Sericulture Development in Non-Traditional Areas

Proceedings of the National Workshop held at Pune on August 19, 20 & 21, 1993

Sponsors: Central Silk Board & NABARD.

Girish Sohani, I.A. Kamte

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THE BAIF MISSION

BAIF’s mission is to create opportunities of gainful self-employment for the rural families, especially disadvantaged sections, ensuring sustainable livelihood, enriched environment, improved quality of life, and good human values.

This will be achieved through development research, effective use of local resources, extension of appropriate technologies and upgradation of skills and capabilities with community participation.

BAIF will be a non-political, secular and professionally managed organisation.
SERICULTURE DEVELOPMENT IN NON-TRADITIONAL AREAS

Proceedings of the National Workshop held at Pune, on 19, 20 & 21 AUGUST 1993

Editors
Mr. Girish Sohani
Mr. I.A. Kamte

BAIF Development Research Foundation, Pune (India)
BAIF Development Research Foundation (BAIF) is a voluntary service organisation with a strong research base, operating in various parts of India, since its inception in August 1967, helping the rural people in making proper and judicious use of natural resources such as land, water, vegetation and cattle for improving the quality of their life. In all its undertakings, the rural family is the focal point and natural resources are the means to make human life richer and better.

Starting with the programme of crossbreeding, BAIF has now diversified into other areas like tribal rehabilitation, community health, sericulture, watershed planning, afforestation, bio energy and other rural based vocations.

The unique organisational structure of BAIF blends social leadership with technical competence and managerial professionalism to ensure timely and effective execution of its development programmes.

Sericulture, because of its various features, fits well in BAIF's rural development programmes. For the farmer, sericulture provides year-round homestead employment and income opportunity. This also provides raw material for possible industrial development in rural areas.

BAIF looks at Sericulture as a major component in its programmes for its following merits:

- Short gestation period
- Labour intensive but light work
- Mulberry suitable to varieties of climatic zones
- Need of personal involvement rather than sophisticated technology or skill

BAIF started work on sericulture with a view to provide rural families additional opportunity for work and income. Soon, work was initiated within BAIF on all relevant aspects of sericulture.

Systematic extension of this activity to the farmer level has been initiated. Additionally, action research studies related to development of a new design of mountage, leaf storage options, and transportation of chawki worms are being carried out.
NATIONAL WORKSHOP ON
SERICULTURE DEVELOPMENT IN
NON-TRADITIONAL AREAS

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CENTRAL SILK BOARD (CSB), BANGALORE.
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I. PREFACE

India is the second largest producer of silk, next to China, and has a 14% share in the global raw silk production. The international demand for silk is increasing every year and a shortfall in supply, vis-a-vis the demand, is a regular feature. In India alone, even though silk production is largely geared to domestic consumption, substantial import of raw silk takes place.

Recent developments in sericulture have shown that it can be considered as one of the promising rural industries in most parts of India, and has the potential to play an important role in rural development. This is because Sericulture has unique characteristic features of being labour-intensive, having short gestation period, and capacity of developing into a family-level enterprise requiring limited investment.

Traditionally Sericulture in India was restricted to a few pockets in Karnataka, Bengal and Jammu & Kashmir. In order to give a thrust to the activity, the National Sericulture Project (NSP) was launched in 1989, to extend sericulture to the non-traditional areas, initially concentrating on a few pilot districts. Some important features of NSP have been its emphasis on involvement of NGOs and focus on promoting the role of women in sericulture.

The NSP having completed half its projected life span, it was considered an appropriate time to organise a National Workshop on Sericulture Development in Non-traditional Areas, to provide a forum for exchange of experiences, ideas and concepts. The Workshop was organised by BAIF Development Research Foundation - an NGO involved in various aspects of sericulture development, from research to extension, was held at Pune from 19th to 21st August 1993. Sponsored by the Central Silk Board and NABARD, the workshop was well attended, with over 70 participants from NGOs, The Central Silk Board, State Sericulture Departments and Other Support Agencies like NABARD and The New India Assurance Company Ltd. The participants consisted of policy makers, research scientists, extension workers, programme farmers and providers of support services such as credit.

The Workshop was organised into various sessions, focusing on specific themes. The methodology consisted of presentations, plenary discussions and group discussions. A field visit to BAIF’s Central Research Station at Urulikanchan and an exhibition on "Appropriate Technologies in Sericulture" were also organised as part of the Workshop.

Details of the presentations and deliberations during various sessions of the workshop are laid out in the following sections. The deliberations during the plenary sessions and the group discussions brought out a number of important recommendations. These are presented as a separate section in these proceedings.
II. WORKSHOP PROGRAMME

Thursday, August 19, 1993

Session I: Inaugural Session

Introductory Remarks: G. G. Sohani
Vice President, BAIF

Keynote Address: Mr. P. S. S. Thomas,
Member Secretary, CSB

Presidential Address: Dr. Manibhai Desai,
President, BAIF

Session II: Extension Methodology

Background Presentations: Dr. Jayant Patil
Dr. J. V. Krishna Rao
Mr. K. K. Shetty

Comments

Friday, August 20, 1993

Session III: Involvement of Women

Background Presentations: Mr. Jacob Thomas
Dr. Manibhai Desai

Comments

Saturday, August 21, 1993

Session IV: Support Systems & CSB-NGO Interface

Background Presentations: Mr. Krishnan
Mr. A. V. Karandikar
Mr. K. K. Kshirsagar

Comments

Session V: Concluding Session

Valedictory Address: Mr. Arvind N. Mafatlal
Concluding Remarks: Dr. Manibhai Desai
III. INTRODUCTORY REMARKS

G.G. Sohani  
Vice President, BAIF

Let me join my colleague, Dr. Hegde, in welcoming all of you - our Chief Guest Mr. P.S.S. Thonas, Member Secretary, Central Silk Board; Dr. Manibhai Desai, President of BAIF and all the delegates - scientists, extension workers who are working in different aspects of sericulture, and our well wishers and associates like Mr. Ravi Maithel from IDRC. I welcome you all once again.

As you are aware, India is very much on the sericulture map of the world. We are number two, after China, but this information also has other nuances to it. Though we are number two we are way below the number one in terms of the total quantum of production and one of the reasons has been that sericulture is restricted to a few pockets traditionally; and it is only in the recent years that there has been a lot of thrust put on extending sericulture to newer areas in India - the non-traditional areas.

In addition to this, there is lot of scope for further improvements, as all of you are aware, in terms of the productivity, in terms of quality of the silk that is produced. So if we are producing less than 20% of the raw silk production of the world, it is also a promise or a potential in disguise, that there is a lot of scope for increasing this to very high levels - much higher than what we are at today.

There is also another very important aspect of sericulture, in the underdeveloped situation in the country, and that is the main reason why BAIF took up sericulture as an important programme; and that reason is that sericulture offers a tremendous potential for a very remunerative self employment for the rural families.

A lot of potential for taking up production of a high value product right in the farmers' home, and it is this potential that can help to advance sericulture as a discipline and also to help the poor farmers to come out of their poverty through this very important cash crop.

Just to compare with China, our productivities are very low. In China the figures are of the order of about 40-45,000 kg of mulberry leaf production per hectare; or production of about 50 kg of cocoons per 20,000 eggs. You are all well experienced with sericulture and you are very well aware that this implies almost a double production level as compared to India. In addition to this, there is a difference in quality. So all this potential is available for us to tap. There is a possibility of reaching these levels and it will a big quantum jump from what we are at today, and if we take this to the non-traditional areas throughout the country then it can bring about a great revolution in rural India.
So while we are at about 4-5 years on in a programme, which gave a thrust to introduction of sericulture in non-traditional areas, we thought it would be a very good occasion to get the concerned persons together, for an analysis, for a reflection on what have been the experiences in these areas. It is indeed a privilege for BAIF to organise this workshop where scientists, extension persons both from the government as well as the NGO sector, have come together in a common forum where there can be a rich exchange of experiences and ideas.

So what we intend to do during this workshop of the next three days is not to look at the type of statistics that I have been mentioning, but rather the factors behind these statistics. What is it that has helped to achieve successes? What are those factors which can be fostered, which can be reinforced? Under what conditions have there been problems? Are there ways to tackle them, or should that experience be used to better define areas where we can introduce sericulture? What are the lacunae that need to be removed and what are the support needs for these - there may be support needs in terms of infrastructure, in terms of inputs, in terms of research implications. So it is all these things that are to be looked into, and all that has to be based on the field experience in the non-traditional areas.

I think this will be a very invaluable exercise for defining better, a future programme in the country, that will help to shape a very sound extension strategy, help all of us to learn from each others’ experiences, take the best points and forge ahead; and to better define a research programme that can cater directly to the field experiences and the problems encountered. We hope this will be an outcome of the interactions we have, and therefore we thought we will have this workshop split into a number of sessions, and for each of these a few issues could be identified. These have been circulated to you. But that is not the exhaustive list. There can be a lot of things that need to be discussed, which I am sure you will be able to bring out.

So, we will look at extension methodologies, we will look at what this activity means to the family for whom it is being done, and especially for the women, because there is a potential of having a major involvement of women in this programme; what are the support needs, infrastructure or otherwise; and in what way there can be a greater linkage with the Central Silk Board and various institutions which are already working in this field. So these are the sessions and we have put in a field visit of half a day to our research station which is close to Pune, we also have an exhibition, and we can arrange for some films which will be of interest to all the participants and the programme can shape up and can become more rich by your suggestions as we discuss them later.

I am sure your keen participation will be a very important contribution to making this a very enriching interaction and discussion, and we will be able to bring out, by putting in a lot of work in the next three days, some very concrete suggestions which can help to shape a better national sericulture programme and help us to improve our own programmes.
I consider myself extremely privileged to be asked to inaugurate this National Workshop on Sericulture Development in Non-Traditional Areas. This is also a workshop with a particular focus on the participation of NGOs in sericulture programmes. Let me at the outset say a few things about the National Sericulture Project. It is now in its fifth year and commenced as a seven year project with a total outlay of Rs.555 crores, of which the credit component to come from banks is about Rs.160 crores, and about Rs.390 crores is the government budgetary support.

The main activities supported by the National Sericulture Project are those of building up the required infrastructure in all areas of sericultural activities for this country. It starts with research and development which is mainly the responsibility of the Central Silk Board, and so we have strengthened quite substantially our R & D institutions like the main institute at Mysore relating to the on farm activities, the institute at Bangalore which relates to the textile technology part, and a few new laboratories have been added. We have a new Seed Technology laboratory whose campus is nearing completion at Bangalore. We have a large germplasm station coming up at Hosur in Tamil Nadu. We have a biotechnology laboratory for silkworm genetics coming up in Bangalore. These are our research thrust areas. Fortunately, coinciding with the commencement of the National Sericulture Project, we were also able to get assistance from the Japanese government for a bivoltine sericulture technology development project. We have Japanese experts working with us on a long term basis, trying to develop an appropriate technology including breeding of new races of bivoltine silkworm; the appropriate mulberry varieties; the agronomic practices, the rearing technology; or the reeling technology; and so on. This work is going on in Mysore for the last two years and that again is a five year project.

We have also strengthened our various regional stations - we have central institutes in Behrampore and Mysore that are being strengthened, and are also giving our research scientists the facility to get trained wherever the best training facilities are available, particularly in China and Japan in sericulture technology. The other area being strengthened under the NSP is that of seed production, as seed is a key input for the farmers, and basic seed farms and commercial grainages are being strengthened both under the CSB as well as under the state departments.
Extension is another area - a number of new extension centres have been created and they are already assisting the farmers. One more important objective of the National Sericulture Project is to take sericulture to new areas. The five traditional states are Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu & Kashmir. In addition to these states, the CSB has entered selected districts in 12 other states - the nontraditional states, to take up pilot projects. CSB started with a project target of 28,000 acres in these 12 pilot states. We have already reached about 15,000 acres, and hopefully by the end of this current financial year it would have reached about 20,000 acres - so the target of 28,000 acres seems to be well within reach.

There are many other components to the NSP - this project has recognized that sericulture is more than just another production activity - it has a number of features which make it more important for women, for environment and so on. We have an ongoing concurrent assessment of the project and its impact on sericulture, through a programme called beneficiary assessment. We have 3 independent agencies - academic institutions mostly, who have their field personnel called participant observers in the field who keep studying by interacting with the farmers - what they feel is happening to their sericulture industry, and also they carry out some special studies on the needs of sericulturists, and we get a regular feedback from these agencies which are then made use of by the implementing agency to improve the NSP.

Women are an important focus of the NSP, because in sericulture up to about 60% of the labour is contributed by the women - but as in many other areas the contribution of women goes largely unrecognized - not paid for, and they have very little control on the income generated by their own labour. This is of course a much larger issue than we can tackle under the sericulture programme alone, but in our own way we are trying to improve the situation by getting better recognition to women, to what they do and we have decided that we will look at 1994 as the Year of Women in Sericulture and we are drawing a number of special programmes for women mainly to get recognition to their work to give them some degree of managerial autonomy, and most important to give them better control on sericulture technology, because we feel that if they master this technology, then they will become better recognized as a contributor to this particular industry. That is in short what this NSP is all about.

Let me move on to the question of sericulture in nontraditional areas and what is its present status. You may be aware that about 98.5% of all Indian silk is produced in the five traditional states and about 80% or more is produced in the three southern states of Karnataka, Andhra Pradesh and Tamil Nadu. Probably it is something like 85-86%. This is somewhat paradoxical because sericulture has been an age-old craft in many parts of India, particularly in the north-eastern states where it has been practiced as a domestic
household occupation for many years - in U.P hill areas, Himachal - these are all really speaking the traditional areas, but they are not developed on the same lines as sericulture in the main traditional states.

There are number of problems in introducing sericulture to different states: what emerges from the figures of the statistics of government budgets, the manpower created by the government over many years, kind of infrastructure which has already been created in these non-traditional states; when you weigh this against the very little progress made in actually expanding sericulture in these areas, you must admit that there must be some very serious problem. One time, we looked at the planned budgets of the various sericulture departments and found that several of the non-traditional states had as much budget as some of the traditional states, and they were producing about 10% of the silk which was being produced in these traditional states. They have large numbers of farms, they have large staff and in some of the non-traditional states, I won’t mention the names, there are as many as 2000 employees in the sericulture department. There is at least one non-traditional state where they must be having 200 acres under departmental farms. These are all efforts made by the government which have not led to the results we would have expected. I leave it to this workshop to find why things have not been going on well.

One word of caution for those who would like to enter the nontraditional states - that is the people thinking of taking up sericulture in nontraditional states from the beginning start with a mental block, which is that we would like to do at least half as the traditional states, which I think is a totally wrong approach. If you start by thinking that Karnataka produces an average of so much kilograms of cocoons, let me reach $\frac{3}{4}$ or $\frac{2}{3}$ of it, then I think you are bound to fail. You will have no place in national sericulture.

On the other hand, in the non-traditional areas you should start with a much higher target. You must aim to produce at least 10% or 15% better than the traditional areas. This I think is the only way sericulture in the non-traditional areas can really thrive; how it is to be done, whether it can be done, these are questions we must analyze and we must go into these things. I think it will be fatal for anybody to say, let me somehow start sericulture, let me catch up with Karnataka’s average up to a level because I cannot match Karnataka’s so let me be $\frac{3}{4}$ as good or $\frac{2}{3}$ as good and I will be satisfied.

The only way the non-traditional areas can come up and survive and sustain in sericulture is by aiming to do better than the traditional areas, by crossing their average by at least 15%, and this means that when you set out for non-traditional sericulture you must have very clear-cut objectives, you must be sure what you are going to achieve there, what is going to be the result of your effort, what kind of cocoons you are going to get, where you will reel them, where you will market them. Of course sericulture is very paying, but the cocoon doesn’t get converted into money till you have sold it, and in non-
traditional areas marketing, reeling, these are real constraints; and the reason is that as I mentioned earlier that they are willing to do about 66% of what the traditional areas are doing, which means they will never succeed.

I would say that the key issues in sericulture in non-traditional areas are:

1. **Feasibility**:

   This point has to be given a serious thought. It is possible that in a small area, a very localized kind of sericulture is possible, you can produce cocoons you can have some reeling there and you consume it locally. If that is your aim and if there is a downstream infrastructure or industry already existing or you can create it then it is alright; you will have some weavers probably handloom weavers and silk is quite versatile; you can weave grey and then convert into all kinds of finished products by processing. That is one way of doing, and if that is your aim, then it is perfectly alright.

   If you plan to enter the national market, then feasibility is very important and it has to be examined in terms of the agroclimatic features, the availability of ground water, the willingness of farmers to switch over to this kind of a crop from their traditional crops, their willingness to handle worms, their willingness of family participation, their ability to supervise, their willingness to adopt the required practices, all these must be considered while calculating feasibility.

2. **Sustainability**:

   Here technology plays a very important part. It is said sericulture is intensely driven by technology. This must be admitted because at every level there is something to be done according to a certain science and technique or technology, and the acceptance/ adoption of these practices is very important and cannot be ignored at all.

3. **Competitiveness**:

   We have to be competitive not only within the country but on global terms, it has come to this stage. We can no longer be insulated as regards world movement of silk prices as we see just at this moment, and if the Chinese drop their prices the effect is felt through the length and breadth of India in the sericulture areas. To be competitive means increasing the productivity acrewise and improving the quality.

   These three are the key issues and whatever we do falls into these three parameters: feasibility, sustainability and competitiveness.

   Of course, this is a very rich area for non-governmental organization activity. Because it has everything that you can think of: it gives you a solid production
activity in which the contribution can be very substantial, as an educational effort it is very rich, because by transmitting technologies you bring about changes in the way people think and act, the way they organize their productivity, it has enormous social importance, it has gender importance because of the important role that women play, it has importance for environment, which is one of the things which needs a great deal of emphasis and has also a key role in productivity and quality in the use of organic fertilizers, and we have observed that this is not being given the importance as it should have been given; but now we want to re-emphasize that instead of leaving the programme of composting to agriculture department, it should be seen that the sericulture development takes it up as a major programme as it is a key to land productivity and good mulberry cultivation.

It is important in terms of organizing rural farmers for the various activities, to discuss their activities, their problems, and in the process of technology transfer we necessarily have to use groups. You can form groups for the vital activities as young worm rearing which is of critical importance for the success of the crop. I think that NGOs can and should play a very important role in this. Government has traditionally done most of the extension for sericulturists; but we all know that the government has certain limitations - their activity gets bogged down with various problems like motivation, other responsibilities or added items of work, which have nothing to do with extension, get tagged on to the extension worker; there are management problems of the extension worker and so on. This is where the NGO can make a very important and significant contribution than the government organizations, by raising the level of technology, by offering superior extension support and training and also organizing the farmers for activities like technology absorption, disease control, chawki rearing. So these are the things on which definitely we feel, that the non-governmental organizations can do much better than the governmental agencies.

We would like to support the non-governmental organizations in whatever way we can under the NSP. We have resources. We are funding about 99 NGO programmes under NSP project in various ways - mostly relating to training, group formation and so on. Our institutions are always open to NGO organizations for training purposes and for technical support. In fact in our main institutions we offer training to NGO representatives at our own cost and these are the things we hope to continue.

Let me finally thank BAIF for taking up this programme, for taking efforts to organize this workshop, and to get such good participation from non-governmental organizations. I am sure that during the course of these three days we will be able to thrash out many of the issues and come with suggestions, and we look forward to hearing from you on what you think are the measures to be taken to improve the services of the CSB and the State departments.
At the outset, I must thank Mr. P. Thomas for entrusting the responsibility to BAIF for organising this important National Workshop on sericulture particularly in non-traditional areas, it is very difficult; a difficult task but I think my senior colleague Mr. Girish Sohani and his team will perform the responsibility as best as possible. We are quite new in this field but have realised that sericulture, if we initiate in rural areas, has a great potential. As a policy, BAIF always accepts a programme if the programme fulfills two conditions; the first condition is that the programme must be technically feasible, and the second condition is that it must be economically viable. In the beginning we were not sure about this, but after having discussions with the CSB, Bangalore we have come to the conclusion, that if we manage it well, it can be technically feasible and economically viable, not only for the organisation but also for the participating families who joined this programme; and that is why BAIF entered into this field which is quite new to us.

In this workshop several NGOs have come and you must have noticed that right from the first dot of the hour we started talking business. We avoided bringing any politician to inaugurate an All-India workshop, because then you are on a different track and you lose about two hours and when we are seated in this environment we have to use every minute in a businesslike manner. And I feel, because Mr. P. Thomas was able to come here, it became more businesslike and a professional approach is taken right from the beginning. So I think, well begun is half done.

Fortunately, our very senior friend Mr. Ravi Maithel from IDRC, Delhi is also with us. IDRC has a very strong base on research and development. They have technologies in the western world, and he is now initiating entrepreneurship development and we want to develop this sericulture as a small person’s entrepreneurship programme. And here we have to be very clear, that we cannot only think about mulberry agronomy, we cannot only think about egg production, or grainage, we have to consider this whole programme as a very comprehensive package. And with this whole package you have to go, if you want to be successful, and we want to be successful. We cannot afford to be a failure, and we have to show that non-traditional areas can match very well with traditional areas.

