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WOMEN'S ROLES IN LARGE EMPLOYMENT SYSTEMS

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Women's Roles in Large Employment Systems

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It is increasingly being recognised that women tend to receive unequally the benefits ensuing from development programs, particularly from the development programs targetted at large employment systems in India, such as dairying, fisheries, sericulture. These two case-studies raise issues regarding the development of sericulture in Karnataka and Tamil Nadu particularly regarding the question "Is the unequal access of women to the benefits of development due to the unequal presence of women in the personnel network?"

1. A Case-Study of the Karnataka Sericulture Project*

Devaki Jain

* This was prepared as a consultancy report at the request of The Ford Foundation.

Women's Roles in Large Employment Systems

Introduction

Nancharamma is a female Harijan Landless labourer in Challapalli village in Andhra Pradesh. Her tiny hut in the Harijan colony has mud walls which are slowly crumbling down. Her possessions are extremely limited - a few mud pots, a few old saris. And yet - now she has a buffalo and earns at least Rs.100 a month by giving the milk to the milk cooperative at Challapalli. "I knew nothing of the milk cooperative until last year" she says. "The male office-bearers never talked to us. But when it became an all-women's wilk cooperative last year, the President took great pains to enroll me."

Venkatalakshmamma in Sivanahally village in Karnataka says, "I have been rearing silkworms for the past 12 years. Yet, I never knew how to care for the worms. Sometimes, a whole batch would suddenly die in a flash. We thought it was someone's evil eye. Now the Government's extension worker Marsamma tells me so many new things. She tells me why they die - she tells me what to do. She sits with me as I work, and talks about so many things going on in the world outside. The world is changing rapidly - but we were not aware of change till she came to tell us."

Are these isolated anecdotes? Or, are these observations at the micro-level, part of a larger macro-level framework of women in development and women's employment issues?

The two case-studies presented in this discussion paper attempt to raise some of these issues and present different points of view.

I. The Enquiry

It is increasingly being recognised that women tend to receive unequally the streams of benefits ensuing from development. It is often suggested that one of the reasons for this unequal access is the unequal presence of women in the personnel network, whether in programme-design, administration, extension, evaluation or intervention.

The question that this case-study attempts to answer is:

- how far the reach of a programme depends on the sex of its communicators. The reach would obviously have a class-economic target group aspect apart from a sex aspect. The question would be to allocate/ determine the mix of the two;

- if women communicators appear to be a critical input from the point of view of distributive justice how to overcome the known obstacles or inhibitions and ensure the absorption of an adequate number of women personnel at each level?

In trying to look for the answer to these questions the ongoing Sericulture Development Project of the Karnataka State Government aided by the World Bank was examined.

The examination first looks into the principal aims of the Project, its employment potential and the nature of such employment. Second, it looks at the type and number of functionaries that the Project intends to employ, their roles, pay scales, educational level, source of supply. It specifically identifies functions where the Project's aims and needs could be better served by female functionaries. Third, it attempts some general inferences which would lead to an improved understanding of the woman-power needs of various development projects.

Methodology

Some elaboration of methodology seems necessary as special attempts have been made to carry the project administrators with the ideology behind the study. Studies or research which wants to reform policy, modify, intervene, require to follow a different path from research that wants to expose facts without necessarily guaranteeing that the exposure will be accepted.

This research was undertaken with the first goal namely to intervene within a climate where the intervention is understood, acceptable and absorbed. The attempt to use such methodology has necessarily meant a great deal of patience and time in getting down to quantification and analysis. Thus the phase of household survey, consultation with women "beneficiaries" as well as women protagonists was taken up only after some advance had been made with the first goal, that is trying to make the research an active tool for sensitizing the project to the issues and having them "accept" the rationale of the study.

Sensitizing started with a frank sharing with the authorities the main points of criticism of the sericulture project.

(1) A very heavy part of the project finance was going to build extension delivery system and very little would actually go to sericulture workers. This has been justified on the grounds that the programme basically was trying to introduce new techniques in sericulture production and therefore extension was the critical input.

(2) Most of the extension staff were male while sericulture was an activity in which both males and females participated. Hence the concern was raised whether over time women will not be pushed out of the sericulture industry as the new knowledge would be largely absorbed by the males.

(3) The programme might tend to be more utilised by the "better farmers" namely the larger landholders and thereby intensify inequality in the rural areas.

(4) It was found that certain crafts associated with traditional sericulture production such as the manufacture of cocoon rearing trays, "chandrikes" traditionally done by forest based tribals (Medars) would get into the commercial manufacturing sector in urban centres, thus possibly denying these tribals their income earning opportunities.

(5) There were health hazards associated with the sericulture process and this had not been taken care of.

In the first round, these comments were shared with the Deputy Director, Department of Sericulture, who was friendly and interested enough to reply to each of the criticisms.

In the next round, the Chief Secretary, Government of Karnataka was appraised of the issues and he readily saw that the Sericulture Project was largely a programme for women, that this would basically affect women and therefore we should have a look at it.

At his instance a field visit was arranged by the concerned department, the Directorate of Sericulture in which both the District Officer-Sericulture as well as the Director of Women and Child Welfare and the President of the most active voluntary agency in the district namely the Family Planning Association of India went as a team. The visit was to 10 sericulture villages in one of the most well established sericulture districts of Karnataka namely Kolar.

The District Sericulture Officer questioned the team's interest in finding out whether women had been given adequate attention in the project's implementation design. Firstly he said that women and men and children were intertwined in sericulture cultivation with no clear segregation of roles - no forms of traditional task allocation charter. Hence, there was no need to see the project either as a women's project or a project in which unless women are reached there can be some negative consequences. He called it a household activity with no sex-based demarcation of tasks.

Therefore he did not see any reason why the extension agents should be females or local information dissemination centres should be manned by women. If the household is reached, male or female, the project would be adequately looked after. He also argued that women would be inhibited in taking up jobs either in the chowki rearing centres or in other forms of outside-house training or discussion activities and would prefer to send their men for such activities including marketing. Hence by and large their roles were housebound.

Some of these issues were tested out in the field visit:

Firstly it was found that the chopping of mulberry leaves and the continuous feeding were 3 hourly; this was largely done by females and children as they were more house bound. Many of the women complained that after working the whole day at household chores and child-rearing they could not sleep in the night because the worms had to be fed, and felt exhausted. They also felt that the house was created for the worms who dominated the space and left very little for themselves and for their children.

In village level meetings held with men and women, women volunteered to be the incharge of the chowki rearing centres and showed no inhibition or hesitation in taking such outside house extension tasks.

They felt that they would even like to take the product to the market as then they could have a control over the cash which otherwise came under the control of the men. They mentioned that men's use of cash have included non-food items and liquor which rob them of the full value of their work.

As a result of the visit, both the Director of Women and Child Welfare and the former Director of Sericulture wrote notes to the Chief Secretary in which they expressed the view that there was need to look at the project again from the point of view of women's participation at all levels especially from the point of view of providing women sericulture workers inputs from the social welfare side such as child care centres, health protection and so on. Consequently, the Chief Secretary decided to appoint a Task Force on Sericulture to go into

all these issues. Due to changes in the administrators in charge of sericulture and its department, namely, Industry, the setting up of the Task Force was delayed by several months. The Task Force eventually came into existence on February 4, 1982.

In the meantime the Ford Foundation also took another step and funded the induction of eight women extension workers in the Kanakapura Block - a traditional sericulture area. This gave an additional opportunity to see if having more women in the delivery system would have some special benefits both to the household as well as to the project.

Before going into the field it was also decided to consult other research organisations in Karnataka who had collected data on the sericulture project, the most rich stock being that of the Institute of Social and Economic Change (ISEC) where Dr. A. H. Rajapurohit was incharge of the research programme and concurrent evaluation of the Sericulture project.

Our tasks were then divided between two teams. One team looked at the arrangements for the training of functionaries. The other studied the extension services and conducted field investigations at the household level in selected villages. 64 households in 30 villages in Kanakapura were covered of whom 15 were women-headed households and about one half that is 30 were below the poverty line. The silkworms bred in these villages included traditional varieties as well as M-5 and Bivoltine. The findings are embodied in different sections of the report at appropriate places. Appendix I gives a note on the coverage and characteristics of the household survey and facts and observations.

The results of the field survey were analysed and presented at group meetings of women sericulturists in some of the surveyed villages for a recheck and for learning some of their other problems and suggestions.

II. The Karnataka Sericulture Project

1. Objectives

The objectives of the Karnataka Sericulture project* are:

1) To increase the production of raw-silk in the next five years from the present level of 2,300 tonnes to 4,500 tonnes (of which 1,700 tonnes to be of bivoltine silk), by bringing 19,000 ha. irrigated area in the new districts under (M-5) mulberry cultivation, and by converting 24,000 ha. of existing irrigated mulberry area in the traditional districts from low-yielding mulberry cultivation to high-yielding (M-5) varieties, and by increasing production in rain-fed areas.

2) To provide employment mainly to weaker sections of the people.

For this purpose, and from a longer term point of view,

3) To strengthen research capability for evolving new races of silkworms and strains of mulberry, including improved methods of disease control and agronomic practices.

4) To strengthen the arrangements for producing breeders and foundation stock and egg production and the other associated infrastructure of technical services, marketing, reeling etc., in order to expand the area of new multivoltine, bivoltine and bivoltine hybrids in the traditional as well as new areas.

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* Sericulture Project, Karnataka, Joint Report, Government of India and Karnataka, 1979.

2. Employment

Sericulture is a labour intensive farm activity, combining intensive land cultivation with intensive silkworm rearing in the household.

The Project would generate a total of 1 million person-years during implementation and incremental employment of 0.25 million person-years per year thereafter. The assumption is that one hectare of land under irrigated mulberry is estimated to provide about 6 person-years of employment on the farm and 6.27 person-years in reeling and manufacturing.

The Project does not spell out how much of this employment would be for female workers. An attempt has been made here however to estimate women's share in the total anticipated employment in sericulture.

Sericulture is a family activity in the three main aspects: Mulberry cultivation, silkworm rearing and reeling. Male and female members handle different stages and operations within these aspects, but some stages/operations are more female labour intensive. The existing pattern of male/female participation in different sericultural operations as gathered from other studies and knowledgeable sources is given in Table 1 (also see Tables 2, 3 and 4).

Table 2: Female workers/Male workers Ratios in Rearing of Silkworms, Production of Cocoons and Raw Silk

Important Silk Producing States and Districts	Female workers/Male workers Ratio
States	
- Bihar	0.1408
- West Bengal	1.4177
- Karnataka	1.1488
Districts	
- Kolar	0.7859
- Mysore	1.3135

Source: Census of India 1961, Vol.I, Part II-B(i), General Economic Tables, and Vol. XI Mysore, Part II-B(i) General Economic Tables, as quoted in a study of Employment and Income in Sericulture - A.H. Rajapurohit, K.V. Govinda Raju, Institute of Social and Economic Change, Bangalore, 1981.

Table 3: Comparative Picture of Labour Absorption Ratios

Crops	Female labour/Male labour Ratio	
	Rainfed	Irrigated
Mulberry growing	0.25	0.44
Silkworm rearing	0.32	0.57
Total	0.44	0.54
Ragi	0.24	0.62

Source: A Study of Employment and Income in Sericulture, 1981.

Table 1: Women's Employment in Different Sericultural Operations

Operations	Total No. of person days required	Women workers	
		Nos.	Percent Share
1. Mulberry Cultivation (One acre)			
Weeding	40	40	100%
Application of fertilisers and farm yard manure	30	20	66%
2. Rearing	500	300	60%
3. Reeling			
Reeling (300 kgs. cocoons from one acre)	93	75	80%
Twisting (30 kgs.)	139	83	60%
4. Weaving	328	66	20%
5. Printing, dyeing, etc.	10	4	40%

Source: Constructed by this study based on other studies and interviews with knowledgeable persons.

Notes:

1. Rearing: Leaves are essentially harvested by women. Transportation of leaves during the later stages (last ten days) is done by men. Otherwise it is done only by women. Silkworm rearing is conducted indoors. Women at home mainly attend to this work.
2. Mulberry Cultivation and Rearing: Thus in all, commencing from mulberry cultivation till harvesting of cocoons about 360 women get employed in one year for every acre of mulberry.
3. Reeling: Women are mainly engaged in cocoon sorting, floss removal, cooking, reeling, re-reeling, turning, cleaning and skeining.
4. Weaving: Nearly 80% of the silk is used for weaving on handlooms and 20% in powerlooms.
5. Apart from the above activities the women are employed in silkworm egg production (nearly 60%), and in establishing the mulberry garden.

Table 4: Female Labour/Male Labour Ratios in Silkworm Rearing

Operation	Hired labour/Own labour		Female Labour/Male labour	
	Rainfed	Irrigated	Rainfed	Irrigated
Harvesting	1.03	0.60	1.42	0.56
Chopping	All own	0.31	0.10	0.09
Feeding	0.36	0.76	0.32	0.66
Cleaning	0.39	0.37	0.26	0.64
Others	0.67	0.93	0.69	0.66
Total	0.46	0.68	0.52	0.57

Source: A Study of Employment and Income in Sericulture, 1981.

While women's participation is marginal in mulberry cultivation it is substantial in cocoon production. But in both these there are noticeable variations across different areas, reasons for which are not easily identifiable. The variations exist between districts and between different talukas in a district as also between villages in the same taluka. See Table 5.

There is nothing in the project aims as such to suggest that any change is envisaged in this existing pattern of male/female participation. However, the technology proposed to be introduced by the project in various facets of sericulture could alter the proportion of male/female participation and indeed total employment - an issue to which we shall revert later.

Based on the existing pattern of male/female participation, we have estimated in column 2 of Table 6 the likely share of women in the total additional employment estimated by the Project.

Table 5 - Percentage of Female Days to Total Labour Days in Mulberry Cultivation and Cocoon Production

Districts/Talukas	Villages	% of Female Days in Mulberry cultivation	% of Female Days in Cocoon production
I.(a) Mysore Dist.			
1 Kollegal Taluka	1. Hosamalangi	0.22	33.52
	2. Surapura	1.90	50.72
2 Chanagar Taluka	1. Maliyur	1.15	47.89
	2. Mangala	0.65	43.64
3 K. R. Nagar Taluka	1. Hebbal	4.34	49.81
	2. Melur	1.80	33.68
II(a) Bangalore Dist.			
1. Ramanagara Taluka	1. Ankanahalli	0.85	57.14
	2. Yerehalli	0.39	52.13
2. Doddaballapura Taluka	1. Rajaghatta	8.57	30.02
	2. Hosahalli	5.65	16.13
(b) Mandya Dist.			
1. Malavalli Taluka	1. Hittanahalli Koppal	1.55	46.39
	2. Talagavadi	1.57	46.42
III a) Kolar Dist.			
1. Kolar Taluka	1. Vokkaleri	1.76	25.91
	2. Madanahalli	2.83	20.94
2. Sidlaghatta Taluka	1. Mallur	8.78	33.70
	2. Gudihalli	7.73	16.87
(b) Tumkur Dist.			
1. Pavagada Taluka	1. Ponnasamudra	19.72	13.74
	2. Veeralagondi	11.98	9.68
IV(a) Hassan Dist.			
1. Channarayapatna Taluka	1. Baralu	1.03	52.28
	2. D. Kalenahalli	1.65	33.02

Table 5 (contd.)

