Programme.
- Overall adjustment of the Project, which hinged around increase of income, is consistent with JICA Country Programme.



5-2 Effectiveness

Effectiveness of this Project is evaluated high. The Project purpose “Extension system for bivoltine sericulture will be functional.” have been achieved by the end of the Project for the following reasons:

- (1) The number of bivoltine sericulture farmers increased to 3698.
- (2) The quantity of bivoltine cocoon transaction in cocoon markets 1148t in 2005. However, each farmer can rear 400 dfls (100 dfls=65 kg) at a time and they rear five times per year, therefore the total production will be 4807t in the future produced by JICA farmers. Consequently it is assumed that the quantity of bivoltine cocoon increased by 2000t.
- (3) The total production and supply of quality bivoltine seed increased to 45 lakh dfls.
- (4) 5 outputs have been almost achieved and will contribute to the attainment of the Project purpose.

5-3 Efficiency

The efficiency of this Project is considered as high for the following reasons:

- (1) Appropriate numbers of Japanese experts and Indian Counterparts with experience in appropriate field of specialization have been assigned to the Project.
- (2) Training of the Counterparts, trainer’s training, training of the farmers, both seed and commercial and reelers have been covered as envisaged. A large number of training programmes improved the skill of extension workers and farmers to increased yield of quality bivoltine cocoons / yarn and also income from silkworm rearings.

5-4 Impact

The impact of the Project is highly positive because:

- (1) The Project actually increased the income of the selected farmers, and the reelers.
- (2) The in-country training programme, booklets and Audio-Video materials contributed in diffusion of bivoltine sericulture management skill in the areas out of Karnataka, Tamil Nadu, and Andhra Pradesh.
- (3) Technical transfer from selected farmers to non-selected farmers has been observed to take place. These non-selected farmers take advantage of the valued information from the selected farmers and developed their production capability.
- (4) By setting up the quality check system at the cocoon markets, the quality of the produce started to be reflected in the price. It gave an incentive for the farmers to improve their produce.

5-5 Sustainability

Sustainability of this Project is assumed high from three view points written below:

- (1) Organization aspects

In targeted three States, “Extension System for Bivoltine Sericulture” was established in collaboration between CSB and DOS. Ownership of related governmental organization is



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significant and activities of those organizations are expected to continue.

(2) Financial aspects

Bivoltine sericulture extension will be stated as one of the principal targets in the 11th Five Year Plan, which starts from FY 2007. Thus appropriate budget allocation from both Central and State governments is expected.

(3) Technical aspects

Technical knowledge of counterparts improved to a very high level so much so that they can now implement their own extension programmes. Technical improvement of farmers is also satisfactory and some of the progressive farmers are in a position to advice other farmers including non-JICA farmers. Technical pamphlets and booklets are published in local languages and distributed to a large number of farmers. These aspects indicate that necessary techniques for bivoltine sericulture is widely spread in target area. Moreover, many requests for technical pamphlets and for organizing workshop on bivoltine sericulture from other States such as Kerala and Maharashtra, clearly indicate the spread effect of extension system and bivoltine technology will be having.

For further sustainability of bivoltine programme, following needs to be given due consideration.

- (1) At the grassroot level, such as TSCs, STSs and CRCs, adequate funds to be made available to realize each of the objectives more efficiently.
- (2) In Government establishment, the recruitment of fresh personnel is suggested to sustain the Bivoltine Sericulture Extension System as skill augmentation of staff attained by implementation of JICA technical programmes needs to be transferred to budding extension workers / functionaries.

6. CONCLUSIONS OF EVALUATION

As described above, the outputs of the Project have been achieved and the Project purpose is also achieved appropriately. With regard to the five criteria (outputs), following are concluded:

1. Relevance of the Project is endorsed by the consistency of the Indian national policy, needs of local people, and the Japanese aid policy;
2. Effectiveness is good: Extension system for bivoltine sericulture is practically functional;
3. Efficiency of the Project is high: Largely inputs were well arranged;
4. Impact of the Project is highly positive, income of bivoltine sericulture farmers increased and non-selected farmers could learn a few techniques developed by the Project from selected farmers; and

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5. Sustainability is high from institutional, financial and technological perspectives.
Therefore, it is concluded that the Project will be terminated on August 2007 as planned.

7. **RECOMMENDATIONS (Actions to be taken after the termination of the Project)**

The Project has been implemented as planned and it has produced planned/ expected results. Therefore, it is recommended that the momentum gained in bivoltine sericulture development needs to be supported and enlarged in the interest of developing strong bivoltine production base in the country and also to increase production of quality bivoltine silk, the following measures are suggested:

7-1 To make Project achievements sustainable

(1) Continuance of programmes like Catalytic Development Programmes (CDP)

For further expansion (extension) of bivoltine sericulture, on-going Catalytic Development Programme activities such as providing financial assistance for creating critical infrastructure to continue.

(2) Utilisation of skill of Extension counterparts

The technical skill developed and transferred to the identified extension officers to be fully utilized for expansion (extension) of bivoltine sericulture not only in the Project States but also in other potential States in the country.

(3) Continuous monitoring of indicators

The quality of silkworm seed production to be monitored as it determines the uniformity of cocoons and quality of yarn and thereby increased returns from rearing/ reeling. Therefore, parameters evolved for seed production/ reeling to be monitored to sustain the quality production and for corrective measures wherever necessary.

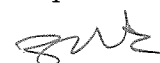
7-2 For further development of Indian bivoltine sericulture

(1) Improvement of systematic statistical data collection

In India, statistical sericulture data is reported to state governments from each of the field units such as TSCs through BVC. There are grey areas in data collection such as taking long time in finalization and cross-verification of data furnished to Central Government. In order to use data efficiently and to make appropriate decision, improvement of data collection system to be made for better planning.

(2) Actions for quality improvement of bivoltine silk and final silk products

Lack of sufficient reelers/ low usage of Indian bivoltine raw silk against the backdrop of imported silk can be inhibiting factor for further extension of bivoltine sericulture. Thus, Governmental policy for post-cocoon sector, to be more intensive. Cocoon quality inspection



system, reeling technology improvement, and launch of raw silk quality system are all required to be put in place. In order to achieve overall goals of this Project, support and actions for farmers, reelers and weavers should be implemented.

Lack of adequate number of reeling establishments and low usage of indigenous bivoltine silk against the backdrop of huge import of silk in the country calls for development strategies and support mechanism for production and improvement in production system of quality cocoons, marketing of cocoons linked to quality, raw silk marketing based on quality parameters and inspection are all necessary.

8. LESSONS LEARNT

(1) The Team approach to develop C/P's capability.

The organizations of Central Government and that of States have jointly worked as a team collaborating and coordinating various activities under the Project to realize the project goals. This is not only to be continued but also to be enlarged for the larger cause of extension of bivoltine sericulture in the country.

(2) Farmer to farmer extension

Many of the progressive farmers have become a model and progressive farmers can therefore serve as a linkage to achieve the improvement desired for spread of new systems/ technology. Their expertise to be utilized efficiently as link-person to cover more and more farmers in all areas of importance.

(3) Incentives to farmers to improve the quality of the produce

By setting up the quality check system in the cocoon markets, the quality of the cocoons will start to be reflected in the price. It gave an incentive for the farmers to improve their produce and become quality conscious. This needs to be improved upon.

(4) Inspection note book as a tool for guidance

The field staff/ extension officers record of suggestion on the spot on the improvement of rearing and quality production will go a long way in raising successful crops. This practice to be strengthened so that farmers' understanding improves and the purpose of guidance will be realized.

(5) Mutual trust between experts and C/Ps

The mutual trust between Japanese experts and Indian C/Ps has been built-up since the 1st phase of the Project. This firm trust has supported the Project positively in many ways and led to the smooth implementation.

(6) The support by the stakeholders in sericulture sector

With the strong support of the Japanese stakeholders in sericulture, Project managed to deploy the long term experts, short term experts, and execute the C/P training in Japan. Utilizing the network in related field and strong support by them is an essential factor for smooth implementation of the Project in the future.



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DISTRIBUTION MAP OF SELECTED BSFs AND GRAINAGES UNDER JICA PROJECT PHASE III

INDEX

- BSFs : Basic Seed Farm
- GRAINAGES
- Cities



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DISTRIBUTION MAP OF SELECTED TSCs AND STSs UNDER JICA PROJECT PHASE III

INDEX

- TSCs :
Technical Service Centre
- REELING TSCs
- ▲ STSs :
Sericultural Training Centre
- Cities



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Project Design Matrix

Project Title: The Project for Strengthening Extension System for Bivoltine Sericulture in India.