We have to now bear in mind that India has accepted, since last 2-3 years, the market economy, everything is open now; everybody is coming, so we have to stand
to that competition. So this has to be a total business approach, of course maintaining your credentials and your value system. Let us not work in a haphazard or an adhoc way but develop it as a system, a package which will bring us success and which will help us in matching with production levels of the traditional areas.

Mr. Thomas has rightly pointed out that we must have a higher target, if you decide a lower level you are still lower to achieve. So we have to go above and we have shown that in non-traditional areas like Dairy Production. We have produced excellent animals, in highly tropical areas where people were afraid that this will not be successful. It will only be possible in Mussoorie or some other areas like Ooty; or at the most it can be possible in Bangalore and Mysore, but not here. But we have shown that it can be done. So proper management has to be adopted, the right strategies have to be adopted, and the main component which we want to emphasize is training. Training must be a core programme in this whole approach, and BAIF should take up the lead in training, particularly NGOs and its own staff also. We should not compromise in bringing modern systems and technologies.

You prepare a project and any support you get from Central Silk Board or any other agency, should be taken as an investment and it should be considered while preparing a project, then only we can stand competition. That will bring pressure on management systems. You are getting everything free, then you don’t bother, then it normally fails. In government system, not only is it the limitation of the system, the methodology, but the problem lies in that everything is free; nobody has to pay back; “free” is very costly. From that angle let us, NGOs particularly, take a message and find out in these three days the mechanism which can build up the business concept, for both NGOs and the participating families.

It must be sustainable livelihood, not simply livelihood; they must be able to change the quality of living. Sericulture, I think, has that potential if you do it well. If you take the message with all the applied systems and methodologies, we can do it, and BAIF should take a challenge that we make this sericulture as an excellent proposition which can fulfill the dream of Mahatma Gandhi which he told me in 1945. He said if you want to change the scenario of the economy of India at national level you must change the economy of the rural families. Underemployment is more hazardous, more complicated, and more complex than unemployment. So we have to see that we have to give sustainable employment throughout the year and you can only do so if you have market link, so you cannot produce that which cannot be sold, so you have to first study the market and production should be planned from market side.

This I think is very crucial for us. We should not go in a haphazard way, in a traditional way. Don’t have management by crisis - that is what normally we feel we
never plan. This is another message we have to take from this workshop, that let us be businesslike, let us draw out project ideas, some parameters and protocols and also assessment periodically as they have done in the World Bank Project; concurrent assessment. Why not we also develop this system. Assessment of what you are doing and what the beneficiaries are getting. Unless they get the benefit, the programme cannot be spread. It is the people who have to spread it, not we; we can only be a catalyst, or initiate the programme, but they have to take up the programme.

And what I see from the short experience, the very brief experience of BAIF is that there is a fantastic need of investment. Whatever we have done till now in BAIF, lot of money we have spent in establishing a laboratory, grainage and so on; if we critically examine it in the present structure we can only produce eggs for 50 - 80 acres. It is very small; negligible; so you require a fantastic investment, a fantastic band of people, scientists, qualified people, committed people with a missionary zeal. So these are very important components besides technology - the manpower, the person. I think we should discuss this threadbare here.

From this angle we have to tie up all the NGOs who are interested in non-traditional areas; whether we can link up with them for training programmes and even input generation. We have to also bear in mind why China is ahead. One thing is that major part of China is temperate; we are a tropical area, but even tropical China is also ahead of us. So let us find out whether we can have a collaboration, we can have IDRC in between to bring Chinese technology to India. Why not explore that possibility also?

I hope that during these three days the brainstorming process will bring us excellent result and give new direction and confidence about sericulture in non-traditional areas. I wish this workshop a grand success.
VI.
EXTENSION METHODOLOGY
SESSION PROCEEDINGS

1.0 BACKGROUND

Sericulture is a highly extension-oriented industry. Effective extension alone provides the vehicle for increasing productivity, because it links the farmer with the scientist, the creditor and the consumers of his product. The role of extension is to ensure that the knowledge and skill of farmers is continually enriched through their access to the continuous developments in sericultural research.

Sericulture extension services have been established in India to provide practical and useful information to sericulturists to solve their problems. Despite these efforts, sericultural extension service in our country has not been able to get results commensurate with the investments that are being made.

There are significant yield gaps between the research, management, extension and the field levels. Diffusion rate of the new technologies in the field is slow. Component wise analysis indicates the gaps to be about 40% in leaf yield. Over 56% in respect of cocoon yield per 100 dfls and 78% in respect of raw silk yield, compared to established potential.

Against this background, it needs to be evaluated how well our sericultural extension system has functioned so far, and the necessary changes that need to be incorporated wherever needed, for planning an effective extension strategy. It was with this objective that the first session focussed on extension methodology and brought together a sharing and exchange of field experience of researchers, extension agencies and sericulturists from different parts of the country.

2.0 PRESENTATIONS

2.1 Sericulture Development in Non-Traditional Areas

Dr. Jayantrao Patil, Member, Planning Commission, New Delhi

I must give great compliments to BAIF, and particularly to Dr.Manibhaiji, for organising such a useful workshop on how to take up sericulture in the non-traditional states. You know that Manibhaiji was inspired by Gandhiji to take up the work of improvement of cows in this country, and when he asked Gandhiji what should be the time
limit for my programme, Mahatmaji replied that ‘your ashes should be laid in Urulkanchan’. I think that it is most appropriate that when we are talking of especially providing employment in the country for diversification of agriculture, of which sericulture is the most important component, that a committed person like Manibhaiji has taken up this call. When I was coming with Girish, I told him that to introduce sericulture in non-traditional states is a very very difficult job but at the same time it is a challenging job. I am sure in this workshop if you could develop some approaches for establishment of sericulture in non-traditional states, you will go a long way in establishing a very important industry in this country. I would say it may be a village industry, it may be a cottage industry, or whatever you call it, but it will go a long way in providing employment in the rural sector.

It will promote not only the domestic market, but it has tremendous potential for exports also; from that angle also this industry has a great scope. Girish told that I had some experience in the State of Maharashtra about sericulture. All of you must have discussed yesterday that Karnataka is a pioneer state right from the time of Tipu Sultan, and the most important factor in Karnataka you see if you go to Ramanagara or some other markets: they have got very well-developed backward and forward linkages which we don’t have. So you have to start sericulture without any backward linkages and without any forward linkages. We don’t have any organised markets in the non-traditional states. In Ramanagara, everyday you see the cocoon sale ranging from Rs.30 lakhs to even Rs.50 lakhs. When we went with Shri. Sharad Pawar, our Chief Minister on that day the sales were upto Rs.50 lakhs. We don’t have such a market. When there is no market, in that situation you have to start sericulture, what should we do?

In Maharashtra also we started sericulture. Mr. Kamte is here today, he was a pioneer in starting sericulture in Maharashtra. He started some experimental plantations in Panchgani, Mahabaleshwar. But he could not proceed much more because there was no market and there was no organised granage in Maharashtra. We were bringing eggs right from Bangalore. Then we started in Sulera, Gadhiniglaj because between bivoltine and multivoltine you have to cross and evolve your own varieties.

So I think there were no granages and there was no market and so everywhere I used to find that the farmers used to plant the mulberry and next year they will uproot it. And that is why if the acreage was constant at any one place: 100 acres were planted and 100 acres were uprooted. They were uprooted not because the mulberry was bad; mulberry was excellent, leaf size was very much better than Karnataka. If you go to Sholapur our leaf size is so good compared to anywhere in the world, but they did not get eggs in time. Similarly, if they produced cocoons with so much labour, nobody was there to purchase it. They did not have the stifling arrangement and that is why they used to
blame the KVIB, including me as a Chairman, and the best way they found as a compromise, was to uproot the mulberry and go in for another crop. In this situation you will have to work. That is why we found with all our experience, that if a cluster approach is taken of planting mulberry in 50 acres or 25 acres, it works.

I am sure if you concentrate your discussions especially on the cluster approach, and some of the participants who have come here tell their experiences, it will be very useful. I know in other states also, in Rajasthan, Gujarat also, I see the problem. In U.P for instance, the other day one expert came to me and said that "Sir, I am doing sericulture"; I said "where are your plots" and he said one plot is here and the other plot is 100 miles distance. I said, "How long it takes to reach"; he said, "2-3 days". I said, "How did you supply the eggs," he said, "No Sir, we supply". I could imagine what are the difficulties, with this whole approach.

People nowadays feel that our work should be expanded all over the district you know. All fancy ideas, it will not work. When Gandhiji came to India, one Christian missionary conference was going on in Madras; and he came from South Africa. Gopal Krishna Gokhale told him to shut up his mouth, don't talk, and just open your eyes and see, just observe. When the missionaries asked him Bapu what should be the line of work. Bapu told them follow “swadeshi dharm”. Swadeshi he defined as that spirit in us which restricts us to the service of the immediate neighbour, to the exclusion of those remote. So the participant asked Bapu we did not follow you, so Gandhiji explained in a very simple language. He said, suppose you are travelling in a train and the bench is meant for 5 people, 2 people are standing, what we do ? We just sit closer and give space for these 2 people. We do not think big, oh! this whole train is crowded what we should do, what philosophy we should evolve. He used to say very practical things. He said that give space only to the 2 people and that is swadeshi.

I think swadeshi dharm will have to be inculcated when your approach is for non-traditional states, that is what I have realised. Gandhiji’s meaning of swadeshi is so relevant for your subject - take a very concentrated approach, take a cluster approach in a concentrated area, try to plant mulberry in a very small hamlet.

Second important point is about granage for supply of dfls. In Karnataka, every block has 2-3 granages, either private or run by the Karnataka government or by some farmers’ co-operatives or CSB at some places. I think if you take a cluster and your granage is at a long distance, again your programme will fail. When I was here, we were carrying all these dfls right from Gandhinglaj, Vidarbha. How can they travel; because they are perishable eggs; they are not seeds like Bajra, wheat or rice; it is a perishable thing. So, perishable things in a very hot climate like India will not be able to sustain so much transport, and that is why you will have to think that where the granage is there, try
to locate all your seed programmes around the granage. Granage should be a central place for planting all your mulberry plantations. Otherwise if you plant in the interior areas and there is no transport, then again all those dsfs which you will supply will be very ineffective. At some places, I found they took all these dsfs and there was not a single emergence of larvae. Not that the eggs were bad in quality, but they were not able to survive. Because basically ours is a tropical country, we have a very warm climate and these eggs were not able to sustain the temperature or the transport constraints and so that is why I think granage is also very very important. Try to plan your plantations round about granages.

Thirdly, I would not go more for training and rearing. Our farmers are quite competent, you know. Rearing they can easily handle. But timely supply of fresh, quality eggs is very very important for non-traditional states and next comes timely purchase of cocoons because the farmers are in need of cash. They are small farmers. Every farmer will not take 1/2 - 1 acre of land, that also I will advise you. Don't take big farmers, or even if they are big, they have irrigation then do not take more area in beginning, take only 1/2 acre, then they can go on extending to 1 or 1 1/2 acres and so on. Once the crop is ready, the cocoons are ready, immediate purchases have to be done.

I would tell you one example. We had done very good sericulture in Akola district. The officers with me declined to come with me. They said the people are very much against us, I said I will go, let them beat me if they want. But they welcomed me and they said all these cocoons the Board has promised to purchase, but they have not purchased, and it is our great loss. I said where did you learn all these things. They said we went to Bijapur -they have many relatives there - and they used to come to one of those temples over there. They showed us how to do sericulture. They do it in an excellent way, but the Board did not have money and so the Board was unable to purchase cocoons in time. But later on we organised them and told them see you have so much cocoons why don't you hire one tempo and directly send to Ramnagaram and when they went to Ramnagaram they got better price than Karnataka.

We are producing quality cocoons, our farmers are quite competent to prepare what we call as quality cocoons, but timely purchase is also one very important factor. Unless you have some revolving fund in your hand, don’t go in for sericulture, otherwise it will be very risky. You should have some revolving fund in your hand to purchase cocoons in time. If you just go on advising that you stifle the cocoons, then they will be reeled afterwards, that also will not work. Timely purchase of cocoons is very important. Next comes reeling; in Karnataka, round about Ramnagaram you will find thousands of traditional reelers and all of them have cottage basins. They are engaging child labourers, they do not follow any laws, they are all private people there. And so, there is no reeling problem in Karnataka.
If you take a cluster approach, and suppose you take 50 acres mulberry plantation. you can establish at least 1 or 2 cottage basins. I would not immediately go in for the multiend unit in the traditional states, even though the CSB advocates it. But our experience is that the multiend unit is very difficult - in the beginning. It can work afterwards. Ultimately, we have to go in for multiend unit, for quality silk. But in the beginning, when you are going to the non-traditional states, my advice is: go start with Charkha; in Pune, we had engaged some charkhas and the people were telling me that nobody will purchase the silk or yarn. But people from Kanjivaram came all over to Pune and purchased our yarn. Go for Charkha in the beginning, because Charkha will be no problem, your main problem will be of how to immediately put those cocoons to reeling. That is most important; as I told, these are all perishable commodities. We started from eggs as well as cocoons: immediately reel it, weave it; it may be charkhas it may be cottage basins; if you have multiend, I am very happy, if you have acquired the skills for multiend machine it is fine, but don’t wait for multiend -start with charkha.

I think Manibhaiji asked Gandhiji and Vinobhaji also, you are advocating charkha you know. They said if you don’t find charkha useful you burn it, but first find an alternative. Unless you find an alternative, Charkha is the only tool. I remember in one of the book when Miraben came (she was a daughter of an admiral from England) and she immediately wanted to join a demonstration so Gandhiji told her don’t join the demonstration. First spin on the Charkha because it is a symbol for any employment in this country and especially employment for the poorest section of the people.

I would also advice you for the non-traditional states to go in for Charkha. Charkha is a simple machine and there is ample market in Kanjivaram sarees. We should thank all the weavers from Kanjivaram who have laid the traditional yarn for Kanjivaram sarees, and this is all Charkha yarn. Charkha is excellent especially in a very small remote area if you want to go in for sericulture. Next comes cottage basin; why cottage basin? because it is very simple to operate. As I told you in the beginning, you are introducing a new concept of sericulture to the people who do not know anything. It is very very difficult to introduce new technology anywhere.

You know now USA is a leader of hybrid maize. Hyrbid maize conception or philosophy was started by Mendal. In last century, it was lying in the libraries. Two scientists (one was from Harvard university and the other was from Briston university), they went there, they saw the cases: here is the concept of hybrid. They developed the hybrid corn in 1924 and then they were ready to introduce hybrid corn in USA in 1929. No body was accepting hybrid corn, what they did, they arranged a demonstration through the students. I went to one school in Chicago where they said the pioneers of the introduction of hybrid corn was through education through children. The children arranged the demonstration and then the American farmers accepted the hybrid corn.
So, it is very difficult to introduce new technology and I am sure that for the new technology which you want to introduce, you have to go in a systematic way. If you take a systematic approach, I am sure you will be able to do that. Suppose if you go in for a good granage in the locality, and if you have any machinery for the purchase of cocoons, and if you go for reeling units in the area then sericulture will be a great success over there. For that purpose, I want to make a few suggestions.

Immediately before you start the programme, you get the farmers to start their own organisations, in Maharashtra what we call as the growers’ organisation. For instance, in Maharashtra, they have grape growers’ organisation, that is one of the best organisations in our country. They have educated the farmers how to grow grapes, slowly they have now gone in for exports, they were exporting the grapes until now by air, but now they brought Californian technology and now they are exporting the grapes by ship. So they have grapes for which the shelf life was only one week, but now they have increased the shelf-life for two months. It is the technology, if you could bring among the people then you can increase their productivity.

I am sure Manibhaiji has applied the best technology in the world, especially for the improvement of cattle in India. The cows which were just looked down upon as they did not give any milk - but he brought the technology, the best technology in the world and demonstrated. The cow which was giving one litre of milk, its offsprings give 20-30 litres of milk. So by new technology you can do that I am sure that under the dynamic leadership of a committed person like Manibhaiji, if he takes the sericulture programme, I am sure it will reach the non-traditional areas. And the approaches which I suggested, especially the cluster approach and the seed growers’ association, will lead to the farmers power, the people’s power, to rise in sericulture as in traditional agriculture.

I must again tell you that our farmers are very very enthusiastic. I know one farmer from Satara. He is an Army Major. He does not stay here. He stays in Calcutta. I saw his farm and the manager who was an agricultural man, he was able to reap Rs.1 lakh out of 1 acre but that was a seed plot. He used to prepare bivoltine cocoons in such a hot climate. So whatever our farmers did in the green revolution and whatever they have done in the white revolution, I am sure they will be able to respond to you in sericulture. They are very good people and I am sure that is a good plus point for us, for introduction of sericulture in non-traditional states.

I look forward to know about whatever deliberations and discussions take place here. On behalf of the Planning Commission, I assure you that whatever recommendations are made by the workshop, we shall take all steps in the Planning Commission to see that this sector gets well established in the non-traditional sericulture states.
2.2 Experiences of Sericulture Extension
Dr. J. V. Krishna Rao, Dy. Director, Central Silk Board

'Extension Methodologies' is rather a broad subject and I would like to just touch upon some of the important aspects. Sericulture extension differs from agricultural extension and basically involves technology transfer in giving some inputs and services.

So not only the extension agent has to be well-versed with the technology that is to be transferred, but he also has to extend some services and inputs. In non-traditional areas it gains much more importance. This role of the extension agent is a crucial role: he is between the farmer and the researcher; he transfers the technology and research innovations to the farmers and at the same time the difficulties being faced, the problems faced by the farmers are once again transferred to research to make further improvements in the innovation, in the technology. This role, till now, was one sided: the improvements in the technology were pushed to the farmer whereas the reverse flow was taking place very marginally.

As the Member Secretary said in his opening remarks, the government agencies have certain limitations - they may be good at the technology but as an extension agent how far they are successful with the transfer of technology is doubtful. Perhaps the NGOs are very good as messengers and communicators, but they have limitation in the resource, that is the technology.

In the non-traditional areas we have to aim at production and productivity, higher than in traditional areas. But our experience shows that presently it is not so. In fact while in traditional areas the capacity to brush layoffs is 300-400 dlls per acre per year and the productivity is 40-50 kgs or even more per 100 dlls by a progressive farmer in a traditional area, if we compare these figures with the non-traditional areas perhaps it is sometimes coming down to 40-50 dlls per acre per annum and the productivity is somewhere between 15-20 kgs per 100 dlls. Why is it so? Perhaps the group may look into this crucial aspect. Is something wrong with the technology, or is something wrong with the messenger or the communication skills, or with the receiver that is the farmer himself. This is a complicated question.

Of course, some people may say that in certain areas for example, some of the tribals and lower caste farmers whose earnings were ranging between Rs.500 - 600 per acre per year, through sericulture they may be now getting about Rs.2000-3000 per annum, and so the beneficiary is highly satisfied. Because of this, sericulture with its inherent advantages, is very pertinent to rural India.
So from this background, the important thing is the role of not only the beneficiary, but his family as a whole. When we look into it, we have to prepare the beneficiary and the people involved directly with the risks involved in this industry. The very first point that BAIF has raised is about the yield and disappointments and all the risks involved. Are we informing the beneficiaries of the risks involved, are we preparing the beneficiary, are there risks of the failure of a crop, likelihood of low yield due to varied reasons?

Once a farmer whose rearing was entirely looked after by his wife, sent a long distance call and when we went there we found that the whole rearing of about 600 layings was in the last instar and was suffering from grassery. The entire lot was suffering from grassery. There was no alternative but to discard the entire lot. But the lady had become emotionally upset and she said no, I have reared the worms like my own kids, and so on. It took a lot of time for us to explain to her to see the reasons. Then, slowly, she realised how to overcome such happenings in future. So in the next batch she could get about 35 kgs. So, if something happens and if we are stepping there, are we preparing them for the risks?

Another important thing is why low efficiency? Is it due to poor quality of leaf being produced, or is it due to poor rearing facilities, or is it due to the selection of the beneficiary himself; shall we restrict to only a particular category of farmers; so our whole approach should be depending upon the different categories of beneficiaries. We have to look into that angle also.

Sericulture requires investment, how can we get investment if it is a poor farmer or a small farmer, a SC or ST candidate. Is it not that his rearing house is not good and that is why his earnings are not up to the mark; or he lost his crop because he could not do disinfection properly. Is it that way we can satisfy ourselves? or before starting we will prepare the beneficiary? that also has to be looked into.

For production of leaf, generally we observe in extension, whenever we interact with extension agents whenever they are departmental people or NGOs, they said they are not following the package of practices. Some people say that they are not at all using farmyard manure or organic fertilizers, somebody else says that they are not at all using inorganic or chemical fertilizers, and sometimes they say that there are a lot of failures in the mulberry garden. Why? what are the reasons?