Districts/Talukas	Villages	% of Female Days in Mulberry cultivation	% of Female Days in Cocoon production
(b) Chitradurga Dist.			
1. Davanagere Taluka	1. Siddanur	0.98	47.58
	2. Gumnur	2.70	40.61
(c) Bellary Dist.			
1. Kudligi Taluka	1. Thimlapura	8.19	55.60
	2. Hulekere	13.94	47.70
V(a) Raichur Dist.			
1. Manvi Taluka	1. Kavithal	10.55	50.94
	2. Hathnur	11.95	36.04
(b) Gulbarga Dist.			
1. Jeevangi Taluka	1. Hipparga	1.78	54.52
	2. Kolekur	9.25	36.52
(c) Bijapura Dist.			
1. Mudhoi Taluka	1. Kesaragoppa	8.42	38.89
	2. Chinehakhandi	9.87	46.45

Source: A Study of Employment and Income in Sericulture, 1981.

Table 6 - Estimated Women's Employment in Karnataka Sericulture Project After Completion.

	Incremental employment as per project	Women's share estimated by this study	Women Percent share in (1) percent
	person year / (additionals)	Women year	
A. Mulbery Cultivation and Rearing			
New areas converted from sugarcane	75,360	37,600	(50)
B. Reeling			
Processed by filatures	1,867		
Cottage Basins	19,716	15,700	(80)
	21,583		
Twisting	39,200	24,000	(60)
C. Printing, Dyeing, etc.			
Incremental production of silk fabric			
80% of the fabric is dyed	2,800	1,400	(5)
E. Rearing Equipments			
Bamboo trays	12,160		
Bamboo chandrikes	28,000		
Double stands	1,200		
Leaf baskets	1,000		
Bamboo baskets for picking ripe worms	500		
Chopping Board	100		
Chopping knife	100		
	43,060	34,500	(80)
Grand Total	245,736	149,200	(60)

Table 6 (contd.)

Parameters:

1. For one hectare of Sugarcane person days for one year is 590.

2. For one hectare of other crops (Paddy, Cotton, Groundnut, Vegetables, Wheat, Maize) average person days for one year is 260.

3. For mulberry upto production of Cocoons, per hectare per annum 1,450 person days.

4. One personday for weaving 2 metres of fabric with 80 grams of silk on Handloom (5% process loss).

5. One person day for weaving 8 metres of fabric with 320 grams of silk on Powerloom (5% process loss).

6. For twisting 2.88 kgs. of silk 13 persondays and 360 spindles are required.

7. One person day is required to print, dye, etc. of 60 metres of fabrics.

8. Life span of the Equipments is 3 years. Hence 1/3 of total persondays and person years is added to Grand Total.

3. Functionaries

Sericulture is not only labour-intensive but also technology-intensive. The industry needs silk farms and grainages which produce the quality mulberry cutting and silkworm seeds on which depends the quantity and quality of silk output. These have to be extended from the laboratories to the field. The cultivation of high quality mulberry and rearing of silkworms by farmers and households requires intensive technical guidance on the spot. This requires a spatially well spread out extension organisation with technical personnel easily accessible to sericulture villages and households. Incidentally, most mulberry cultivators also rear silkworms.

The Karnataka sericulture Project needs a large extension organisation because it aims to (a) develop sericulture in eight new districts which have little previous experience in sericulture, (b) introduce improved varieties of mulberry and silkworms in the traditional area and (c) raise productivity and quality of silk throughout.

The challenge it faces in the traditional areas, let alone non-traditional areas, is apparent from the following observations in the Project report:

> Available evidence shows that recommended practices for application of fertiliser in the mulberry gardens, and for spacing and pruning of mulberry plants are not being strictly observed by sericulturists.
>
> Technical advances notwithstanding, the average yield of cocoons per 100 dfls in the State under irrigation at 20 kgs. to 25 kgs. are much lower compared to Japan (56 to 66 kgs.) The average productivity in Japan per family is as high as 390 kgs. of cocoons compared to Karnataka's 168 kgs.
>
> The relatively low yields are partly attributable to the quality of layings supplied by the private seed preparers.
>
> The low yields are also due to the inability of the rearers to adopt fully the package of practices recommended by

the Department, especially during the first two instars. The Sericulture Department has prescribed a package of practices for rearing young silkworms which are designed to ensure (i) adequate spacing for the hybrid/bivoltine silkworms in the rearing trays to avoid over-crowding, (ii) feeding silkworms with fresh nutritious and succulent leaves and taking measures to conserve the moisture in the leaves by maintaining humidity in the rearing bed during the first two instars of the silk worms, (iii) feeding of worms with fresh leaves and limiting the number of feedings to four and avoiding chopping of the leaves into small bits so that the bits do not dry up quickly.

There is a heavy mortality of young silkworms during the first two instars on account of rearing under unhygienic conditions which characterise dwelling houses of most of the sericulturists.

The Project has therefore planned to set up an extensive infrastructure of technical services (for details see Appendix II) which includes:

- 8 silk farms to demonstrate scientific methods of mulberry;
- 19 grainages to produce and supply quality seeds;
- 198 Technical Service Centres (TSC) at taluk level and under them;
- 2451 Chowki Rearing Centres (CRC) to reach out technical services to the remote villages in the project districts. Appendix II shows the location of CRCs district-wise.

Besides, the Project will establish training facilities for farmers and functionaries. It will expand public sector units having filatures, automatic reelers, silk weaving, spun silk mill and twisting factory. It will also set up 50 cocoon markets and upgrade the 22 existing markets.

All this extension and expansion will need the strengthening of the Directorate of Sericulture at the State level and its arms at the District, Taluk and Village levels. Correspondingly, the number of functionaries will expand in various categories and pay levels. There will be a spurt both in technical and labour employment as also administrative jobs in government institutions.

The type and number of functionaries by activity, designations and with pay levels are shown in Tables 7 and 8.

There is no ear marking or emphasis in the Project Report on recruiting women as functionaries for any of these posts.

However, a scrutiny of the existing pattern of male/female employees by categories, qualifications and pay scale, in the Directorate of Sericulture shows that women's share throughout is insignificant particularly in the technical wing of the Directorate. (See Table 9).

Table 7 - Sericulture Project Karnataka

	Technical staff unit	Total
(a) Technical Employment Potential - by Activity		
1. Silk Farms	10	80
2. Grainages	32	608
3. Technical Services		
a) T.S.C.	9	1,782
b) Model C.R.C.	3	60
c) Training School		
i) New	6	12
ii) Strengthening		5
4. Cocoon Market		
a) New		
i) Class I	15	75
ii) Class II	11	275
b) Strengthening		133
5. Government Enterprises		
a) Mini Filatures	7	56
b) Silk Weaving Factory	2	2
c) Twisting	29	203
d) Workshop	6	6
6. Organisation and Management		69
7. Research		166
Total		3,532

(b) Labour Employment in Government Institutions - by Activity	Labour per unit	Total
1. Silk Farms	50	400
2. Grainages	75	1,425
3. Technical Services		
a) C.R.C.	3	7,353
b) T.S.C.	12	2,376
c) Model C.R.C.	8	160

Table 7 (contd.)

		Labour per unit	Total
4.	Cocoon Markets		
	a) New Markets		
	i) Class I	26	78
	ii) Class II	9	225
	b) Strengthening		252
5.	Government Enterprises		
	a) Mini Filature	99	715
	b) Semi-automatic	22	770
	c) Weaving Factory		171
	d) Twisting	358	2,506
	e) Spun Silk Mills	120	120
	f) Workshop	21	21
	Total		16,572

Table 8 - Karnataka Sericulture Project - Technical and Administrative Jobs - by Designation and Pay Scale

	No. of Posts	Pay Scale
Technical Posts		
Principal/Dy. Director of Sericulture	220	1,300-1,900
Lecturers/Asst. Director of Sericulture	25	750-1,525
Sericultural Demonstrators	2,108	340-800
Sericultural Inspectors	192	400-900
Sericultural Assistant	154	660-1,300
Sericultural Operators	372	300-700
Sub-total	3,071	
Administrative Staff		
Manager/Office Superintendent	22	500-1,120
P.A./Stenographer	22	400-900
Typist	45	300-700
Clerk - I Division	262	400-900
Clerk - II Division	64	300-700
Attender	54	280-500
Driver	243	280-500
Cook and Attender	9	280-500
Peon	317	250-400
Watchmen	106	250-400
Labourer	195	250-400
Skilled Labourer	308	280-500

Table 9 - Statement Showing the Employment of Women in Sericulture (Government) Services

Designation	Total working	Women employees	Qualification Required	Pay scale
(a) Technical				
1. Dy. Director of Sericulture	6	-	B.Sc.	1,300-1,900
2. Asst. Director of Sericulture	6	-	B.Sc.	750-1,525
3. Sericultural Assistant	45	2	B.Sc.	660-1,300
4. Sr. Sericultural Inspector	2	-	B.Sc.	500-1,120
5. Sericultural Inspector	25	1	B.Sc.	400-900
6. Sericultural Demonstrator	250	2	S.S.L.C.	340-800
7. Sericultural Operative	47	1	S.S.L.C.	300-700
8. Office Superintendent	12	-	Graduation	500-1,120
9. I Division Clerk	6	-	Graduation	400-900
10. II Division Clerk	6	2	S.S.L.C.	300-700
11. Stenographer	1	-	S.S.L.C. with typing & Shorthand	400-900
12. Typist	7	4	S.S.L.C. with typing	300-700
13. Attender	4	-	Literate	280-500
14. Peon	67	-	Literate	250-400
(b) Administrative				
1. Headquarters Assistant	1	1	Deputation from Rev. Dep.	900-1,300
2. Sericultural Assistant	1	1	B.Sc.	660-1,300
3. Audit Superintendents	3	1	2 yrs. service in the cadre of office supdt.	600-1,240
4. I Division Clerk	13	3	For promotion serve 5 yrs. must have passed Dept. Exam. prescribed for Recruit. Graduate	400-900
5. II Division Clerk	11	2	S.S.L.C.	300-700
6. Stenographers	10	6	Sr. Shorthand & SSLC	400-900+ spl. pay
7. Typists	9	6	Sr. typing & SSLC	300-700+spl. pay
8. Peons	16	2	-	250-400
9. Skilled Labourers (on consolidated and daily wages)	41	14	Literate to degree	250-400 Daily wages Rs. 6/- consolidated from Rs. 150-300 range

Source: From Directorate of Sericulture

As Table 9 shows, presently women have a presence only as stenographers/typists and skilled labour in the sericulture development organisation from the State headquarters to the village level. It can be assumed in this background that ordinarily most of the new functionary posts will be filled up more or less in the existing proportion of male/female participation in the Directorate of Sericulture.

It must be acknowledged however that the existing sericulture development organisation in Karnataka is predominantly male because it was built up over past several decades when there was little awareness/ interest in promoting female employment. While there is no specific policy direction as yet for recruiting a higher proporation of women as functionaries, an experiment has been initiated by the Government of Karnataka to have women functionaries in Kanakapura block.

A field survey was carried out in Kanakapara as a part of this study and its results are discussed in the next section alongwith the question whether the project would not better serve its aims by having a substantial number of female functionaries for selected functions; and if so, in what fields and why.

Table 10: Recommended proportion of Women Functionaries

Function	Functionaries				Suggested No. of female functionaries	
	Title	Nos.	Pay Scale	Qualifications Minimum	Nos.	As % of
A) Extension of improved technical facilities in:						
1)Mulberry cultivation	Dy. Director	198	1300-1900	B.Sc.	89	50%
	Demonstrators	1584	340-800	S.S.L.C.	792	50%
2)Silkworm rearing	Operatives	40	300-700	S.S.L.C.	20	50%
B) Silk Farming	Assistant	8	600-1300	B.Sc.		33%
	Inspectors	8	400-900	B.Sc.		33%
	Demonstrators	32	340-800	S.S.L.C.	10	33%
	Operatives	32	300-700	S.S.L.C.	10	33%
C)Grainages	Dy. Directors	19	1300-1900	B.Sc.	6	33%
	Asst. Directors	19	750-1525	B.Sc.	6	33%
	Assistants	95	660-1300	B.Sc.	31	33%
	Inspectors	95	400-900	B.Sc.	31	33%
	Demonstrators	190	340-800	S.S.L.C.	62	33%
	Operatives	190	300-700	S.S.L.C.	62	33%
D)Cocoon Marketing	Assistants	40	600-1300	B.Sc.	20	50%
	Inspectors	66	400-900	B.Sc.	33	50%
	Demonstrators	237	340-800	S.S.L.C.	115	50%
	Operatives	110	300-700	S.S.L.C.	55	50%
E)Training	Principals	3	1300-1900)	B.Sc.	6	33%
	Lecturers	5	750-1525)	B.Sc.		33%
	Inspectors	9	400-900)	B.Sc.		33%

A word about the selection procedures.

Functionaries

The Sericulture Assistants are appointed through the Karnataka State Public Service. For the other posts - Sericulture Inspectors, Sericulture Demonstrators and Sericulture Operatives - the selection is made through the Recruitment Committee.

The selection is done through the usual Government procedure, with prescribed reservations for Scheduled Castes and Scheduled Tribes.

Previously merit plus interviews were the criteria for selection. Now it is merit and passing a Kannada language test. (This is only to test language, it is not a general knowledge test). There are no special considerations to take rural persons.

There is no policy of pre-interview training for demonstrators, operatives and sericulture inspectors. There is a 9 month training after selection at the Government Training School.

Progressive Farmers

Each Chowki Rearing Centre is to have one progressive farmer and 2 labourers who are supervised by a demonstrator. The progressive farmer usually needs to be literate and belong to the same village where the Chowki rearing centre is located. He is selected by the Chowki Rearing Committee of the village. Each Chowki Rearing Centre has a "village committee". No special criteria for selecting Village Committee members has been laid down except that they have to be sericulturists. Usually, they are "prominent" persons of the village. Since there are 5 or 6 villages under each Chowki Rearing Centre (CRC) they usually ensure that each village gets represented by at least one member.

The Project has started taking a few women as trainees under the provision for training of progressive farmers. This has been facilitated by women functionaries in Kanakapura (See next Section for details). Women may thus get considered for employment as progressive farmers attached to CRCs.

4. Training

The project has recognised the inadequacy of the existing departmental facilities for training sericulturists and functionaries. It has therefore provided for:

1) Expansion of the existing training school;

2) Establishment of two new training schools; and

3) 4 mobile units to provide visual education.

These three training schools/centres will train sericulturists and functionaries in the theory and practice of sericulture techniques.

The training would be for one month for new farmers and a refresher course of one week for those already trained.

Discussions with the authorities brought out that there is no specific criteria for selection of farmers for the one month training except that they have to be sericulturists. Literates are preferred but it is not an essential condition. The opportunities are orally advertised by sericulture staff at the village level who "talk about the course and encourage them (farmers) to undertake the training".

Each school will have a capacity of 1200 farmers/staff per year, and about 100 persons per month.