Target Group: Bivoltine Sericulture farmers in target areas. Target Areas: Karnataka, Andhra Pradesh, Tamil Nadu.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>(Overall Goal) Enhancing production and quality of bivoltine raw silk and thereby raising the income levels of farmers and reelers.</p>	<ol style="list-style-type: none"> 1. Bivoltine sericulture farmers in target areas will increase income from sericulture 2. The production of quality raw silk (above 2A level) in target areas will be increased. 	<ul style="list-style-type: none"> ·Reports/documents of CSB/DOSs. ·Baseline Survey ·Repeat Survey on farmers and reelers ·Data from Cocoon markets 	<ul style="list-style-type: none"> ·Policy of CSB and DOSs for promoting bivoltine sericulture will not be changed.
<p>(Project Purpose) Extension system for bivoltine sericulture will be functional</p>	<ol style="list-style-type: none"> 1. The number of bivoltine sericulture farmers will be increased to 3,600 by the end of the project in target area 2. The quantity of bivoltine cocoon transaction in cocoon markets in target states increase to about 2000 MT from base year 2002 by the end of project 3. Production and supply of quality bivoltine seed will increase to 36 lakh dfls by the end of project 4. Selected TSCs, CRCs, STSs, BSFs and Grainages will acquire requisite facilities. 	<ul style="list-style-type: none"> ·Baseline Survey ·Reports of CSB/DOSs 	<ul style="list-style-type: none"> ·Price of quality bivoltine raw silk will not drastically fall. ·Demand for quality bivoltine raw silk will not decrease.
<p>(Outputs)</p> <ol style="list-style-type: none"> 1. Action plan for promotion of bivoltine sericulture will be formulated. 2. Coordination/collaboration mechanism among CSB and DOSs for extension of bivoltine sericulture will be established. 3. System for mass production of quality seed will be established. 4. DOS staff will be equipped with necessary skills and knowledge for extension of bivoltine sericulture, and training facilities will be improved for bivoltine sericulture. 5. Extension model for bivoltine sericulture will be established. 	<ol style="list-style-type: none"> 1-1. CSB and DOSs will jointly formulate action plan with necessary budget allocation. 1-2. Infrastructure development/improvement plan for extension of bivoltine sericulture will be formulated with necessary budget allocation on annual basis. 2-1. Information/data regarding bivoltine sericulture will be compiled annually at Bivoltine Cells in CSB and DOSs 2-2. Monthly Bivoltine Cell Meetings will be held regularly during the project period in order to share plan and challenges with CSB and DOSs 3-1. Hatching will be over 90 % in selected BSFs and F1 seed will also have 90 % and above hatching. 3-2. Defective cocoon rate will be less than 5% in selected BSFs. 3-3. Mixing of different races and sex will not occur in selected Grainages 3-4. Pupation rate will be over 85% in selected Grainages 3-5. Recovery rate of seed from seed cocoons will be over 45g/kg in selected Grainages 3-6. Training program will be conducted for BSF/Grainage staff (200 participants /year) and seed farmers (30 farmers/year) in CSR&TI and SSSL 	<ul style="list-style-type: none"> ·Baseline survey ·Quarterly reports ·Reports/documents of CSB/DOSs ·Repeat Survey on farmers and reelers ·Minutes of meetings ·Annual reports of CSB/DOSs. 	<ul style="list-style-type: none"> ·New disease will not breakout.

	<p>4-1. TSC staff (315 participants/ 5 years), STS staff (60 participants/5 years) and Reeling TSC staff (100 participants/5 years) will be trained by CSR&TI and CSTRI</p> <p>4-2. Field oriented bivoltine sericulture training courses will be formulated in selected STSs (more than 2 courses/ STS)</p> <p>4-3. Training materials will be improved and developed (textbooks in 5 subjects in local languages, training videos in 5 subjects in local languages and picture panels for selected STSs)</p> <p>4-4. DOS staff (600 participants /5 years) will be trained at selected STSs</p> <p>5-1. 9 booklets and 5 pamphlets in English and local languages will be utilized</p> <p>5-2. The number of Chawki rearing houses managed by Quality Clubs in selected area will be increased from 40 as of 2002 to 100 in 5 years.</p> <p>5-3. Sericulture related tools (rotary moutage, cocoon defloshing machine, cocoon cutting machine, leaf chopping machine and incubation frame) will be developed and introduced to BSFs, Grainages and farmers</p>		
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<p>(Activities)</p> <ol style="list-style-type: none"> 1. Formulation of Action Plan for Promotion of Bivoltine Sericulture. <ol style="list-style-type: none"> 1-1 Baseline Survey (Survey on target farmers current extension system, current extension plan and government policy to support small sericulture farmers and to strengthen farmers group, etc.) 1-2 Promotion of full introduction of cocoon marketing system with quality assessment 1-3 To examine the need for modification on current extension system, extension plan, Government policy to support small sericulture farmers. 1-4 Action Plan for promotion of bivoltine will be formulated with close coordination of CSB and DOSs. 2 Establishment of coordination/ collaboration mechanism among CSB and DOSs. <ol style="list-style-type: none"> 2-1 To formulate plan of activities for Bivoltine Cell. 2-2 To monitor project activities through regular Joint meetings. 3 Strengthening of system of Seed Production . <ol style="list-style-type: none"> 3-1 To formulate plan for mass production of quality seed. 3-2 To establish one-way system of seed multiplication at CSB and DOSs. 3-3 To establish quality control guidelines and checkpoints at P3 level and below. 3-4 To formulate guidance plan to BSF, grainage staff and seed farmers. 3-5 Strengthening of seed production facilities 4 Strengthening of Training <ol style="list-style-type: none"> 4-1 To formulate training master plan for bivoltine sericulture. 	<p>(Inputs) (Japanese side)</p> <ol style="list-style-type: none"> 1. Dispatch of long-term experts Chief Advisor Coordinator Seed production Training Extension 2. Dispatch of short-term experts 3. Acceptance of Indian personnel for training in Japan. 4. Provision of machinery/ equipment , training tools, Others <p>(Indian side)</p> <ol style="list-style-type: none"> 1. Assignment of counterpart personnel Project Manager Deputy Project Manager Director of CSB institutions and DOSs Subject Matter Specialist (in necessary field) 2. Administrative personnel 3. Land, buildings and facilities necessary for the Project. 4. Budgetary allocation for local costs. 	<p>Counterpart personnel of the Project will not be shifted.</p> <ul style="list-style-type: none"> ·Trained CSB/DOSs staff will be fully utilized. ·Law and order in the target areas will not get worse. <p>(Pre-condition)</p> <ul style="list-style-type: none"> ·Bivoltine Cell will be established in CSB and target states. ·Memorandum of Understanding among CSB and DOSs on coordination/ collaboration mechanism for the Project will be signed. ·Counterpart personnel of CSB and DOSs who had trained during PPPBST will be utilized to the extent possible.
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		<p>4-2 To formulate facility development plan</p> <p>4-3 Strengthening of training facilities.</p> <p>4-4 To revise training curriculum to be field oriented.</p> <p>4-5 To conduct trainers training.</p> <p>4-6 To conduct farmers training (by DOS)</p> <p>4-7 To devise training curriculum and materials in each field</p> <p>4-7-1Silkworm race maintenance/seed production</p> <p>4-7-2 Mulberry cultivation</p> <p>4-7-3 Silkworm rearing/disease control</p> <p>4-7-4 Reeling</p> <p>4-8 To conduct training course for extension staff</p> <p>5 Establishment of Model for Bivoltine Sericulture Extension.</p> <p>5-1 To select target TSCs</p> <p>5-2 To plan and implement model extension activities in the target areas.</p> <p>5-3 To tune up technical package developed by PPPBST.</p> <p>5-4 To prepare method of monitoring and evaluation for extension activities.</p> <p>5-5 Strengthening of TSCs.</p>
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Project Design Matrix

Project Title: The Project for Strengthening Extension System for Bivoltine Sericulture in India.

Target Group: Bivoltine Sericulture farmers in target areas. Target Areas: Karnataka, Andhra Pradesh, Tamil Nadu.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>(Overall Goal) Enhancing production and quality of bivoltine raw silk and thereby raising the income levels of farmers and reelers.</p>	<ol style="list-style-type: none"> Bivoltine sericulture farmers in target areas will increase income from sericulture The production of quality raw silk (above 2A level) in target areas will be increased. 	<ul style="list-style-type: none"> Reports/documents of CSB/DOSS. Baseline Survey Repeat Survey on farmers and reelers Data from Cocoon markets 	<ul style="list-style-type: none"> Policy of CSB and DOSS for promoting bivoltine sericulture will not be changed.
<p>(Project Purpose) Extension system for bivoltine sericulture will be functional</p>	<ol style="list-style-type: none"> The number of bivoltine sericulture farmers will be increased to 3,600 by the end of the project in target area The quantity of bivoltine cocoon transaction in cocoon markets in target states increase to about 2000 MT from base year 2002 by the end of project Production and supply of quality bivoltine seed will increase to 36 lakh dfls by the end of project Selected TSCs, CRCs, STSs, BSFs and Grainages will acquire requisite facilities. 	<ul style="list-style-type: none"> Baseline Survey Reports of CSB/DOSS 	<ul style="list-style-type: none"> Price of quality bivoltine raw silk will not drastically fall. Demand for quality bivoltine raw silk will not decrease. Natural conditions do not drastically change.
<p>(Outputs)</p> <ol style="list-style-type: none"> Action plan for promotion of bivoltine sericulture will be formulated. Coordination/collaboration mechanism among CSB and DOSS for extension of bivoltine sericulture will be established. System for mass production of quality seed will be established. DOS staff will be equipped with necessary skills and knowledge for extension of bivoltine sericulture, and training facilities will be improved for bivoltine sericulture. Extension model for bivoltine sericulture will be established. 	<ol style="list-style-type: none"> 1-1. CSB and DOSS will jointly formulate action plan with necessary budget allocation. 1-2. Infrastructure development/improvement plan for extension of bivoltine sericulture will be formulated with necessary budget allocation on annual basis. 2-1. Information/data regarding bivoltine sericulture will be compiled annually at Bivoltine Cells in CSB and DOSS 2-2. Monthly Bivoltine Cell Meetings will be held regularly during the project period in order to share plan and challenges with CSB and DOSS 3-1. Hatching will be over 90 % in selected BSFs and F1 seed will also have 90 % and above hatching. 3-2. Defective cocoon rate will be less than 5% in selected BSFs. 3-3. Mixing of different races and sex will not occur in selected Grainages 3-4. Pupation rate will be over 85% in selected Grainages 3-5. Recovery rate of seed from seed cocoons will be over 45g/kg in selected Grainages 3-6. Training program will be conducted for BSF/Grainage staff (200 participants /year) and seed farmers (30 farmers/year) in CSR&TI and SSTL 	<ul style="list-style-type: none"> Baseline survey Quarterly reports Reports/documents of CSB/DOSS Repeat Survey on farmers and reelers Minutes of meetings Annual reports of CSB/DOSS. 	<ul style="list-style-type: none"> New disease will not breakout.