Before selecting the beneficiaries did we look into the suitability of the field, of the soil, does he have irrigation facilities or can he grow mulberry under rainfed conditions? If it is red soil are there any attacks of white ants? Did we look into those things? No! generally we come with lot of explanations when something happens and this is at the cost of the farmer. It is like the unanswerable question: the seed is first or
the tree is first? Whether mulberry cultivation and sericulture introduction should be first and then the forward and backward linkages should be developed in an area; or first we have to create forward and backward linkages and then we should go in for mulberry cultivation.

This is an important aspect which the groups may discuss because the farmer, once he plants his mulberry, is ready for rearing at most within 5-6 months. But it is at that time that he starts searching for good source of silkworm seed. If we have supplied silkworm seed somehow, then he has produced his cocoons within one month, and then we will begin to see where he has to send his cocoons, and where he will get proper price for his produce. Even today it is happening in most states of the non-traditional area; it is happening that the produce is there, but there is no buyer. Sometimes the producer is not getting his money even six months after selling his cocoons. So naturally the farmer will be disheartened. He will not say it is o.k. He will say let me go in for some other thing where I can get immediately some cash returns or let me go for some other crops, may be cereals or horticulture or something like that.

Another point BAIF mentioned is of clubbing sericulture with horticulture, cattle development and agro-industrial programmes. In this context, instead of clubbing sericulture with horticulture, why not we encourage the farmers to grow some fruit bearing trees along with mulberry. If the area is promising and to make the farmer sure of sericulture and the earnings, and gain experience, why not we go in for wider spacing and intercropping. May be even maize or some other cereals or may be some legume; so that he would have simultaneously some returns or may be encouraged to grow some of the horticultural trees like guava, chikoo, papaya on the boundaries or may be after every 6th or 7th line. This aspect is also very important because we are taking sericulture to non-traditional areas where the farmer is not at all familiar with the whole thing.

Another important thing is which rearing technology needs to be transferred to non-traditional areas? Is it the traditional ones which are being practiced by the traditional farmers? and then introduce them and once the farmers are well-versed with the traditional technology then we will introduce them to the improved technologies evolved by the research institutes? Or shall we straight away introduce them into improved technologies?

One important thing here is perhaps most of us who are in the field, we come across different categories of farmers. Some farmers may be very intelligent, some farmers may take the whole thing as a challenging thing and we do come across some farmers innovating themselves. Are we looking at, telling them the advantages and disadvantages. Suppose if it is really advantageous, are we referring back to researchers, to evaluate the technology involved.
For instance in Koraput district of Orissa, about 20-25 kms from Koraput, one farmer, an ex-serviceman having served in the Airforce for five years or so, took up sericulture. He has a small rearing house, and instead of doing 3 or 4 crops he is doing 12-13 crops in a year. He has divided his garden into small plots, and one after the other he is taking the crops, even then he is unable to have enough space to keep chandrikas (bamboo mountages). There he found difficulty in mounting as well as storing these chandrikas.

By chance, he saw in Tarasuras at Koraput a collapsible plastic mountage. He thought that it may be easy for him to go into and he saw that not only it is costly but they said that as the surface is smooth there is more wasteage while spinning and so on and so forth. Then he took only one plastic mountage, returned to his rearing space. He opened all the chandrikas, discarded the bamboo mat and cut the chandrika flower into 3 ft length pieces and tied about 20 pieces together and he made it as a collapsible thing.

He used this collapsible bamboo chandrika in the trays itself in place of plastic mountages and he claims now that he has people visiting from in and around Koraput, and about 1000 pieces he has supplied to others and he claims that there would be an increase of one kg in the yield of cocoons compared to chandrika and he claims that it is very easy to handle. The rearing space, storage space, mountage space required is very less and he claims that he is doing it for the past 2 - 2 1/2 years. This has however not been reported by any agency working in the area.

As an extension worker, we have to pick up some of these things. This is only an instance. There may be many such instances of farmer-innovations happening in the field. We have to pick up these things, encourage the farmer and if he is erring somewhere in his enthusiasm, or he may not be having that much of a background, so he may be doing some mistakes, we can correct him at the same time encourage him, and bring back this feedback to research. Ask them to find out, if it is a good mountage - perhaps this is a better solution than plastic mountages and chandrikas. He claims it hardly costs about Rs.13-15 and in each collapsible bamboo mountage one can mount about 700-800 multi-bivoltine ripe worms, or about 500-550 bivoltine ripe worms.

This is also another aspect which the extension worker needs to look into. Another aspect is that whenever we are taking sericulture to non-traditional areas we are generally following Training-and-Visit system in sericulture extension. When we are following Training-and-Visit system we go to individual farmers. Is it possible for us to concentrate on individual farmers? How many workers do we require to cover the sericulture farmers? Even if it is 200 farmers, we require a large number of people. But if we go for groups, with a cluster approach, what should be our extension strategy? Perhaps the groups may deliberate upon that.
Another important topic which the Member Secretary was also referring in his speech was about chawki rearing. So far, I think we are not successful in popularising chawki rearing. Somehow it is not being pushed through or it is not catching. May be the departments have started it with heavy subsides and now they want to withdraw; or the beneficiary is not prepared to pay that much of cost for the chawki worms, but has the farmer been informed properly about the advantages of young age silkworms? Whether the departments or the NGOs did ever try to popularise chawki rearing, may be through co-operatives as it is happening successfully in West Bengal or may be organising them into groups from the beginning.

This is another aspect which the groups may deliberate upon, how to popularise chawki rearing, how we can successfully take it to the field. Why I am telling this is that in pilot states, that is non-traditional states, the CSB has organised more than 50 Technical Service Centres and it has posted people from different corners of India. Do they have proper communication means. Perhaps even within the state a person who is posted to particular tribal areas may have to develop his own communication skill. Some of the farmers may not be knowing the state language. For example, I am sure the tribals of Chandrapur and Bhandara area may not follow fully Marathi nor Telugu nor Hindi - they may follow only Gondi or their own dialect. In that case, what should be our communication method?

2.3 Role of Voluntary Agencies in Sericulture Development

Mr. K. K. Shetty, Asst. Secretary (TECH), Central Silk Board

The NGOs are involved in promoting sericulture in a big way. We have so far assisted around 99 NGOs. There are many important areas in which the NGOs have been working: one is technology transfer and extension, the second one is infrastructure facilities and sericulture services, third one is the generation of skilled manpower, the fourth is in increasing women’s participation in sericulture and the fifth is as credit facilitators. I would just like to briefly present these one by one.

In non-traditional areas, sericulture demands a large scale programme of training. It was observed that the farmers who have taken up sericulture without proper training have suffered heavy losses. The untrained farmers had not achieved the minimum productivity. The extension facilities available at the state and central government cannot reach every farmer. NGOs can supplement the efforts of government agencies in this direction. Programmes like STEP (Support To Employment Progress for women) have succeeded because of Group approach and involvement of NGOs. They can provide training to farmers groups, women groups, on banking procedures. The NGOs we
have assisted, like BAIF in Gujarat, ASSEFA in Rajasthan, in Orissa and some NGOs in Kerala have in fact worked on these lines and shown a lot of progress.

The second area - one of the crucial areas where there is a great role for NGOs, is infrastructure facilities and sericulture services. In the new areas there is a need for lot of sericulture services, like nurseries for supplying planting material to the new farmer who is taking up sericulture, granaries for supply of dafs, chawki rearing centres, sericulture equipment centres; we have observed that these have been working in an excellent way where the NGOs, especially the women's groups were assisted, where we had given a sort of working capital to them.

In the non-traditional areas, farmers cannot afford to purchase all the equipments like bamboo trays, chandrikas, mats, rearing equipments, disinfectants, spares etc. Here what they have done is they are giving it on rent and later on take it back and give it to somebody else because in these areas they take only 3 or 4 crops and rest of the time it will be idle if they purchase it; so it is working very nicely. Even the chemical fertilizers, disinfectants are so difficult to get, and unless they are readily available, the farmers, don't go for purchasing fertilizers or farmyard manure. So they need to be further motivated to procure farmyard manure and the facility should be made available to them for the supply of these.

The other important task is generation of skilled manpower, mainly in the non-farm activities of reeling, weaving etc which needs skilled manpower. Some of the NGOs have even established multiend reeling units and it is a sort of training-cum-production centre which creates a local demand for the cocoons and also they have created skilled manpower.

In Kerala and also in Assam, we have assisted some of the NGOs to set up the training-cum-production centres and the progress I should say is satisfactory. They were able to train some persons in reeling and they have also at the same time helped other farmers, they have established cocoon drying chambers and helped the farmers to store their cocoons.

The other important area where the NGOs have been working is women's development. The basic objective of NSP assistance to NGOs is to promote further participation of women in sericulture. As you all know more than 60% of the persons participating in the sericulture activity are women (37 lakhs out of 60 lakhs). There is in fact a need to create awareness among the women to come in large numbers and take part in sericulture. So the intervention and assistance from the NGOs, in fact would expand the options available for improving the status of women. They can provide technical, institutional, organisational and social support to poor women working in selected sub-sectors such as agriculture, dairy, sericulture etc.
We have seen some of the excellent progress made in Kerala where the NGOs have formed women’s groups and they have been taken on study tours to Karnataka and they became very active.

The other area is as credit facilitators. The NSP envisages an assured credit flow of 194 crores to the project beneficiaries through financial institutions. And in fact even in the credit workshop we had organised last year, it was felt that the credit flow is in fact very tardy and low. We feel NGOs can play a vital role and act as a credit facilitators. The reason for tardy credit flow has been : lack of awareness about certain vital matters among lenders about sericulture, and among borrowers about banking procedures between the lender and borrower and there have been some good examples in other fields. In fact NGOs have been working as credit facilitators and in Bangladesh the NGOs have played a very vital role in providing credit to sericulture. In fact, voluntary agencies can play a vital role in improving the conditions of the people involved in the development process, mainly in group formation, sericulture co-ops, women's groups to increase access to income and wealth, and provide training in the managerial and decision making role.

In many of the conferences, there has been discussion about the similarity between silk and milk. It’s all known to us that both is a sort of conversion of green fodder to a farm product through the living media. Both silk or milk have a on-farm and a non-farm activity and the media is an animal or it may be an insect. So, when dairy husbandry is working successfully with involvement of NGOs or co-ops, there is definitely a chance for the sericulture industry also to develop likewise. So may be it is for the group to discuss and find out what are the crucial areas where the dairy industry has been working well, and how the example could be applied to sericulture.

We had given a lot of publicity for the scheme of assistance to NGOs. However, the response from the NGOs in the non-traditional states is not that satisfactory despite our repeated advertisements, letters, brochures. Also, we could find very few NGOs responding to our request in the Northern States especially. However, there has been a good response from some of non-traditional states like Kerala, Assam, Rajasthan, etc.

I just would like to give an example of one success story of an NGO - AVARD. This is the Apex Voluntary Agency for Rural Development in Kerala. This particular NGO has been assisted for the scheme which has 3 phases : (1) Establishment of mulberry garden, (2) Construction of rearing house and (3) Organise farmers training, and assist farmers to take up mulberry plantation, organise chawki rearing and supply chawki worms to the farmers who have been trained. The results / performance of the NGO has been very good. They have established a 1 acre mulberry garden, constructed
a rearing house, and already trained 125 farmers in 5 batches. They have organised a lot
of awareness seminars, and supplied planting material to 117 farmers. In selection of the
farmers itself they have taken lot of care to see that these farmers after the training take
up sericulture, and they have seen that immediately after the plantation reached the rearing
stage they have supplied chawki worms.

With this I would like to conclude with what Dr. Manibhai Desai had
mentioned - the message of Gandhiji, that only the participation of the people in the
development process will ensure success. In fact, we are sure that this thing could be
achieved by the NGOs. The managerial and decision making capability of the people
involved in the development process should be improved; the women should not be treated
as an isolated group. The entire family should be involved in the sericultural activity
thereby creating opportunity for the women. NGOs which have the credibility, account-
ability and the human touch, can initiate this sort of programme and will definitely
succeed. The success stories of NGOs like BAIF, SEVA, MYRADA, MITRANIKETAN,
and AVARD have proved this.

3.0 COMMENTS

3.1 Mr. Satish Patel

I started sericulture by planting 1 acre of mulberry in 1988. After one year
I got successful yield. In our area another 30 farmers came forward and joined me in
planting mulberry and now we have formed a co-operative society of the farmers for
sericulture. We had lots of problem in getting planting material but our State Government
has helped us a lot by bringing cuttings from Karnataka and supplied us, and in that process
we had lots of failures because the establishment was only about 60%. After that we have
raised simultaneously the saplings also and after that we have got very good quality leaves
and we started rearing and giving training to our farmers. That was done by myself only
because at that time there was no research and extension centre at Surat and there was
very few staff of CSB.

We gave training to the farmers and then supplied dfls and got good success.
One of the farmers is with me and he had got something like 60 kg of cocoons of crossbreed
variety per 100 dfls. In training what we have done is that we have taken the package
package of practices recommended by CSB and I just translated in our local dialect and
I feel that actually while giving the training one should actually give in local languages
and local tongue. Also, the trainer should speak in the language of the farmer, so I feel
that the trainer should be from the same area and from the same region. Of course we have
also farmers' chawki rearing centres and in the chawki rearing centres we were brushing
upto 2000 or 3000 dfls per month. Farmers were willing to pay the chawki charges and
but we were charging as a co-operative Rs. 100 per 100 dfl. They were very willing to give the charges because they think that 11 day’s headache is over; moreover whatever care should be taken in initial stages that will be done properly. In that experiment, I found that over a year in five rearings we have got on an average something like 35 kg of cocoons per 100 dfls. It was something like 15000 dfls rearing.

So I feel that there should be a chawki rearing centre wherever we introduce sericulture in new areas. Unfortunately we have got only two chawki rearing centres in Gujarat. One is in Hasot that we are running as a co-op on our own. Of course nobody has recognised us; and one is in Vansda, by BAIF. Under the NSP they have all provisions to form a chawki rearing centre but they don’t do it properly. They do chawki in our Surat and Valsad district, under the NSP, in one farmer’s house. The TSP people, they actually come and visit two hours in one day. I don’t think they will be able to handle the worms and that is why I have seen that although in one of our block we are producing cocoons like 3 tonnes per year, Surat and Valsad as a whole, two districts, they are just producing equivalent to us.

As far as rearing is concerned, we are getting very good leaves, so we have very good quality of cocoons and the average weight about 1.25 gms per cocoon and 1.5 gms is the highest in cross breeds. In bivoltine also, we have produced 2.2 gms or two gms of average cocoon weight. Of course, as a co-op we concentrate more on agronomy practice than on rearing in hygienic conditions. Of course, that is important but I found that nobody is looking after the nutrition supplied to the mulberries because it requires very heavy nitrogen, so we give lots of organic manure, even intercropping with legumes, for supplying of organic matter and nitrogen, particularly in monsoon season, because after pruning in June, we just simultaneously broadcast either dhaicha or sumhemp and that we bury so that we can sustain the yield. And also, we use lots of biofertilisers which is produced by Gujarat State Fertiliser Corporation, that is azoto bacteria and it also adds to the quality of leaves.

For marketing we don’t have a big problem in Gujarat because Silk Federation has a reeling centre in Valod. They purchase cocoons. They were previously purchasing cocoons on average basis but then, we were at a loss. So I told to the Silk Federations that there should be some way to assess our cocoon quality and according to that we should get the price. So they introduced the renditta method. Of course we get less price than Bangalore, because I sold one lot of cocoon in 1989 and I got something Rs. 120 per kg from our cross breed dfls, that time we just got Rs. 60 - 70 in Gujarat.

So, quality of cocoon from our black cotton soil is very good. After the NSP Programme came we had a problem, because we are outside the NSP area, through just adjacent. Many times they give us dfls, whenever they wanted to count our yield in the
NSP area. But somehow they do not supply us the dfis properly, and moreover the dfis come from Baroda to Surat and from Surat they distribute. During this time it deteriorates, particularly in hot season. Sometime when their person brings dfis, it is already hatched, so we get a very poor yield. And in summer season, it gets hotter and when from 100 dfis there should be something like 400 larvae, you get only 100 larvae or 80 larvae. So I think it is not a very good idea to link yield with the dfis.

Of course we also rear crossbreeds during September and October months; then we rear bivoltine in November, December, January and upto February. Then again we take cross breeds; but in May and June we are facing problem with cross breeds, so I think we should have Pure Mysore or another variety which can sustain hot and humid climate. Now these NSP people discourage us from rearing in May and June. But in Gujarat we get maximum leaf yield at that time and if we just keep it upto June to supply the cuttings it is economic loss. We should take some harvest out of that. But they do not agree and insist that we have to rear cross breeds alone. This is my experience.

3.2 Mr. Joseph Sebastian

AVARD is the Voluntary Agency for Rural Development. We have taken up a sericulture programme in Kerala. Sericulture is a family enterprise and everybody is involved: the old, the adults - even the children. We train the children only to see if the worms are ready for the chandrika. And their transferring the worms to the Chandrika is much faster than anyone else - at least 20-30% faster for children who are 6-7 years old. And that work is only for about two days. In this way the whole family is involved. If you bring outside labour they are not efficient. And even when the worms are not ready, they will transfer them (to the Chandrika). So training and involving the whole family is the most effective way to do sericulture.

3.3 Ms. Amla

I think that sericulture is a very good income generation programme. Our organisation is working in a very drought prone area. For the last 3 years we are working under National Sericulture Programme. In the first year we selected 25 beneficiaries in 3 villages, our organisation raised a nursery to distribute to the farmers, then after plantation gave training. The beneficiaries took up silkworm rearing and most of them gained more income. They got government subsidy for rearing shed, tools, equipments, then mulberry plantations also. Our staff everyday goes to the villages to give technical guidance. To gain more experience we organise exposure tour to many places. The second crop seems to be a failure because the cocoon market is very low, and in our area there is no rain.
3.4 Mr. Panda

It is very difficult for a state government to mobilise funds, to take up this as a very integrated type of project for production of silkworms. We can go for commercial cocoons. But for supporting commercial cocoons we must have seed cocoons and we must have the two side by side, bivoltine and multivoltine.

Another point is regarding marketing. For marketing, in Orissa, at the block level we are organising a primary society which is purchasing the entire cocoon crop. Grading of cocoons is crucial. Initially, the society divides the cocoons into two grades, based on how many cocoons there are in one kilogram. So the better quality cocoons we are trying to stifle and send to Karnataka. And in case of the second grade cocoons, we are trying to develop reeling through advanced Charakha, locally. And I entirely go with the point put forward by Mr. Patil, that advanced Charakha has to be the first step in developing sericulture.

Here again, there is one issue which I think requires attention. We must have some revolving capital, whether it is at the primary society level or at the NGO level. Whoever looks after marketing must have some revolving capital.

The second issue is that when we are trying to address ourself to the economically weaker sections who have several lacunae in terms of their skilled manpower, in terms of their resource base and in terms of their organised base, the government has to intervene, and if government decides to intervene, it would be much better to intervene in the marketing aspect rather than to give subsidies for taking up mulberry plantation or for rearing house. It should be linked up with better productivity.

3.5 Dr. Manibhai Desai

Revolving fund is not a one-time shot. It is revolving throughout 3 to 5 years. So revolving fund has to be linked with your material going out. It must go through a channel, from where revolving fund is coming. So if you give revolving fund, and the cocoon is sold to Ramugaram, the fund will be totally gone. So there must be undertaking of repayment of revolving fund regularly as the material is getting sold. They may not sell it but they should get the fund back, that is the system in a sugar factory, or cooperatives or in dairy milk societies.

3.6 Mr. Ravi Mathiel, IDRC

Sericulture extension needs to be looked at from a different perspective. This can be expressed in terms of the following principles:
1. **Technology adoption**: The principle is to funnel in knowledge and focus on the farmers needs and then deliver it to the farmer. This is the “Expert Systems” approach. The advice to farmers should be very specific - like a medical prescription - and not like a general advice.

2. Various alternative institutions/models may be relevant for sericulture programme. One such model is ‘Franchising’ - though this is not commonly practiced in India. Franchising involves giving the total package of technical advice, financial advice, back-stopping research, market research etc. Further, a franchisee has to pay very low fees - of the order of 2%, and hence this leads to rapid spread of the programme, if the package is well designed.

3. Product differentiation in sericulture is very crucial and will alone be able to protect the price.

4. As a large number of NGOs are participating in the programme implementation, viability not only of the programme but also of the NGOs must be given proper attention.

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3.7 **Dr. Reddy, Aurobindo Institute**

Sericulture extension is different than agricultural extension in that a number of new skills have to be imparted. In our experience the following points have been very important:

a. Training of the entire family including children is crucial as it is a family enterprise.

b. Training of technicians who can take up work right from establishment of farm, as well as who can function as a trainer for farmers training, is found to be very important.

c. Introducing new mulberry varieties having higher leaf area helps to reduce total labour inputs considerably.

d. To have good success it is desirable to start in assured irrigation area.

e. Timely supply of disease free eggs is very crucial. Many failures in Andhra Pradesh are because of this factor.