Number of trainees trained each year depends on the selection made by the Sericulture Department Recruitment Committee. In the latest batch 47 Sericulture Assistants were taken of whom 7 were females. This year 272 vacancies for demonstrators have been advertised. 69 posts for sericulture assistants (interviews are currently going on). Duration of training and stipends are as follows:

	Duration	Stipend Rs. per month
Progressive Farmers	One month	100
Sericulture		
Demonstrators)	Nine months	100
Inspectors)	Nine months	100
Sericulture Inspectors	Nine months	150
Sericulture Assistants		Regular salary Rs. 660-750-100

The trainees are all day scholars. Farmers, by and large, have to make their own arrangements. There are no residential facilities offered during the training but all 3 schools propose to have them at a later date. Channapatna has already started building a hostel which is expected to be completed by the end of the year. It will be a co-ed facility; there is some doubt whether girls will use it.

The Government arrangedhostel facilities only for the boys in Mysore. The girls stayed in a Convent (one was a day scholar) and had to make the stay arrangements on their own. There are thus no special facilities for girl trainees.

III. Women's place in the Industry and the importance of women functionaries.

Mulberry Cultivation and Rearing

While sericulture is a family activity the foregoing review shows that the participation of women is quite significant. It also shows that the various operations which generally women workers handle, whether in relation to mulberry cultivation or rearing of silkworms require technical knowledge and skill and have an important bearing upon sericultural productivity - both quantitatively and qualitatively. It is clear that for an assured accomplishment of the productivity goals of the project, the skill of the women workers would need to be developed adequately to the task.

The Project Report acknowledges, as referred to earlier, that the "Technical advances not withstanding the average yield of cocoons in Karnataka are much lower compared to Japan." It also says that the average productivity per family in Karnataka is less than half that of a sericulture family in Japan. The focus of extension work therefore has to be on enhancing the capability of the "family" for raising productivity. Given the fact that women provide not only a substantial portion of labour but perform technical functions in relation to mulberry cultivation, silkworm rearing and reeling, the up-grading of their skills has to be a specific and deliberate part of the Project endeavour and cannot be left to chance as appears to be the case presently.

For example, the Project Report has not seriously considered separately the need for training of selected new sericultural "farmers" for a period of one month in mulberry cultivation and silkworm rearing.

This combined training in mulberry cultivation and silkworm rearing will benefit mostly male workers who will get selected for training since they predominate numerically in mulberry cultivation.

Even if women "farmers" do get selected, they may find it difficult to stay far away for one month since only three training schools are planned for a vast area of 15 districts. Besides, the three training schools have no facilities for the lodging of women trainees. Thus the training and upgrading of skill of female labour, though essential for raising sericultural productivity will be neglected. The training programme will need to be reformulated (a) to train male and female farmers proportionately to their actual participation rate in different operations and (b) to make the location of training schools easily accessible to rural women by increasing the number of training schools for farmers.

Apart from the training of workers in formal training centers, the project also rightly envisages the provision of technical services and guidance on the spot to sericulture households through a large network of Chowki Rearing Centres (CRCs) at the village level under the supervision of Technical Services Centres (TSCs) at the Taluka level.

These centres - CRCs and TSCs - are to be manned by a large number of technical officers: Sericultural assistants, demonstrators and operatives who are expected to visit intensively the farms and the cottages of sericultural families to render technical assistance on the spot i.e. something like on-the-job training. (See Table 10 and Appendix II).

The technical personnel will observe and guide the various operations including those carried out by women e.g., weeding, harvesting, chopping in the farms, and feeding, cleaning and care of the silkworms in their homes. This requires a very close contact and communication between the technical personnel and the men and women workers. It should not be difficult to recognise that the effectiveness of contact and communication with the women workers would be considerably enhanced by having as many women as possible among these technical functionaries.

There are undoubtedly problems of housing and transportation of women technical functionaries to the villages. But these problems are nothing compared to the problem of having male functionaries who, though can be housed and transported relatively easily, are unable to communicate effectively with half the labour force i.e., women workers and provide

them on-the-job training. In one case, the project may incur some extra costs on housing and transportation of women functionaries but in the other the project will suffer a substantial loss due to the failure of the male functionaries to accomplish the objective.

On an experimental basis the Karnataka Government has appointed a woman as incharge of a Technical Service Centre (TSC) in Kanakapura and (with special assistance from the Ford Foundation) 8 women field functionaries (demonstrators) have been attached to this TSC. Since the experiment has been launched recently it is too early to make any conclusive comments about the impact and contribution of the women functionaries. But our field visits to the Kanakapura villages showed that these functionaries have direct and easy access to female workers in the household and that male workers of the household are not inhibited from receiving advice from the female functionaries.

One of the difficulties in the traditional areas like Kanakapura however is that male members feel (and with some justification) that they already know enough about sericulture and that there is not much that they can learn from "these innocent little girls". The women field functionaries are, therefore, working against an in-built prejudice which make it difficult to measure their contribution although in the household survey conducted as a part of this study in Kanakapura, women respondents have generally appreciated the role of women functionaries. But whether this appreciation is for the quality of their companionship and/or for the quality of technical guidance provided by them is too early to decipher. For this the experiment must run for a year or two and be monitored systematically.

Perhaps a more clear advantage could be derived from the experiment even in a short interval were it to be tried in a non-traditional sericulture area i.e., where neither men nor women have knowledge in sericulture and have both to be provided on-the-job training and guidance. It is necessary, therefore, to launch a few experiments of this nature in some of the non-traditional areas where sericulture is being introduced for the first time and there is little existing knowledge among men or women. In the traditional areas too, a few more experimental projects with women functionaries will help to derive conclusive lessons.

Though necessary, it is not sufficient to lay stress on women functionaries. Our survey of households in Kanakapura shows that some priorities must be established for the female functionaries. Their attention

must go first to female-headed households and second to poor households - poor in terms of assets and income.

The nature and number of functionaries which the Project expects to engage and the likely pay levels have been listed in Table 8. An analysis of this indent of functionaries shows that there are some positions where the productivity aim of the Project would be better served if women were inducted as functionaries for a better reach to female workers, as argued earlier. Table 10 estimates the proportion of women among the functionaries that may be aimed at for this purpose.

Reeling and Weaving

From the point of view of women and the weaker sections whom the project is committed to serve mainly, there are some serious omissions in the project which deserve notice and call for remedial action.

Mulberry cultivation and the linked activity of silkworm rearing are essentially for the land-owning class, be they large, medium or small. It is the next two operations (i) Reeling[1/] and (ii) Weaving, which hypothetically offer the best hope for the landless among the weaker sections.

Even presently the reeling industry in Karnataka is mainly in the hands of minorities (Muslims) and the labour force is mainly the weaker sections (Scheduled Castes and women).

1/ Reeling is a process by which the continuous silk filament is unwound from the cocoon and is wound on to a reel - i.e. producing the silk yarn.

There are about 10,000 Charkhas in Karnataka and they produce about 40 percent of silk yarn in Karnataka. Some 7500 cottage basins produce another 50 percent of silk yarn. The Charkha costs about Rs.500 and the cottage basin about Rs.10,000.

The reeling skills in Karnataka have been developed through the hereditary process. The Government has done little to institutionalise training in reeling either on 'charkhas' or the improved contrivance called the 'cottage basins' - the two reeling appliances in vogue in the cottage sector of the sericulture industry. Its role towards reeling in the cottage sector has been in encouraging the development of a model charkha and in subsidizing the cost of the charkha.

But more substantially, the Karnataka Government (historically) entered the reeling industry by installing filatures (the mechanised method of reeling) as State enterprises.

In the Sericulture Development Project, the State government has proposed to modernise its existing filatures and to set up 8 mini-filatures in the new (non-traditional) sericulture districts. One mini-filature will use semi-automatic reels imported from Japan and a second such unit has been allowed to be imported and installed by a private entrepreneur and is expected to have a demonstration effect.

The Project provides for an investment of Rs. 7.48 crores on mechanised reeling (filatures); and about Rs. 2 crores for credit to cottage basins in the new areas. Only 1000 model charkhas at 50% subsidy are to be introduced in the entire period of 5 years.

The rationale for this marked emphasis on mechanised reeling in the Project is that "the quality of cocoon and the reeling technique together determine the quality of yarn" and therefore the "spread of Bivoltine silk rearing must be complemented with the improved reeling techniques to effect the breakthrough in quality."

We may leave aside this issue of mechanisation for the moment and concentrate on the neglect by the project of reeling by charkhas and cottage basins which are providers of not only large employment but have a record of providing employment to women and weaker sections. There is no provision in the project for training in the reeling skills. No training centres have been proposed for training women in reeling. The extension organisation, TSC and CRC, are also devoted to mulberry cultivation and silk-work rearing. Reeling is not in its orbit. Even the women functionaries attached to the Kanakapura project are concentrating mainly on mulberry cultivation and silkworm rearing.

Strangely the Project report has argued the case for setting up 8 mini-filatures in the new non-traditional districts on the ground that the introduction of reeling to new areas through charkhas and cottage basins 'will take time'. It does not explain anywhere how much time it takes to train a woman in operating the charkha or a cottage basin. It truly takes time to train - the cost of training should be a social cost rather than a burden on the (hereditary process) poor households. The real reason for leaving the reeling skill to be developed by the hereditary process, seems to be that the Project does not intend to provide any significant stimulus for the expansion of charkhas and cottage basins, except nominally. It sees the future in the filatures.

Sericulture Equipment

The silkworm rearing activity will require a variety of mainly handmade equipment in huge quantities.

Items	In Million
Bamboo trays	3.04
Bamboo Chandrikes	3.50
Double Stands	0.15
Leaf Baskets	0.25
Bamboo Basket for picking ripe worms	0.25

The employment potential for making these is 43,060 years or 32,000 women years (Table 6).

There is no programme or organisation to help the women engaged in this industry; nor is there any available study related to it. This is a serious gap.

Another aspect of the problem related to this equipment is peculiar to the poor sericulturists. The field survey revealed that the poor households do not own the equipment.

The women who make the equipment are generally the scheduled castes and the poor; and mainly women.

Both the producers and the users of the equipment need development assistance which is currently not on the Project agenda.

Women Functionaries Also to be Facilitators

Group meetings with women sericulturists in Kanakapura organised during the field survey brought out the need for a wider role by women functionaries. The women sericulturists highlighted several social problems including lack of drinking water facilities.

The women functionaries in the sericultural villages would also need to act as facilitators helping the women and the weak to get access to the services expected to be provided to them by the minimum needs programme. They are invariably not aware of the Government's rural development schemes.

They also listed problems relating to their sericultural operations where they need someone to help them with the authorities. For example, they cited the cash advances of Rs. 30 to Rs. 35 collected from them 12 to 18 months ago by the Directorate of Sericulture to secure bank loans for them for wire-mesh to cover their doors and windows as a shield against Uzy fly. But there had been no further response from the Directorate and some had meanwhile borrowed from private money-lenders.

Some had filed insurance claims for compensation against losses due to Uzy fly - but these had not been settled. They are not able to get irrigation or bank credit. Bank branches are also not near.

In the women-headed households, they are unable to go and collect the layings or to go to the cocoon market. There is little help from the community. They have always to look for someone "trustworthy" to help specially when it comes to the correct weightment of the cocoons.

These instances underscore the need for organising the women sericulturists into self-employed workers associations - another area where the women functionaries could play a crucial role.

IV. Strategy for Enhancing Employment of Women Functionaries

The first step of course would be to persuade the Project Authorities to accept the suggested proportion of female functionaries in the total number of functionaries to be employed. But even if the project authorities do get persuaded it is not likely that women will be able to fill these positions in the normal course.

To ensure women's actual employment in the suggested jobs and proportions it is essential to provide a minimum pre-interview training to women candidates. They must have the necessary minimum knowledge about the job as well as the confidence to compete successfully in the interview.

It will be too much to expect the project authorities to provide such pre-interview training. It is a fit case for induction of some socially motivated voluntary effort. The shape such a voluntary effort should take would include:

1. An Association should be set up for the promotion of women's employment in general and as development functionaries.

2. The Association should take up the Karnataka Sericulture Project as its first challenge.

3. Its foremost task would be to give wide publicity to the nature of jobs required by the project, among women, specially in the districts and talukas (See Appendix II) included in the project.

4. It should devise courses for pre-interview training for the various categories of functionaries, especially where the employment in terms of numbers is substantial.

5. It should set up or sponsor pre-interview training camps.

6. It should lobby with the authorities for a policy direction for appropriate technology for reeling and weaving and for recruitment of women as functionaries and assistance for pre-interview training programmes.

7. It should monitor women's recruitment.

8. It should keep in touch with the employed women to get a feedback for improving its pre-interview training.

9. It should organise self-employed workers associations including rearers, reelers, weavers and sericultural equipment-makers and provide them encouragement and support.

The methodology likely to be employed in this instance and the experience will be invaluable in (i) analysing other development projects from the female functionaries angle and (ii) in initiating practical measures that would enhance women's employment in the identified jobs.

Such an input is the minimum necessary for obtaining significant results. The Association will need initial funding from philanthropic organisations sympathetic to women.

The induction of a socially aware and motivated voluntary association is also necessary for the wider objective of the project to reach weaker sections. It has to be recognised that apart from any bias of the extension organisation, the very approach of inducing an industry through "extension workers" has limitations in delivering the employment opportunities to the weaker sections if the experience of development programmes in general in the country is any guide. The selection of candidates for training as extension workers thus acquires a special significance to help the Project succeed as much as possible to deliver its benefits "mainly to weaker sections". The Association should itself concentrate its pre-interview training on girls/women from the most disadvantaged groups.

Indeed, in this context, the cost of pre-interview training for functionary jobs should be a part of the project cost. While initially the Association could start with the help of funding agencies, it should persuade the project authorities also to support its training programme.

Insofar as the higher technical jobs are concerned, the duration of training needed is long term and the required basic educational qualifications are higher. The mobility of the employees has also to

be high since technical personnel is scarce and has to be moved around where needed. These jobs can go mainly to women who can satisfy the above requirements. And, most likely, girls from better placed families are likely to have greater access to such jobs. The association should therefore raise funds for providing scholarships/subsistence to girls (who have the prescribed educational qualifications) from relatively poorer families to enable them to enter training institutes for long-term courses.

There is also a provision in the Project for appointment of progressive farmers attached to each CRC. The Association should also run an orientation camp for progressive silkworm rearers to improve the prospects of their selection as progressive farmers. The progressive farmer has to help not only in the propagation of mulberry cultivation but also silkworm rearing practices which are technically sound.

The Project also offers large employment opportunities mainly for women in making chandrikes, bamboo trays etc., required by the Project in large numbers (Table 6). The Project itself does not envisage concerning itself organising their supply. But the proposed Association could usefully have a special wing and programme for this activity. Women already engaged in making such items need help in protecting their employment from substitutes, in raw material supply and credit. A detailed study of this activity should be made to start with.

V. General Inferences

The foremost lesson to be drawn from the Karnataka Sericulture Project is that though necessary it is not sufficient to plan only for increase in output of goods and services or to estimate total resultant employment or to provide for general facilities for training of extension. It is equally necessary to analyse the composition of the labour force by sex.-- males and females by major operations involved in the production process. This must be specially so in industry where (a) women constitute a significant proportion of the labour force; (b) tasks performed by women are of a technical nature requiring skill and knowledge on which depends the productivity and quality of the industry.

The present example shows that although women have a substantial share in the sericulture employment and are responsible for important processes - the fact (let alone its implications) does not get mentioned even once in an otherwise detailed meticulous and large report with 230 printed pages. As a result, the general provisions made in the project for formal training and on-the-job training through a network of Technical Service Centres, are in their design and structure unsuited to women's special conditions and are most unlikely to reach female workers, the major segment of the labour force.