	<p>4-1. TSC staff (315 participants/ 5 years), STS staff (60 participants/5 years) and Reeling TSC staff (100 participants/5 years) will be trained by CSR&TI and CSTRI</p> <p>4-2. Field oriented bivoltine sericulture training courses will be formulated in selected STSs (more than 2 courses/ STS)</p> <p>4-3. Training materials will be improved and developed (textbooks in 5 subjects in local languages, training videos in 5 subjects in local languages and picture panels for selected STSs)</p> <p>4-4. DOS staff (600 participants /5 years) will be trained at selected STSs</p> <p>5-1. 9 booklets and 5 pamphlets in English and local languages will be utilized</p> <p>5-2. The number of Chawki rearing houses managed by Quality Clubs in selected area will be increased from 40 as of 2002 to 100 in 5 years.</p> <p>5-3. Sericulture related tools (rotary moutage, cocoon defloshing machine, cocoon cutting machine, leaf chopping machine and incubation frame) will be developed and introduced to BSFs, Grainages and farmers</p>		
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<p>(Activities)</p> <p>2. Formulation of Action Plan for Promotion of Bivoltine Sericulture.</p> <p>1-5 Baseline Survey (Survey on target farmers current extension system, current extension plan and government policy to support small sericulture farmers and to strengthen farmers group, etc.)</p> <p>1-6 Promotion of full introduction of cocoon marketing system with quality assessment</p> <p>1-7 To examine the need for modification on current extension system, extension plan, Government policy to support small sericulture farmers.</p> <p>1-8 Action Plan for promotion of bivoltine will be formulated with close coordination of CSB and DOSs.</p> <p>2 Establishment of coordination/ collaboration mechanism among CSB and DOSs.</p> <p>2-2 To formulate plan of activities for Bivoltine Cell.</p> <p>2-2 To monitor project activities through regular joint meetings.</p> <p>3 Strengthening of system of Seed Production .</p> <p>3-1 To formulate plan for mass production of quality seed.</p> <p>3-3 To establish one-way system of seed multiplication at CSB and DOSs.</p> <p>3-3 To establish quality control guidelines and checkpoints at P3 level and below.</p> <p>3-4 To formulate guidance plan to BSF, grainage staff and seed farmers.</p> <p>3-5 Strengthening of seed production facilities</p> <p>4 Strengthening of Training</p> <p>4-1 To formulate training master plan for bivoltine sericulture.</p>	<p>(Inputs) (Japanese side)</p> <p>5. Dispatch of long-term experts Chief Advisor Coordinator Seed production Training Extension</p> <p>6. Dispatch of short-term experts</p> <p>7. Acceptance of Indian personnel for training in Japan.</p> <p>8. Provision of machinery/ equipment , training tools, Others</p> <p>(Indian side)</p> <p>4. Assignment of counterpart personnel Project Manager Deputy Project Manager Director of CSB institutions and DOSs Subject Matter Specialist (in necessary field)</p> <p>5. Administrative personnel</p> <p>6. Land, buildings and facilities necessary for the Project.</p> <p>4. Budgetary allocation for local costs.</p>	<p>Counterpart personnel of the Project will not be shifted.</p> <p>Trained CSB/DOSs staff will be fully utilized.</p> <p>Law and order in the target areas will not get worse.</p> <p>(Pre-condition)</p> <p>Bivoltine Cell will be established in CSB and target states.</p> <p>Memorandum of Understanding among CSB and DOSs on coordination/ collaboration mechanism for the Project will be signed.</p> <p>Counterpart personnel of CSB and DOSs who had trained during PPPBST will be utilized to the extent possible.</p>
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<p>4-6 To formulate facility development plan</p> <p>4-7 Strengthening of training facilities.</p> <p>4-8 To revise training curriculum to be field oriented.</p> <p>4-9 To conduct trainers training.</p> <p>4-6 To conduct farmers training (by DOS)</p> <p>4-7 To devise training curriculum and materials in each field</p> <p>4-7-1Silkworm race maintenance/seed production</p> <p>4-7-2 Mulberry cultivation</p> <p>4-7-3 Silkworm rearing/disease control</p> <p>4-7-4 Reeling</p> <p>4-8 To conduct training course for extension staff</p> <p>5 Establishment of Model for Bivoltine Sericulture Extension.</p> <p>5-1 To select target TSCs</p> <p>5-2 To plan and implement model extension activities in the target areas.</p> <p>5-6 To tune up technical package developed by PPPBST.</p> <p>5-7 To prepare method of monitoring and evaluation for extension activities.</p> <p>5-8 Strengthening of TSCs.</p>		
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Evaluation Grid With Findings

1) Project Implementation Process		Evaluation Items			Remarks	
Appropriate of Implementation Process		Necessary Information and Data	Sources	Means of Verification	Remarks	
1. Overall project management	<ul style="list-style-type: none"> • Project implementation process 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • The coverage of the project is very large and there are many organizations related to the project. However there was no significant problems about the overall management of the project. 		
2. Appropriateness of communication between Experts and C/P	<ul style="list-style-type: none"> • Communication situation 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • Since there are many C/Ps in this project, it was difficult for the experts to communicate with all the C/Ps. • As the C/Ps easily get transferred in DOS after training, the capacity has not been accumulated. • Since most of the budget is used for personnel, some DOS organizations have difficulties to maintaining extension activities. 		
3. Establishment of ownership of the Project	<ul style="list-style-type: none"> • Awareness and attitude of C/P 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • For the promotion of bivoltime sericulture, TSC STSs implement their original training courses by their own, such as the training for small scale farmers, for women development and so on. • The necessary equipments were not given to the selected farmers for free to help establishing ownership. 		
4. Appropriateness of approaches/methods of technology transfer	<ul style="list-style-type: none"> • Methodology of technology transfer 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • The experts encouraged the C/Ps in different level to work together so that the transferred technology could be effectively transmitted to a wide range of extension workers as well as to assure the sustainability of the activities after the project. 		

2) Five Evaluation Criteria: Relevance

Evaluation Items	Necessary Information and Data	Sources	Means of Verification	Remarks
1-1. Relevance to the government policies	<ul style="list-style-type: none"> National Government Data The tenth five-year economic development Plan(2002-2007) Catalytic Development Programme (CDP) Long term plan 2001/2007 Promotion Plan of Sericulture in 3 states Reshmi Sampathu Yojane (Karnataka) 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> India is the second largest country of raw silk production in the world. However, the demand exceeds the supply. The government of India is according high priority for improving the productivity and quality of raw silk. The 10th five-year economic development Plan(2002-2007) includes a plan that focuses on the promotion of bivoltine sericulture. The Catalytic Development Program (CDP) for the sericulture farms started from 2002 as a five year plan for the purpose of the promotion of sericulture by the government of India. The program covers not only mulberry silkworm farms but also wild silkworm farms. However, the 2003 meeting of Joint Coordinating Committee approved of giving priority to bivoltine sericulture.
1-2. Relevance to local people's needs	<ul style="list-style-type: none"> Farmer's view on the promotion of bivoltine sericulture Willingness of farmers to bivoltine sericulture 	<ul style="list-style-type: none"> CSB DOS Experts Farmers 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> According to baseline survey, there are 796,685 farmers in target 3 states and they produce 86% of national production. According to the interview survey to sericulture farmers conducted on the occasion of the terminal evaluation, all of the interviewees are highly content with the project. And their income have been increasing. The project conducted survey on the present situation of sericulture with 70 of 142 selected farmers in phase II project. Most of the farmers continue to rear bivoltine sericulture. 67% of the farmers increased their income. The number of bivoltine sericulture farmers raised 12.5 times from 142 to 1776 farmers. The project also conducted survey on the present situation of selected sericulture farmers. Although the sample size was limited, many farmers has increased their income after becoming the selected farmers.
1-3. Technical advantage of Japan's assistance	<ul style="list-style-type: none"> C/P views on Japan's expertise in bivoltine sericulture Similar activities by other donors 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> Although Japanese sericulture business is declining, the technologies for bivoltine sericulture in Japan are advanced compared with other countries. Although the basic technique is different in tropical and temperate zones, the Japanese experts translated the technology in a good manner.
1-4. Consistency of Japan's aid policy to India	<ul style="list-style-type: none"> Focal fields in Japan's aid policy/programs to India 	<ul style="list-style-type: none"> JICA 	<ul style="list-style-type: none"> Review of materials 	<ul style="list-style-type: none"> Poverty reduction, especially increase of income in rural areas, is one of the focal issues in JICA Country Program and Country Assistance Program. Overall of the Project, which is increase of income, is consistent with JICA Country Program.
1-5. Appropriateness of the project approach		<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> The experts encouraged the C/Ps in different level to work together so that the transferred technology could be effectively transmitted to a wide range of extension workers as well as to assure the sustainability of the activities after the project.