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3.8 **Mr. Jacob Thomas**

The real problem is with the reeling, where the margins are very low. If we can think of integrating it forward with marketing, the margins may improve. For example,
actual cost of a Kanjiwaram Saree may be around Rs. 7000/- but it may be selling at the
central shop for Rs. 12000/- or 15000/-. Most of these are pocketed at the post weaving
level. So the real margin lies after weaving.

So when we are talking about small societies, units in new areas, we have
to think of further integrating it forward with the products market and there, there is a lot
of a margin. And if you want to make reeling viable initially, it is very difficult. The
Ramnagar reeler are getting working capital from the moneylenders at the rate of 36%
or 48%. So even if banks can give at 24% it will be very helpful.

3.9 Mr. Panda

Developing reeling infrastructure in a new place is extremely difficult
because it has very low margin and it requires a higher skill. So if we depend entirely on
a bank loan it becomes a non-viable proposition. At the initial stages, may be for two to
three years, if we depend entirely on developing reeling locally, it becomes non-viable.

In Orrisa, we are grading the cocoons and dividing it into two categories. The
inferior category we are reeling locally, and the better quality cocoon we are sending to
the cocoon market and getting the price back. That is again coming back to the society.
Borrowing capital for doing cocoon market business makes it all the more viable, and at
least for two to three years time, becomes very helpful in providing the money in time.

3.10 Mr Jacob Thomas

We have found that whenever children form part of the family labour it is
like family work, but the problem comes when they are used at a very young age of 5 or
6 years as hired labour. In reeling, we had a study under the beneficiary assessment
programme on child labour. We found that some of the technologies are such that unless
the child is there to work - I mean the little kid should be there and creep inside and get
the fluf out of the particular yarn - the work cannot be done. It is the current technology
itself that promotes their involvement. Therefore this is a very complex question.

Of course it is not that if the children are not going to be working there, the
exports are going to dwindle. How is it that Switzerland exports far better products than
India, and can do it without any children working. It is a structural problem, it is related
to some of our perceptions, it is related to some of our technologies. The point is what we
can do? As far as family labour is concerned they will work there, and I don't think there
is much of a problem; but in case of hired labour we have to have systems wherein their
tragedy is minimised.
3.11 Dr. Manibhai Desai

I come from the area where there is a very big industry of textiles. I joined Mahatma Gandhi in 1945 formally, but I joined in his programme in 1942. So I have completed 51 years.

One important point, a food for your discussion which I thought I should give you, is my concept about Sericulture as a silk textile industry. I had a very strong discussion with Gandhiji about decentralised spinning. Cotton like cocoons, is grown by farmers in their own soil. Fine cotton is produced in Surat and Valsad District, in South Gujarat, which is touching Bombay. So, as a structure if you see, cotton is grown in a decentralised way by farmers. This is an analogy with sericulture. What personally I feel, from business angle, is that an individual farmer can grow cocoons - only upto cocoons. You should not again involve farmers in processing these cocoons.

Personally I feel, that wherever spinning in cotton is decentralised; so everybody is asked to spin, carding and then spinning - because Gandhiji gave everybody a charakha - his idea was different; his idea was to spread the message of revolution against the British, a silent revolution through this charakha. But every spinner has a different yarn, different strength, and different number.

So in textile it is accepted that spinning must be centralised and weaving can be decentralised. You must have an excellent seasoned, sized yarn; an excellent sized yarn which you can only get when you manufacture in an organised, air-conditioned unit, can be accepted by a weaver in his own small hut. So weaving can be decentralised; but spinning, if you want to make it a very successful industrial approach, has to be centralised.

It is like in case of sugarcane, which is grown separately by every farmer, when it is harvested and brought together by a co-operative or a individual private sugar factory, crushed and then it is converted to sugar. Why don’t you conceive this idea in these three days? and develop a methodology where we promote people; women; young farmers to produce good cocoons. For this also a central granage is required.

And then if you collect those cocoons, grade them according to quality and then a co-operative or any other set-up you can have for reeling and spinning; a very well, nicely done, modern spinning unit. The size can be decided from industrial norms, which minimum size will be viable; and thus develop cocoons production in that area. So you can save distance and cost of transport; and either do it as a joint sector or as an individual weaver, women can also do in their own house the different type of cloth which you want, which they are doing to some extent in Kashmir and Jammu. The quality of the cloth is
dependent on the quality of the yarn. If you decentralise processing of cocoons house to house, you may lose quality.

So this is the structure, that is necessary. You have to see what type of model you require, what type of infrastructure you require, whether in government sector or in NGO sector or private sector. Whatever gives better price to the farmer, that model can be accepted.

But here as an industry, we have to be very careful about the seed material. So research, R & D, has to go on by different agencies. No NGO or any number of NGOs together can take over any activity, whatsoever. You have to be complementary to what the government is doing. People will select, whether they go with the government, or individual businessman, or with an NGO; it is their choice. But if you want to design the total growth of the silk industry, I think we have to think from that angle.

Always have consideration of industrial economics - whether for a small man or a big man. But for a small man you have to be very careful. He cannot afford to lose, because that small man is on the border. If a small man loses, he will lose his confidence also, not only money. So we have to see that when we work with the rural poor, you have to see that their poverty disappears, and that is the potential in sericulture. The only activity which can remove poverty and put everybody to job in the shortest period is sericulture.
VII. IN-vOLVEMENT OF WOMEN

1.0 BACKGROUND

Sericulture is looked upon as having tremendous scope to improve the economic conditions of the rural families. Yet, mere economic growth without an improvement in the quality of life and removal of gender inequities can be socially undesirable.

However, sericulture has some characteristic features which make it eminently suitable to be promoted primarily as a women’s activity. The work involved in silkworm rearing is relatively light and is to be carried out at the farmers’ dwelling. It can therefore be managed by the women along with their other household activities. Experience of similar other activities as well as sericulture in specific areas, has indicated that the women are keen to take up the programme with great interest. However, to make this possible, various important gender issues need to be addressed. These include:

.. How to make the extension worker focus on women?
.. How to ensure technology transfer directly to women?
.. Is the prevalent technology women-friendly? If not, how to make it so?
.. How to ensure access to market for women?
.. What mechanism can be introduced to see that adequate funds are available to women and that the income will accrue to women.

These and many other crucial issues will need to be addressed and innovative approaches introduced if sericulture has to bring about relevant change in the life of the rural families. For this reason a special session was organised on involvement of women in sericulture, to share field level experiences, as well as to analyse policy implications based on the needs felt at the field level.

2.0 PRESENTATIONS

2.1 Gender Issues in Sericulture
Mr. Jacob Thomas, IAS

This workshop was an idea in the formation of which I had some participation when I was associated with CSB to in the capacity as a Project Co-ordinator. The National Sericulture Project which started its implementation in 1989. It was thought that
one of the main components of development will be the nonformal sector of development i.e. the NGOs, women and that one of the major objective of the project would be the social objective.

The question was raised earlier as to whether to develop sericulture as an industry to have better silk or to help people to produce silk themselves. The crux of the development programme lies there, and what we thought when we formulated the NSP was to reconcile these differing points of views and see how far each can strengthen the other i.e. the industry, as well as the producer, through programmes which address directly to the some of the constraints and problems existing today in our developmental paradigm.

If you look at sericultue especially in the traditional states where it has been developed, 60% of the work force consists of women. The work is done by them mostly in rearing and reeling but if you look at the income, asset distribution, technology transfer, access to technologies, number of women going to the market, any of these indicators of development, you find that women don’t figure there; they are not visible at all.

Now the question is, if you are only keen about development of silk why don’t we try to have better technology and have a target oriented approach where we produce better silk and then not talk about these soft issues which is very difficult to achieve anyway. The point is that if you really want to produce good silk you have to transfer the technology to that person who produces silk. It is as simple as that. And if the extension agent or the banker doesn’t give credit, doesn’t give the technology to the person who produces it, this effort is useless.

So if you really want good silk, you really have to give it to the woman who produces silk. So that is the philosophy behind the whole programme of women’s development through sericulture, or sericulture through women, which we undertook under the NSP.

I will therefore indicate some issues, some points on which further discussions can take place.

If women produce silk, and you have to improve the productivity, the training has to reach them. The problem with CSB and the government is that our people, our extension staff are not gender sensitive. They will arrange a programme where women will not be able to come. They will have the language, - somebody was mentioning that the language should be of the farmers - I would say that the language should be capable of being understood by the person who does the work. The training methods, the training programmes, the timings; our timings are not suited to the person (the woman) who produces, therefore there is a question of sensitising your extension staff to the needs of the producers.
Gender Sensitivity

We try to initiate some work in this way, and we need to start with what is called gender sensitization. In the male dominated society, there are sociological problems. Wherever you look, you find that in number as well as in quality there is male dominance. So if you ask our extension workers whether there is any problem in giving this technology to women, they say there is no problem. He doesn’t understand, he is not sensitive.

The first point is to make them sensitive to the issues in this field (the gender issue). It is quite a difficult thing initially; the reaction is almost violent; because people don’t perceive this thing, they think this is a useless activity and secondly they feel very insecure about this. If I don’t know a particular subject and somebody comes and talks that this is the subject I have to learn I feel very insecure about it. So, we have tried from the very top - the scientists, the directors, the joint directors and upto the level of field workers, we tried to do a little bit of work in this. So this is an area on which we can have further discussions - gender sensitization of the extension staff.

Infact the whole philosophy behind involvement of NGOs in sericulture was the feeling, that government, whether it is CSB, or the Central Government or State Government - is not really suited for extension. We found it is better and that we would learn certain things if we associate the NGOs. This is acutely so in case of adressing problems related to women’s development. It is already the problem of extension.

Secondly you have not only to extend to farmers as a whole you have to be sensitive to the needs of people who produce i.e. women. Therefore, there is lot of intersection between the NGO Programme and the Women’s Development Programme. I will talk about it a little later. We can specifically see how best we can utilise the capabilities of the NGOs in addressing this programme of accessing women’s development. I just mentioned the word ‘extension’. Now the problem is, that extension gives the person a technology; that you should have a technology to extend.

Technology Development

Now we find that most of the technologies were developed by men thinking that the producers are men. I will give a very concrete example. We developed what is called a new model of charkha, sometime in 1985-86 and I think the we tried to distribute it to the people; but of the 400 or 500 charkhas distributed almost all of them ended up in the attics of the people who bought it. It was given at a sibsidized rate; out of sheer force of extension the people had to buy it, or the extension worker had to sell it but it was not used, why? The charkha could not be used by the women, it was so unfriendly - to put it in the modern term; she just could not turn it. Of course this came to light only later when
we had another programme, assistance by the Swiss Development Co-operation for remodelling the charkha. So this is the case. When you develop a technology which is totally unfriendly, totally unsuitable there is no point in trying to extend it.

Therefore, there is a need of developing; women-friendly technology. Now we have found one problem with apex organisations that they always think on monolithic lines, they always think that there is a single technology from Kashmir to Kanyakumari and U.P. to Karnataka. Actually when the organisation is situated in Karnataka they intend to think that all of the sericulture world is confined to Karnataka. The question is can the technologies developed by CSB be adapted by all famers all over the country? Can technologies already developed be adapted for the needs of women who produce silk? So this is an issue again, which NGOs probably can address in a more meaningful manner; probably the interaction between the scientists and the NGOs will address it better.

We were only talking about technology and production; now we should come to marketing. I told you there is no point in producing more efficiently unless the gains of production are not going to the producer, this is the very fundamental principle of economics. If the income, if the asset which produces the income is not going to be under the control of the woman who produces, we may have better productivity for some time but later what will happen is that the person will lose interest; Why should I do it? Therefore, there is need for participation in the market.

Market Linkage

You find that when even women do all the rearing, they don't come out of their houses to go to the cocoon markets. Even the cocoon markets are very unfriendly, I must say. I had an occasion - you see we had been talking to all our State Government people, marketing people; they said there is no problem, that we have a separate queue to women, a separate counter for women; all these things are there. We went with one of our visiting delegates or scientists, I just asked a woman who was there; just asked her what is the problem? She said that: number one of course there is supposed to be preference (for women), but nothing exists in practice. Number two whenever I come with particular quality cocoons, I invariably get Rs.20 less than what the male gets. Point is that this problem is not even transmitted to the decision making authority.

Our markets in a way are structured in such manner. One reason is that more male members come, and they would like to sell it and go off, and they control the whole thing. But more than that, and there is an economic point here, unless the person who produces goes and gets a feel about the quality through marketing, - quality means price - the feedback will not come. The man may go, he will get the money, but he will not tell
his wife what money he got, the rate and therefore she doesn’t get the feedback about the quality of the cocoon. But more important than that is the fact that if she produces cocoons there is no reason for her why she should not go and sell it the market. But this is very difficult and I must tell you for the last five years we have been trying.

So one point is access to technology, access to training, access to market. In good capitalist countries they have customer orientation; we are in between; we think that whatever we do or the government does is for the good of the people; it is assumed. If you have at least a customer orientation, people will think what is the training school, who is it going to serve. If it has to serve the clients, even from that basis you should see that it should be accessible to them, it should be modeled in such a way that people can come, the people for whom it is meant can come and get the training or do the marketing.

Another important point is that generally the market is a very good centre of dissemination of technology and here too, apart from other problems that it is unfriendly, you don’t find that there is any way a woman can; of course she will come with a child anyway you know she can’t leave her child anywhere, there is no creche - there no other facility for that, she will have to keep the little kid with her and probably she may be in a great hurry to sell it off and go; that may be a reason why she is getting Rs.20 or Rs.30 less. The point is that we don’t have any facility, we also don’t make the effort to give the technology to them there; so this is what meant by providing access to infrastructure or markets.

Constraints to Credit Availability

And there is again another area : I was quite distressed that the very crucial question of women’s development or the role of women was not even discussed when we were discussing credit. Not a single word was uttered about the fact that credit to women is the biggest problem. Therefore the whole point under NSP was to change from the marginal stature they have, in the production mechanism, in the marketing mechanism, to their genuine position, which is the centre-stage of marketing and production.

Inspite of the various strategies we followed, we found it difficult to get success; it takes more time; it can’t be qualified easily; and in working with NGOs, the time frame is different, it not like the government set-up where you can just produce figures and get away with that. One strategy we found that people were addressing many of these problems, tackle many of these problem through group formation and that is why some of the NGOs have done very good work.

Many of the social constraints that we have in production, in marketing can be successfully countered if you have a group. In many cases we had very good success in terms of productivity in terms of marketing. The point is that groups have more control,
they have more strength, both economically and socially, with which they can bargain and get their view shared. This is one strategy which I feel we can discuss further.

Another point regarding credit is that, till recently one necessary condition for getting credit for sericulture was that you should have the land in your name. In India about 99% of women have no land in their name. Now RBI has given directions to all the banks that collateral requirement need not be insisted for sericulture finance, and that rearing and mulberry cultivation can be delinked.

Therefore, if a woman wants to start rearing she can get credit based on the strength of rearing: credit for her equipment, credit for her working capital. Upto Rs.20,000 a woman can be financed, a man also can be financed, without insisting on collateral; but I don't know how much it is really being practiced.

I was thinking when we were discussing about credit, as Mr. Krishnan was saying that most of the problems are to do with the extension agencies. I found that, more than the bankers, the extension officers are to be blamed for the lack of achievement, lack of good work in credit. Some of the reasons he has cited. But we can't change the extension agency, we can't change the attitude of the bank we have to live with this and try to optimise on this.

I have a suggestion and I think we can put up this suggestion to the Planning Commission to consider: just like we have decided now to do away with the normal governmental channel of extension for sericulture and shifted towards NGOs, why can't the bank setup also do it? If you insist on default certificate, if you require the bank manager to visit the farmer's place, if you require the combined visit of the extension staff and bank manager, nothing will happen. The practical thing is that no credit will go to them and what would happen is that as on 31st of March they will get the subsidy money deposited in the account for subsidy, then some sort of figures will be shown.

So what is possible is that NGOs can be the underwriting agency or may be the nodal agency, and let them take the responsibility for financing just like they have taken the responsibility for sericulture extension, at least for women they can do that. Whatever we say about the quality and productivity, without credit, without on-farm investment, productivity is not going to improve; quality is not going to improve. Unless you have a separate rearing house which can be disinfected, which can be kept properly, the productivity is not going to rise above 20 or 30kgs per 100 dfls.

Therefore on-farm credit is very important and we have been trying it, we have been beating hard against this rock of credit for the last 5 years and I have been personally doing it, so my personal experience is that it is very difficult to change the normal terms and we discussed with the World Bank that it is very difficult to get a
separate credit for sericulture. Therefore why don’t we have this institutional arrangement, in case of programmes for women’s development, programmes like sericulture development which will benefit women and the socially deprived sections, the economically weaker sections of the society; why can’t credit arrangements be made through NGOs.

Mr. Patil also discussed one important point that is about marketing and reeling. We find that even under normal circumstances reeling is very difficult, the margins are very low unless you have very high turnover and very good skill; it is not a very profitable venture and unless you have good reeling base, sericulture will not develop. I am convinced now that the strategy to develop sericulture is not from mulberry. My scientists in CSB may not agree with me because they have been teaching mulberry with sericulture and silkworm rearing for years together but that is wrong. We have to start with the market; we have to look at the weaving sector, look at the yarn sector and then integrate backwards.

Post Cocoon Operations

Therefore, if you can get a good reeling unit established, then you don’t have to worry about selling the cocoon to the cocoon market, and the price fluctuations, and the cocoons can be processed there. Therefore you should have entrepreneurship developed for this and this is very difficult. There are few people who come forward in the new areas but the support to them from the banking sector, from the training sector, from the technology sector are very crucial and therefore unless you develop it it will not work. Mulberry cultivation is not difficult, rearing is also not difficult, but you have to have the linkage upto reeling and once you develop it, yarn can be stored, cocoon cannot be stored.

Summing Up

So I think, if we do all this for women’s development, and if women produce their cocoons; if cocoons can’t be sold it will backfire on her, we had a very bad example in Kerala when a multinational tried to introduce cocoa and later backed out leaving the farmer with no choice except uprooting the cocoa. So, this should not happen for mulberry, especially when we are talking about women’s development. And the only way in which it can be done, is to tie it up on a very viable longterm basis through a proper reeling mechanism and if possible weaving also. There is a good market. There is market in India, for silk and even outside India, but, the linkages have to be worked out.

Last point I will make is again dealing with extension. Even most of the literature we have - extension literature, they are unfriendly. Unfriendly in terms of language, in terms of their emphasis, in terms of approach. Therefore the main area in
which NGOs can contribute, is to really make the whole sector a little more women-friendly and sensitive to the producers of silk, which happen to be women. As a government agency our view is like this: that we are not going to change society overnight, we are not going to change the existing systems immediately and in a revolutionary manner. But, we are going to seek change.

Therefore, even if we have strategies which are meaningful, which are practical, which are pragmatic, - like group formation - we find that it is possible. Our society is not that bad as some people say. It is not so male dominated that talking about female autonomy, or women going to market is going to shatter the harmony under the roof. It doesn’t happen like that.

We have found, through our work with the NGOs, through developing groups, providing some support in marketing, making some of the markets more friendly to women, we find that change is possible. And any change will have sociological repurcussion and consequences. If we are trying to change the system overnight of course the consequences are going to be more drastic.

Therefore I will put it this way: These changes are required only if you really want to develop the industry on a very long term basis. But these changes are far more difficult than changes in technology or in production systems. Therefore a beginning can be made and this is where a socially conscious group, like NGOs, can help us. We have found that it works. And the task before us is to make the change not only viable, but sustainable.

2.2 Involvement of Women in Sericulture

Dr. Manibhai Desai, President, BAIF

Gender issue is a very prominent issue in any conference or workshop. You know that I am from the Gandhian school. I may not be called a Gandhian but I am brought up in the Gandhian school of thinking, and Gauḍhi ṇi always used to tell us that unless you involve women in any development programme, at the forefront of the programme, it is not possible to change the quality of living of that family. BAIF has always insisted that women should be always involved in a dominant way, not just casually. And that works.

Here in Pune, Maharshi Karve, when he took up women’s education and widow marriage, it was a great revolt and he was having a very bad time; but then he fought with it. In the beginning he was alone; then a few other people joined; and then it became a movement in Maharashtra. The village Hingane where he was working became a message for women’s training, and Karve and Hingane were synonymous with women’s development.
So where there is just a start, you should not get frustrated. Whatever experiences you have, you should bring the issue to policy makers and not get disappointed. It is a long fight, you may not solve it in your lifetime, but somebody else will take it up. That is how we have to look to this issue. Second thing in our programme is very interesting for you to know, that when myself and Girish Sohani, when we went in 1982 to the tribal areas, just casually talking to the people, one old man told me that if his wife grows some tomatoes and brinjals, and if she picks up those tomatoes, and if she wants to sell those tomatoes, that money is her money, and that is the "Wavali System". He said "Wavali is her income and if I even dream to have a single coin of it, I will go to hell". There is no worse hell than what he is living in, but he said I will go to hell.

This is an old custom 5,000 - 6,000 years old. So I developed a programme with the name Wavali Project meaning women's programme. You will be surprised that Wavali Programme is now introduced even in areas where the custom is not followed.