The value of the Project would have been enhanced had it differentiated between male/female labour, documented the special shortcomings and problems of the male and female workers and ensured structurally that its solutions and related institutions would in fact be able to reach and upgrade the women workers also. For example, the project has envisaged only three centres to train thousands of farmers from 15 districts - a huge area both in terms of geography and population. As a result, women from villages which are in close proximity to the three training centres alone would be able to avail of the two months training proposed. But most women, even if they live in proximity to the training facilities, cannot stay away at a stretch for one month. Had the Project looked at these aspects, it would have designed its training strategy suitably to ensure its reach to the women workers.

Therefore, it follows that at the very stage of planning of such projects be it the World Bank, Government of India or State Governments, the planning teams must include those who could devote proper attention to the place and need of female labour by documenting their prevailing conditions, productivity, state of knowledge, training and other constraints on their making a better contribution to arrive at satisfactory solutions as an integral part of the project report itself. The likely employment opportunities for women arising from the project could also be identified at the planning stage itself in order to make room for measures and conditions to enable this potential to be realised through the induction of proper policies, women functionaries and other needed supports.

Another important influence is that there is need to avoid a mismatch between Project goals and implementation design. The Karnataka Project throws up two or three examples of inconsistencies between its aims and actions.

First, the Project aims at benefitting "mainly the weaker sections" but in its implementation it has made only a nominal provision for credit to farmers for switching over from other crops to mulberry or for switching over from traditional to high-yielding varieties of mulberry.

> "Support from financing institutions by way of credit facilities might be needed by sericulturists for (a) undertaking fresh plantation of mulberry or replantation through M-5 variety; (b) purchase of equipment; and (c) construction of rearing houses. Past experience in the sericultural areas has shown that credit demand for replantation is not universal. To the extent there is demand in the traditional areas it would be met by the financing institutions with the ARDC support under the on-going schemes. In the new areas too, credit demand for this purpose as well as for equipment is unlikely to be large, since most farmers who will switch over to sericulture in part of their holdings are those having income-generating irrigated crops like sugarcane and paddy in the rest of their holdings." (Emphasis added).

The Project thus itself expects contrary to its aim (mainly weaker sections) that mulberry cultivation will be taken up by middle and large farmers who alone have risk-bearing capacity and resources and already growing other cash crops. As noted earlier, the households which grow mulberry also do rearing. Consequently, the weaker sections will mainly provide hired labour. Table 3 shows that there is considerable hired labour even today in the traditional sericulture areas. If the Project intended to change this pattern, it has not equipped itself to do so.

If the Project is relying on the banks to provide credit to the small and marginal farmers to make them the backbone of sericulture in the new areas, it is again in error.

There are several studies including the recent RBI Report on Rural and Agricultural Credit to show that ARDC and institutional finance does not flow to small and marginal farmers. In the traditional areas too, switching over to M-5 or Bivoltine would primarily be by the medium and large holdings; our field study shows that the menace of Uzy fly is already proving to be a deterrent for the poorer sericulturists.

Second, recall the reference made earlier to the neglect of reeling in the cottage sector, at the hands of the Project. If the focus on the weaker sections was firmly translated into the project implementation design, then activities like reeling and making of sericulture equipment which are of relevance to the landless, would have secured a direct and positive development support in the Project's budget. The poor reelers and equipment makers have been in fact left to fend for themselves in almost all respects. Neither is there a provision in the Project to assist poorer sericultural hous eholds to own their own equipment.

Third, a preliminary look suggests, subject to deeper study, that the technology choices made by the Project may in fact shrink employment opportunities and divert income opportunities to the relatively better off. It is likely that the pressure for making 'A' grade yarn for export would ensure large scale induction of filatures in the private, if not pubϕic sector. 'A' grade yarn in turn will stimulate weaving by powerlooms (to obtain export quality) and starve handlooms at the hands of private enterprise since government has hitherto failed to control mushrooming of illegal powerlooms in the country.

The most critical issue of general importance the Karnataka Project throws up, however, relates to the style of development. The Karnataka Project has good aims and despite some of its design weaknesses highlighted above, it is bound to add to employment/income of large numbers in Karnataka. But it is a 'top down' Project. Participation is not embodied in its style although 'participation' is today the principal issue in development nationally and internationally. The past three decades of development have established that a mass development project such as this cannot succeed in the measure it should, given its substantial resources, without active involvement and participation of the people it intends to benefit at all stages in planning, implementation and monitoring.

It also reaffirms that government by itself cannot create sufficient conditions for 'participation' even if it is inclined towards it. The involvement of non-governmental voluntary bodies is essential to inform, organise and assist the people as well as the authorities to actualise participation and realise its promise.

Appendix I

A Note on the Household Survey

The objective and main questions set for the household survey in Kanakapura were:

Objective

If mulberry cultivation is to be extended to other (non-traditional) areas, in Karnataka, what are the lessons to be learnt from Kanakapura?

Main Questions

1. What proportion of the land owned by farmers has been devoted to mulberry cultivation?

2. Which type of mulberry and cocoon they are cultivating and prefer

Mulberry	Traditional or M-5
Cocoon	Traditional or Bivoltine

   The reasons for their preference?

   Is it more income or less work or less chances of damage to crop and cocoons?

3. What is the pattern of employment of different members of the family in relation to sericulture, growing other crops, milch cattle or any other income generating activity?

4. What is the nature of services/advice provided to them by the sericulture extension organisation?

5. What has been the impact of increased income on the family?

Methodology

1. A preliminary 'familiarisation' visit was paid to Kanakapura, along with extension workers and the ISST investigators, which included visits to some households and some chowki rearing centres.

2. Following the visit, a questionnaire was then prepared taking into account the main questions stated above and field conditions.

3. The selection of households was done with the help of the women functionaries of the sericulture extension organisation in Kanakapura. It was decided to include 50 households based on the knowledge of the functionaries who responded as much as possible to the following criteria:

   a) to include as many women-headed households as could be identified - upto one third;

   b) at least half the households should be those who grow both mulberry and other food crops;

   c) about 40 percent or 20 households should be those who have adopted bivoltine wholly or partly; and

   d) about 20 percent or 10 households may be those who are landless but hire land for mulberry cultivation.

4. In order to capture as many of these characteristics as possible it was however agreed that the number of households could, if necessary, exceed 50. Similarly, no limit was set on the number of villages to be covered though it was estimated that about 15 villages may do. If any of the households was also found to be engaged in reeling, the employment pattern and particulars of that activity were also to be noted.

5. Although the number of households was extended to 66 and that of villages to 30, all the stipulated features could not be fully accommodated. Of the 66 households, only 64 responded. The broad classification of these is:

	Nos.
a) Women-headed households	15
b) growing both mulberry and food crops:	
i) Mulberry only	8
ii) Mulberry with other crops	56
c) Those who have adopted improved tech nology	
i) M-5	60
ii) Bivoltine completely	9
iii) Bivoltine partially	19
d) Landless, hiring fields for mulberry or purchasing mulberry	1
e) Reeling also	None

6. Two teams of investigators were deployed. Each team consisted of a male and a female investigator. They attempted to gather information from both male and female members of the households.

Facts and Observations

1. Some of the characteristics of the surveyed households were:

1 Distribution of Households by land holding

(In acres)

Sl. No.	Size of Holding (in acres)	Total H. Holds (Nos.)	% to total	Women headed Households No.	Women headed Households % of total
1	0.0 - 0.5	6	9.3	5	33.3
2	0.5 - 1.0	2	3.2	1	6.6
3	1.0 - 2.0	11	17.1	3	20.0
4.	2.0 - 3.0	8	12.5	1	6.6
5	3.0 - 4.0	10	15.6	-	-
6	4.0 - 5.0	7	10.9	2	13.3
7	5.0 - 10.0	10	15.7	3	20.0
8	10.0 - Above	10	15.7	-	-
	Total	64	100.0	15	100.0

2 Distribution of Households by Assets Other than Land

Sl. No.	Type of Asset	Total H. Holds	% to total	Women headed households No.	Women headed households % to total
1	Livestock only	24	37.5	5	33.4
2	Durable Assets only	2	3.2	-	-
3.	Both 1 and 2	26	40.6	3	20.0
4	Nil	12	18.7	7	46.6
	Total	64	100.0	15	100.0

3. Distribution of Households by Income

Sl. No.	Income Groups (in Rs.)	From Sericulture				Other Sources				Total			
		No. of House Holds	% to total	Women H. H. W H. H.	Women H. H. % total	No. of House Holds	% to total	Women H. H. W H. H.	Women H. H. % total	No. of House Holds	% to total	Women H. H. W H. H.	Women H. H. % Total
1.	Upto - 1,000	3	4.6	1	6.6	23	36.0	5	33.3	3	4.6	1	6.6
2.	1,000 - 2,000	11	17.2	4	26.6	15	23.5	1	6.6	5	7.8	2	13.6
3.	2,000 - 3,000	9	14.0	5	33.6	3	4.7	1	6.6	4	6.2	3	20.0
4.	3,000 - 4,000	2	3.2	-	-	4	6.3	2	13.3	4	6.2	1	6.6
5.	4,000 - 5,000	2	3.2	-	-	2	3.2	-	-	2	3.1	-	-
6.	5,000 - 10,000	21	32.8	4	26.6	6	9.4	-	-	19	29.8	7	46.6
7.	10,000 - 15,000	10	15.7	1	6.6	1	1.5	-	-	12	18.9	-	-
8.	15,000 - above	5	7.8	-	-	2	3.2	-	-	15	23.4	1	6.6
9.	Nil	1	1.5	-	-	8	12.2	6	40.2	-	-	-	-
	Total	64	100.0	15	100.0	64	100.0	15	100.0	64	100.0	15	100.0

Note: W stands for women.

4 Distribution of Households by Cropping Pattern

Sl. No.	Crops	No. of House Holds	% to total	Women Households No. of H. H.	Women Households % to total
1	Sericulture only	8	12.5	6	40.0
2	Sericulture with paddy, jawar and ragi crops	56	87.5	9	60.0
	Total	64	100.0	15	100.0

5 Distribution of Households by Indebtedness

Sl. No.	Class Interval (in Rs.)	No. of House Holds	% to total	Women Households No. of H. H.	Women Households % of total
1	Upto 500	2	3.1	2	13.3
2	500 - 1,000	2	3.1	2	13.3
3	1,000 - 2,000	6	9.6	-	-
4	2,000 - 3,000	5	7.8	1	6.7
5	3,000 - 4,000	8	12.5	2	13.3
6	4,000 - 5,000	4	6.2	1	6.7
7	5,000 - 10,000	8	12.5	1	6.7
8	10,000 - Above	4	6.2	-	-
9	Nil	25	39.0	6	40.0
	Total	64	100.0	15	100.0

6 Distribution of Households by Consumption Pattern

Sl. No.	Class Interval (in Rs.)	No. of House Holds	% to Total	Women Households No. of H. H.	Women Households % to Total
1	Upto 5,000	12	18.8	6	40.0
2	5,000 - 10,000	33	51.5	8	53.4
3	10,000 - Above	19	29.7	1	6.6
	Total	64	100.0	15	100.0

7 Distribution of Family Size

Sl. No.	Group Size Family (In No.)	No. of House Holds	% to Total	Women Households No. of H. H.	Women Households % to Total
1	Upto 5	30	46.8	10	66.7
2	5 - 10	28	43.7	5	33.3
3	10 - 15	6	9.5	-	-
4	15 - Above	-	-	-	-
	Total	64	100.0	15	100.0

8 Some comparative Features of Households Below 2 acres and those above 5 acres

	Item Description	Household Below 2 Acres	Household Above 5 Acres
1	Total No. of Households	19	20
2	No. of Households having 'irrigation' facilities	15	18
3	No. of households having live-stock	11	20
4	No. of households having other durable assets	4	8
5	No. of households having all the above 3 facilities	2	8
	Women Headed Households		
1	Total No. of women headed households (WHH) are	9	3
2	No. of W.H. Households having irrigation facilities are	7	3
3	No. of women H. Households having livestock	3	3
4	No. of W.H.H. having other assets are	1	1
5	No. of women headed households having all the above 3 facilities	1	1
	Workers		
1	Total population (including children)	96	155
	Males	50	87
	Females	46	68

Workers (contd.)

2	Total No. of workers (including women)	57	100
	Percentage of workers to population	59	64
3	Total No. of women workers	26	49
	Percentage to total workers	46	49
4	No. of workers involved in Cocoon work alone	20	14
5	No. of workers involved in Agriculture-cum-cocoon work	29	38
6	No. of workers involved in wage work	4	2

Literacy

1	Total illiterates	69	75
	Males	33	37
	Females	36	38
2	Total upto elementary (1st to 5th)	19	38
	Males	11	18
	Females	8	20
3	Total (6th to SSLC Standard)	8	37
	Males	6	27
	Females	2	10
4	Total Higher education (above SSLC)	Nil	5
	Males	-	5
	Females	-	-
5	Overall literates as % of population	28	51
	Males	34	57
	Females	21	44

2 Considerable time was lost in allaying apprehensions that the investigators were not representing "land reforms/revenue departments" or "income tax department". Despite this, the possibility that those with larger holdings understate their land holdings and income cannot be ruled out. Information on indebtedness was also not fully forthcoming especially from the poorer sericulturists. One evidence is that in both cases (large holdings and the poor) consumption expenditure was reported higher than income including borrowings. To an extent, consumption may have been overstated.

3 The questions relating to the services rendered by extension organisations were affected by a fairly widespread resentment about advances taken by the sericulture department for getting their wire-mesh loans from banks which had not materialised. Women extension workers were generally "praised" by women and males generally described them as "superfluous". These opinions have to be interpreted with due moderation.

4 Out of the 60 households, which had adopted M-5 variety - only 9 households had completely switched to Bivoltine type of silk worm cocoon; 19 had partially adopted them while 32 of them preferred to carry on with the traditional CB type. In many cases, due to disease, the entire crop of Bivoltine growers were wary of this type.

5 Most households have mixed crops - mulberry plus cereals. Some also have other cash crops. Only a small number of the households have mulberry as the exclusive crop. The latter category is confined to the very small land holders. They depend on purchases for food grain (ragi, jowar, paddy) required for their consumption.

6 The majority of women-headed households belong to the poorer category. They are not only poor in almost all respects; land, other assets, income, literacy but are poorer than other households. In the 15 women-headed households a few did have a husband, but for one reason or another, the women in the households were found to be the 'effective' head of the household.

7 Women headed households more pronouncedly than other poor households need some one reliable to bring the layings and take the cocoons to the market, and want to own the sericulture equipment.

8 Those women who are among the poorest prefer to stick to traditional variety of silk worm. Fear of loss on account of damage is the single biggest factor.

9 Universal suggestions for improvement seem to be:

a) need for good quality of eggs;

b) need for better (more assured) irrigation facilities;

c) Need for wire-mesh and/or curtains (mosquito nets) to keep away uzy flies; and

d) easier access to medicines for saving the diseased cocoons.

10 Some suggestions made by the higher land-holding groups are:

a) Easy terms for bank loan;

b) Insurance against crop failure.

11 Most silk growers report that it had improved their financial position and over the last few years they have been increasing their output.

The Last Step

The results of the field survey were taken back to some of the surveyed villages where they were presented to women sericulturists at group meetings for a re-check.