3) Five Evaluation Criteria: Effectiveness

Effectiveness Evaluation Items	Necessary Information and Data	Sources	Means of Verification	Remarks
2-1. Achievement of Project Purpose	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.
2-2. Contributing or Negative factors for the achievement of Project Purpose	<ul style="list-style-type: none"> • Capacity building of C/P • Financial resources • Communication between Experts and C/P • Development of legal/institutional framework for promotion of bivoltine sericulture 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • 4 year long drought, started from 2000-2001, hit severely mulberry cultivation in project area and the number of silkworm farms has slightly decreased. • At the beginning of the project in 2002, increase of raw silk import from China caused cocoon price to lower. • Since the budget was in short in the states, preparations of facilities in STS and Reeling TSC were delayed. • (Regarding transaction in cocoon markets) Extension activities could not have been carried out in the first year as the project spent more time on preparation to start up their activities. • (Regarding 3-6: Trained staff) 62 staffs have been participated in the training by March, 2007. Many staffs took only 2 trainings but couldn't take 5 times as (1) 2 trainings usually cover the range of specialization of a staff (2) preparation was delayed. • (Regarding 4-1: Trained staff of Reeling TSC was 64%) 74 Staffs have been trained by March 2007. Training set up was delayed because between 2002 and 2003, the manpower of CSTRI was devoted into the research on graded quality of imported silk from China, staffs couldn't have time for training. There will be more training in April, May, June 2007 and the number will be reached to 99% of the target.

4) Five Evaluation Criteria: Efficiency

3. Efficiency		3. Efficiency			
Evaluation Items	Necessary Information and Data	Sources	Means of Verification	Remarks	
3-1. Achievement of Project Output	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.	
3-2. Appropriateness of quality, quantity and timing of inputs					
3-2-1. Experts	<ul style="list-style-type: none"> Number Expertise Timing of dispatch Duration of assignment 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Interviews 	<ul style="list-style-type: none"> Number, timing and duration of term experts were mostly appropriate. 	
3-2-2. Training	<ul style="list-style-type: none"> Number of trainees Contents of training Duration of training Timing of training Feedback 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> Training in Japan was useful in upgrading C/P's technical capacity and enhancing their awareness toward bivoltime sericulture. Since the permission of participation in the training course has not been accepted by the state government, some of C/P were not able to participate in the training course. 	
3-2-3. Equipment and Materials	<ul style="list-style-type: none"> Items Amount 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> Some of the small equipments (ex. Masks for chemicals) that could have been procured in India were bought from Japan. The replacement parts needed to be bought from Japan continuously. The project organized the demonstration of how to use equipments to the farmers. It also was a good opportunity to check up how the C/Ps taking care of the equipment. The equipment and materials were provided at the right timing with the right amount. 	
3-2-4. Local Activity Budget	<ul style="list-style-type: none"> Purpose Timing Amount 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> There was a lack in DOS budget, and delay in allocation. 	
3-2-5. C/P allocation	<ul style="list-style-type: none"> Number Ability 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> C/P allocation was appropriate in number and their capability. 	
3-2-6. Land and facilities	<ul style="list-style-type: none"> Site Timing Convenience Current condition 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> Some of the facilities such as building, equipment, and so on, were not enough for the project. So, at the early stage of the project, it caused delay in the activities. 	
3-2-7. Local cost	<ul style="list-style-type: none"> Amount Timing 	<ul style="list-style-type: none"> CSB DOS Experts 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> C/P Salary, maintenance of vehicles, Trip Allowance/Daily Allowance, consumerables, fuel, land and building, facilities and necessary budgetary allocation to maintain. 	

3-3. Contribution to the efficiency of the Joint Coordinating Committee(JCC)	<ul style="list-style-type: none"> •Activities •Members of the Committee •Topics Discussed 	<ul style="list-style-type: none"> •CSB •DOS •Experts 	<ul style="list-style-type: none"> •Review of materials •Interviews 	<ul style="list-style-type: none"> •Once held in mid-term evaluation and will be held once in terminal evaluation. Sufficient enough to confirm the progress and direction of the project at policymaking level. It helped the smooth implementation of the project.
3-4. Contribution to the efficiency of the Bivoltine Cell(BVC)	<ul style="list-style-type: none"> •Activities •Members of the Committee •Topics Discussed 	<ul style="list-style-type: none"> •CSB •DOS •Experts 	<ul style="list-style-type: none"> •Review of materials •Interviews 	<ul style="list-style-type: none"> •In the beginning of the project, the BVC meeting was held once in a month. Eventually, the meeting has been held when there is a need. •The purpose is to share information and decision making of the project.BVC also contributed efficient implementation of the project activities.
3-5. Cooperation with other organizations	<ul style="list-style-type: none"> •Cooperation with other organizations 	<ul style="list-style-type: none"> •CSB •DOS •Experts 	<ul style="list-style-type: none"> •Review of materials •Interviews 	<ul style="list-style-type: none"> •SERI 2000
3-6. Important assumptions	<ul style="list-style-type: none"> •Influence of Natural conditions •Price of quality bivoltine sericulture •Demand for quality 	<ul style="list-style-type: none"> •CSB •DOS •Experts 	<ul style="list-style-type: none"> •Review of materials •Interviews 	<ul style="list-style-type: none"> •Drought has affected the production of mulberry •Drought has caused tension between Tamil Nadu and Karnataka over the usage of water. •Increased amount of imported silk from China and the implementation of price control policy by the government of India in 2002.

5) Five Evaluation Criteria: Impact

Impact Evaluation Items	Necessary Information and Data	Sources As described in the Accomplishment Grid.	Means of Verification As described in the Accomplishment Grid.	Remarks
4-1. Achievement of Overall Goals	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.	As described in the Accomplishment Grid.
4-2. Economic and financial impact	<ul style="list-style-type: none"> Income increase of farmers and reelers 	<ul style="list-style-type: none"> CSB DOS Experts Farmers 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> The research conducted in March 2006 indicates that (1)74% (sample was 70 household among 142 JICA farmers) of the farmers expanded their mulberry field, (2)79% of the farmers expanded the scale of the rearing, (3)67% of the farmers had increased gross income, (4)The annual gross income of 4 farmers exceeded RS.1,000,000- and the highest hit RS.2,400,000-. (5)Fulltime-BV sericulture farmers reached up to 43%. The research conducted in 2007 indicates that the income of selected farmers have been increased since they become JICA selected farmers. The income of reelers have been increased since they started to deal with Bivoltine silk which has been introduced and extended by the project.
4-3. Social impact	<ul style="list-style-type: none"> Equity between selected farmers and non-selected farmers Expansion of output to other areas Influence of the Project to The eleventh five-year economic development Plan(2007-2012) 	<ul style="list-style-type: none"> CSB DOS Experts Farmers 	<ul style="list-style-type: none"> Review of materials Interviews 	<ul style="list-style-type: none"> There is a standard to be a JICA farmer and it could cause disparity between those who are and who are not. Non-JICA farmers introduced technologies such as disinfection, rearing bed, and uzi net from JICA farmers.
4-4. Others				<ul style="list-style-type: none"> Farmer to farmer extension has been observed. (There are farmers partly adopted sericulture management techniques (such as disinfection, rearing bed, or uzi nets) which is a component of BV technology package although they do not adopt BV sericulture.)

6) Five Evaluation Criteria: Sustainability

Sustainability		Necessary Information and Data		Sources	Means of Verification	Remarks
5-1. Organizational aspects						
5-1-1. Operation and management system of the Project	<ul style="list-style-type: none"> • CSB and DOS commitment in managing the project • Managerial / administrative capacity of the staff in CSB and DOS • Organizational framework / strategy for the further implementation of the project, including organizational chart • Retaining of C/P who were trained by the project • Necessity and possibility for the increase of C/Ps 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • As the C/Ps easily get transferred in DOS after training, the capacity has not been accumulated. • The gap in capacity among staffs was recognized and the project offered opportunities for the CSB staffs and DOS staffs working together to develop their capacity. 		
5-1-2. Deployment of C/Ps	<ul style="list-style-type: none"> • Retaining of C/P who were trained by the project • Necessity and possibility for the increase of C/Ps 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • C/Ps of DOS often get transferred after training. • The average age of the C/Ps are getting higher every year. 		
5-2. Technological Aspects						
5-2-1. Progress of technology transfer	<ul style="list-style-type: none"> • Technical level of C/P 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • The technologies in the bivoltine sericulture was transferred to the C/Ps in previous projects. • There was extension of technologies from JICA farmers to non-JICA farmers. 		
5-2-2. Utilization of provided infrastructure, machinery and equipment	<ul style="list-style-type: none"> • Maintenance plans including budget • C/P's capacity for utilization and maintenance of the provided equipments 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • The activities have been carried out by C/Ps by utilizing provided infrastructure, machines and equipments. • The experts have been trying to train the maintenance capacity of C/Ps. 		
5-2-3. Extension of the techniques to other states	<ul style="list-style-type: none"> • Seminar, training or workshop in other states 	<ul style="list-style-type: none"> • CSB • DOS • Experts 	<ul style="list-style-type: none"> • Review of materials • Interviews 	<ul style="list-style-type: none"> • Other than target areas, some states (e.g. Kerala, Maharashtra) are interested in bivoltine sericulture. CSB opened the seminar to those states. Some DOS and universities request to send the textbooks and the video programs developed on the project. • In country training, under the project, which were held for the participants from more than 15 states. Various kinds of extension programs, Enlightenment Program, Interaction Meet, Study Tour, and Group Discussion, have been held. 		