We don't make a celebration on such a programme. If our volunteers want to have celebration, then the man gets scared that there is some revolution against me. We don't do it; we just casually do it without any fear, and I think that this has become a message even where that custom is not there. Under DWCRA Scheme, there is so little demand for funds. There are millions of rupees lying unspent in DWCRA. So we formulated projects to raise nurseries and after lot of fight got approval for large-scale projects. I am very happy to tell you that the women got Rs.17 lakhs by raising 51 lakh seedlings.

And all this money was deposited in their own individual bank accounts. To open all these bank accounts was a great uphill task due to the reluctance of banks. But you must be persistent on that. It is a continuous fight and the fight is non-violent. It is a very tactful job you have to do. We cannot just solve it by talking in the conferences. You insist on action programme. The point is that you have to make a start and here you have to see that the decision makers, the policy makers, if they are really honest about women's development, why don't they reserve jobs and tasks. We are very assertive on this issue. We have village level planning committees and it is a rule that at the most 50% of the members will be men and a minimum 50% will be women.

But we must be very careful. If you insist, without openly quarrelling or creating an issue, I think we can solve the problem. You have to break the ice. It is the NGO - the women leaders, enlightened women who have to take it up, and I think in sericulture it is the women who can handle all activities up to silk production. It must be technically sound, and in a clean environment. We have to go ahead in a very refined way.
3.0 COMMENTS

3.1 Chandra Kanjilal

I represent an organisation called “Stree Sangh Ksherna” working in Penkonda. We are a women’s development organisation and we are implementing the NSP programme where we are training 60 women in sericulture. Later, in case of 20 women who are landless, widows, or destitute, we will give them 1/2 acre of irrigated land, building three sheds for them, and equipment for them to do sericulture autonomously. So far, we have trained 37 women and 23 are to be trained later.

I just want to share my experience of the sociological impact on these women and how it has been changing things in their life. As already established, mostly 60% or more of the work force involved in sericulture are women, especially in our area. We have a strong sericulture base in Andhra Pradesh, and I would say 90% of the work is done by women. It is only the ploughing of the land that is done by men and then later on the silkworm rearing is partially done by the men and women. Planting, manuring, de-weeding, watering is all done by the women. Then we come to silkworm rearing. This is where it starts off by the women being kept out of the activity to some extent, except for chopping of the leaves outside the shed, because women during menstruation are considered unclean and that the crop will be spoiled. This is the reason why women are kept out of the final stages of silkworm rearing.

All these women who have been now trained by us are the women who have been traditionally going and working with the ryots, as they are all landless labourers. So they, are now being qualified -qualified in sericulture as a skill. All these 37 women are being trained and the fact remains that the training is one month long so, naturally, at some stage of the training they do have their monthly cycle and they still continue rearing. This is the one thing we insisted that whether they have their monthly cycle or not they would have to continue their training. So when none of the crops were spoilt and we had a good harvest, the lead farmers who were doing the training had a very happy experience.

Then we finally took them to the market, and as Mr. Thomas said, in the market, since it was the lead farmer who was selling the cocoons the rates were good. He got Rs.120 or Rs.125 per kilo. After these women were trained in May, during this year we had own individual training. During the individual training, the women were given 50 dfls. It was a small experiment that they did themselves, and got 12 1/2 kg from 50 dfls. They went to the market. Two days before that day, the rate was Rs.132/- but the day they went they were given only Rs.98/- per kg. Everybody kept saying that the quality of our M5 leaves was superior, we had larger size of cocoons, but the price was not
superior in comparison. So this made the women very disappointed, and they said "why is it not that somebody from the CSB department sits there and grades the cocoons and there would be a minimum price for the cocoons". If that is the case then, whether we are women or men we would all be assured of a minimum price and of what our cocoons are worth.

Secondly, women are being made fun of, wherever they go into non-traditional areas; that is the price they have to pay for progress, especially in India. But though 'sangam' training we have formed 'women's sangams (women’s group activity) and we are willing to weather that storm. But the real sociological impact is in the village. All the women who were earlier just landless labourers, entitled to Rs.10 a day as wages, are today entitled to Rs.400 - Rs.500 or Rs.600 per month, which the men normally get by working with sericulturists. So these women said, we don’t want Rs.600, you just pay us Rs.450, and so a couple of women started getting Rs.450/- which upset the landlords to a very great extent. Now they have all started threatening the women, that "if you belong to the sangam, if you are with SSK then don’t come and work with us. We won’t even give your daily wages even if you are not doing sericulture, but just doing normal labour. Don’t come and work with us. We will not pay you. Why? because now they are becoming qualified, they are now becoming more autonomous, they are now getting into the skilled work force, they are not available for cheap exploited labour anymore. This is one impact.

Secondly, now the women are going into the market, an area which was hallowed and only reserved for men. That is another thing for which the women are considered as getting out of hand. A normal village rural woman is not supposed to go into any kind of area where only men are seen. We are talking about women continuing just working as a cheap unskilled labour in the field of sericulture; that is fine; but, when organisations like ours go one step further into marketing, make the women more skilled, these are the kinds of problems they, as well as the organisation, are going to face. Even when they receive backing from their homes it affects them personally, because then the men are subject to a lot of ridicule by the other men in the village, that “look at your woman; now she is becoming loose, she is going astray”.

3.2 Dr. Jagannath Rao

I thought I must say a few things as a person who has done some work in sericulture as an implementing agency in India, especially Andhra Pradesh during the initial stages.

I have not much to add than what these two distinguished people, Mr. Jacob Thomas and Dr. Manibhai said; I feel that it takes time to change a cultural thing and women have to really participate in a constructive way.

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I feel that it should not become a problem at all whether it is a lady, now that the NABARD representative has said that women can also borrow similar to the man, but without need for collateral security. So that should not cause a problem.

It is true that wherever we went, the silk reeling establishment had a large number of women and there are places where a minority of men used to work. If you see some of the more modern mills in different parts of the world, even including the Algerian plant where I had been, I found that they cast the burkha outside and come to reel the silk, and again when they go out, they wear the burkha and go out. Of course the logic of burkha I could not understand. But what I am trying to drive at is that even in a country where burkha has been enforced, when they come to silk reeling they remove the burkha and come to the factory and work.

I feel that these things can be done, can be organised within a limited environment and it depends upon who is organising it, how much of information he has, and how he wants to implement it. It is a matter of management and that's all.

Quality silk doesn't recognise, it is produced by whom. I feel that both the genders have to come forward. We are looking forward for an industry which is based on a good tradition of family participation and production, based on more rational thinking.

3.3 G. G. Sohani

Mr. Jacob Thomas has just covered a very important subject about women in development; to achieve development in the status of women, and better opportunities for them.

I think it is a matter of bringing together two perspectives, one with sericulture at the focus and the other with women at the focus; and one has to find out a common ground and a common benefit from both angles. I think it also has a different implication for the people who are involved in implementing programmes. Mr. Jacob Thomas pointed out very clearly, how we don't think of the women at all when we are talking of sericulture, even though the women are often the most important producers in the activity.

When we talk of a farmer we think of a man who is working in the field, but we never think of the woman who is really transplanting the paddy and rearing the nurseries. So also, when we talk of sericulture, we don't get in our minds the image of women doing the rearing; that is the essential crux of making our own approach more informed on the gender issue.
And when we are talking of the other perspective, the one with women's development as the focus, we are trying to organise women, training them, trying to give them opportunities for getting a better livelihood and a better quality of life. Then sericulture is one of the activities, and there are a number of other things that will also have to be tackled. And if those are also tackled, then probably the women will also be able to make the best use of sericulture as an instrument for their own development. This is also what we learnt from the Wavli Programme of tribal women: it started with vegetables but we added nurseries, mango grafting, raising watermelon and even, since last year, raising mulberry saplings, as women's activities. So if you have a sort of a menu of activities then you pick and choose things which fit best and there lies the strength of the programme and the benefit it can bring to the women.

So I think these are the two perspectives that have to be brought together and matched and put together harmoniously.
1.0 BACKGROUND

Sericulture is a complex activity, and has strong need for forward and backward linkages. These linkages are primarily for reliable supply of disease free layings and utilisation of cocoons in the post-cocoon activities of reeling, doubling, twisting and weaving. Apart from these, a number of other important support systems such as technical training, credit availability, insurance coverage, information support and technology development activity, play a crucial role in ensuring the success and sustainability of sericulture. This is particularly true in case of the non-traditional areas where sericulture is in a nascent stage. As a result, the above linkages and support systems are very weak unlike in the traditional states, where they have been evolved over the last few centuries. In the new areas, therefore, these linkages and support systems will need to be deliberately established and nurtured. The increasing involvement of NGOs, who are relatively weak on this, underscores the importance of support systems as well as the formal interface between the Central Silk Board and the NGO.

It was against this background that a session focusing on Support System and CSB - NGO Interface have been organised to develop a better understanding of the role of these as well as the expectations that various extension agencies have from these linkages. The session consisted of plenary presentations and discussions, and was followed by group discussions focussing on four specific areas, viz:

* Research Needs.
* Training Needs.
* Infrastructure Needs.
* CSB-NGO Interface.

2.0 PRESENTATIONS

2.1 Support System for Sericulture - BAIF’s Experience in the field

Mr. A.V. Karandikar, Research Programme Coordinator, BAIF

I will be narrating some of BAIF’s experiences in the field. We have been extending sericulture in Gujarat, Maharashtra and now it has been started in U.P. Many of the needs felt while working in the field were tackled by our field staff by working out
some solutions at the field level. But some of these needs have still to be met and necessary actions are needed. In non-traditional areas, a major problem arises regarding the supply of the planting material which has been talked about quite frequently in the last two days.

Another problem we faced was that, though the recommendations were that the saplings should be used for plantation, generally, on a large scale, only cuttings can be used. This is not only because of lack of availability, but mainly that whatever support is available for plantation of mulberry, is based on the price of the cuttings rather than saplings. It also needs a very advanced planning so that the saplings can be six months old for plantation.

When the farmer is willing to have mulberry, his returns will be much better if he can take an intercrop within the plot. But there are very few recommendations available regarding intercrops. Of course, we tried with soyabeau and it has proved to be very good. The soyabeau also fetched a good price and being a legume, it also enhanced the fertility of the soil itself. So now we are propagating soyabeau. But at many places farmers don’t accept soyabeau. So what are the alternate crops which can be taken as intercrops without competing with mulberry. This type of information is not readily available, at least, not based on concrete data.

The next problem is that of training. For any NGO there are two options: one is that of training in sericulture technology, a person who knows about extension, who knows how to deal with people; another option is to train in extension methods, a person who knows about sericulture technology. These type of trainings are also necessary and at present CSRTI doesn’t fulfill these types of training needs.

So then, we started our own training programme at Urulikanchan, and we have a training which covers both the aspects; that is technical as well as social aspect. The trainers at Urulikanchan also know that these people are going to work in such and such field conditions, and they include some of those hints or tips which are useful for that condition. So this type of training should also be arranged. Some support should also be forwarded for these kinds of training programmes to be conducted at the NGO level.

After our own people were trained, then the training of the farmers came into the picture. Our idea is that training for sericulture needs to be of 45 days duration; ideally both husband and wife should be trained in sericulture, in rearing techniques, in mulberry culture, and so on. But are the people ready to live there for 45 days, leaving their own houses? It is not possible, as per our experience. So, what we did is we started a reverse kind of training programme: we started training both the husband and wife and then might be that one person is not continuously coming for 45 days but at least one person should be present for every feeding time, every cleaning time. They first handle worms in the 5th
stage; and after these start spinning, they start rearing stage 4 worms, and so on. This type of training has three advantages:

1. In non-traditional areas, where people don’t know what are the worms, what are the cocoons and what will happen to these cocoons later, they come to know and can see the product, the fruit of their work, within 7-8 days after they join the programme. This is very encouraging for the farmer. When he sees that the worms that he has reared for the last 4-5 days have produced these cocoons it is a very good encouraging factor for the farmer.

2. Another thing is that because the worms are more sensitive in a younger age, he also gets hands-on experience of working with more mature worms and then go on to a more sensitive stage of the lifecycle. That is also an advantage.

So this type of reverse training we have adopted.

Another important aspect of these trainings is that it should be a local training. The farmers from one taluka or even from one village or from a cluster of villages, cannot be expected to go and stay for 45 days or even a month in another block; so such type of training facilities however small they are, should be established at the local area level, which would be more convenient for the farmers.

In another area, we tried another approach. One of the farmers, who was an innovative farmer, and his grasping power was very nice, we used his place as a training place for other farmers in the same village and that has also proved to be very useful. So such type of different approaches are necessary in different trainings.

There is also a need of training material which can be used during these trainings and this should be in the local dialects, local languages. And there should be a resource center where all types of training material can be available to any extension agency.

The training is organised in four parts: we start with nursery training which is for one day. This is given only one day prior to the nursery programme. Then the plantation training is again a one day programme which is given only one or two days before the farmer takes up plantation. Then we have training in mulberry aftercare practices and then in silkworm rearing.

When we started this programme, we also started chawki rearing on our campus. We had the advantage that we had a facility for chawki rearing, but this facility cannot be sufficient for all the farmers. Farmers have to be identified who can be the chawki rearers. But farmers will get motivated for this sensitive task if they earn higher - about 50% higher - than other farmers. So this type of economics should be worked out and such support should be made available for the chawki farmer.
Regarding equipment, we are trying two approaches. Many of the farmers are not in a position to purchase all the equipment right from the start, so what we have done at one place is that we have 25 sets of the equipment ready and these 25 sets are rotated amongst the farmers. Of course this needs a very good management and scheduling of chawki rearing and pruning as well. Another approach that we have taken is to give a set of equipment to the farmer, the cost of which he will be paying back out of the returns from the cocoons. For this the organisation needs to have control on the marketing of the cocoons as well.

These were some of the experiences we got from the field and I think many of these need to be discussed during the group discussions.

2.2 Credit Flow Under Sericulture

Mr. N. Krishnan, Dy. Manager (NABARD), Bombay

NABARD is an apex institution forwarding refinance to banks, though we are not directly lending to any farmers. This is only a refinancing agency and only the bankers will be able to directly lend money to all the farmers. Of course, most of you may be aware of it. The loans may be divided into: raising of mulberry plantation, rearing stage, reeling stage and post reeling that means upto the weaving of silk. Even for marketing of silk, NABARD is providing refinance facilities to banks.

For mulberry plantation, the term loan of Rs.3500 is given with a repayment of about 3-5 years, for irrigated areas; for unirrigated area also we can have the same cost of cultivation/raising the plantation. For maintenance, every year, loan is given in the form of a crop loan i.e. ranging from Rs.1500 for rainfed and Rs.3000 for irrigated area for the plantation only. For rearing equipments, for an acre, for 300-400 dls, we are fixing unit cost of Rs.5100. For hygienic rearing, we are encouraging going in for a separate rearing house. In Karnataka, we have sanctioned two types of models. One is having concrete roof and other having mangalore tiled roof. In case of concrete roof we give unit cost of about Rs.30,000, and for mangalore tiles the cost is about Rs.24,000. This is for rearing side.

In case of post rearing activities i.e. for cottage basins, we are giving upto Rs.83,000 as unit cost. That is, initially for a pucca shed Rs.12,000 unit cost, machinery Rs.15,000, water softener Rs.5,000, and working capital requirement for an operating cycle comes to Rs.51,900. So the total cost comes to Rs.83,900. For improved charkhas, for cost of two charkhas Rs.8,400, the working capital for one operating cycle is Rs.16,100 and so for improved charkhas we give 24,500. These are the unit costs for various schemes under operation.
So these are the various types of credits we are providing. In addition, we are providing for establishment of separate reeling units, for weaving, working capital for weavers and also establishment of emporium for selling silk. These are the types of finance we make available from NABARD. So far, NABARD has funded about 25 crores during the NSP Project from 1989 to 1993 for sericulture activity, from mulberry plantation to rearing of cocoons. But, beyond that stage of course, it is mostly in the form of a cash credit facility. It runs to about 400 crores. In the case of sanctioning loans, many problems are faced by the bankers. Many bankers are reluctant to finance sericulture activity after a bad experience in the last few years. Of course, the banks are now encouraged to enter into NSP but the past experience is discouraging. NABARD actually conducts periodical studies, both at the regional office and head office, and based on the study, we have got information State wise i.e. all the non-traditional states, and also the All-India pattern of traditional and non-traditional states. Some of the common causes which are affecting the implementation of schemes at the bank level are:

Selection of beneficiary

Many a time the beneficiaries selected are already defaulters. They have taken loan in some other bank and not repaid the loan. So only those beneficiaries are entering into the sericulture field. Those applicants are being sponsored by the government agencies. With the result, the moment these applications go to the banks the bank will reject it. In case of Akola, out of 500 applications there were 450 applications related to defaulters in the last year.

Bunching of applications

Because the departmental officials want to dispose off the subsidy before March, they try to bunch all the applications and submit them to the banks in the months of February and March. Sometimes, decision may not be suitable to mulberry plantations also. So the operation is not timely in nature. So if the applications are sent to the bank within the right time and suiting to the seasons, the success rate will be much better. The banks will also be happy to lend.

Extension

Many a time, the bankers feel that the supply of inputs like dfls are not in time. If the farmers are raising one crop, there is a time gap between the purchase of cocoons and supply of next set of dfls, so the operation gets disturbed, the cycle operation is not maintained. If sometimes there is delay in supply of dfls, instead of raising 4 crops they sometimes raise 2 or 3 crops. This also affects the economics of the farmers, with a result the farmers are not able to repay the loan in time to the bank and their default
increases. Constant attack of pebrine disease has affected the yield in some states like Kerala.

Of course, one defect on the bankers side is that they are not giving timely credit. This is what NABARD is looking into and we are forcing the banks that within 3 weeks from date of receipt of the application they should dispose off, so that we are trying to ensure that the credit goes to the beneficiary in time. But sometimes the applications forwarded by the departmental officials or NGOs, there is a problem of improper selection, and if that is avoided, then the banks will be able to sanction the loan well in time.

Linkages

The main problem is marketing. We try to encourage a type of agreement between the borrowers and the marketing agency and the banks. So the moment the cocoons produced are sold to the marketing agency the marketing agency, will pass on the profits to the bank. So after adjusting the concerned installment, the bank will pass on to the beneficiary, so that the operation will go on a continuous basis. These are the operations to be encouraged, but these are not done at the field level.

Monitoring aspect

Sometimes, lack of monitoring by the department officials or monitoring by the banks has resulted in default and of course misuse of loan also. This is of course the problem of the bankers and we are trying to overcome the problem.

Natural Calamity

In case of natural calamity, we are suggesting to the government that they should go in for insurance, like silk insurance similar to crop insurance. If we succeed in introducing the scheme for sericultural activity, may be it will prove to be a boon. At least it will protect the income of the beneficiary during natural calamities.

I will highlight some of the defects in the implementation in the non-traditional states from the bankers point of view.

In Orissa, the Koraput district has been selected as a pilot district. Mulberry is a labour intensive crop, and in Koraput the tribals who are selected are not sufficiently trained and they are not ready to take up the labour-intensive activity. Generally, in Orissa it has been treated as a poverty alleviation programme, so the selection has been confined only to poor people. Since the poor have taken up sericulture activity, the result has been almost negative. So, if other progressive farmers had been taken at the initial stage that may have given an incentive to the programme.
Family Labour Concept, which is much more important in the selection of the beneficiary, is not taken into account with the result that the selected beneficiaries go in for hired labour which results in poor returns. If you go in for hired labour naturally the labour cost is more.

In case of progressive farmers, they will not definitely do it themselves, they will engage labour. In the selection process, even the poor beneficiaries who have been selected, they are given the one-acre model or only one person is there to look after the entire operation with the result it becomes a problem. If they start engaging labour it is not becoming economically viable for the poor farmer.

In case of Himachal Pradesh, the CSB is collecting Rs.10 per kg towards packaging charges which the farmers feel is quite high, and secondly they are withholding 10% of the produce value which is to be paid out at a later stage but is never paid.

It is such working level problems that need to be sorted out by the concerned agencies.

2.3 Features of Silkworm Insurance

Dr. N. V. Shejwale, Asst. Manager, The New India Assurance Co. Ltd

SALIENT FEATURES OF SILKWORM INSURANCE

Applicability

Type of Silkworm

This scheme is applicable to mulberry silkworms only of Univoltine, Bivoltine or Multivoltine Breeds and Cross Breeds.

Coverage

Only disease free laying (dfls) purchased from Licensed Seed preparers / Graniers of Govt. Granages are covered.

Age Groups

Silkworms from egg stage to cocoon stage are covered.

(Please note: It is under consideration to apply the Insurance cover from the time farmer receives layings at the granage till the cocoons are disposed at the cocoon market).

Scope of Cover

1. This insurance will cover death of silkworm due to accident or disease contracted during the period of insurance subject to the usual terms, conditions and exclusions of the policy.
2. The cover is in respect of Total Loss and Partial Loss (Phase III).