At these meetings the new points raised by the women were their needs in relation to services other than sericulture such as drinking water, information on government development schemes etc. The point was generally made that women sericulture functionaries should also take up other problems faced by women.

Appendix II

Sericulture Project Karnataka
Technical Services

Introduction

5.1 GCK's proposals for providing technical assistance to sericulturists in the traditional as well as in the new areas have been comprehensively designed to provide the required support for introducing over a large area the genetically superior bivoltine hybrid silkworm races and for encouraging the sericulturists to adopt techniques of rearing the new races of silkworms. It is on account of technical difficulties in the rearing of the genetically superior silkworm races involved on the sericulturists for whlch neither the sericulturists nor the Department have been adequately geared at present, that there is a general hesitation to switch over to bivoltine races both in the traditional as well as in the new areas.

5.2 Each member has a pass book which records the use of layings, production and involved prices, the entries in the pass book, required to be maintained by each rearer. Visits to the farm and discussions with the rearer enable the sericultural demonstrator/assistant to identify the deficiencies in the rearing and mulberry growing. The deficiencies might be in any one or more of the areas, viz., maintenance of the mulberry garden (e.g. application of fertilizers, irrigation or plant protection measures), harvesting, transportation and preservation of the leaves, source of supply of dfls, spacing of silkworms during each instar, quality of leaves used for feeding, spacing given at the time of mounting silkworms, etc. It is the Sericulture Department's technical personnels job to help the rearer in identifying the deficiencies and adopt corrective measures. For this purpose, he is required to visit the former once a week during the rearing cycle.

5.3 Apart from advocating measures for improving the productivity per 100 dfls. prevention of diseases is an important aspect of his work. The occurrence of diseases, such as flacherie and grasserie is so sudden that, if neglected, the entire crop is destroyed. There are numerous instances when worms have not shown any symptoms of disease till 23rd day, but suddenly develop flacherie on the 24th or 25th day,

leading to complete crop failure. A technical assistant is able to identify the causes for infection, whether it is due to defective quality of leaves and improper handling of the leaves, over-crowding in the bed, unhygienic condition in the rearing houses, lack of air or/light etc. It is this aspect of continued attention that a sericulture Technical assistant has to give to sericulturists that distinguishes the role of a sericultural technical assistant from that of a regular extension worker.

5.4 At the lowest level the technical assistant viz., the demonstrator is expected to visit the rearer once in four days, and a Sericultural Assistant once in a week. Their work is supervised by an Assistant Director, located at the Divisional office.

5.5 Although most sericulturists are also agriculturists, the sericulturists' special needs in relation to mulberry and silkworm rearing have been catered to over the years by the Sericulture Department. The entire mulberry area in the traditional districts, excluding the seed area has been divided into 200 ranges each range having between 4000 to 6000 ha. to supervise.

5.6 The fact that in the traditional districts the mulberry areas are contiguous did not help the provision of adequate technical services on account of the inadequate staff strength. This is also reflected in the generally low yield of cocoons.

5.7 In the new areas, on the other hand, where silkwork rearing is still incipient and is scattered, the task of providing technical services would be even more difficult. In the context of GOK's strategy to extend the area under M.5 mulberry and introduce the new multi-voltine x bivoltine hybrids and bivoltine hybrids with the associated techniques in mulberry cultivation and silkworm rearing, provision of the technical assistance, for ensuring success of the programme becomes an even more specialised and intensive effort of the Department.

5.8 Karnataka has already adopted the T&V system of extension in the context of the National Extension Project. In view of the special characteristics of the technical assistance to be provided to sericulturists, which is a part of the overall responsibility of the Sericulture Department for enforcement of the regulatory measures under the enactments, the T&V system would be taken advantage of to make use of the regular extension worker, properly trained in Sericulture, for conveying important messages relating to mulberry cultivation and silkworm rearing to sericulturists.

Chowki Rearing:

5.9 Given adequate availability of bivoltine hybrid layings from the new grainages, the focus of GOK's strategy is to organise its technical services in such a way that (a) rearing of young silkworms for which maximum skill and attention are needed and sericulturists are least equipped is done under the supervision of the sericultural technical hands on a community basis and (b) Department's overall responsibility for technical assistance gets fulfilled through well organised centres evenly distributed over the areas.

5.10 High mortality and low vitality of silkworms under typical village rearing conditions are important factors in the low productivity of Karnataka sericulture. On average, only about 70% of the hatched eggs reach the cocooning stage. During their first ten days, silkworms require more intensive care and it is during the initial days that most losses occur. The above mortality rate refers to the rearing of traditional multi-voltine varieties. High yielding bivoltine varieties are even more susceptible to diseases and therefore, typical village rearing conditions pose a formidable constraint to the switching over from multi-voltine to bivoltine varieties of silkworms.

5.11 Japanese experience has shown that the system of chowki rearing of the young silkworm (see Appendix for the comments of Dr. Y. Tazima, Director of the National Institute of Genetics, Japan) has been a great success and has helped to bring down the mortality of the worms by nearly 30 . Inspired by this example 275 chowki rearing centres and 36 extension centres have been established in 16 taluks of 4 traditional districts in the State during 1977-78. Each chowki rearing centre (for irrigated area of 80 ha.) is suitably equipped with wooden chowki rearing boxes, paraffin paper, foam, hygrometers, air-coolers and other amenities to rear the young silkworms under ideal conditions. Each centre has been provided with two trained labourers for feeding the silkworms according to the prescribed timings. A committee consisting of progressive farmers selects well maintained mulberry gardens for harvesting the leaves to feed the silkworms received in the centre. It is ensured that the garden is maintained according to the prescribed practices. 7-8 chowki rearing centres are controlled and supervised by one extension centre which is managed by a Sericulture Assistant, 2 Sericulture Inspectors and 6 Sericulture Demonstrators and is also provided with a vehicle. Each

demonstrator has one chowki rearing centre to look after. Besides this, he provides guidance to the owners of gardens selected for harvesting of leaves for their proper maintenance, undertaking mass disinfection, etc. He is trained in the latest techniques of rearing of young silkworms, control of diseases, improved methods of maintenance of gardens, etc.

5.12 Demonstrators as well as Sericulture Inspectors under the guidance of the Sericultural Assistant conduct field days, film shows, etc, for the purpose of transferring technical know-how to the rearers in the rearing of silkworms, control of diseases, maintenance of mulberry gardens, as recommended by the Research Institute. In the new areas also some 25 extension-cum-chowki rearing centres have been established during 1978 each of which has one inspector and 2 demonstrators. Studies have shown that on account of chowki rearing of young silkworms at the centres the yield of cocoons for 100 layings in the irrigated areas has increased by as much as 20% and in rainfed areas by 16% (see Table 1).

5.13 The organisational structure of the chowki rearing centre provides for a village committee consisting of progressive silk rearers who provide the leadership and ensure involvement of the silk rearers in the effective operation of the centres. Each centre will have a progressive farmer who, with the help of 2 trained labourers, (all 3 receive one month's training in the Government Silk Farms), will undertake the brushing of the layings and rearings of silk worms in the first 10 days. However, the technical support for this unit on a daily basis is available from the 'extension' centre headed by the sericulture assistant supported by appropriate number of sericulture demonstrators. This nucleus staff covering, on an average an area of 360 ha. of irrigated land or 1080 ha. of rainfed land would constitute the infra-structure of technical support for the programme.

Chowking Rearing Centres

5.14 The GOK proposes to establish 2451 chowki rearing centres throughout the State. Each Centre will be equipped with sufficient number of rearing trays (one for 30 layings) and other equipment necessary for scientific rearing upto the 10th day. It is expected to rear some 1,00,000 layings per year. Of the total number of centres 703 will be set up in the new areas and the rest in the traditional sericulture areas according

to a phased programme. A progressive farmer assisted by 2 labourers (all trained) will undertake the rearing under the supervision of the demonstrators from the technical service centres. The non-recurring and recurring expenditure in each centre will be Rs. 0.009 million and Rs. 0.010 million respectively (see Table 2, 2(a) and 2(b).

Technical Service Centre:

5.15 To supervise the work of 12 to 13 centres and to provide technical support to the sericulturists through visits to mulberry gardens and rearing houses during the rearing of silkworms in the grown up stages, a Technical Service Centre will be set up which will have a staff complement of a Sericultural Assistant and 8 Sericulture Demonstrators. The mobile staff of these centres will also undertake work of moth examination and disinfection at the chowki rearing centres/individual rearing houses and help, among others, in silkworm rearing and mulberry cultivation and marketing of cocoon, in their jurisdiction. Each Technical Service centre would involve a non-recurring and recurring expenditure of Rs. 0.064 millions and Rs. 0.127 millions respectively. These will be set up according to a phased programme according to the area under mulberry in different areas (see Table 3, 3(a), 3(b).

5.16 GOK proposals relating to technical services include three complementary proposals, viz., (i) setting up of 20 model chowki rearing centres, (ii) setting up of four mobile demonstration units, (iii) strengthening/setting up of three training schools.

Model C.R.C.

5.17 The purpose of model chowki rearing centre is to demonstrate to sericulturists that under ideal conditions of chowki rearing, the yield of cocoons would be far higher, so that they are motivated to construct through joint efforts, their own buildings eventually for running 2451 chowki rearing centres proposed under the project. The model chowki rearing centres will be located in buildings constructed by the Department itself and will be equipped with wooden rearing trays, incubators, microscopes, sprayers, leaf preservation boxes, etc. The centre's houses will be airconditioned to regulate and maintain the required

temperature and humidity on the Japanese model. Each model chowki rearing centre will have one sericultural demonstrator and two operators. The non-recurring and recurring cost per unit would be Rs. 0.520 millions and Rs. 0.054 millions respectively (see Table 4 for details). During the project period some 20 centres are proposed to be established in a phased manner (see Table 4(a).

Mobile Units:

5.18 Even as the departmental technical staff educate and train the sericulturists on the correct methods of mulberry cultivation and rearing of silkworms through regular contacts, the need for visual education has been recognised in the context of introducing new races of hybrid silkworms and the associated rearing practices. The mobile units will supplement the educational institutions' efforts undertaken through other measures, including literature, exhibitions, etc. The non-recurring and recurring expenditure is modest for each unit at Rs. 0.19 million and Rs. 0.017 million respectively. (See Table 5). During the project period 4 units are proposed with an expenditure of Rs. 1.07 million (See Table 5(a).

Training:

5.19 It has been recognised that one of the serious deficiencies in the sericulture programme is inadequate training of sericulturists as a result of which the yield of cocoons continues to be low. The existing as well as proposed Silk Farms are expected to have facilities for training sericulturists and staff. Under the project it is proposed to strengthen the training school at Channapatna and set up 2 more training schools for training of sericulturists and Department staff in the theory and practice of sericulture techniques. The training would be for one month to new farmers and for a week for the old farmers. Each training school is expected to train in a year some 4260 farmers. The outlay for each training school would include cost of buildings, hostels, library, training facilities, microscopes and projectors. A non-recurring expenditure of Rs. 0.540 million and recurring expenditure of Rs. 0.265 million has been estimated. (See Table 6, 6(a), 6(b), 6(c) for details).

5.20 The total outlay under the component 'technical services' would be of the order of Rs. 166.882 millions by way of non-recurring and Rs. 47.251 millions by way of recurring expenses. (See Table 7).

5.21 Under the project the operational costs of the production infrastructure operated by the Department (comprising silk farms, grainages, technical services centres, chowki-rearing centres and markets) would be recovered by levying service charges on silk rearers and collection of fees from silk reelers. At present, the Department collects 1% commission from the reelers in the notified markets on the sale of cocoons and a charge of Rs. 25 per 100 layings is collected from rearers by grainages. The Government of Karnataka consider suitably increasing these rates in a phased manner to make the production infrastructureself-financing.

2. A Case-Study of the Tamil Nadu Sericulture Project[1/]

Viji Srinivasan

This case-study was developed after field visits by two professional staff members of the Ford Foundation, a soil scientist and a feminist with field experience in working with grassroots level women's action groups. As we travelled together we understood more and more about the tremendous potential of this partnership and the consequent learning process involved in trying to understand the role of women in the production process, with a view to enable women to gain better access to extension services and technical services in the operations performed by women.

1/ This case study refers only to mulberry silk.

Sericulture as an income-generating activity for rural areas in India

Agriculture accounts for 45 percent of India's GNP, provides 70 percent of the country's employment and constitutes 60 percent of the export earning. The five year plans emphasized agricultural development; top priority was given to the agricultural sector. The objectives were to tap the development potential to increase food/fibre production and to generate adequate employment opportunities. The objectives have not been completely fulfilled. The green revolution, resulted in increased production but seriously limited the scope of intensive labour in agriculture. The dry farming area accounting for more than 50 percent of the total sown area and a substantial portion of the country's poor was neglected during that process. Similarly, the technology introduced in the secondary sector did not cover millions of rural artisans. Planners have understood that rural development is not merely a matter of agricultural development.

The problem of unemployment and under-employment in India has become the primary threat to the country's stability, growth and security. The problem is really serious in the rural areas. It is estimated that out of 306 million people living below the poverty line in India, 249 million are in the rural areas and only 57 million in urban centres. 70 percent of the total work force still depends upon agriculture for their livelihood and this figure has remained more or less constant for the past few decades despite considerable industrialization. In a labour surplus economy any worthwhile planning strategy should have a maximization of employment opportunity as one of its key objectives. It is here that the sericulture industry fits into India's socioeconomic conditions as a tool for rural reconstruction.

Sericulture is a labour intensive industry. It involves four distinct phases of activity namely, raising of mulberry plantation and its maintenance, silkworm rearing and cocoon production, raw silk production and weaving. Indirectly it also involves thousands of people at the marketing of various end-products, quality control and export divisions. It is estimated that one hectare of mulberry plantation can create direct employment for 12 to 13 person-years. Around 30 lakh people are employed in mulberry silk production alone in the country and it is estimated that it is possible to increase the number to 50 lakhs in another five years. An important aspect of sericulture which is often

overlooked is that it provides employment to landless labourers, particularly women landless labourers for at least 120 days in the year, apart from agricultural wage employment.

Apart from its labour-intensive nature, sericulture has many other features which make it a suitable rural industry for income-generation in rural areas. Mulberry, the main food plant of the silkworm, is a hardy plant suited to low rainfall and drought conditions. At the same time, it responds very well to irrigation. Compared to other crops there are no major pests and diseases which exist as a threat. Mulberry is a perennial crop with a small gestation period for full utilization. The establishment and maintenance of mulberry farms requires a very low investment. Silkworm rearing that follows, for conversion of mulberry leaf into silk cocoons, needs mostly practical experience and access to extension education and does not call for high technical qualifications. The investment required again is comparatively low. Even ten crops can be taken in a year both under irrigated and rainfed conditions and thus ensures employment in villages, with income at regular intervals throughout the year.* The cocoons are light, therefore easy to transport and non-perishable after stifling. The markets for end-products are readily available and the prices are attractive.** The left over leaf during rearing can be used as cattle fodder, the litter waste for biogas production, reeled out pupa for animal feed after oil extraction, silkwaste for spun silk. The dried stems can be used as fuel and fencing material. Sericulture is also an export oriented industry and the current earnings are over 40 crores of rupees per annum.