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)
	Item	Sub Item	1	2	3	4	5			
		1-1-3 Study on present status of government (CSB and DOSS) policies for extending the bivoltine sericulture						<p>The present sericulture policies of the government were studied in detail and were sustainable for promotion of bivoltine sericulture in the country.</p> <p>[Remaining period] Action Plan for promotion of bivoltine farmers are the basis for quality cocoon yield.</p> <p>[After completion of project] More emphasis will be given for quality cocoon and silk production during XIth Plan.</p>	100%	
		1-1-4 Study on present extension system in the selected states						<p>Present extension system followed by promotion of bivoltine sericulture in the selected areas was studied and the system was found to be adequate to meet the objectives set under the project.</p> <p>[Remaining period] The extension system, as is in vogue, to continue.</p> <p>[After completion of project] The same system will be continued with more assistance to BV farmers.</p>	100%	

Activities (Plan of Operation)		State of Activities					Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)			
Title	Item	Sub Item	1	2	3	4				5	Remarks for remaining period and after completion of the project	
	1-2 Promotion of full introduction of cocoon marketing system with quality assessment [Mainly implemented by DOSs and CSTRJ]	1-2-1 Selection criteria for evaluation of raw cocoons						Criteria for evaluation of raw cocoons in the cocoon markets were studied and modified as per the need and cocoons testing method has been developed.	[Remaining period] Completed. [After completion of project] Completed.	Both farmers and reelers are getting benefited from cocoon testing at cocoon markets. Farmers are getting better price for the cocoons whereas reelers are able to select the required quality of cocoons at suitable price. Quality Club members and farmers have appreciated the importance of cocoon quality assessment. Further, farmers are showing interest for introduction of cocoon testing at Quality Club level.	100%	
		1-2-2 Establish a rapid and simple evaluation method of raw cocoons						Rapid and simple evaluation system of raw cocoons in the cocoon markets were developed with the help of JICA experts.	[Remaining period] Completed. [After completion of project] Completed.		100%	

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)
	Item	Sub Item	1	2	3	4	5			
		1-2-3 Introduce new evaluation system of raw cocoons in cocoon markets						<p>Cocoon testing method for evaluation system of raw cocoons were introduced in Ramnagar, Coimbatore, Hindupur and Dharmapuri cocoon markets with the help of JICA experts.</p> <p>[After completion of project] Rapid and simple evaluation system of raw cocoons will be popularized in the cocoon markets.</p>	100%	
		1-2-4 Plan for cocoon testing by the Quality Clubs to facilitate marketing of cocoons						<p>Interaction meetings with Quality Clubs were held at CSTRI. Quality Club members and farmers have appreciated the importance of cocoon quality testing.</p> <p>[Remaining period] Popularization of cocoon testing in different project sites will be continued with the Quality Clubs.</p> <p>[After completion of project] Popularisation of cocoon testing in different project sites will be continued.</p>	100%	

Activities (Plan of Operation)		State of Activities					Rate of Achievement	Final Goal (Output)	
Title	Item	Sub Item	1	2	3	4			5
	1-3 To examine the needs is for modification on current extension system, current extension plan, government policy to strengthen small sericulture farmers and to strengthen farmers [Mainly implemented by CSB-BC, DOSs-BC and CSR&TI]	1-3-1 Examining present status of extension system and extension plan to clarify problems for improving small sericulture farmers for starting bivoltine sericulture						Current extension system, plan and policy for small sericulture farmers were found to be appropriate. Necessary budget provision has been made to meet the requirement of the new farmers subsequently to be identified in the TSCs under the project.	100%
		1-3-2 Determine budget plan for the modification and development of equipment essential to small sericulture farmers						[After completion of project] The same system will be continued. [After completion of project] Sufficient allocation will be made under CDP for support to the BV farmers. More emphasis are given for promotion of bivoltine sericulture under Xlth Plan.	100%
								Allocated budget for small sericulture farmers under CDP were drawn and all the Action plan for providing inputs to the small sericulture farmers are in place.	
								Remarks for remaining period and after completion of the project [Remaining period] The present system is suitable for promotion of bivoltine sericulture in the country. [After completion of project] The same system will be continued.	

Activities (Plan of Operation)		State of Activities					Rate of Achievement	Final Goal (Output)			
Title	Item	Sub Item	1	2	3	4			5	Result and evaluation at this stage	
	1-4 Action plan for promotion will be formulated with close coordination of CSB and DOSS [Mainly implemented by CSB-BC, DOSS-BC and CSR&TI]	1-4-1 Preparation of practical action plan for small sericulture farmers						Assistance for small sericulture farmers with close coordination with CSB and DOSS has yielded better results in terms of higher cocoon price and the same will be continued.	100%		
								<p>Activities done up to November 2006</p> <p>Action plan for promotion of bivoltine sericulture has been formulated jointly by CSB and DOSS in the targeted states. Sufficient fund has been allocated under CDP to support bivoltine farmers creating infrastructure for a period of 5 years starting from 2002-03. The CDP Scheme prepared to support farmer include all the critical areas. Besides the above, as an exigency plan, farmers had been supported and price incentive in the cocoon market to compensate fall of the price of cocoons and the scheme was operational till December, 2002. For this special support, a sum of Rs.826 lakh was allocated and out of which Rs.268.04 lakh was done as CSB's share to provide support to the farmers from falling prices of the primary produce. For promotion of rotary mountages, special emphasis was given and a sum of Rs.100.00 lakh was allotted as CSB share for the same during the current financial year.</p>	<p>Remarks for remaining period and after completion of the project</p> <p>[Remaining period] Action Plan for promotion of bivoltine farmers are the basic criteria for quality cocoon yield. [After completion of project] More emphasis will be given for quality silk production during XIth Plan.</p>		

Activities (Plan of Operation)		State of Activities					Rate of Achievement	Final Goal (Output)
Title	Item	Sub Item	1	2	3	4		
	2-2 To monitor project activities through regular joint meetings [Mainly implemented by CSB-BC and DOSs-BC]	2-2-1 CSB-BC and DOSs-BC will hold regular meetings for reviewing the progress of project activities (extension service, silkworm seed supply, chawki, rearing, disease control, cocoon harvest, raw cocoon quality, etc.)						
	2-2 To monitor project activities through regular joint meetings [Mainly implemented by CSB-BC and DOSs-BC]	2-2-1 CSB-BC and DOSs-BC will hold regular meetings for reviewing the progress of project activities (extension service, silkworm seed supply, chawki, rearing, disease control, cocoon harvest, raw cocoon quality, etc.)	Periodical meetings were held to discuss various issues including strategies for realizing the objectives of the Project. All attendants have shared their experience to coordinate and realize the objectives set under the Project. Meeting details are given below: No. of BV Cell Meetings - established. 23; No. of Joint Meeting - 13; No. of Group Meetings on Seed Production - 8; [After completion of meetings at periodical intervals. No. of Group Meetings on Extension - 8; project No. of Group Meetings on Training - 8; The system of No. of Quarterly meetings - 7; No. of JCC coordination and collaboration will be continued and the progress will be reviewed through regular meetings and if necessary, the system will be further improved]	Remarks for remaining period and after completion of the project [Remaining period] Coordination/ collaboration for promotion of bivoltine sericulture have been established and the project activities have been monitored through meetings at periodical intervals.	Coordination/ collaboration mechanism for promotion of bivoltine sericulture have been established and the project activities have been monitored through meetings at periodical intervals.	100%		
3. Strengthening of system of seed production [Mainly implemented by NSSO and DOSs]	3-1 To formulate plan for mass production of quality seed [Mainly implemented by NSSO and DOSs]	3-1-1 Determine the standard and select Grainage and BSF	Standards for BSF and Grainage were made to develop as model and nine BSFs and eleven Grainages were selected and supported based on the standards by JICA.	Standards for BSF and Grainage were made to develop as model and nine BSFs and eleven Grainages were selected and supported based on the standards by JICA.	Standards for BSF and Grainage were made to develop as model and nine BSFs and eleven Grainages were selected and supported based on the standards by JICA.	100%	System for mass production of quality seed will be established.	