**Exclusions**

1. Malicious/wilful act of the insured/his family members/person/worker.
2. Theft, clandestine sale, missing of the worms.
3. Non-supply of adequate quality/suitable quality of mulberry leaves.
4. Loss of crop due to attack by predators like ants, lizard, rats etc.
5. Loss of crop due to pebrine disease upto 2nd month.
6. Sum Insured:

<table>
<thead>
<tr>
<th></th>
<th>Cross Breed Rs.</th>
<th>M.V. Rs.</th>
<th>B.V. Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum Insured per 100 dfls</td>
<td>1600/-</td>
<td>1500/-</td>
<td>1800/-</td>
</tr>
</tbody>
</table>

**Examination**

Certificate from the Sericulture Officer (Tech) not below the rank of a Sr.Insp (Tech) of the Sericulture Department is necessary in respect of each and every laying, giving brief details of the layings and certifying that these layings are disease free.

**Examination Fees**

Fee of Rs.5/- per 100 dfls is payable to Sericulture Officer for certificate issued by them.

**Identification**

The insured worms should be suitably identified by:

1. Lot No.
2. Date of preparation of seed.
3. Date of hatchery.

At the time of proposal, the proposal form (standard) and the Silkworm Soundness / Valuation Certificate should be filled.

**Premium Rate**

- Bivoltine - 8% net.
- Multivoltine and Cross Breed - 7% net.
Assessment of Loss

In the event of total loss the liability of the insurance company will be restricted to percentage of S.I. stage-wise as given below:

<table>
<thead>
<tr>
<th>Stage wise</th>
<th>Phase</th>
<th>Nature of Loss</th>
<th>M.V.</th>
<th>B.V.</th>
<th>Cross Breed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg to IIIrd Stage</td>
<td>I</td>
<td>Total</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>4 - 5th</td>
<td>II</td>
<td>Total</td>
<td>75%</td>
<td>80%</td>
<td>75%</td>
</tr>
<tr>
<td>Cocoon</td>
<td>III</td>
<td>Partial - Liability restricted to the difference fall short of S.I. as the case may be i.e. (1600, 1500 or 1800).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

During Phase I and Phase II only total loss claim will be considered for indemnification of the loss and the total loss will be defined as 100% loss or destruction of the variety of silkworms reared. During Phase III, the insurance will also indemnify partial losses and liability of the insurer will be restricted to the difference fall short of S.I. as the case may be. Under this policy the claim can be entertained only once during the period of the crop.

Claim Documents

1. Intimation.
2. Duly completed claim form.
3. Mortality Certificate by Sericulture Officer (Tech) not below the rank of Sr. Inspector of the Department of Sericulture giving brief details of the cause and extend of loss.

TASSAR SILKWORM INSURANCE POLICY

Tassar Silkworms are reared mostly by tribals and the scheme is mostly encouraged by Government Agencies. Under TASSAR 3 crops can be reared in a year. Usually the first crop is a seed crop spread to 30-35 days. The second crop extends to 45 to 50 days and the third crop to 60 to 90 days. The second and third are commercial crops.

Rating

10% of Sum Insured.

Sum Insured is equivalent to Input Cost.
The valuation table is as given below:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Stage</th>
<th>Amount of Compensation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Egg (dfls)</td>
<td>Rs. 25.00</td>
<td>Actual cost of 100 dfls.</td>
</tr>
<tr>
<td>2.</td>
<td>First Fortnight</td>
<td>I Crop Rs. 150/-</td>
<td>II Crop Rs. 150/-</td>
</tr>
<tr>
<td>3.</td>
<td>Second Fortnight</td>
<td>Rs. 300/-</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Third Fortnight</td>
<td>-</td>
<td>Rs. 450/-</td>
</tr>
<tr>
<td>5.</td>
<td>Fourth Fortnight</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Here too, both total and partial loss is covered similar to mulberry.

All other terms and conditions similar to Mulberry Silkworm Insurance.

3.0 COMMENTS / CLARIFICATIONS

3.1 Mr. Panda

I am working in Orissa and had the privilege of working in the north-east for 9 years, where I will be going back after May 1994. I have been greatly privileged by the address of Dr. Manibhaiji and here in the morning by Mr. Patil. Many of my doubts, which emerged over working in sericulture for the last 5 years, have gone. I will just mention two or three small points.

Mr. Patil mentioned that sericulture is technologically sensitive and it requires lot of linkages and we must have cluster approach. When you are doing it in a pilot state the first question arises as who should do it and how should it be done? Where there are NGOs of reputation, and who are really interested in doing this thing, it should be done by NGOs. The problem is that in a large number of states, in large parts of the country, there are no NGOs who are interested in taking up these tasks.

So in Orissa we are trying to organise the rearers into groups and form co-ops and we face exactly the similar problem that you mentioned. Even with me being the director and supporting the cause, there are problems in functioning of the co-op. I will be very grateful if BAIF can work out the alternative ways, of suggesting organisations under the Companies Act, and if these details can be mailed to us, certainly we can try out those things. I have one small doubt, that where from this new organisation will get...
its funds, because with the co-op the advantage is that under the NCDC scheme, under the central co-op bank under the NABARD, funds are available.

In case we have to promote that sort of group, may be the Government of India, at a very high level, should come out with concessional credit, should come out with a sort of subsidy pattern, like the one they are implementing for the NCDC.

Apart from these things, in Orissa we have achieved centpercent chawki system, and that is a very positive thing which can happen in a new area. Once you give 10 day-old good quality chawki worms, a large number of subsequent problems are taken care of.

The problem of starting a granage in the new areas is entirely different from the problem of Karnataka. Because in Karnataka all said and done you have seed areas, you have got farmers doing multivoltine, doing bivoltine and any time of the year you get seed cocoon. This is something which is extremely difficult for a new area to plan and bring about.

So I would submit that if it is taken up as the recommendation of this workshop, the Planning Commission can fund special projects, covering may be one block per State, - it can be taken by an NGO, or it can be taken up by a Company, who would essentially produce seed cocoons. I strongly feel that unless we have very intensive approach to production of seed cocoons of good quality and on schedule, it will be impossible to sustain the sericulture activity in a new area. This is my personal experience and I can mention my experience where, by implementing one bivoltine project with the help of CSB in a tribal area in the Ganjam district called Pallakamin ITD, in the last 5 years we have created a very good bivoltine seed base. If this sort of project is replicated we need not spend lot of money, but we must spend money in a particular place for developing seed cocoons.
4.0 REVISED CREDIT NORMS

The Reserve Bank of India (RBI) through recent circulation has relaxed the criteria/limits relating to making available credit finance for sericulture. As these are very important for sericulture programme and refer to points discussed during the workshop, the circular is reproduced below:

**RESERVE BANK OF INDIA**

New Central Office Building : 13th Flr, Post Box No. 10014 :
Bombay - 400 023.

Reference PPCD.No.PLFS.BL.71/PS.05:03:14/92-93

15, February 1993
26, Magha 1914(S)

All Schedules Commercial Banks
(Excluding RRBs)

Dear Sir,

Security Norms for Sericulture Activity-National Sericulture Project

Please refer to our circular RPCD,PLFS.BC.35/PS.165(F)-91/92 dated 17th September 1991 wherein it was advised that the banks should not insist on obtaining mortgage of land/shed as security for term loans upto Rs.10,000/-under the National Sericulture Project. We have been advised that the unit cost per acre of mulberry has risen from Rs.13,300/- to Rs.20,000/- and the credit component not of subsidy will be about Rs.17,000/-. It has been represented to us that the loan limit for not obtaining mortgage of land as security be raised from Rs.10,000/- to Rs.20,000/-.

The matter has been reviewed by us and it has been decided that for project costing upto Rs.20,000/- banks should not insist on obtaining mortgage of land/shed as security under the National Sericulture Project. However, banks should take hypothecation of assets created out of bank finance as security.

2. We shall be glad if you will please issue immediately instructions to all your controlling offices and branches.

3. Please acknowledge receipt. Hindi version will follow.

Yours faithfully,

(S. K. Gupta)

Joint Chief Officer
Cntrd.RPCD.No.PLFS.670/PS.05.03.14/92-93 of date.
IX. EXHIBITION DISPLAYS

On the occasion of the National Workshop, an exhibition on “Appropriate Technologies in Sericulture” was also organised at the workshop venue. The exhibits consisted of visual programme information displayed by the Khadi & Village Industries Board, Maharashtra; BAIF; and the Department of Sericulture, Orissa. BAIF Information Resource Centre had displayed a number of various information products such as compilations, slides, audio visual materials etc. BAIF had also displayed innovative designs of a mountage and a carrier for chawki worms. (Photos on rear cover - inside page.) More details of some of the exhibits follow.

1. KOSHIKA: AN IMPROVED SILKWORM MOUNTAGE

In India, silkworms are traditionally mounted by hand on a spiral bamboo mountage known as ‘Chandrika’. It is crucial for the silkworm to find the right type of footing as early as possible. This helps to minimize loss in the silk thread (floss) and to optimize the size of the cocoon. The basic function of the mountage is to provide a specific angular space for each silkworm for ease of cocoon formation. For wide-spread application in rural areas, the mountage must be made from low-cost, easily available and durable material.

BAIF undertook a study in which four new mountage designs were developed. Data collected conclusively demonstrated superiority of the newly designed ‘KOSHIKA’ a gunny-cloth mountage over the traditional Chandrika. The name is derived from a reference in the Mahabharata to ‘Koshika’ - the silk produced from cocoons. Advantages of Koshika included higher productivity combined with improved durability and permanent geometry of the structure.

2. SHISHUKA: A CARRIER FOR CHAWKI WORMS

BAIF has recently field tested ‘Shishuka’ - a new design of a carrier for chawki worms. Normally the chawki worms are transported in trays, generally as a head load by the sericulturists. This system may work in traditional areas where the distance over which the worms are to be transported is very short. However in non-traditional areas, where in the initial stages the farmers are few and far in between, an alternative system for transportation of chawki worms is required that will ensure:

.. Protection from environment.
.. Protection from dust.
.. Adequate aeration.
.. Feasibility of transportation in bulk.

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The new BAIF design consists of tubular carriers. The worms are placed on a sheet of paraffin paper which is rolled and inserted in a cardboard tube. The tube is perforated for aeration and has cloth end caps. A number of tubes can be threaded on a canvas belt and can also be stacked. Three such tubes form a unit which can be used to carry 50 dfis and can be handled like a sling bag. The worm carriers can either be shoulder-carried or stacked in a jeep, for transportation over long distances.

3. BIRC SERICULTURE COMPILATION SERIES

Traditionally, agro-industries have suffered a great deal from the lack of technical know-how and non-dissemination of knowledge acquired in different parts of the world. One of the obstacles to the development of mulberry silk production and the promotion of silk industries is the lack of access to up-to-date literature. In order to help bridge this gap, the BAIF Information Resource Centre (BIRC) has brought out compilations of reading materials on the subject. These compilations consist of research and popular articles appearing in leading national and international periodicals*, retrospective literature searches on global databases like CABI (Commonwealth Agricultural Bureau International), AGRIS (UN-FAO) and AGRICOLA (National Agricultural Library, USA), an extensive bibliography of books, and a note on the activities of BAIF.

The compilations available so far include:
1 MULBERRY CULTIVATION: Soil, Saplings
2 MULBERRY CULTIVATION: Fertilizers, Irrigation
3 MULBERRY DISEASES
4 MULBERRY VARIETIES: Pruning, Nutritive value
5 MULBERRY: Genetics, Morphology
6 MULBERRY CULTIVATION: Related Topics
7 VERMICOMPOSTING

More compilations on the following different aspects of SILKWORM REARING are being prepared:
1 Lifecycle of Silkworm; Silkworm races
2 Rearing techniques, equipment
3 Silkworm diseases, pests
4 Cocoon harvesting; Post-harvest handling
5 Raw silk: from filament to fabric

It is envisaged that biennial updates will be brought out for every topic.

VALEDICTORY ADDRESS

Mr. Arvind Mafatlal
Chairman, Mafatlal Industries Ltd. and Chairman, BAIF

I am deeply grateful to you all for asking me to come and address you at this session. The subject that you have been discussing and deliberating has been one of my obsessions, because I am a textile man - because when you talk of silk, or you talk of cotton, or synthetics; it is textile.

What has prompted me and made me consider this business of sericulture, is that it could revolutionise the whole country economically and socially. I being a businessman, for any industry you talk of, for any occupation, I say "how much money it is going to make, what it is going to give to the person who works. In our country the biggest problem of backwardness is underemployment. And a sizeable population lives below poverty line, not because they are poor, but because they don't have opportunities of gainful employment. And one of the effects economic backwardness has created, is caste and class consciousness. All this that we are fighting about, that has no meaning. Today, in this present materialistic world. When money plays an important role, the caste has no more any validity. To the people who have money and power, people will go and fall at their feet. But this will not last. My feeling is that there is no doubt that spiritual values will prevail.

I have been associated with BAIF and one of its greatest contribution is that it is a development organisation which is research oriented. And the reason why I was associated is, how can we improve the productivity and income in areas where nobody has done so before. In other words it is a management group. I got attracted through the cow, which was a total liability and people were trying to save it with panjrapoles. Although being an orthodox hindu, I have always revered the cow, but reveration in the traditional form was killing the cow. But BAIF has worked on how to make it productive and convert that liability into an asset.

And you know, today, Science, technology has advanced to such a great extent, and along with Science and Technology, Management Sciences have also developed. I am a Manager. I am not a scientist but I am a manager - a business manager. I look at how to put the whole thing together as an integrated activity and nothing will succeed, no science will succeed, unless you bring the various activities all on one platform and integrate them as one operation.

Unfortunately, in our country, there have been very useful contributions in isolated pockets but not as an integrated programme. We Indians are known for individual performance but in team performance we are very much backward. This is one of our
weaknesses. With this cow we have found that apart from being a home industry, it is the most backward group of the community in our country - the women - who benefit from this home industry. This is most important, because, after all, in a male dominated society only if you create income in the hands of the women, it is going to add prosperity without disturbing the cultural base. We found dairying was one of the business which she could do.

And the same thing applies here. I personally feel that sericulture will be essentially an industry of the women. There is no question that men cannot compete. Like the cow he may think he will do the outside job, he will help her, but because it requires delicacy and she can do it at home it will be her industry. More important, apart from it being an employment opportunity for women, what gives me more interest is that it can give an income to the family which will bring it out of poverty within the shortest possible time. And we can utilise the most degraded lands, it requires very little land to have mulberry plantations, yet it is a totally agro-industrial activity.

In short, in the present economic environment if you really want to stop migration, to stop zopadpattis and overcrowding of cities, the answer is rural prosperity. And what is rural prosperity; people won't like to leave their villages. I am quite sure we are still so tradition minded, attached to to the land, they won't like to come. They come out of sheer pressure of necessities leaving their families behind and working and living in unhygienic conditions. I think and it is possible to change this with technology and a highly competitive approach, and to create an income of Rs.30,000 a year. You can imagine suppose in a village in an adivasi area, in a backward area we make possible to earn Rs.30,000, nobody will come to Bombay or Madras or Delhi, nobody. He would never leave his place; he will like his own house; he will live with his family. It will bring about a total qualitative change in his life, in his values, in everything.

The fact is that this is one area which shows that it is possible to get an income of Rs.30,000. Now the fact is that if this Rs.30,000 income can multiply, because if we were to integrate into a more industrial activity, then the other members of the family can work in the other activities starting from egg business to cloth production. It is like a textile industry, it can be totally an industry which can be decentralised and dispersed. It has no need to do that we should have large textile centres like Bombay, Ahmedabad, Kanpur, this activity could be at the local level - starting from producing of the cocoons, spinning units, weaving, processing garments, everything could be there. Because this is totally integrated, like an industry.

As a textile man, for me, it is a raw material - whether you have silk, or cotton or jute or you have synthetics. I am a spinner, a weaver, a processor and a marketer of the ultimate product. The reason I am successful, is that it is an integrated operation.
For the product, is that we create the market. Prosperity or growth of an industry takes place on its market role, you have to create a market for it. Once you have a demand for the product then you must have quality that is required, and everything else will follow. There is so much of dichotomy in the sense that what you produce you are not able to sell; and what the other fellow wants, you don’t have that material. Why can’t we put it together? I personally think that India has a tradition of sericulture, but it needs to be upgraded in terms of quality.

Can you say that our Indian silk yarn is as good on quality as the international market demands. I am quite sure ultimately it will be a question of price, meaning competitiveness, but are you able to produce of the same standard or quality like China, Italy, Japan and Korea? So, you have to look at the system of sericulture up to the yarn stage, not only at the cocoon stage; it has to be a total integrated operation, and this is quite possible.

I would say there is no sense if you have to only sell yarn; then it could be woven. The whole industry base develops and whether you have a market in Surat or in Italy or in Japan makes no difference. Are you able to produce that quality, this is where the important question comes. Do you have ISO 9,000? Once your whole concept changes then you will bring in experts, I agree I don’t know everything, but I know if I have a problem, I go and call the specialist. Today we have sufficient amount of technology, but it is only required to bring them – say “this is my problem and you solve it”. You may not have it, then call a foreign consultant for six months or 12 months, and the task is finished. You have to identify your problem and get it solved.

Fortunately here in Manibhai and BAIF, it is entirely a research group. And we want to bring about a total change in certain areas. We want to revolutionise the whole economy of a small farm, one hectare and below. Today you are only talking about farming, agriculture, the situation of people, the rich, and many other things. I want to see that these bigger farmers farms break down and the smaller farmers outstrip them. How can you bring it about, because he has his limitations he has his own worn one hectare of land.

I am told that the statistics is 85% of the holdings in this country is one hectare and below. I am interested whether they can earn Rs.30,000 a year. If not, then why should he bother about it. But if he gets it, he is not going to leave his farm, he is not going to work as a slave labour, he is not going to migrate, yes, it is going to affect some of our friends in the cities. They won’t be able to get bonded labour; will not get contract labour; do you see what will happen? The money lender will say I am out of business. The illicit distillery fellow will say nobody is coming to drink, because for all problems you know, you bring about a total revolutionary social change.
In sericulture you are all working on different aspects, and this meeting and this seminar itself has brought you together. Each of you has a problem, but look at it as an integrated one. I would concentrate on this aspect rather than going into the industrial weaving side. I think that is not so important because weaving in itself is sufficiently advanced - whether I buy a cotton yarn, a silk yarn or a blended yarn, or woollen yarn makes no difference. Weaving is a total technology. Can you produce the right raw material - and there you should keep your standards international. Then the thing will grow. The first important question is to produce quality, then how to increase its production. If the quality is not good then whatever productivity is there has no meaning, because there is no market for it. For this an R & D effort is required. I am quite sure you will be able to take it up.

Second suggestion is about choosing the right target group. I see great potentiality because this industry is not going to be done by the traditional progressive farmers. It is only going to be done by the people who are most backward, because they have nothing else to do, you should concentrate on them when we talk of non-traditional areas - the people who are really affected, particularly among the schedule castes and schedule tribes - these people have nothing to do. They are migrating. For them anything that gives them stability and security and prosperity is welcome. They will stabilise. We have got so many nomadic tribes. Why are they nomadic? I don’t blame them but their occupation is that. If you want to settle them the problem is that they don’t have any assets, any land. Yes, the Government has large amount of wastelands available.

I am quite sure with proper representations you will be able to give them land. I don’t mean transfer the lands in their name, but give them the usufruct. Give them the basic infrastructure, develop their whole communities, their problem will be solved. But, the important fact is that before you start doing it you must have proper technology. Otherwise the whole thing will fail. They do have cocoons, but from preliminary data which I could see, I think it needs to be upgraded to be of international standard. Climatic conditions, I personally think, you can create artificially. Science and technology has advanced so much and anything is possible when people can go to the moon. There is nothing that is impossible. We need not say it is a tropical crop or it is a temperate crop. You can create the right conditions throughout the year with modern science. Technology and investment is required, and it would come, provided you have been able to produce a product of an international standard, and a market; because no industry can grow without a market. You have to first understand that it must be market driven economy and now we have become global. But, I am quite sure that it is one area where Rs.30,000 annual income is possible, and much of the income will be controlled by women.

So, this has a tremendous socio-economic impact. Once the woman gets settled all things will change. If you really want to bring about change in the social structure, you will have to tackle the woman and make her the focal point. And with this industry you will be able to do it.
The women have a lower status only because of their economic and other backwardness. Once you bring in income generating opportunities, the picture changes. We have seen experiences in Vansda, the total picture has changed - the whole control has gone in their hands. And when they will be having the control, that is where you will bring about a change in the future society. The children will be brought up in a totally new surrounding, they will be better looked after, they will be better citizens. There is no question about it.

So, I personally think that this seminar today is very timely. You have to sit together to consider whether you can take up two million families. Identify those areas and settle them. Two million families, and tell the Government to give them two million hectares. Now you can start and cover particularly the areas which have a predominance of scheduled tribes - the adivasi areas.

For example, in the non-traditional areas I am considering Orissa, Bihar the north-east areas - they are all hilly areas. They are economically backward, but the fact is that this is the area where you can totally change the picture overnight. They will begin it faster because those adivasis - they are traditionally in trouble.