II. Sericulture development in Tamil Nadu

Starting with a modest acreage of 475 hectares under mulberry in 1956, after the implementation of the Intensive Sericulture Development Program in 1977 and the formation of the Department of Sericulture in 1979, at the end of 1980-81, the total area under mulberry in Tamil Nadu is about 16,000 hectares.

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* For economics of sericulture production see Appendix I.

** The cocoons provide raw material for the silk handloom weavers and expansion of sericulture and stabilization of cocoon prices assits the silk handloom weavers who also constitute the "weaker sections" as defined by the Govt. of India, insulating them from arbitrary sudden fluctuations of price which have always affected the silk handloom weavers adversely.

In 1980-81, mulberry silk production in India was as follows:

	Metric tonnes	
Karnataka	2,878	63.97%
Andhra Pradesh	797	17.35%
Tamil Nadu	467	10.37%
West Bengal	355	7,73%
Jammu & Kashmir)	76)	0.58%
Uttar Pradesh)	20)	
	4,593	100.00%

Because of easy access to Karnataka State, both Tamil Nadu and Andhra Pradesh have been able to dramatically increase their sericulture industry. Technical assistance to Tamil Nadu is provided by the Central Sericultural Research and Training Institute, set up by the Central Silk Board, Ministry of Commerce, Government of India at Mysore. There is a proposal to set up a Regional Station in Salem. The Coordinating Committee and the Steering Committee for development of sericulture in Tamil Nadu, has representatives from the Mysore Institute.

Tamil Nadu has the unique distinction of housing 27.5 percent of the total silk handloom weavers in India. Against their estimated requirements of 7 to 10 lakhs kgs. of silk yarn per annum, the present production within Tamil Nadu is of the order of around 1.5 lakhs kgs. Thus there is a considerable gap between the production and requirement of the State*, and this demand exists.**

The Tamil Nadu Government has made a special effort to assist tribal people and the scheduled castes to get employment in sericulture. Between the years 1978 and 1982, 924 tribal families and 11,187 scheduled caste families were introduced to sericulture.

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* For a more detailed note on sericulture development in Tamil Nadu see Appendix 2.

** For more on marketing aspects see Appendix 2.

III. The Problem

Sericulture is a family activity in the three main aspects: mulberry cultivation, silk worm rearing and reeling. * Male and female members handle different stages and operations within this aspect, but some stages/operations are more female labour intensive.

Women's employment in different sericulture operations**

Operations	Total No. of person-days required	Women workers	
		Numbers	Share
1. Mulberry cultivation (one acre) Weeding	40	40	100%
Application of fertilizers and farmyard manure	30	20	66%
2. Rearing	500	300	60%
3. Reeling (300 kg cocoons from one acre)	93	75	80%
Twisting (30 kgs)	139	83	60%
4. Weaving	328	66	20%
5. Printing, dyeing	10	4	40%

Considering the percentage of women's employment in different sericultural operations, and our increasing recognition that generally poor rural women tend to receive unequally the streams of benefit ensuing from development, and the suggestions in development literature that some of the reasons for this unequal access are the unequal presence of women in the extension network, whether in program-design, administration, extension, evaluation or intervention-design, and, the lack of access of women to the market, we looked at the employment of women in the Sericulture Service of the Governments of Karnataka and Tamil Nadu.

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* Reeling activities are now becoming more and more factory-based.

** Source: An Assessment of Women's Roles - the Karnataka Sericulture Development Project.

Statement showing the employment of women in the Sericulture Service of the Government of Karnataka

	Description	Total	Male	Female	Qualification required	Pay-scale
	(a) Technical					
1.	Dy. Director of Sericulture	6	6	-	B.Sc.	1300-1900
2.	Asst. Director of Sericulture	6	6	-	B.Sc.	750-1525
3.	Sericultural Assistant	45	43	2	B.Sc.	660-1300
4.	Sr. Sericultural Inspector	2	2	-	B.Sc.	500-1120
5.	Sericultural Inspector	25	24	1	B.Sc.	400-900
6.	Sericultural Demonstrator	250	248	2	SSLC	340-800
7.	Sericultural Operative	47	46	1	SSLC	300-700
8.	Office Superintendent	12	12	-	Graduation	500-1120
9.	1 Division Clerk	6	6	-	Graduation	400-900
10.	II Division Clerk	6	4	2	SSLC	300-700
11.	Stenographer	1	1	-	SSLC with typing/short hand	400-900
12.	Typist	7	3	4	SSLC with typing	300-700
13.	Attender	4	4	-	Literate	280-500
14.	Peon	67	67	-	Literate	250-400
	(b) Administrative					
1.	Headquarters Assistant	1	-	1	Deputation from Revenue Dept.	900-1750
2.	Sericultural Assistant	1	-	1	B.Sc.	660-1300
3.	Audit Superintendents	3	2	1	2 yrs. service in the cadre of Office Supdt.	600-1240
4.	1 Division Clerk	13	10	3	Must have passed Dept. Exam. prescribed for Recruitment Graduate	400-900

	Description	Total	Male	Female	Qualification required	Pay scale
	Administrative (contd.)					
5.	II Division Clerk	11	9	2	SSLC	300-700
6.	Stenographers	10	4	6	Senior shorthand & SSLC	400-900 + Sp. pay
7.	Typists	9	3	6	Senior typing & SSLC	300-700 + Sp. pay
8.	Peons	16	14	2	-	250-400
9.	Skilled laborers (on consolidated and daily wage)	41	27	14	Literate to degree	Daily Rs. 6/-
	TOTAL	529	481	48		

Source: Director of Sericulture, Government of Karnataka

Statement showing the involvement of women in the Sericulture Service of the Govt. of Tamil Nadu

Description	Total	Male	Female	Pay scale (Rs.)
1. Director of Sericulture	1	1	-	
2. Joint Director	1	1	-	1500-2100
3. Dy. Director of Sericulture	4	4	-	1000-1650
4. Assistant Directors	16	16	-	750-1350
5. Inspector of Sericulture	39	39	-	525-925
6. Asst. Inspector of Sericulture	140	140	-	400-700
7. Jr. Inspector of Sericulture	128	128	-	325-550
8. Sericulture Demonstrators	696	695	1	265-425
9. Industrial Coop. Officer	2	2	-	525-925
10. Asst. Supervisor of Industrial Coop.	31	29	2	350-600
11. Superintendents	9	8	1	525-925
12. Commercial Accountants	2	2	-	400-700 + Sp. pay
13. Assistants	31	28	3	400-700
14. Junior Assistants	34	27	7	350-600
15. Typists and Steno-typists	28	14	14	350-600 + sp. pay
16. Driver	22	22	-	310-500
17. Basic Servants	41	41	-	250-400
18. Sentry and Watchman	32	32	-	250-400
19. Pumpset Foreman	1	1	-	250-400
20. Mechanic Grade I	1	1	-	200-350
21. Mechanic Grade II	1	1	-	175-350
22. Wireman	1	1	-	175-350
23. Boiler Attendant	1	1	-	175-350
24. Agriculture labour employed in farms grainage etc.	600	300	300	Daily Rs. 9/-
25. Workers engaged in reeling	260	50	200	Daily Rs. 6/-
TOTAL	2112	1584	528	

Then the questions we attempted to answer were those asked by Devaki Jain in her case-study of the Karnataka sericulture project.

- How far does the outreach of a program depend on the sex of its communicators? The outreach will have an economic/class/caste (e.g. scheduled caste/scheduled tribe) aspect apart from the sex aspect. How does one determine/allocate the mix of the two?

- If women communicators appear to be a critical input from the point of view of distributive justice, how does one overcome obstacles/inhibitions and ensure the absorption of an adequate number of women personnel at each level? Which are the levels at which women are essential?

In the case-study, Devaki Jain described the process of writing the case-study as follows:

"At the instance of the Chief Secretary of Karnataka, a field visit was arranged by the department, Directorate of Sericulture, in which both the District Officer - Sericulture as well as the Director of Women and Child Welfare and the President of the most active voluntary agency in the district namely the Family Planning Association of India went as a team. The visit was to 10 sericulture villages in one of the most well established sericulture districts of Karnataka namely Kolar.

"The District Sericulture Officer questioned the team's interest in finding out whether women had been given adequate attention in the project's implementation design. Firstly he said that women and men and children were intertwined in sericulture cultivation with no clear segregation of roles - no forms of traditional task allocation charter. Hence, there was no need to see the project either as a women's project or a project in which unless women are reached there can be some negative consequences. He called it a household activity with no sericulture based demarcation of tasks.

"Therefore he did not see any reason why the extension agents should be females or local information dissemination centres should be manned by women. If the household is reached, male or female, the project would be adequately looked after. He also argued that women would be inhibited in taking up jobs either in the chowki centres or in other forms of outside-house training or discussion activities and would prefer to send their men for such activities including marketing. Hence by and large their roles were housebound.

"Some of these issues were tested out in the field visit.

"Firstly it was found that the chopping of mulberry leaves and the continuous feeding were 3 hourly, was largely done by females and children as they were more house bound. Many of the women complained that after working the whole day at household chores and child-rearing they could not sleep in the night because the worms had to be fed, and felt exhausted. They also felt that the house was created for the worms who dominated the space and left very little for themselves and for their children.

"In village level meetings held with men and women, women volunteered to be the incharge of the chowki rearing centres and showed no inhibition or hesitation in taking such outside house extension tasks.

"They felt that they would even like to take the product to the market as then they could have a control over the cash which otherwise came under the control of the men. They mentioned that men's use of cash have included non-food items and liquor which rob them of the full value of their work.

"As a result of the visit both the Director of Women and Child Welfare and the former Director of Sericulture wrote notes to the Chief Secretary in which they expressed the view that there was need to look at the project again from the point of view of women's participation at all levels especially from the point of view of providing women workers in sericulture, inputs from the social welfare side such as child care centres, health Protection and so on. Consequently, the Chief Secretary decided to appoint a Task Force on Sericulture to go into all these issues. Due to changes in the administrators incharge of sericulture and its department , namely industry,the setting up of the task force was delayed by several months. The Task Force eventually came into existence on 4th February, 1982."

IV. The pilot project in Kanakpura Block, Karnataka

About the pilot project in Kanakpura block, Devaki Jain's case-study says:

"The Technical Service Centres and the Chowki Rearing Centres provide technical services and guidance on the spot to sericulture households through technical personnel. The technical personnel will observe and guide the various operations including those carried out by women e.g. weeding, harvesting, chopping in the farms and feeding, cleaning and care of the silk worms in their homes. This requires a very close contact and communication between the technical personnel and the men and women workers. It should not be difficult to recognize that the effectiveness of contact and communication with the women workers would be considerably enhanced by having as many women as possible among these technical functionaries.

"There are undoubtedly problems of housing and transportation of women technical functionaries* to the villages. But these problems are not significant compared to the problem of having male functionaries who though can be housed and transported relatively easily, are unable to communicate effectively with half the labour force i.e. women workers and provide them on-the-job training. In one case the project may incur some extra costs on housing and transportation of women functionaries but in the other the project will suffer a substantial loss due to the failure of the male functionaries to accomplish the objective.

"On an experimental basis the Karnataka Government has appointed a woman, Ms. Jayanthi, as in-charge of a Technical Service Centre (TSC) in Kanakpura and (with a grant from the Ford Foundation) eight women field functionaries (demonstrators) have been attached to this TSC. Since the experiment has been launched recently it is too early to make any conclusive comments about the impact and contribution of the women functionaries. But our field visits to the Kanakpura villages showed that these functionaries have direct and easy access to female workers in the household and that male workers of the household are not inhibited from receiving advice from the female functionaries.

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* In the case of the pilot project, the employed women are from the same villages and this problem is not considerable.

"In the household survey conducted as a part of this study in Kanakpura, women respondents have generally appreciated the role of women functionaries. But whether this appreciation is for the quality of their companionship and/or for the quality of technical guidance provided by them is too early to decipher. For this the experiment must run for a year or two and be monitored systematically."

Our remarks on the pilot project in Kanakpura block after our field visit are

(1) We felt that the Joint Director of Sericulture, who accompanied us, and who has been associated with the project from the beginning is a very competent person. His interest in the project, we feel, will yield positive results.

(2) The eight women extension workers are definitely more confident, articulate and knowledgeable, now, than during my visit in November 1981. They are able to identify not only sericultural problems, but general problems of the poor. However, they need additional training in agricultural (mulberry) production, communication methods, working of women's organizations and in poverty/equity issues.

(3) The eight women extension workers have not dropped out for the past one year. They also said they had no difficulty in working in villages. This leads us to believe that perhaps it is best to begin with affirmative action policies at village functionaries level, recruiting women from the villages, rather than insisting on recruitment of women at all levels.

(4) The equity issue (reaching the poorest families) needs to be followed up in programmatic terms. For example, in a few of the poorest scheduled caste or scheduled tribe villages, common silk worm rearing houses run by a village women's organization can be demonstrated as bankable projects.

Some Results of the Pilot Project

1. As mentioned earlier, the Government of Karnataka has set up a Task Force to examine the whole issue of women functionaries in the Department of Sericulture and meetings are being held regularly. Mrs. Devaki Jain attends on behalf of the Institute of Social Studies Trust. The Task Force seems to be making good progress.

2. The eight women functionaries at Kanakpura project have remained in position for a year and are functioning satisfactorily.

3. There is more general awareness among higher officials of the department, and indirectly more recruitment of women has taken place. For example, at the last recruitment of Sericultural Demonstrators, out of 69 posts, 10 were filled by women.

4. The Department of Sericulture, Government of Tamil Nadu has developed a project proposal for 200 women sericultural functionaries.

V. Project proposal of the Department of Sericulture, Government of Tamil Nadu

I. Short-term objectives

(1) To utilize the opportunity presented by the fact that the Directorate of Sericulture, Government of Tamil Nadu is only now expanding and recruiting (the existing sericultural organization in Karnataka was built up over several decades when there was little awareness/interest in promoting women's employment, and it is very difficult to displace existing male staff, even if desirable).

(2) To demonstrate the value of village-level women functionaries in employment systems such as sericulture, in sufficiently large numbers (200 in this case) so as to have a critical mass for the demonstration effect.

(3) To bring about an awareness in the Department of Sericulture, Government of Tamil Nadu to expand their already existing equity concerns in the sericulture project.

II. Long-term objectives

To enable policy makers in India to look at large employment systems to critically address the questions posed earlier in this. How far does the outreach of a development program depend on the sex of its communicators? The outreach will have an economic class/caste aspect (e.g. scheduled castes and scheduled tribes) apart from the sex aspect. How does one determine/allocate the mix of the two?.

If women communicators appear to be a critical input from the point of view of distributive justice, how does one overcome obstacles/ inhibitions and ensure the absorption of an adequate number of women personnel at each level? Which are the levels at which women are essential?

How can both productivity and equity aspects of a development program be ensured?

Specific objectives

1. To provide gainful employment to about 2.5 lakh persons mostly belonging to weaker sections in the rural areas and also to improve their socioeconomic conditions.

2. To expand the area under mulberry and to step up production of raw silk from the present level of around 1000 tonnes to 1300 tonnes of which 500 tonnes will be bivoltine silk.

3. To improve the access of women sericulturists to extension services, technical services and to the market.

The Project

Under the project, 200 women will be recruited from rural areas in Tamil Nadu (100 to be trained to be Chowki Rearing Technicians, attached to the Chowki Rearing Centres and 100 to be trained as Sericulture Extension Workers). The training will be held at suitable places such as Sri Parasakthi College for Women, Sri Avinashilingam Home Science College. Resource persons will be drawn from Tamil Nadu Agricultural University, Central Sericultural Research and Training Institute, Mysore.