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)	
	Item	Sub Item	1	2	3	4	5				Activities done up to November 2006
		3-1-2 Mass production plan of high quality silkworm seeds will be formulated according to the guideline for the production and quality control of silkworm seeds						Mass production of high quality silkworm seeds were provided and formulated. Guidelines were made for the production and quality control of silkworm seeds which included ISO 9001: 2000 certification in quality silkworm seeds production.	[Remaining period] Production of quality silkworm seeds have been formulated. [After completion of project] Emphasis will be given for production and quality control of silkworm seeds for cocoon quality production.	100%	
	3-2 To establish one-way system at CSB and DOSs [Mainly implemented by NSSO and DOSs]	3-2-1 The one way system for maintenance and multiplication of silkworm race is established by discrimination of male and female, and prevention of race mixing						One way system of basic seed multiplication was followed at CSB and DOSs. Training for sex separation was given in each Grainage.	[Remaining period] The one way system for basic seed multiplication was successful and more emphasis was given for discrimination of males and females at pupal stages to avoid mating of unwanted race in the commercial seed. [After completion of project] The one way system for basic seed multiplication will be followed.	100%	

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Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)	
	Item	Sub Item	1	2	3	4	5				Remarks for remaining period and after completion of the project
	3-3 To establish quality control guidelines and checkpoints at P3 level and below [Mainly implemented by NSSO and DOSs]	3-3-1 Establishment of rearing techniques assuring more than 85% of pupation rate and 45g/kg seed cocoon (egg recovery) in Grainage						Quality control guidelines for the BSFs and Grainages were prepared and guidance was given to carry out the work based on the guidelines. Purchase of quality seed cocoons are very important for quality seed production. Therefore, identified/selected P1 seed farmers were trained for generation of quality seed cocoons. The pupation rate of seed cocoons at selected Grainages were 90.3% and recovery rate was 50.4g/kg.	Quality control guidelines for the BSFs and Grainages were prepared and activities were carried out by following the guidelines. In some selected BSFs, the hatching percentage is less than 90% and defective cocoon percentage is more than 5%. Further improvement is required.	90%	

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)	
	Item	Sub Item	1	2	3	4	5				Remarks for remaining period and after completion of the project
	3-4 To formulate guidance plan to BSF staffs, Grainage staffs and seed farmers [Mainly implemented by NSSO, DOSS, SSSL and CSR&TI]	3-4-1 Formulate guidelines for BSF staffs, Grainage staffs and seed farmers						Standard guidance for selected BSFs/GSFs, Grainages and seed farmers was made. Guidance for the BSFs/GSFs, Grainage staffs and seed farmers was given by the team.	100%	Guidance plan was formulated for the BSF and Grainage staffs. Training at SSSL and following the standard village level were conducted for seed farmers. Village level training was found to be very effective because of the one complete cycle required for rearing on raising of quality seed rearing. In BV seed to meet the additional training on mulberry cultivation will meet the standards technology, disinfection and rearing technology were also given to sustain production of quality seed cocoons.	
	3-5 Strengthening of seed production facilities [Mainly implemented by NSSO and DOSSs]	3-5-1 Strengthen facilities and equipment in BSFs and Grainages for quality seed production						Inspection of BSFs and Grainages for strengthening of seed production facilities was done.	100%	Upgrading has been done by NSSO and DOSSs based on inspection report.	

Activities (Plan of Operation)		State of Activities					Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)				
Title	Item	Sub Item	1	2	3	4				5	Remarks for remaining period and after completion of the project		
4 Strengthening of training [Mainly implemented by CSR&TI, CSTRI and DOSS]	4-1 To formulate training master plan for bivoltine sericulture and Reeling TSCs [Mainly implemented by CSR&TI, CSTRI, SSTL and DOSS]	4-1-1 Determine the standard and select STSs and Reeling TSCs						The criteria for model STS and Reeling TSC were made. Six STSs and two Reeling TSCs were selected based on the model.	[Remaining period] Completed.	[After completion of project] Completed.	The target STSs and Reeling TSCs were selected. Training master plans were formulated in each of the identified fields.	100%	DOS staff will be equipped with necessary skills and knowledge for extension of bivoltine sericulture, and training facilities will be improved for bivoltine sericulture
		4-1-2 Formulate training master plan which emphasizes practices for the bivoltine sericulture technology (mulberry culture, rearing, disease control, etc.)						Training master plans for the bivoltine sericulture technology were formulated at CSR&TI and STSs.	[Remaining period] Completed.	[After completion of project] Completed.			
		4-1-3 Formulate training master plan for seed production						Training master plans for the bivoltine seed production were formulated at CSR&TI and SSTL.	[Remaining period] Completed.	[After completion of project] Completed.			
		4-1-4 Formulate training master plan which emphasize practices for reeling						Training master plan for reeling technology were formulated at CSTRI and Reeling TSCs.	[Remaining period] Completed.	[After completion of project] Completed.			
	4-2 To formulate facility development plan [Mainly implemented by DOSS]	4-2-1 Formulate a plan for developing training facilities especially for bivoltine sericulture practices including reeling						Information was collected through surveys of STSs and Reeling TSCs. The plan for developing training facilities was formulated.	[Remaining period] Completed.	[After completion of project] Completed.	Gave instructions to concerned units to develop training facilities at STSs and Reeling TSCs.	100%	

Title	Activities (Plan of Operation)					State of Activities		Rate of Achievement	Final Goal (Output)		
	Item	Sub Item	1	2	3	4	5			Activities done up to November 2006	Remarks for remaining period and after completion of the project
4-3 Strengthening of training facilities (by DOS) [Mainly implemented by DOSs]	4-3-1 DOSs strengthen training facilities and equipment especially for bivoltine sericulture practices including reeling							The STSs were strengthened in training facilities, mulberry garden and rearing equipments based on inspection report. Reeling TSCs were strengthened by introduction of reeling facilities based on inspection report.	[Remaining period] At STS Channapatna, the mulberry garden will be enhanced to more than 1 acre. [After completion of project] Completed.	Training facilities were strengthened by DOSs. Especially, at Reeling TSC, Sidlaghatta, reeling room and boiler room etc., were extended and one set of multiend reeling machine and boiler etc., were installed. However, the established mulberry plantation in STS-Channapatna is too small to practice.	95%
4-4 To revise training curriculum to be field oriented [Mainly implemented by CSR&TI, DOSs, CSTRI and SSTL]	4-4-1 CSR&TI, CSTRI and SSTL in consultation with DOSs revise training curriculum which emphasize practices for the bivoltine sericulture and reeling technology							Revised training curriculum were made ready for implementation on the training programme in each training institutions.	[Remaining period] Completed. [After completion of project] Completed.	Revised training curriculum are utilized in planned training programmes.	100%
4-5 To conduct trainer's training [Mainly implemented by CSR&TI]	4-5-1 Conduct advanced training for STS staffs							The trainers training programmes for STS staff was conducted by CSR&TI.	[Remaining period] Completed. [After completion of project] Completed.	Trainer's training were conducted more than the target(60 staff/5 years) at CSR&TI, and the achievement rate was 128 %.	100%

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)
	Item	Sub Item	1	2	3	4	5			
4-6 To conduct farmer's training (by DOSS) [Mainly implemented by DOSS]	4-6-1 DOSS conduct practical and efficient training for bivoltine sericulture farmers						Two training courses for farmers were conducted at STS K.R.Pet. Three training courses for farmers were conducted at two STSs, Channapatna and Hassan. Four training courses for farmers were conducted at two STSs, Kuderu and Hindupur. Six training courses for farmers were conducted at STS Hosur.	[Remaining period] Training will be continued according to the schedule. Training in STS Channapatna will be started with strengthening of training facilities. [After completion of project] Each state government should secure the budget to continue training.	100%	Because training had been conducted more than the target(2840 farmers/5 years) in six STSs, the average of achievement rate exceeded 179%. At STS-Channapatna, training programme remains stagnant. However, more than 90 farmers will be trained between January and March, 2007 and the expected achievement rate will be 80%.
4-7 To devise training curriculum and materials in each field [Mainly implemented by CSR&TI, CSTRI and SSTL]	4-7-1 Silkworm race maintenance/seed production [Mainly implemented by CSR&TI, SSTL and NSSP]						Training curriculum on silkworm race maintenance/seed production was prepared in consultation with CSR&TI and SSTL. Two kinds of booklets, one video and two kinds of picture panels on silkworm race maintenance and silkworm seed production were made for BSF/Grainage staffs.	[Remaining period] Completed. [After completion of project] Completed.	100%	Devised training curricula and several teaching materials were prepared more than the plan in each field. One training course on silkworm race maintenance was set at CSR&TI, and five training courses on seed production at SSTL were set.
	4-7-2 Mulberry cultivation [Mainly implemented by CSR&TI]						Training curriculum on mulberry cultivation was revised. One booklet, one video and seven kinds of picture panels on mulberry cultivation were made for STS and TSC staffs.	[Remaining period] Completed. [After completion of project] Completed.	100%	One training course on mulberry cultivation was set at CSR&TI.

Activities (Plan of Operation)		State of Activities					Rate of Achievement	Final Goal (Output)		
Title	Item	Sub Item	1	2	3	4			5	Remarks for remaining period and after completion of the project
		4-7-3 Silkworm rearing/disease control [Mainly implemented by CSR&TI]						[Remaining period] Completed. [After completion of project] Completed.	Three training courses on silkworm rearing and disease control were set at CSR&TI.	100%
		4-7-4 Reeling [Mainly implemented by CSTR]						[Remaining period] Completed. [After completion of project] Completed.	Seed farmer's training at SSSL had been conducted more than the target (150 farmers/5 years), achievement rate was 158%.	100%
4-8 To conduct training courses for extension staffs [Mainly implemented by CSR&TI, CSTR and SSSL]		4-8-1 CSR&TI, CSTR and SSSL conduct recurrent training course for extension, BSF and Grainage staffs						[Remaining period] Training will be continued according to the schedule. [After completion of project] Each state government should secure the budget to continue training.	The achievement rate of TSC staff's training at CSR&TI was 105 % of target (315 staff/5 years). The achievement rate of reeling staff's training at CSTR was 64 % less than target (100 staff/5 years). However, more than 20 reeling staffs will be trained between January and March, 2007 and the expected achievement rate will be more than 80%.	90%

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)
	Item	Sub Item	1	2	3	4	5			
5 Establishment of model for bivoltine sericulture extension [Mainly implemented by CSB-BC, DOSS-BC and CSR&TI]	5-1 To select target TSCs [Mainly implemented by CSB-BC, DOSS-BC and CSR&TI]	5-1-1 Determine the standard and select TSC, Reeling TSC and bivoltine sericulture farmers in Karnataka, Andhra Pradesh and Tamil Nadu						The achievement rate of BSF/Grainage staff's training at CSR&TI and SSTL was 52 % less than the target(1000 staff/5 years). At SSTL, five training courses are proposed to train 1000 persons in five years. Since target staff in BSF/Grainage is only 300 staff, hence it is impossible to achieve target. To reach the target in remaining period, the same persons should be deputed to other courses. The achievement rate of TSC staff's training at STSs exceeded 144 % of target(600 staff/5 years).		Extension model for bivoltine sericulture will be established.
			4-8-2 SSTL conduct practical and efficient training for bivoltine seed farmers	Training programme for seed farmers was conducted in village level by SSTL	[Remaining period] Completed.	100%				
								18 TSCs, 2 Reeling TSCs and 3,303 JICA farmers were selected.	95%	
								[After completion of project] Completed.		