Similarly, the programme can be taken up in U.P. and Madhya Pradesh, or you take Rajasthan, in all the hilly areas. In Vansda, even what mulberry is they did not know. They just took to it because of their economic backwardness and the amount of skills they can develop is unbelievable.

Take the example of Vansda, or the Valsad dairy. You may not be aware, but 95% of the milk is coming from the adivasi fellows, 95% of the whole dairy, - and it is being expanded. The traditional fellows have gone out because the traditional farmer doesn't look after the cow himself. That adivasi fellow has beaten him in incomes and his production is going up. Today, BAIF is having 20 centres of crossbreeding in the adivasi area and I want to cover the whole tract. You will be surprised what motivation can bring. How, because it is a need for him and he looks after the animals better, our people who are in the market are surprised that their traditional source of supply has gone, because they have been priced out.

I am giving just an instance; - where the need is, where the income level is very poor, where there is hardly any employment, motivation is the most important point. Technology, management, are indeed needed, but what is most important is who is able to motivate.

Fortunately, you are all NGOs and you have been involved in motivating people. Concentrate on the people who need it the most, and with upgraded technology I think you can surely manage it.

I wish you all the best and bless you all. I hope you play one of the most important roles to bring about this revolutionary change.
XI.

CONCLUDING REMARKS

Dr. Manibhai Desai
President, BAIF

With the involvement of Shri Arvindbhai to give his mind about how we should look at sericulture, I think we have received a very good feedback and you can have a good thinking in the field of sericulture - not only the NGOs or the Government officers, but also the Central Silk Board. I think it was a very good exercise of 3 days and it is a cross section of several people coming from several corners of India. We were able to discuss threadbare most of the aspects of this new challenging task to take up sericulture in non-traditional areas.

We have realized, everybody has realized that it requires tremendous R & D work, you should come out of old grooves and think anew; try to understand and study what is going on in other parts of Asia, and that may give us better confidence and direction as to in which way we should go. Our Chief Guest has brought to your notice that now it is an open economy, a market economy, so you have to first think about marketability, ensuring marketability of the product - you have to produce only that which you can sell.

We must always maintain the sequence of market driven production: if you just start production and don’t think about the market, you are gone. So we have to think in terms of a composite package. We will decide now that we will produce that, which will be sold with premium price; it will stand in the competitive market, with either China or Japan or Korea or Italy and for that whatever backup we want in the quality of cocoon, quality of mulberry, variety of mulberry and the agronomy, we should ensure that.

So that term brings you to reeling and spinning, but it is the cocoon which decides the quality of the yarn, so you have to produce good cocoon, and for good quality cocoons you need good leaf, so that brings you to very well managed plantations, with good agronomic practice, the optimum level of nutrition which you can supply to the silkworm timely as per the age of the worm.

So I think that this workshop can give a message, that develop a package a comprehensive one and that package is a holistic approach package. In this work, organisations like BAIF can play a very crucial role. I would request my colleagues to now come out of old traditional silk business. But let us think anew now as we have thought in dairy industry. We never thought of the old things. We never thought of going back and improving our local indigenous herds by selective breeding.

I sat down and worked out that it will take 130 years to increase the milk production by 15-20% in our local cows. I said I don’t have the time. I must see it during
my lifetime. A cow which can support a woman so, we immediately studied various 27 exotic breeds in the world and travelled across and that time I was alone. The foreigners were thinking how can I understand the technology but very soon they realised I want to go deep into it, and that I know the subject.

You will be surprised that for the first time 24 years back I talked about progeny testing of sires by contemporary comparison, which was a new thing in America that time. I met Prof. Anderson, the father of progeny testing in a computer room, and spent 5 hrs on discussing progeny testing, on how to select a bull. It was the first time I knew that the bull, even if it is born from excellent tested parents, need not transmit the economic traits to its own progeny; so you have to select those which are capable of transmitting the economic traits to their own progeny, and not just their production figures.

So the bull has to be tested from the daughters and not from the father and mother. This thing when I talked in India in ICAR, they laughed at me. They said it is not possible. But, we started in a small way a progeny testing programme in India at Urulikanchan, and perhaps this is the best herd in India, an NGO-owned herd. There is no grant-in-aid from ICAR or anything. We are on our own. So, this time also when you bring in new technology you have to go alone. Latest technology in sericulture should be brought in. You have to develop according to your requirement, in your own soil, which is convenient or suitable or adaptable to your environment, and it should be manageable by your people and that is also very crucial.

So why not also take a decision to go into it in a systematic way - a well defined programme, and we should, as BAIF, provide all the information that is available all over the world, particularly Asian countries. It can be an important component of our information resource service which is just in Poona.

Let us not end here but this is a good beginning for joint effort of CSB and NGOs and some of the NGOs like BAIF can have concentrated effort from all sides; which includes technology, management, research and development and also which includes agronomy and very sophisticated systems of irrigation. I hope everybody will go with confidence and build up a strategy. Whenever we meet next we will have better reports. If we succeed in this exercise, as Arvindbhai rightly pointed out, this will change the rural scenario of under-employment and misery.

Any calamities which you face are all symptoms. The disease is poverty which is born from underemployment. We have to see that all persons, particularly women, are not kept underemployed. They should have full employment, they should manage their own business without creating any quarrel in the family, both should live with self-respect and create a new society. I think silk industry can be one of the important activities for this. I am sure you will go with encouragement, commitment, and confidence to devote yourself to this great mission.
XII. RECOMMENDATIONS

A. EXTENSION:

1. Extension programmes should be taken up with a cluster approach.
2. There is a need for redefining of pilot project areas based on agro-climatic zones or regions rather than depending on artificial state boundaries.
3. Area to be covered by one extension worker should not exceed 25 acres of mulberry plantation in a compact block.
4. In new areas, sericulture should be introduced with the latest technology.
5. Targets should be realistic and quality should be defined in terms of number of farmers, production, and cocoon quality rather than plantation area or supply of dfs.
6. There should be specific norms for selecting beneficiaries based on the capability/potential to take up sericulture and achieve minimum productivity.
7. Mulberry is an excellent tree crop which can be integrated into the forest scenario of the country. A minimum percentage plantation under social forestry should be earmarked for mulberry, and this plantation should be allotted to beneficiaries on a usufruct basis, so as to take up sericulture.
8. Sericulture should be linked up with other programmes like horticulture, cattle development or agro industrial projects, so that a synergy is developed.
9. In new areas, multivoltine races should be introduced rather than non-acclimatised bivoltine races.
10. Initially, subsidy should be given in terms of input supply in instalments. Subsequently, it should be linked to production and not to area under mulberry.
11. In new areas, a single implementing agency (preferably NGO) should be entrusted with the extension programme for a specific area.
12. In each new area, special programme to multiply planting material should be taken up from the outset.
13. Documentation and dissemination of innovations by farmers, NGOs and other implementing agencies needs to be taken up to enable wider adoption.

B. WOMEN'S INVOLVEMENT IN SERICULTURE

1. Special orientation programmes to increase gender-sensitivity need to be organised for extension workers.
2. In order to develop more woman-friendly technology, it is necessary to ensure greater interaction between women sericulturists and researchers/designers.

3. Direct participation by women in sale of cocoons in the market should be fostered to increase their awareness of market mechanisms and preferences. This should be facilitated by introducing market functioning as per objective criteria such as price fixation on the basis of scientific cocoon grading.

4. Direct credit availability to women is often hampered due to lack of land titles in their names or earlier loan defaults by husbands. These bottlenecks need to be removed.

5. Certain sericulture tasks should either be reserved/restricted and actively promoted only for women. These would include cocoon grading, reeling, operating chawki rearing centres etc.

C. ROLE OF NGOs

1. Competent NGOs should be selected on the basis of accountability, proficiency and capability, and supported for taking up extension, training and applied research programmes.

2. A complete set of guidelines on project formulation and implementation should be prepared for use by NGOs to submit projects to CSB.

3. It should be mandatory for NGOs to train their candidates in suitable technology at approved institutes.

4. “Regional Information Cells” should be established at different locations to make available information inputs. NGOs can also be entrusted with this task.

D. TRAINING

1. Study tours and demonstrations are found to be very effective methods of extension and should be supported in a big way.

2. CSB should initiate special trainer’s training programmes.

3. A family training approach should be adopted with a training period of at least 45 days.

4. Hands-on training starting with the last instar worms and progressively moving to third instar worms is found very effective and should be promoted.

5. Decentralized training arrangements should be made to make training more universal.
E. RESEARCH

1. Season specific package of practices are more important than season specific races. Applied research studies should be taken up for standardising these.

2. A very simple localised adaptive R & D system must be associated with the extension programme for immediate solution to the farmers' problems.

3. Location-specific, problem-oriented research directed towards productivity and quality, should be taken up by appropriate local organisations and supported by the Central Silk Board.

4. Regional research and development stations/sub-stations should be established, at existing competent local institutions/NGOs, for carrying out need-based research, from mulberry production to finished products.

F. INFRASTRUCTURE

1. Location specific economics needs to be worked out realistically. This should be used as the basis for studying feasibility and planning credit support.

2. All the needed inputs and marketing support should be made available through a single agency in an area.

3. An appropriate agency should ensure a support price, and procurement at production points, to restrict wide price fluctuations. Grading of cocoons should be promoted from the outset.

4. In any potential area, there should be simultaneous development of mulberry plantation at farmer level, and infrastructure development like seed organisation and cocoon marketing and processing.

5. Supply of Dfls should be timely and with better quality control during transportation.

6. Lack of awareness among lenders/borrowers is one of the reasons hampering adequate credit flow. Credit facilitation should be specially organised. NGOs can also play this role.

7. It seems necessary to develop a uniform index for fixing price which will be valid all over India.

8. In all non-traditional states, areas should be identified and earmarked for development as seed cocoon areas.
XIII. 

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PAPERS
BY
MAIN SPEAKERS
I am happy to be with you at this important National Workshop organised by BAIF Development Research Foundation on “Sericulture Development in Non-Traditional Areas,” along with the Central Silk Board which is a national apex body implementing the National Sericulture Project in traditional silk producing states as well as non-traditional states in the form of a pilot project.

Sericulture is a labour intensive activity and one hectare of mulberry plantation can generate as high as 12 to 13 person-years of employment opportunity. This activity has short gestation period, which is very important for the rural poor. After plantation, the first crop can be taken within 6 to 7 months and thereafter every two months, the farmer can take silkworm rearing. Sericulture is the mainstay of many a rural family in the five “traditional” states. These traditional states account for about 98% of the total raw silk production. Sericulture sector employs about 12.4 lakh families in these states.

Sericulture traditions have existed in many parts of India. In the “non-traditional” states, sericulture did not gain importance in providing income and employment to rural farmers and artisans which it has achieved in the traditional states. However, since times immemorial, sericulture pockets have been existing in states such as Assam and other North-Eastern States, U.P., Bihar, Orissa, etc. In some of these states, tussar is being produced by tribal people.

In recent years, sericulture has come to be recognised as one of the most important, rural, agro-based occupations. Employment generation to achieve near full employment by the turn of the century is one of the priority areas during the Eight Plan. The village and small industry sector of which sericulture is an important sub-sector has the potential to generate employment with minimum investments as compared to the organised sector. Hence, VSI Sector has been accorded high priority in the Eighth Plan. Given the high domestic and international demand, the shortage in supply of raw silk and the prevailing remunerative prices, scope exists to increase sericulture activities in non-traditional states. The World Bank aided National Sericulture Project (NSP) is being implemented by the Central Silk Board in 12 pilot states. The pilot states covered under the project are Orissa, U.P, Assam, Maharashtra, Kerala, Madhya Pradesh, Bihar,
Rajasthan, Punjab, Haryana, Himachal Pradesh and Gujarat. The objectives and target of NSP for pilot states include:

i. to improve the quality and productivity of cocoon and raw silk per unit areas

ii. generation of employment opportunities for rural people in rural areas

iii. upliftment of socio-economic status of women through sericulture

iv. setting up of R&D institutions, organisations for extension, seed production, training, marketing etc and to ensure involvement of non-government and voluntary organisations (NGOs) for expansion of silk industry. The project envisages establishing mulberry plantations in 28000 acres land in private sector to produce 8400 mt quality cocoon and 840 mt raw silk annually. With the implementation of the project, it would be possible to generate employment opportunities round the year for about 30,000 people in pilot states.

BAIF has been actively involved in laboratory level research programmes and sericulture expansion projects in the states of Maharashtra and Gujarat. This institution has studied existing programmes in the traditional states like Karnataka and Tamil Nadu and a number of research projects were taken up in areas of alternate mountage designs, leaf preservation, loose egg production etc. Because of this research and extension experience, BAIF has been associated with NSP in the pilot states of Maharashtra and Gujarat. This institution has also taken up sericulture extension programmes for income generation for tribals and other weaker section communities. A training programme for tribal women in sericulture in Dangs district in South Gujarat has been concluded by BAIF.

Central Silk Board has formulated extension programmes in an integrated and comprehensive manner including creation of infrastructural facilities within the area/district of the pilot states chosen. A District Level Co-ordination Committee headed by the District Magistrate or Chief Executive of Zilla Parishad/DRDA is monitoring the programmes of the Central Silk Board. The main components of NSP in pilot states include basic seed production, grainage, extension services, chawki rearing centres, cocoon markets, supply of mulberry saplings, setting up of cocoon drying chambers and providing credit to farmers and silk processing units. The total investment envisaged by NSP in pilot states is Rs.66.2 crores.

I would like to focus on some issues which are crucial for implementation of the NSP in pilot states, and I would urge the participants of the workshop to find out possible alternatives and solutions to improve the delivery of proposed investments and its benefits to rural population, particularly women.
The main focus of NSP in the traditional states as also in pilot states is on increasing bivoltine silk production. Bivoltine silkworms require suitable climatic conditions, humidity and temperature for giving positive returns. It has been observed that climate of Maharashtra, Gujarat and Rajasthan is not suitable to bivoltine. Choice of silkworm breed rearing should be according to the suitability of climate, amount of rain, soil nature and silkworm rearing practices being adopted in the area. In view of this, multibi mulberry sericulture silkworm rearing may be attempted in these states in place of bivoltine. The development of sericulture in non-traditional states faces the problems of non-availability of cocoon markets, facilities for cocoon drying, established reeling sector and sustained demand of raw silk. In states like U.P, Orissa, Bihar and Assam demand exists due to handloom weavers undertaking silk cloth weaving and producing silk sarees, but there is no silk yarn reeling and twisting industry. To make silk rearing popular and to increase mulberry plantations coverage, it is desirable that steps are initiated to encourage setting up of silk yarn reeling and twisting industry in the state. I would suggest that the governments of non-traditional states may take up following steps to strengthen the NSP pilot project:

a. induce the farmers to take up silkworm rearing

b. increase coverage of mulberry plantations by explaining to farmers through extension work and education regarding viability and profitability of mulberry plantations.

The State Governments will have to set up demonstration farms, grainage, cocoon drying chambers, cocoon markets, testing laboratories etc. All these components have been included under the NSP.

The State Governments should also formulate schemes in-built with incentives and suitable infrastructural facilities to encourage entrepreneurs to set up reeling and twisting units. For that purpose Cluster Approach would be very useful. The state governments will have to organise training of new entrepreneurs and to expose them to traditional silk producing states by organising visits, tours and training programmes in the institutions set up by the Central Silk Board.

Low land holding of NSP districts is one of the factors resulting in slow progress of mulberry plantation and poor production of leaf and cocoon. While selecting the beneficiaries, the state governments should be consulted and socio-economic status of the beneficiaries should be taken up into consideration. Any slippages on this account would result in failure and poor maintainance of mulberry gardens, missing of silkworm crop and also carelessness during rearing which leads to poor productivity and low cocoon production. The agencies implementing the silkworm rearing programmes should ensure
that supply of silkworm seeds is regular and timely. The lots should be uniform and of
desired quality and quantity. Production of seeds in the absence of sufficient quantity of
seed cocoons, silk rearers and seed areas has proved uneconomical in most of the pilot
states. There is need to link sericulture activities with the programmes of the Department
of Rural Development, so that the beneficiaries can take advantage of rural development
schemes for sericulture.

Absence of an independent sericulture department, in some states like
Gujarat, Rajasthan etc, has reportedly hampered the progress of NSP, co-operative
matters like transfer of land for construction of sericulture schools, TSCs, etc.

Performance of each pilot state in terms of programme implementation
speed and quality needs to be evaluated. It would be necessary to prepare a programme
software with selection of indices on the basis of detailed check lists. Programme
implementation speed and quality parameters to be chosen are:

i. Staff deputation by Department of Sericulture.
ii. Mulberry Acreage.
iii. Use of high yield varieties.
iv. Rearers attendance for the training programmes.
v. Average use of planned infrastructure capacity (such as grainages, CRCs, TSCs,
etc) is the most significant factor.

Some of the state governments have already constituted Bivoltine Steering
Co-ordination Committees where CSB is also a member. This committee looks after
issues such as bivoltine hybrid production, support programmes such as central / state
subsidies for bivoltine hybrid cocoons and raw silk reeling, marketing, extension,
training, promotional measures among users etc. The state governments which have not
set up such committees should do so. A State Level Technology Co-ordination Committee
should also be set up to cover aspects like propagation of improved mulberry varieties,
pebrine and other disease monitoring, surveillance and control, extension, training etc.

The State Government should also consider setting up of:

Seri-Biotechnology Laboratories to reap the advantages of advancements in
bio-technology in silkworm breeding and to fill up the backlog with respect to international
competition. This would be specifically required for strengthening the bivoltine programme
under National Sericulture Project.

Women have an important role in adopting sericulture practices and
increasing productivity in raw silk production. The Central Silk Board has considered to
observe 1994 as the year of women in sericulture. The basic objectives of observing
'women's year' should include improving access to resources, enhancement of managerial
skills through training and betterment of knowledge and skills. In silkworm rearing, raw silk production and reeling industry, women have a major share, hence it is necessary to give them due importance and to make them an equal partner in the progress of sericulture projects in the States. I may like to mention “Kalpvruksha Scheme” being implemented by Madhya Pradesh for extending benefit to women belonging to the families of Scheduled Castes in the silk industry. The state government is providing Rs.15,000 financial assistance per acre of mulberry plantation. Other state governments and programme implementing agencies could also consider formulating such schemes for women.

I wish this National Workshop a great success and hope that the discussions and deliberations of the workshop will result in fruitful recommendations to improve the effectiveness and enhance the progress of sericulture programmes in the non-traditional states. These recommendations may also focus on women who are the mainstay of sericulture activities. I am thankful to the organisers for giving this opportunity to share my thoughts with you.
2.

SCOPE OF
MULBERRY SERICULTURE IN NEW AREAS

Mr. S.K.Panda
Director of Textiles, Orissa.

Background

Poverty and unemployment are the two major problems faced by our country today. As our economy is mainly based on agriculture, any meaningful solution to these problems would come from agriculture and allied sectors. Mulberry sericulture is a land-based activity, with good potential for generating productive employment. It has several advantages, such as labour-intensive nature, low capital investment, short gestation and good market. It has special significance in employment of women and the aged, who have limitations either due to low resource base, or due to less physical stamina, or due to prevailing social customs against working outside the house.

Mulberry sericulture in one acre, with related activities, produces employment for 5 persons throughout the year. In the country, sericulture provides about 7 million jobs at present, as compared to 25 million jobs provided by the entire organised sector with much higher investment. Mulberry sericulture has played a very important role in the socio-economic development of several Southern States; like Karnataka, Andhra Pradesh, Tamilnadu and parts of West Bengal. Because of several advantages, number of steps have been taken for expansion of this activity into new areas. The State Governments have set up mulberry demonstration farms for demonstrating advantages of mulberry sericulture. An account of mulberry plantation and cocoons produced in the new states is given in Table - I.

Under the World Bank sponsored National Sericulture Project, 12 new (pilot) states like Madhya Pradesh, Orissa, Maharashtra, Bihar, Uttar Pradesh, Kerala etc. have been taken up for development of mulberry sericulture. An account of the implementation of the National Sericulture Project in the pilot states is given at Table II. Even though achievement in terms of area covered under mulberry sericulture has been good in the new areas, productivity of cocoon per acre is lower than the traditional states. Some of the factors, affecting expansion of sericulture in new areas may be discussed as under.
Constraints

Mulberry sericulture is a land-based activity. Production of good quality mulberry leaves is essential for increasing productivity in sericulture. This calls for availability of good quality land and adoption of prescribed agronomical practices. Introduction of mulberry sericulture in new areas, calls for diversion of land, being used for other crops, to sericulture. Our farmer is a very intelligent person. He would divert his land once he is assured of marketing facility and a good return. This calls for demonstration and a good marketing system in the new areas. Several attempts have been made to cover Scheduled Castes, Scheduled Tribes and other economically weaker sections under mulberry sericulture programme by giving them financial assistance under various anti-poverty programmes. Such programmes have met with limited success as the target group do not have suitable land. Such beneficiaries have mostly taken up sericulture on reclaimed land allotted by Government, which is not suitable for agriculture. Development of such lands requires considerable efforts and resources, which is not available with the beneficiaries. This affects productivity and discourages diversion of productive land for sericulture.