From past experience it is seen that in spite of efforts at equity, poor women are very difficult to reach programmatically. Therefore a provision is made in the budget, to utilize for any expenses, such as subsidizing sericulture equipment for tribal women, setting up a special chowki rearing centre in a very disadvantaged area.

Voluntary agencies like the Community Services Guild will be given assignments by the Department of Sericulture to identify poor women to become members of the sericulture cooperatives, as well as to identify women to be employed as Chowki Rearing Technicians and Sericulture Extension Workers.

Strengths and Weaknesses: Risks and Yields

During our field visits to sericulturists in Salem district, Tamil Nadu, we met two distinctly different groups of sericulturists.

The first was the group of sericulturists in Sooludayapatti village of the remote Kolli hills. The Malayali tribe lives in the Kolli hills and the Kalrayan hills in abject poverty, and the initiative of the Department of Sericulture to introduce sericulture in this area reflects a genuine equity commitment.

In Sooludayapatti village, 13 families had taken up mulberry plantation (rainfed) and silkworm rearing (details given below):

Name of Sericulturist	Date of planting mulberry	Number of silkworm crops reared and income		
		1980-81	1981-82	1982-83
1	2	3	4	5
Kuttamudaya Andi	30.8.81	2 crops Rs. 267.30	6 crops Rs. 2,420.00	
Raju	3.10.79	5 crops Rs. 2489.00	8 crops Rs. 9213.00	3 crops Rs. 2946.10
Kulandaya	30.8.81		1 crop Rs. 240.00	1 crop Rs. 291.70
Ponnusamy	30.8.80	2 crops Rs. 422.10	9 crops Rs. 4933.00	1 crop Rs. 500.90
Thangaraj	30.8.81			1 crop under rearing
Sundaram	3.10.79	4 crops Rs. 1144.25	4 crops Rs. 1826.70	2 crops Rs. 753.00
Sevi	5.8.81		2 crops Rs. 421.10	1 crop Rs. 267.00
Chillali Karuman	3.12.81		1 crop Rs. 274.85	1 crop under rearing

contd.

1	2	3	4	5
Henri	5.8.81		1 crop Rs. 231.40	1 crop under rearing
Krishnan	6.8.81		2 crops Rs. 1077.40	2 crops Rs. 1722.00
Karuman	11.8.81		2 crops Rs. 341.82	1 crop under rearing
Chinnammal	11.8.81		1 crop Rs. 222.50	1 crop under rearing
Abimannan	17.10.79		3 crops Rs. 2387.55	1 crop just harvested

This group has definitely benefitted. The families who had earned above Rs. 2000 a year had built brick houses and we could see a dramatic change.

We talked with the women sericulturists of the Kolli hills. Though they had no access to the market, their men told them about the prices they had got for the cocoons and involved them in decision-making. The women decided along with their husbands whether they wanted to invest in a better living house or a better silkworm rearing house. Their main problem was lack of access to primary health care, health care at childbirth.

In contrast to this were the groups of women sericulturists in the plains. Most of these women were Gounder women (a relatively high caste). Many of the families had 4 to 10 acres of irrigated land, and had planted mulberry on 1 to 2 acres. We met with groups of women sericulturists at Muniappampalayam, Iyyampalayam and Kulathupalayam villages.

The women were quite happy with the silkworm-rearing. They did feel it had definitely increased the total family income. But they had no access to the market, were not members of the cooperatives*, had no idea how much the husbands sold the cocoons for. The women also complained of overwork and exhaustion, particularly when the silkworms were nearing the spinning stage. There is a need for time-budget studies.

Then we gradually got to talking about women's issues. In group after group the women said that the dowry demands were increasing and because of this, boy babies were definitely preferred to girl babies. Husbands often had to be persuaded to take back wives who had given birth to a girl. They asked me about women in Delhi and women in America. I talked about dowry deaths. Then to my surprise they hesitatingly came out with stories of female infanticide - they were fed a poisonous seed, a common method of suicide in Tamil Nadu.

Most of the women had undergone tubectomies after two children, definitely if they had two boys, or a boy and a girl, but never if they had two girls (in contrast the Kolli hills women had large families). "Do you have the tubectomy with your husbands' consent?"

"Of course! How could we go otherwise?"

They also underwent medical termination of pregnancy (MTP). Again, to my surprise, MTP was very common if the astrologers predicted a girl baby. This was mentioned in group after group. The astrologers in Tamil Nadu have preceded the amniocentesis clinics! I talked about the amniocentesis clinics in North India and many of the elder women thought it was a good idea.

While I talked with the women's groups, the soil scientist would visit the mulberry plantations of the same women. Then we would compare notes. In one place we talked to a group of men and women sericulturists. This whole process was a very useful experience.

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* The question of membership of women in cooperatives was discussed at great length with the higher officials, why it was necessary, what changes it would make in their lives etc. Finally there was some agreement that the offer should ideally be made to both husband and wife and the decision left to them. The bureaucracy had not thought of female-headed households and there was no data available on number of female-headed households. This question needs to be thought over more.

The soil scientist's observations are:

Profitability from sericulture depends largely on the production of mulberry leaf at economic cost, as nearly 50 percent of the cost of cocoon production accounts for raising food plant, mulberry. Therefore for productivity and the profitability, maximisation of leaf yield per unit area at reasonable cost is essential.

"Packages of Practices" for mulberry cultivation - both under irrigated and rainfed conditions are now available as a result of intensive agronomic research carried out at Central Sericultural Research and Training Institute, Mysore (CSRTI). Under irrigated conditions with the use of high yielding varieties (Kanva-2), new system of plantation, adequate inputs of water, fertilizers and proper cultural practices, it has been possible to increase the leaf yield from 15,000 kg. to 35,000 kgs. per hectare per year. However, under rainfed conditions the leaf yield has remained very low, 3500-4000 kgs/ha/year due to non-availability of water and fertilizers. At Kolli hills, for example, the rainfed mulberry leaf yield was only 2000 kg. The farmers here were not using fertilizer excepting little farm yard manure. With new technology evolved by CSRTI, the leaf productivity can be increased to 15,000 kg per ha. per year under rainfed conditions. The quality of mulberry leaf also improves. The overall result is that mulberry production becomes lucrative and popular among the cash crops like cotton, groundnut, tapioca, etc.

The farmers in general are not following the recommended package of practices. The varieties are old, the spacing, planting, interculture, irrigation and manuring not adequate. The recommended fertilizer dose is 300:120:120 kgs/NPK per hectare per year in split doses. The farmers are using 17:17:17 fertilizer complex which is available to them. This fertilizer which is poor in N is used for groundnut (a common crop) which needs no nitrogen while mulberry requires large amount of nitrogen. Only one farmer used 50 kg of urea per cutting while most were using only farm yard manure - 10-20 cartloads. One farmer used four bags of oil cake (castor oil). Some paddy (heavy textured black soils) farmers had taken up mulberry cultivation and the plantation was suffering from poor drainage. On my questioning why they were not using urea, they explained that urea was causing grassy disease in silkworms. Farmers knowing my background flocked to learn about scheduling of irrigation, manurial practices and disease control.

Generally a farmer having 10 acres of land plants mulberry in 1-3 acres and rest is put under groundnut, tapioca, sugarcane etc. It appears that irrigated mulberry crop though perennial is a high input crop and likely to benefit rich farmers. On the other hand rainfed mulberry being drought resistant and perennial in nature is ideally suited to poor farmers. The low leaf yield under rainfed conditions is due to poor initial establishment, inadequate moisture conservation practices, low yielding varieties and lack of fertilizer application. Under the current sericulture practices in rainfed area, the problems are, either the farmer has an extensive land under mulberry with very poor productivity or the rearing facilities are too inadequate. An economical unit linking the two has to be worked out. Due to lack of availability of necessary trained staff in agronomic practices in sericulture department, we suggested close collaboration with Department of Agriculture and Tamil Nadu Agricultural University till the Department of Sericulture recruits the necessary staff.

The mulberry production appears to have other advantages of providing protection to land from water erosion, production of fuel and fodder, better utilization of soil stored moisture and finally a sound ecosystem management of undulating drought affected lands. This year, due to severity of drought the water tables were below 60 ft. and village women were pulling out water from these depths."

Strengths/Yields

The strengths have already been discussed above, but I will attempt to recapitulate here.

The Department of Sericulture, Government of Tamil Nadu has an infrastructure of technical assistance, marketing, extension services (though admittedly with some gaps) and the backing of the Central Silk Board and its Research Institute. It has the political commitment to women's issues, equity issues of scheduled castes/scheduled tribes and an efficient administration. Yet, it is an infant department and this is the critical period of entry for 200 women functionaries and therefore presents a unique opportunity. We, and, policy-makers can learn a lot from this grant. This will give a thrust to the whole question of rural women

functionaries. It will also enable to resolve the productivity/equity* issues.

Another strength is that the Department of Sericulture is using other available sources of government funds such as Trysem for training women in reeling, tribal development funds, Harijan welfare funds.

Weaknesses/Risks

The weaknesses are almost the same as observed in the Karnataka sericulture project, except for more political commitment towards equity and women's issues. It is possible to have a successful village-level cadre of 200 women workers. It could be possible to find a woman for a higher level position (e.g. Joint Director) on deputation, for example. But to what end? What is really needed is sensitization of the male higher officials to women's issues and one has to think through the different strategies for this. Through a woman Project Officer (Joint Director)? Or would it be better to invest our staff time? Or suggest training courses? Run by whom?

Then comes the question of the middle-level workers (the group described by the Karnataka DWCW, Directorate of Sericulture in the Task Force meeting). This is the group who are Supervisors, Project Officers wo need higher qualifications. Urban women do not stay. They have problems of husbands posted elsewhere, children's education, inability to travel in rural areas (to supervise 50 village-level women workers, for example), children's sickness, feeling of insecurity in rural areas, incompatibility with living conditions in rural areas etc. We should think of various strategies for this level - fellowships for rural women to do B.Sc. Agriculture/Sericulture, improvements in living conditions. However, again the most promising strategy seems to be sensitization of existing male employees. But this group is infinitely more difficult than the higher-level group. They have more prejudices/ less 'intellectual' capabilities. Besides, who will do it?

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* Many of the women sericulturists in the plains said they employed female landless labourers for at least 100 days in the year at Rs. 6 per day for mulberry plucking, feeding of silkworms. I talked to the female landless labourers also and confirmed this. This is another aspect of the employment issue, connected with the equity issue which needs to be explored further.

Unless attitudes towards female children are changed, does increase in income make any difference? How will attitudes change? Over what period?

We also do not know enough about intra-familial distribution of income and effects of redistribution on family life, and some of the questions I have raised earlier on this issue are relevant to Tamil Nadu also.

However, on all these issues, I think many of those questions can be answered only through the progress of this project. Someone needs to work systematically, over a period of time, with the women's groups of sericulturists I have described above, and with the 200 women workers and then we can learn from this experience. It is a risk worth taking and a challenge.

Appendix 1

Economics of Sericulture under rainfed conditions

The full impact of the yield and economics will be seen from third year onwards only. During the first year, two crops can be taken and the leaf yield and rearing capacity is limited to about 400 dfls. In the second year, the leaf yield increases to 10,000 kgs per hectare with a rearing capacity of around 1300 dfls. During the third year yield reaches the optimum level of 15,000 kgs per hectare with the rearing capacity around 2000 dfls. From third year onwards, the net profit per hectare is about Rs.5,390 per annum. The details of rearing expenditure and the economics are given below:

Investment of Equipments for Rearing 400 Disease free Layings

Equipment	Total cost(Rs.)	Utility (years)	Value/ year(Rs.)
1. Rearing trays (wooden) 20 trays @ Rs.80/- each (size 4'x3'x3½")	1,600	10	160
2. Chowki rearing stand 2 Nos. @ Rs.75 each	150	10	15
3. Leaf chopping board 2 Nos. @ Rs.125 each	250	10	25
4. Chopping knives 2 Nos. @ Rs.15 each	30	3	10
5. Antwells 64 Nos. @ Rs.5 each	320	10	32
6. Rearing stands 16 Nos. @ Rs.220 each	3,520	10	352
7. Bamboo round trays 3½' diameter 160 Nos. @ Rs.15 each	2,400	3	800
8. Feeding stands 4 Nos. @ Rs.40 each	160	10	16
9. Leaf chamber 5'x2½'x2½' @ Rs.250	250	10	25

Source: Central Sericultural Research and Training Institute, Mysore.

1		2	3	4
10.	Sprayer 1 No. @ Rs.550/-	550	10	55
11.	Hygrometer 1 No. @ Rs.150	150	10	15
12.	Foam pads 1 kg @ Rs.100 per kg.	100	4	25
13.	Silkworm bed cleaning nets 400 Nos. @ Rs.3	1,200	3	400
14.	Bamboo mountages 120 Nos. @ Rs.35 each	4,200	3	1,400
	Total	14,880	—	3,330

Expenditure on rearing:

1.	Cost of dfls @ Rs.30 per 100 dfls for 400 dfls		120
2.	Cost of labour - young age 12 days - 3 men per day = 36 mandays Late age 12 days - 5 men per day = 60 mandays Spinning and harvesting - 2 days - 8 men per day = 16 mandays Total 112 (36+60+12) - mandays @ Rs.5 per day		560
3.	Paraffin paper, formaline, newspaper, cocoon marketing etc.		230
		Total	910

Returns

Yield at the rate of 35 kgs cocoons for 100 dfls for 2000 dfls (35x20) — 700 kg

Marketing @ Rs. 25 per kg. — Rs.17,500

Expenditures:

Non-recurring expenditure on rearing equipment	Rs. 3,330.00
Rearing expenditure (@ Rs.910 for 400 dfls) for 2000 dfls	4,550.00
Leaf production	4,230.00
Total	Rs. 12,110.00

Net profit/hectare/year (third year onwards)

Return through sale of cocoons	17,500.00
Total expenditure	12,110.00
Net profit	Rs. 5,390.00

Economics of Sericulture under irrigated conditions

During the first year of plantation only two crops can be taken with a rearing capacity of 650 to 700 dfls each. The plantation is fully established during the first year and reaches optimum productivity from second year onwards, with the leaf yield around 35,000 kgs and rearing capacity of about 4600 dfls in five crops. The net profit per hectare is about Rs. 26,275. The details of rearing expenditure and the economics are given below:

Investment on Equipment for Rearing 400 Disease Free Layings

Equipment	Total cost(Rs.)	Utility (Years)	Value per year (Rs.)
1. Rearing trays (wooden 20 trays @ Rs.80 each (size 4'x3''x3½'')	1,600	10	160
2. Chowki Rearing stand 2 Nos. @ Rs.75 each	150	10	15
3. Leaf chopping borad 2 Nos. @ Rs.125 each	250	10	25
4. Chopping knives 2 Nos. @ Rs.15 each	30	3	10

Equipment		Total cost (Rs.)	Utility (years)	Value per year (Rs.)
5.	Antwells 64 nos. @ Rs.5 each	320	10	32
6.	Rearing stands 16 nos. @ Rs.220 each	3,520	10	352
7.	Bamboo round trays $3\frac{1}{2}$' diameter 160 nos. @ Rs.15 each	2,400	3	800
8.	Feeding stands 4 nos. @ Rs.40 each	160	10	16
9.	Leaf chamber $5'x2\frac{1}{2}'x2\frac{1}{2}'$ 1 no. @ Rs.250	250	10	25
10.	Sprayer 1 no. @ Rs.550	550	10	55
11.	Hygrometer 1 no. @ Rs.150	150	10	15
12.	Foam pads 1 kg @ Rs.100 per kg.	100	4	25
13.	Silkworm bed cleaning nets 400 nos. @ Rs.3 each	1,200	3	400
14.	Bamboo mountings 120 nos. @ Rs.35 each	4,200	3	1,400
	Total	14,880		3,330

Expenditure on Rearing

1.	Cost of dfls @ Rs.30 per 100 dfls for 400 dfls	120
2.	Cost of labour - young age 12 days 3 men per day = 36 mandays and Late age 12 days - 5 men per day = 60 mandays. Spinning and Harvesting 2 days - 8 men per day = 16 mandays = Total 112 (36+6+16) @ Rs.5 per day	560
3.	Paraffin paper, formaline, newspaper, cocoon marketing, etc.	230
	Total	910

Returns

Yield at the rate of 40 kg cocoons for 100 dfls for 4, 600 dfls (40x46)	1840 kgs.
Marketing @ Rs. 30 per kg (1840x30)	Rs. 55, 200

Expenditure

Non-recurring expenditure on rearing equipment (Rs. 3330x2 units)	Rs. 6, 660
Rearing expenditure (@ Rs. 910 for 400 dfls) for 4600 dfls	10, 415
Leaf production (35, 000 kgs per year)	11, 850
Total	Rs. 28, 925

Net Profit per hectare per year (2nd year onwards)

Return through sale of cocoons	Rs. 55, 200
Total Expenditure	Rs. 28, 925
Net Profit	Rs. 26, 275

Source: Central Sericultural Research and Training Institute.
Please Note that the cost of nets to keep out uzifly is not mentioned in this.