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)	
	Item	Sub Item	1	2	3	4	5				Remarks for remaining period and after completion of the project
	5-2 To plan and implement model extension activities in the targeted area [Mainly implemented by CSB-BC, DOS-BC, CSR&TI and CSTR1]	5-2-1 CSR&TI will prepare and publish extension manuals/pamphlets written in languages for model extension activities and promotion of bivoltime sericulture in selected area						Manuals/pamphlets were published in regional languages. Charts and videocassettes were prepared and distributed to TSCs for illustration while teaching extension programmes. Pamphlets were prepared by TSC staff themselves for acquiring the know-how and regional extension tools.	9 manuals and 8 pamphlets were published in regional languages. 6 charts and 4 videocassettes were prepared and distributed. Pamphlets were prepared by TSC staff themselves. 110 times of extension programmes organized and 8,691 persons participated. Total number of selected JICA farmers has reached to 3,303. The JICA crop rearings were taken up continuously and crop monitoring was drawn.	100%	
		5-2-2 Organization of enlightenment programme, field days, group discussion, study tour for promotion of bivoltime sericulture						Total 110 of extension activities, such as Enlightenment programme, Group discussion, Study tour, Quality awareness programme, Field day for reelers, Interaction meet, Demonstration of CRC management, Demonstration of rotary mountages, Work shop were organized and 8,691 persons participated.	[Remaining period] Demonstration of CRC management, rotary mountages, work shop will be conducted. [After completion of project] Those activities and maintenance of provided equipments will be continued.	100%	

Title	Activities (Plan of Operation)					State of Activities		Result and evaluation at this stage	Rate of Achievement	Final Goal (Output)	
	Item	Sub Item	1	2	3	4	5				Activities done up to November 2006
		5-2-3 Detailed brushing program for each crop with F1 seed requirement, organizing chawki rearing and crop monitoring will be drawn by CSR&TI, in consultation with DOSs and NSSP						Total number of selected JICA farmers has reached to 3,303. The crop plans were made, the brushing date and layings will be taken up requirement were decided in the Joint meeting for extension. Chawki rearing monitoring will be conducted in 50 CRCs including identified 18 JICA model CRCs. The JICA crop rearings were taken up during the period. Accordingly, the crop inspection and guidance were made in different stages by guidance team and TSC staff in each district.	[Remaining period] The JICA crop rearings will be taken up continuously and crop monitoring will be drawn. [After completion of project] Those activities will be continued.	100%	
	5-3 To tune up technical package developed by PPPBST [Mainly implemented by CSB-BC, DOSs-BC, CSR&TI, CSTRI, NSSP and SSTL]	5-3-1 Bivoltine sericulture technology package (race maintenance, seed production, mulberry cultivation, rearing, disease control, reeling) developed and certified by PPPBST will be finely tuned						Mulberry planting system of 3' x 3' as well as I-J were being continued. Local manufactures making sericulture related tools have been identified and the list are updated. Efforts of manufacturing and popularization of rotary mountages locally are in progress and a cocoon harvester has been developed. Development of other sericulture related tools are completed in CSTRI.	[Remaining period] Rotary mountages and denier control system will be popularized. [After completion of period] Those activities will be continued.	100%	Manufacturing system for sericulture related tools with indigenous materials were established.

Activities (Plan of Operation)		State of Activities					Rate of Achievement	Final Goal (Output)	
Title	Item	Sub Item	1	2	3	4			5
	5-4 To prepare method of monitoring and evaluation for extension activities [Mainly implemented by CSR&TI and DOSs]	5-4-1 Study the monitoring and evaluation method for the extension activity based on the baseline survey						Established a monitoring and evaluation method through Joint meeting and Group meeting. Inspection notebook is using for extension activities effectively. New CRC certification system was started.	100%
	5-5 Strengthening of TSC (DOS) [Mainly implemented by DOSs]	5-5-1 DOS strengthen TSC according to the action plan 5-5-2 DOS will promote to establish CRCs as per the requirement linked to the commercial TSCs to organize young silkworm rearing						Maintained JICA model TSCs and CRCs. The TSCs and the CRCs strengthened under the project will work as model facilities for extension activities. Additional CRCs were established by DOS.	100%

Accomplishment Grid

1) Accomplishment of Indicators for Project Overall Goal		Results
Overall Goal	Indicators in the PDM	
Enhancing production and quality of bivoltine raw silk and thereby raising the income levels of farmers and reelers.	(1) Bivoltine sericulture farmers in target areas will increase income from sericulture	<p><u>According to the research on the present situation of 70 bivoltine sericulture farmers which was selected on second phase, 70% of the farmers increased their income.</u> The number of bivoltine sericulture farmers raised 12.5 times from 142 to 1776 farmers. The bivoltine sericulture extension system has been strengthened. And the number of bivoltine sericulture farmers has increased 3698 by the project.</p> <p>Bivoltine cocoon quantity increased every year.</p> <p>Therefore it is assumed that bivoltine sericulture farmers in target areas will increase income.</p>
	(2) The production of quality raw silk (above 2A level) in target areas will be increased.	<p>The training for reelers have been implementing in Reeling TSC.</p> <p><u>The grade of raw silk which is made from cocoon produced by JICA farmers is from 2A to 4A, and 4A raw silk is increasing.</u></p> <p>It is assumed that the production of quality raw silk (above 2A level) in target areas will be increased.</p>
2) Accomplishment of Indicators for Project Purpose		Results
Project Purpose	Indicators in the PDM	
Extension system for bivoltine sericulture will be functional.	(1) The number of bivoltine sericulture farmers will be increased to 3,600 by the end of the project in target area	<p><u>According to the report of Joint Meeting, the number of bivoltine sericulture farmers is 3698. (103% of the indicator)</u></p> <p>Project started to select bivoltine sericulture farmers in 2002. Rearing of silkworm started from July 2003. From 2002 to 2003 there have been drought. And because of the security, there was regulation of movement for experts. Therefore implementation of some activities were delayed. There was no statistics of the number of bivoltine sericulture farmers in 2002, therefore survey of the number of bivoltine sericulture farmers started in 2003. According to the baseline survey, the number increased from 786 in 2003 to 2486 in 2005. In September 2006, the number increased to 3303.</p>

<p>There are 3 statistics of the number of bivoltine cocoon quantity. The statistics of 2006 hasn't been surveyed. And after the selection of farmers, it usually takes time to start to produce bivoltine cocoon stably.</p> <p>1) Baseline Survey: Production in 2002 was 3829t. The production increased to 4956t in 2005 which is 56.4% of the indicator.</p> <p>2) Report of Joint Meeting: JICA selected farmers started to produce bivoltine cocoon in 2002, and the production in 2003 was 375t. The production increased to 1176 in 2005 which is 58.8% of the indicator.</p> <p>3) Market Transaction Data in 3 states: There are 4 cocoon markets in 3 states, which are Ramangaram and Kolar in Karnataka, Hindupur in Andhra Pradesh, Dharmapuri in Taminadu. Ramangaram cocoon market is the biggest cocoon market in India. The transaction of bivoltine cocoon was 698t in 2002. Koral cocoon market started transaction of bivoltine cocoon in 2004 and the transaction in 2005 was 47t. In Hindupur cocoon market transaction increased 12t in 2002 to 78t in 2005. 66t increased. In Dharmapuri cocoon market transaction was 6t in 2003 and the transaction increased to 70t in 2006. 70t increased.</p> <p>The total of the transaction is 1148t in 2005 which is 57.4% of the indicator.</p> <p>However, each farmer can produce 400dfls (100dfls=65kg) once and rear five times per year, therefore the total production will be 4807t in the future produced by JICA farmers. Consequently, it is assumed that the quantity of bivoltine cocoon increases to 2000t.</p>	<p>(2) The quantity of bivoltine cocoon transaction in cocoon markets in target states increase to about 2000 MT from base year 2002 by the end of project</p>
<p>Bivoltine silk seed are supplied to farmers by SSPC and DOS Grainage. SSPC supplies only to JICA farmers to control the quality of seed and DOS Grainage supplies to non-JICA farmers. SSPC supplied 211t in 2002 and increased to 534t in 2005. 323t increased. DOS Grainage in 3 states supplied 24t in 2002, and increased to 104t in 2005. 80t increased. The total supply increased 403t in March 2005 which is 111.9% of the indicator.</p>	<p>(3) Production and supply of quality bivoltine seed will increase to 36 lakh dfls by the end of project</p>

Project Purpose	Indicators in the PDM	Results
	(4) Selected TSCs, CRCs, STSs, BSFs and Grainages will acquire requisite facilities.	<p>The Project selected 18 TSC, 18 CRC, 6 STS, 2 Reeling TSC, 9 BSF, and 11 Grainage. After the selection, the Project made "Strengthening plans for the selected units under PEBS" in July 2003 and April 2004 about the improvement points of facility, training system and so on in accordance with the standard of JICA model. To implement the plans, JICA and DOS provided machineries and improved the facilities from 2002-2003 to TSC, CRC and STS and started activities. To BSF and Grainage, from 2003-2005 both JICA and DOS provided machineries and improved the facilities and started activities. To Reeling TSC, JICA and DOS Karnataka provided machineries and improved the facilities in 2003 and started activities. In 2005 the Project surveyed the situation of provided machineries and improved facilities, and request BVC to take necessary measures for them. <u>According to the request, each state has finished provisions of machineries and improvement of facilities.</u></p>

2) Accomplishment of Indicators for Outputs		Results
Project Outputs	Indicators in the PDM	Results
(1) Action plan for promotion of bivoltine sericulture will be formulated.	(1)-1. CSB and DOSs will jointly formulate action plan with necessary budget allocation.	<u>CSB and DOSs jointly formulate the plan of CDP for the promotion and extension of bivoltine sericulture.</u> Such as provision and maintenance of facilities, price support of cocoon and so on.
(2) Coordination/collaboration mechanism among CSB and DOSs for extension of bivoltine sericulture will be established.	(1)-2. Infrastructure development/improvement plan for extension of bivoltine sericulture will be formulated with necessary budget allocation on annual basis.	<u>Provisions made under CDP for construction of rearing houses etc. for the farmers were completed.</u>
	(2)-1. Information/data regarding bivoltine sericulture will be compiled annually at Bivoltine Cells in CSB and DOSs	<u>Bivoltine Cell in CSB and DOSs are functioning as the project coordination office. The information such as the progress of the project, situation of activities, trainings, extension programs and so on, are collected and shared in BVC.</u> Besides, Group Meeting, Joint Meeting, and Quarterly Meeting were formed and held for the effective implementation of the Project.
(2)-2. Monthly Bivoltine Cell Meetings will be held regularly during the project period in order to share plan and challenges with CSB and DOSs.		<ul style="list-style-type: none"> • <u>24 Bivoltine Cell meeting were held until Dec.2006.</u> • In the beginning of the project, the BVC meeting was held once in a month. Eventually, the meeting has been held when there is a need. • The purpose is to share information and decision making of the project. BVC also contributed efficient implementation of the project activities.

Project Purpose	Indicators in the PDM	Results
(3) System for mass production of quality seed will be established.	(3)-1. Hatching will be over 90 % in selected BSFs and F1 seed will also have 90 % and above hatching.	9 BSF and 11 Grainage were selected by the Project and the Project provided machineries and improved the facilities in accordance with the standard of JICA model. <u>Hatching in BSF in 2005 was average 92.0%, (90.1% in 2003 and 91.7% in 2004. Hatching in Grainage in 2005 was average 92.5%. (91.7% in 2003 and 91.8% in 2004.</u>
	(3)-2. Defective cocoon rate will be less than 5% in selected BSFs.	<u>Defective cocoon rate was average 3.9% in 2005. (6.5% in 2003 and 3.9% in 2004) The rate is decreasing every year.</u>
	(3)-3. Mixing of different races and sex will not occur in selected Grainages.	<u>Mixing of sex rate was average 1.8% in 2005. (4.4% in 2003 and 2.0% in 2004) The rate is decreasing every year.</u>
	(3)-4. Pupation rate will be over 85% in selected Grainages.	<u>Pupation rate was average 90.3% in 2005. (89.1% in 2003 and 91.3% in 2004)</u>
	(3)-5. Recovery rate of seed from seed cocoons will be over 45g/kg in selected Grainages.	<u>Recovery rate of seed from seed cocoons was average 50.4g/Kg in 2005. (41.1g/kg in 2003 and 45.4g/kg in 2004) The rate increases every year.</u>
	(3)-6. Training program will be conducted for BSF/Grainage staff (200 participants/year) and seed farmers (30 farmers/year) in CSR&TI and SSTL.	<u>The 524 staff of BSF and Grainage trained have been trained in CSR&TI and SSTL at present. (52%) At the beginning each BSF staff was going to have 5 training courses. However, so far each staff has 2 or more than 2 courses. The reasons are 1) the start of the training was delayed, and 2) depending on the work, it is not needed for staff to have 5 courses.</u>
	(4) DOS staff will be equipped with necessary skills and knowledge for extension of bivoltine sericulture, and training facilities will be improved for bivoltine sericulture.	<u>237 seed farmers have been trained at present. (158%</u>
	(4)-1. TSC staff (350 participants/5 years), STS staff (60 participants/5 years) and Reeling TSC staff (100 participants/5 years) will be trained by CSR&TI and CSTRI	<u>330 TSC staff and 77 STS staff have been trained. (105% 128%) Since the budget allocation was delayed for the improvement of facilities, 64 Reeling TSC staff have been trained at present. (74%). Since there will be 2 trainings to be held by July, the total staff will be 99 participants. It is assumed that the indicator will be almost accomplished by the end of the project.</u>

Project Purpose	Indicators in the PDM	Results
	<p>(4)-2. Field oriented bivoltine sericulture training courses will be formulated in selected STSs (more than 2 courses/ STS)</p> <p>(4)-3. Training materials will be improved and developed (textbooks in 5 subjects in local languages, training videos in 5 subjects in local languages and picture panels for selected STSs)</p> <p>(4)-4. DOS staff (600 participants /5 years) will be trained at selected STSs</p>	<p><u>Bivoltine sericulture training courses have been formulated. (3 courses in Channapatna, 2 course in K.R. Pet, 3 courses in hassan and 4courses in Kuderu)</u> Totally 5086 farmers have were trained and their knowledge were improved. The Project surveyed the satisfaction of the farmers who had training courses. About 90% were satisfied with the training courses. And at the end of the training course in STS, the test to evaluate the knowledge of bivoltine sericulture was held. More than 70% of the farmers could gain the knowledge about bivoltine sericulture.</p>
(5) Extension model for bivoltine sericulture will be established.	<p>(5)-1. 9 booklets and 5 pamphlets in English and local languages will be utilized</p> <p>(5)-2. The number of Chawki rearing houses managed by Quality Clubs in selected area will be increased from 40 as of 2002 to 100 in 5 years.</p>	<p><u>6 textbooks, 6 video programs, 10 panels, 5 booklets in 4 or 5 languages were developed.</u></p> <p><u>Totally 863 DOS staff were trained.(144%)</u></p> <p><u>9 booklets for mulberry cultivation , seed rearing, reeling and so on were developed in 4 languages.</u></p> <p><u>6 pamphlets for extension in TSC, CRC, and Reeling TSC.</u></p> <p><u>4 TSC published own pamphlets for extension and the introduction of the situation in each TSC.</u></p> <p><u>The number of Chawki rearing houses managed by Quality Clubs in selected area have been increased to 102 at the end of February in 2007. And 50 non-Quality Club CRCs are being operated and 11 more are being planned to operate.</u></p>

Project Purpose	Indicators in the PDM	Results
	<p>(5)-3. Sericulture related tools (rotary moutage, cocoon deflossing machine, cocoon cutting machine, leaf chopping machine and incubation frame) will be developed and introduced to BSFs, Grainages and farmers</p>	<p><u>CSR&TI developed Cocoon cutting machine, Leaf chopping machine and so on with the support of CSB experts and TSC staff.</u></p> <p><u>Rotary moutage, sprayer, and cocoon deflossing machine were introduced to the farmers.</u></p> <p><u>Cocoon cutting machine and incubation frame were introduced to BSF and Grainage.</u></p> <p><u>Leaf chopping machine was introduced to CRC.</u></p> <p>There were 35 private companies which produce sericulture related tools in 2002. The number of the companies increased to 50 in 2005.</p> <p>There was recommendation of improvement and extension of rotary moutage on the midterm evaluation. After the evaluation the project firstly started to train the local companies. The project had a seminar about rotary moutage for the companies and the union for production of rotary moutage was formulated to develop. Moreover through BV, it was decided that CDP was subsidied for the farmers to purchase rotary moutage. 2 companies have started to produce rotary moutage monthly 1000 sets since 2005. For the extension, the training about rotary moutage was held for the staff of STS and the manuals were developed. each 18 TSC has been selling rotary moutage</p>
Other Activities		<p>There are some requests for textbooks, video programs, panels, booklets in local language from DOS of other states or universities.</p> <p>BV sericulture workshops were held in Kerala and Maharashtra by CSB based on the requests from those states, which are interested in BV sericulture.</p> <p>16 enlightenment programs, 4 interaction meetings, 15 study tours and 35 group discussions, 5 quality awareness programs, 4 field days, 10 chawki rearing management courses and 8 rotary moutage management courses for farmers have been held. Projects contributed upgrading not only in extension officers' level but also in farmers' level.</p> <p>Technical transfer from JICA farmers to non-JICA farmers has been observed. Some JICA farmer is playing a role as consultant for silkworm rearing.</p>