Appendix 2

Sericulture Development in Tamil Nadu

Employment-generation has been one of the declared policies of the Government of Tamil Nadu. One of the most successful programs organized for this purpose has been the development of sericulture in Tamil Nadu. The impetus has been a continuing feature of the programs from 1979. The sustained efforts of the Government have enabled the increase of acreage to 47,042 acres till the end of last year.

Planned development of sericulture in Tamil Nadu is only of recent origin. At the time of the reorganization of the States in 1956, Kollegal Taluk of Coimbatore District, then the major sericulture tract of the composite Madras State was merged with Karnataka, resulting in practically no sericulture residual in Tamil Nadu. There were only some pockets in the plateau region of Coimbatore and Dharmapuri Districts where sericulture was practised. Mulberry was thought of only as a rainfed crop. There was only about 500 acres under mulberry cultivation. Although the State government started a number of development schemes during the plan periods the industry could not take root, due to want of sufficient cash returns from mulberry when compared to other crops. It was during the year 1972-73 that the industry was introduced on a fairly big scale in the plains of Tamil Nadu. Due to favorable cocoon prices and the modern package of practices adopted by the farmers of Tamil Nadu and various financial and technical assistance given by the Government, the industry gradually started picking up in the plains and mulberry cultivation under irrigated condition came to stay.

It was the introduction of the Intensive Sericulture Development Program in 1977-78 which gave the industry a boost. The entire provision of Rs. 52.63 lakhs was fully utilized during the two years of implementation of the program. The area under mulberry increased from 10,000 acres at the beginning of 1977-78 to 20,000 acres by the end of 1978-79. Silk production increased from 28,000 kgs to 63,000 kgs. Additional employment was generated to more than 30,000 people. During this period the industry spread almost throughout the State.

Source: Government of Tamil Nadu, Department of Sericulture

Encouraged by the impact of the Intensive Sericulture Development Programs and considering the importance of the industry in the rural economy of the State, the State Government wanted to develop it in a big way. As a first step towards this goal, a separate Department of Sericulture was created and started functioning with headquarters at Salem with effect from 1.4.1979. The financial outlay for this industry was stepped up considerably during subsequent years.

The Department of Sericulture is giving the following financial assistance to farmers:

1) Plantation subsidy of Rs. 100/- per acre or free supply of 'M5' seed cuttings.

2) Stipendary training to farmers for three months at a monthly stipend of Rs. 150/- and supply of scientific tools worth Rs. 300/- at 50% subsidized cost.

3) Rs. 500/- per acre being 25% subsidy towards purchase of silkworm rearing appliances.

4) Rs. 750/- per acre being 25% subsidy for construction of a silkworm rearing shed.

5) Rs. 1,100/- being 50% subsidy per basin towards cost of machinery and building for establishing small scale silk reeling units of 4 basin, 5 basin, 6 basin capacities.

Apart from the above financial assistance, the Department is providing the following technical services also:

1) Technical guidance for mulberry cultivation and silkworm rearing through extension workers.

2) Supply of quality silkworm seed at fair prices.

3) Distribution of chowki worms (young stage worms) for increasing the yield.

4) Marketing facilities for cocoons and silk.

During the past three years of its existence, the Department of Sericulture has taken up various developmental measures, to increase the mulberry acreage and silk production and marketing in the State.

Apart from continuing the financial and technical assistance to farmers and small scale silk reeling units, the Department has developed the infrastructure. The acreage has more than doubled during the period. The capacity of existing grainage was considerably increased and four new grainages were started during this period. Additional cocoon markets and Technical Service Centres were established. Three modern Chowkie Rearing Centres were started. Licences were issued for 1000 additional cottage basins in the private sector during the period. 24 additional Silk Rearers' and Reelers' Cooperative Societies were started. 100 graduates and 200 undergraduates were trained at the training school started during 1979-80 for training personnel required for implementing the schemes. More than 12,000 farmers were trained in modern practices of silkworm rearing.

Pamphlets on the modern package of practices and control of diseases were printed in Tamil and distributed to farmers. A number of exhibitions and demonstrations at village levels were held. A rational method of fixing the commercial cocoons prices on the basis of shell content was introduced in all the markets in the State. Such a method was introduced for the first time in the country.

The Tamil Nadu State Silk Producers Industrial Cooperative Marketing Federation has continued to play a pivotal role in the distribution of the silk produced within Tamil Nadu to silk handloom weavers, particularly those who came within the purview of the Department of Handlooms and the Khadi and Village Industries Board. Its role as the regional raw material bank for holding the price line for silk can be judged from the fact that the federation, which held around 14,000 kgs of silk as buffer stock in July 1980, released the same to the weavers at prices which were Rs.50 to Rs.100 lower than the prevailing market prices. It has continued to act as a responsible agent for restricting the prices. The Government has been able to get the assistance of the National Cooperative Development Corporation to this Federation. A sum of Rs.3.29 lakhs has been sanctioned to the Federation as share capital. The Government has also sanctioned 1.26 lakhs of rupees as subsidy to the Federation in order to enable it to have its own building and warehouse in order to enable it to expand its activities. The Federation has also decided to continue

to assist repatriates by deciding to start two more raw silk twisting units at Coimbatore and Salem with assistance from the Repatriates Rehabilitation Bank. Proposals have been sent to the Repatriate Cooperative Bank for sanction of loan at the rate of Rs. 1, 20, 000/- to four Sericulturist and Silk Reelers Industrial Cooperative Societies in Madurai District. The Federation has transacted business for more than 83, 000 kgs of raw silk valued around Rs. 3.50 crores during 1981-82.

		1979-90	1980-81	1981-82
1)	Budget allocation under various schemes (Rs. in lakhs)	272.96	265.31	247.78
2)	Area under mulberry (in acres)	31,470	40,871	47,042
3)	Cocoon production (in lakhs kgs)	46.55	56.00	27.53
4)	Production of raw silk (in lakhs kgs)	1.06	1.49	1.51
5)	Additional employment generated in the year	50,000	47,005	35,185
6)	Cumulative employment at the end of each year	1,57,350	2,04,355	2,39,540

The internal demand for silk in the State is estimated to be around 10 lakhs kgs. The actual production of silk during 1981-82 was only 1.50 lakhs/kgs. A major portion of silk reeling cocoons produced in the State especially from the bo- rder districts of Dharmapuri, Periyar, Coimbatore and North Arcot continue to flow to the adjacent Karnataka State for want of sufficient silk reeling capacity in the State. Similarly a major portion of the requirement of silkworm seed is also being met by Karnataka State at present. Therefore the main emphasis in the sixth plan propo. sal is to achieve self-sufficiency in silkworm seed production and silk production in the State. It is also programmed to increase the bivoltine silk production in the State. Schemes have been drafted to achieve this goal.

Two officers of the Department have been recently deputed to Japan for a short study tour to acquaint themselves with modern developments in sericulture with the main idea of stepping up bivoltine silk production in the State. Dr. Krishnasamy, the retired Director of the Central Sericultural Research and Training Institute, Mysore was asked by the State Government to prepare a detailed feasibility report on introduction of bivoltine program on a large scale in the State and his report has just been received and is now under the consideration of the Department.

It is gratifying to mention here that the Central Silk Board and Government of India are very keen on supplementing the efforts of the State Government. The orders of the Government of India in recognizing the State Silk Marketing Federation as a branch of the raw material bank under the price stabilization scheme and releasing financial assistance to the Federation has helped it to a great extent.

The Central Silk Board grainages at Alangayam, Coimbatore and Hosur are supplementing the efforts of the State Government to supply quality silkworm seeds to the farmers. The Central Silk Board Extension Centres at Coimbatore and Salem are helping in disseminating the modern package of practices in sericulture to the farmers in the region. The Central Sericultural Research and Training Institute, Mysore is also helping this infant department in solving its technological problems.

A greater amount of participation by the Central Silk Board in encouraging the development of sericultural in Tamil Nadu has been assured. Because of the efforts that have been taken by the Government, the Central Silk Board have agreed not only to open another extension centre in Madurai District, but have also agreed to establish a Regional Research Substation in Salem. Moreover, a fulfledged regional office of the Board will also be opened in Salem, in order to ensure effective coordination of all the activities of the Central Silk Board in Tamil Nadu and also to ensure a greater degree of mutual coordination between the activities of the Central Silk Board and the Department of Sericulture.

Sixth Plan Objectives

The Tamil Nadu Government has projected in the Sixth Plan period to reach a target of production of 900 metric tonnes of raw silk from the present level of production of 300 metric tonnes. The Planning Commission has allocated Rs. 22 crores during the Sixth Plan period to

achieve this target. Mulberry cultivation will be extended in 45,000 acres during the Sixth Plan period, taking the total acreage to 75,000 acres. This will generate employment to about 2,25,000 people in the rural areas. At the end of the Sixth Plan period about 3,800 lakhs people will be engaged in the silk industry. Infrastructure facilities such as basic seed farms, organization of seed areas for both bivoltine and multivoltine breeds, additional grainages with production potential of four crores layings will be established. There will be significant increase in production of cocoons to 150 lakhs kgs. from the present level of production of 50 lakhs kgs. About 6,000 farmers will be trained each year of the plan period with the establishment of six additional demonstration-cum-training centres, thus bringing the total demonstration-cum-training centres to 12. Chowkie rearing will be introduced to farmers by a network of 15 centres to be established by the government and also by 175 village-level community Chowkie Rearing Centres. In addition to the 27 cocoon markets established during the previous plan periods, 10 new markets will be established at the rate of two each year. The reeling industry will be strengthened by issuing licences to private parties to instal about 3,000 cottage basins during the sixth plan period bringing the total from 1670 to 4670. Establishment of reeling units in the cooperative sector will be simultaneously encouraged and about 45 societies with 10 basins capacity each will be organized. In the Government sector three silk reeling and twisting complexes with the capacity of production of about 16,000 kgs of warp will also be established to stabilize the market trends in cocoons as well as silk. Thus by implementing all the components of the scheme, the total area under mulberry will rise to 75,000 acres at the end of the plan period, meeting the entire demand for raw silk in Tamil Nadu. In order to maintain the economic level of the price of raw silk for silk handloom weavers and also to establish an expert potential for the silk produced in the State, a bivoltine program has also been included in the Sixth Plan period, to achieve a production of 100 tonnes of expert quality silk each year and at the end of the Sixth plan period, 500 tonnes would have been produced in the State, wherever the climatic conditions are conducive for conducting bivoltine silkworm rearing. Two units of modern silk filatures with semi-automatic reeling machines have been proposed to be established during the Sixth Plan period for production of international grade bivoltine silk.

Marketing

The estimated production of reeling cocoons in the State is in the range of 5000 to 6000 metric tonnes per annum. There are 29 cocoon markets in the State established by the Department of Sericulture which provides marketing facilities for the silkworm rearers. A large number of markets have come into existence during the last five years. In order to ensure fair trading practices in the cocoon market, and to prevent exploitation of rearers, the Madras Seed Act of 1956, is being enforced, according to which only licensed reelers are eligible to purchase cocoons from the markets. With a view to ensuring reasonable price to the rearers, the Department of Sericulture fixes a floor price for the cocoons in the market. The system of determining the floor price is based on the recommended quantitative assessment of silk content in the cocoons by the Central Sericultural Research and Training Institute, Mysore. The floor price fixed by the Department is based on the prevailing market rate for raw silk. The price fixed by the Department serves as the floor price, over which further auctions are held to arrive at the final price.

A statement showing the location of the markets district-wise and the details of cocoons transacted is given below:

Districtwise list of cocoons markets and cocoons handled during 1980-81

District	Location of Market	Quantity of cocoons transacted (kgs.)
1	2	3
Salem	Salem	1,05,027
"	Rasipuram	10,508
Dharmapuri	Hosur	78,554
"	Papparapatti	2,784
"	Harur	18,025
"	Thally	8,016
Coimbatore	Coimbatore	2,14,962
"	Tiruppur	20,032
"	Dharapuram	3,566
Periyar	Thalavadi	31,963
"	Gobichettipalayam	
Madurai	Palani	24,179
"	Dindigul	9,044
"	Theni	

1	2	3
Ramnad	Sivaganga	1,976
"	Virudhunagar	12,982
Tirunelveli	Nannagaram	10,851
"	Sankarankoil	9,412
"	Kalakadu	1,203
Kanyakumari	Nagarkoil	1,094
Pudukottai	Pudukottai	2,691
Tiruchi	Musiri	2,544
Thanjavur	Kumbakonam	19,053
"	Mannargudi	415
South Arcot	Kallakurichi	835
North Arcot	Vaniambadi	1,10,725
"	Chengam	11,029
Chengput	Kancheepuram	9,773
	Total	7,33,969

The Government has also taken keen interest in the introduction of sericulture to tribal families and to scheduled caste families, and details are given below:

Tribal Program : From 1978-79 to March 31, 1982

District	Acreage	Number of families involved	Quantity of layings brushed	Cocoons harvested (kgs.)
North Arcot	333.45	424	28,940	8,855.00
Salem	336.00	340	19,873	5,532.45
South Arcot	146.00	160	2,105	586.10
	815.45	924	50,918	14,973.55

Special component plan for Scheduled Castes

Year	Acreage	Number of scheduled caste families involved	Budget provision (Rupees in lakhs)	Actually spent
1980-81	2500.00	7,510	21.990	21.196
1981-82	918.00	3,677	17,325	15.318
	3418.00	11,187	39.315	36.514