The second constraint in development of sericulture in new areas is the absence of a suitable extension set-up. In most of the non-traditional states, there is no separate Directorate for looking after the programme. This activity is being looked after by a skeleton staff under the Industries Department. As the programme is small and new, it does not get required attention at the appropriate level. Absence of adequate trained manpower forms a critical constraint in development of sericulture. Besides, there are inherent constraints in launching a new scheme entirely through Government, which has several limitations. Non-Government organisations (voluntary agencies) of repute can play an important role in introducing any programme in a new area, as they have committed workers and flexibility required for undertaking a season-bound, land-based activity in an unorganised sector.

Availability of funds is another important constraint. Even though mulberry sericulture is labour intensive in nature and requires relatively less amount per unit, it requires infrastructure for supporting the programme. Adequate arrangement for preparation and supply of disease-free silkworm eggs and marketing of cocoons are essential for supporting the programme, which requires sizeable investment. Setting up these infrastructure has been taken up in the pilot states under the National Sericulture Project by the Central Silk Board. Details are given at Table - III. However there are problems in the Board working in new areas. Implementation of the National Sericulture Project by the State Government concerned, with technical guidance from the Board, would be useful in setting up the infrastructure in time and managing them properly on a permanent basis.
Marketing of the finished product is another critical factor for success of any commercial activity. Marketing network for sericulture produce in the country has so far developed in the Bangalore, Ramanagaram and Mysore belt. There are difficulties in marketing cocoons in general, due to a number of factors such as (a) perishable nature, (b) low margin and (c) skill required. Besides, non-availability of good quality cocoons in adequate quantity in a new area, discourages private entrepreneurs from taking up reeling. This in turn affects the expansion of sericulture.

Mulberry sericulture has several advantages. But it is a fairly complex culture, as it involves management of a plant (mulberry), a living organism (silkworm) and an industrial activity (reeling of cocoon to yarn). These components are required to be taken up in a co-ordinated way, in a time bound manner and is to be supported by infrastructure. History of economic development in Japan and China indicate that sericulture can play an important role in development of any under-developed economy. However in a new area, introduction of mulberry sericulture requires a co-ordinated effort and provision of required infrastructure. Following points may be considered in new areas for expansion of sericulture.

Action Points

The first and foremost step involves creating general awareness about the advantages of the programme. Pamphlets, literature, audio-visual publicity as well as publicity through Doordarshan, All India Radio is required to be organised on a large scale for publicising advantages of the programme. Elected peoples' representatives, like leaders of village panchayat, MLAs, Voluntary Agencies (NGOs) and lead farmers may be taken on tour to the sericulturally advanced areas like Karnataka and Andhra Pradesh, for having an exposure to the advantages of sericulture. This would generate an awareness, which is the prime requirement for introduction of sericulture in new areas. As regards demonstration, several demonstration farms have been set up by the Government. However demonstration by Government has its own limitations. Introduction of sericulture by lead farmers, with required support from Government, would be cost effective and would have much better impact, than running demonstration farms by Government.

Development of sericulture in a new area requires necessary forward and backward linkages. This requires adequate resources in terms of money and manpower. In view of limitations of Government in providing money and additional manpower, the programme may be taken up in one District covering one or two blocks initially. Concentration of available resources in a geographically compact area is required to solve most of the teething problems. Once a base is created, the programme, would expand of its own, even without Government's intervention.
Sericulture in non-traditional States would mean taking certain risks due to the uncertainty associated with any new activity. Besides, inertia and general resistance to change affect introduction of a new programme. As such, instead of trying to introduce the programme through the poor under antipoverty programmes, it would be advisable to introduce the programme with relatively advanced, resourceful, progressive farmers, who have suitable land, resource and entrepreneurship for taking up a new programme. Such an approach is necessary not for making the rich richer nor against the policy of socialism; it is essential for introducing a new economic activity. Once the programme is stabilised in a new area and required linkages are established, the small and marginal farmers would take up this programme because of the simple reason that it is a low skilled, labour-intensive activity and a big farmer cannot expand his programme beyond a point.

The unit cost for taking up mulberry sericulture have been decided in most of the states in consultation with NABARD and is covered under NABARD refinance scheme. However, it has been noticed that in a large number of cases, there has been undue delay in disbursing the loan in time and as per the unit cost. This delay and under-financing affect the programmes very adversely and at times end up in diversion of the disbursed amount for unproductive consumption purposes. Sericulture has an excellent record of loan repayment. Study conducted in Andhra Pradesh has indicated that repayment from sericulture is 57.8% as compared to 28% in case of agriculture. The women rearers have a better record (79.28% as against 59.1% in general). An account of loan disbursed under the National Sericulture Project is given in Table - IV. Bankers working in non-traditional area have genuine doubts about a new activity. They are also under pressure for achieving targets set under various schemes. Organisation of orientation courses and visit to sericulturally advanced area for the bankers working in these area would be useful to the bankers in appreciating advantages of the programme and ensure disbursement of the entire loan in time.

Supply of planting material i.e. mulberry cutting or saplings is another important requirement for development of sericulture. As the plantation programme is usually taken up with onset of monsoon, procurement of plantation material with bank loan delays the plantation and reduces survival. In new areas, planting material may be supplied in time by the Government either free or at a subsidised rate, initially for 3 to 5 years, as it will ensure availability of planting material in time. Similarly, supply of disinfection material may be ensured for undertaking disinfection of rearing house and rearing equipments in time.

Availability of good quality disease free silk worm egg (Disease free layings) is an important requirement for success of mulberry sericulture. This is one of
the most difficult areas in development of sericulture. It calls for development of a seed area, adoption of prescribed technical practices for checking diseases, rearing seed crop as per schedule, preparing eggs, consigning the egg and finally making the egg available in time. In case of hybrid races, additional care has to be taken for synchronising rearing schedule of two seed crops (races) simultaneously. This aspect is required to be given maximum attention in development of sericulture. While the Central Silk Board can ensure supply of eggs as a short-term measure, adequate arrangement has to be made in each state going in for sericulture, for preparation and supply of good quality eggs in the long run.

Preparation of Chawki worms is another important requirement in the development of sericulture. Rearing of chawki worms, rather than eggs, would be of great help to the new rearers in controlling diseases at later stage and getting a higher productivity. Adequate arrangement for preparation of chawki worms and supply to the rearers in time is required to be provided. This should be started by the Government initially. Selected lead farmers, rearers Co-operatives, and voluntary agencies may be encouraged to take it up in due course. In the traditional areas, the rearers normally do egg rearing and there are resistances by the farmers to chawki rearing. In new areas chawki rearing can be easily introduced for benefit of the rearers.

Training is another important requirement. Training on sericulture can be broadly divided into two categories i.e. (a) training the extension staff and officers and (b) training the farmers. The Central Silk Board has been set up mainly for organising training. The Board is organising number of short term and long term training programmes. The extension staff may be sent for training to the training institute of the Board. Besides the normal training programme, special capsule training programmes on specific subjects like moriculture, chawki rearing, disease control, reeling etc. may be organised at regular intervals for skill upgradation. Training of the farmers can be best done on the field. The farmers may be trained for two months covering plantation and one full rearing in the villages. Organisation of training in the rearers’ village would not dislocate their other work and would be much more effective than organising training in any institute. The rearers may visit the training institute of the Central Silk Board for a week during this training, for having an idea about the advanced techniques.

Adequate number of trained and motivated technical staff are required for extension of sericulture. As it is a land-based activity, the programme can be implemented only by the local agencies, who have knowledge of local conditions. In new areas, the programme should be taken up by the State Government with the help of technical officers from the Board. The extension staff should be divided in two categories for managing (a) the staff infrastructures like the grainages and filatures and (b) the
extension programme. Staff in these two categories should be kept separate and given continuous training and incentives for skill upgradation. A proper reward and punishment system for the staff is essential for achieving the desired objectives.

Marketing support for sericulture is another critical area. As indicated earlier, it is unlikely that a private entrepreneur would come up for providing marketing support initially, when the business would not be normally viable. On the other hand, a remunerative price for the cocoon is essential to maintain interest of the rearers in this activity. A good support price system would encourage the producer to improve quality and productivity and would at the same time reduce chances of misutilisation. The Government may introduce a support price operation and subsidise the marketing for a period of five years. Such an approach would be better than giving high amount of subsidy at the initial stages while starting the programme. Cocoons produced initially may be broadly segregated into two categories, basing on the shell ratio (silk content). Relatively better quality cocoon may be stifled and sent to the established cocoon markets where it would fetch a better price. The second grade cocoons may be processed locally for developing reeling. Adequate arrangement for stifling, storing and reeling of cocoons may be developed. Rearers' cooperative may be encouraged to take up these activities with assistance from NCDC.

Voluntary agencies can play an important role in development of sericulture in a new area. Reputed voluntary agencies may be encouraged for taking up sericulture, as it has got special significance for women, and small and marginal farmers.

The rearers may be organised into cooperatives which can play an important role in development of sericulture in new areas. Once a general awareness is created among the target group, it would be possible to organise them and run cooperatives in a viable manner. The cooperatives may be assisted by the Govt and NCDC for establishing grainages, filatures and providing required forward and backward linkages for development of sericulture.

Sericulture is a land based activity. Its introduction in a new area requires effective co-ordination. The District Collector may be involved actively for co-ordinating its implementation from selection of beneficiaries, allotment of land, grounding the infrastructure, following up with banks for disbursing loan in time, interdepartmental co-ordination etc. Monitoring by a district level committee under the Collector / Zilla Parishad would solve local problems.

The Central Silk Board may provide required technical support such as evolving a hardy Bivoltine race, a proper pruning and rearing schedule, cost effective means for checking diseases, increasing soil fertility by green manuring and check' ing
cattle grazing by green fencing. In view of limited resources, the State Govt. may not be able to have a separate research set-up. The Central Silk Board may provide the entire research and training support in new areas.

Conclusion

Mulberry sericulture has played an important role in the development of the economy of Japan and China. It has played a major role in the development of some of the Southern States like Karnataka, Andhra Pradesh and Tamilnadu. There is good scope for introduction of this activity in other areas as well, which can generate productive employment on a large scale. With proper planning and support, sericulture can be introduced in new areas and would play an important role in the process of socio-economic development of the backward regions of our country.

TABLE - I

Status of mulberry sericulture in non-traditional states (90-91 prov.)

<table>
<thead>
<tr>
<th>States</th>
<th>Plantation (in acres)</th>
<th>Production (in M.T.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rainfed</td>
<td>Irrigated</td>
</tr>
<tr>
<td>Assam</td>
<td>1354</td>
<td>-</td>
</tr>
<tr>
<td>Bihar</td>
<td>4000</td>
<td>82</td>
</tr>
<tr>
<td>Gujarat</td>
<td>-</td>
<td>149</td>
</tr>
<tr>
<td>Haryana</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>H.P.</td>
<td>-</td>
<td>587</td>
</tr>
<tr>
<td>Kerala</td>
<td>-</td>
<td>620</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>-</td>
<td>2101</td>
</tr>
<tr>
<td>M.P.</td>
<td>1216</td>
<td>-</td>
</tr>
<tr>
<td>Orissa</td>
<td>1379</td>
<td>28</td>
</tr>
<tr>
<td>Punjab</td>
<td>12</td>
<td>53</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>-</td>
<td>470</td>
</tr>
<tr>
<td>U.P.</td>
<td>232</td>
<td>494</td>
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### TABLE - II
Coverage under N.S.P. in non-traditional states during 89-92

<table>
<thead>
<tr>
<th>States</th>
<th>Target</th>
<th>Achievement</th>
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<tbody>
<tr>
<td>Assam</td>
<td>4000</td>
<td>1231.06</td>
</tr>
<tr>
<td>Bihar</td>
<td>2000</td>
<td>970.13</td>
</tr>
<tr>
<td>Gujarat</td>
<td>2000</td>
<td>643.04</td>
</tr>
<tr>
<td>Haryana</td>
<td>500</td>
<td>97.00</td>
</tr>
<tr>
<td>H.P.</td>
<td>1000</td>
<td>93.00</td>
</tr>
<tr>
<td>Kerala</td>
<td>2000</td>
<td>1209.09</td>
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<tr>
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<td>4000</td>
<td>1400.00</td>
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<td>M.P.</td>
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<td>1103.05</td>
</tr>
<tr>
<td>Orissa</td>
<td>4000</td>
<td>1559.00</td>
</tr>
<tr>
<td>Punjab</td>
<td>500</td>
<td>57.00</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>2000</td>
<td>399.25</td>
</tr>
<tr>
<td>U.P.</td>
<td>4000</td>
<td>600.57</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>28000</strong></td>
<td><strong>9363.45</strong></td>
</tr>
</tbody>
</table>

### TABLE - III
Infrastructures proposed to be set up under N.S.P.

<table>
<thead>
<tr>
<th>State</th>
<th>BSF</th>
<th>GRG</th>
<th>TSCs</th>
<th>CRC</th>
<th>C.MKT</th>
<th>CTGU</th>
<th>CDC</th>
<th>DCTA</th>
<th>FTS</th>
<th>RSRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assam</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>40</td>
<td>2</td>
<td>2</td>
<td>40</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bihar</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Gujarat</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Haryana</td>
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<td>-</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>H.P.</td>
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<td>-</td>
<td>2</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>-</td>
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<td>20</td>
<td>1</td>
<td>1</td>
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<td>40</td>
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<td>1</td>
<td>40</td>
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<tr>
<td>M.P.</td>
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<td>20</td>
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<td>1</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Orissa</td>
<td>2</td>
<td>1</td>
<td>8</td>
<td>40</td>
<td>1</td>
<td>1</td>
<td>40</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Punjab</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>U.P.</td>
<td>2</td>
<td>1</td>
<td>8</td>
<td>20</td>
<td>2</td>
<td>2</td>
<td>40</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>11</strong></td>
<td><strong>56</strong></td>
<td><strong>280</strong></td>
<td><strong>12</strong></td>
<td><strong>12</strong></td>
<td><strong>280</strong></td>
<td><strong>9</strong></td>
<td><strong>11</strong></td>
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<table>
<thead>
<tr>
<th>BSF</th>
<th>Basic Cocoon Farm</th>
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</thead>
<tbody>
<tr>
<td>TSC</td>
<td>Technical Service Centre</td>
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<tr>
<td>CRC</td>
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<td>C.MKT</td>
<td>Chowki Market</td>
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<td>CTGU</td>
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<tr>
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<td>Cocoon Dry Chamber</td>
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<td>Demonstration Cum Training Centre</td>
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<tr>
<td>FTS</td>
<td>Farmers Training School</td>
</tr>
<tr>
<td>RSRS</td>
<td>Regional Sericulture Research Station</td>
</tr>
<tr>
<td>State</td>
<td>Proj.Target</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>4730</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>750</td>
</tr>
<tr>
<td>Karnataka</td>
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<tr>
<td>Tamilnadu</td>
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<tr>
<td>West Bengal</td>
<td>1770</td>
</tr>
<tr>
<td>Pilot States</td>
<td>5100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19450</strong></td>
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</tbody>
</table>
3. DEVELOPMENT OF SERICULTURE IN KARNATAKA

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Introduction

Sericulture is an important agro-based, labour intensive, export-oriented cottage industry, introduced more than 200 years ago. In fact, Tipu Sultan organised the industry in 1780. The industry consists of mulberry cultivation, silkworm rearing, reeling, twisting and weaving, which are inseparable links on a chain. It has undergone many severe vicissitudes due to various factors like disease and wide fluctuations in the price of silk. Research and Development are the main springs of the progress in any industry and sericulture is no exception. And it is essential to link research and development and sericulture to the doorsteps of the sericulture farmer.

Global raw silk production being 58000 M.Tons per annum, accounts to only 0.3 percent of total textile fibres. In recent years, China has emerged as a major producer of raw silk, while sericulture is a dying industry in Japan. Japan has reduced her production of raw silk from 48000 M.Tons in 1935 to 8431 M.Ton in 1986. China has emerged as the foremost producer of raw silk assuring nearly 60 percent of the global production of raw silk.

India having abundant manpower, has stepped up her raw silk production and is thereby occupying second place. India, Brazil, Thailand falling in the tropical zone contribute 20% to global production of raw silk. The multivoltine races are attuned to the conditions prevailing in the tropical areas.

The picture in recent years envisages that lovers of silk are looking towards the countries like China, India and Brazil. In other words, these countries can meet the demand of global silk in the ensuing days. The salient features in Chinese sericulture is that increase of raw silk production is concentrated only towards production of superior grade silk - bivoltine, and thereby China has emerged as a major silk exporting country. India is also amplifying her silk production, but the sad picture is that increase of silk production is of mainly inferior grade coupled with high cost of production.

Sericulture in Karnataka (1860 to 1980)

Karnataka, which is situated in South-West India, has a geographical area of about 1,91,719 sq kms and a population of about 445 million. The cultivable area is a little over 14 million ha. Already about 10.55 million ha are under cultivation. Out of
the cultivable area, about 1.69 million ha are irrigated partly by canals or tanks and partly by individually owned wells.

Sericulture, which is one of the important cash crops mainly in the Southern region of Karnataka, has been in practice for more than 200 years. Karnataka is the apex silk producing state in the country accounting for 60 percent of the silk production. The importance of this industry lies in the fact that it requires low investment, low requirement of water and assures high income. Out of the cultivable area of about 14.0 million ha, mulberry is being grown in nearly 0.15 million ha accounting for 1.07 percent of the cultivable area.

Sericulture Development In Karnataka (1860 to 1960)

During the period between 1860-1960, several attempts were made to improve the sericulture industry which often met with drift to great successes and failures. In 1860 an Italian established a filature near Bangalore, imported silkworm races from Japan and tried to introduce cross breed rearings (Mysore race x Japanese). However, he failed in his attempt due to outbreak of muscardine disease. However, in the beginning of the 20th century, pebrine caused heavy losses to silkworm crops. In the year 1913, services of an Italian expert by name Mr. Signoor Washington Mari were obtained and a Research and Development Station was started at Channapatna. He advocated preparation and supply of disease free layings. In the year 1919, services of a Japanese expert by name Mr. N. Yonemura were obtained. He studied combining abilities of Mysore race with selected Chinese and Japanese bivoltine races. Thus, in the year 1920-21, the introduction of cross breed silkworms (between Mysore race female and bivoltine race male) started. However, the introduction of cross breed layings on regular basis in the field took upto 1930.

By the year 1937-38, about 70 percent of the disease free layings supplied were cross breed layings. With introduction of cross breed layings, organisation of a separate seed area for Mysore race was taken up for its maintenance and multiplication. In the year 1940, establishment of a Hill Station at Biligirirangana Hills in Yelandur taluk of Mysore State was taken up, in order to maintain and multiply the imported bivoltine and univoltine race. On the hill station, P3 stock was maintained and P2 rearings were introduced in government silk farms located in the plain and P2 layings were supplied. With further multiplications in silk farms, P2 layings were prepared and supplied to the selected rearers attached to silkworm egg producers. Thus, the maintenance and multiplication of imported bivoltine race was organised. Originally two races called C.Nichi and H.S.-6' were maintained and multiplied, and later number of races such as J-122, J-112, C-122, C-112, C-108, NN6D, etc were imported and maintained.
Due to deterioration in the qualitative and quantitative characters of these Bivoltine races, cocoon quality and yield decreased.

In 1925, Sri Navarathna Rama Rao, brought in improvement in reeling by introduction of 'Mysore Domestic Basin'. Until then, reeling was conducted using a very crude contrivance, the charaka. Sriyuths T.S.Chandrashekharaiah, improved the domestic basin by introducing Jettebout and multiends. Kollegal filature imported multiend reeling machine and cocoons boiling machine from Japan and also established hot air drying machine. In the year 1919, the then Mysore state established a central sericulture school and 17 other popular schools to teach sericulture. Experiments of selection of suitable bivoltine/univoltine races for cross breeding purposes were conducted between 1931-1937. The important outcome of research conducted between 1931-1949 was refrigeration of silkworm seed.

In the year 1947, the government of Mysore accorded for sanction for establishment of a Research Institute. This institute evolved a new variety of mulberry called 'M5' or 'Kanva-2' and silkworm race called Mysore 'A' - White. The CSB established a sericultural training school at Mysore in 1958.

Progress of Sericulture during 1960 - 1980

The CSB in April 1961, took over the state research institute and in 1965 merged the training institute with the research institute.

The research conducted between 1961-80 has resulted in improvement of the adoption of bivoltine varieties to the tropical environment and their use for hybridization with local varieties and for bivoltine hybrids. The other multivoltine race called 'Hosa Mysore' with 16-17% of silk as against 12-13% of the Mysore race and a bivoltine race called NB4D2 with 21-24 percent of silk was evolved. M5 variety, which was evolved at state sericulture research institute, was further tested and released to the field. In the year 1973-73, NN6D and K.A. were released for rearing in Anekal Seed area after field trials. NN6D during the year 1976-77 was replaced by NB4D2. In the year 1979-80, another two bivoltine races namely NB7 and NB18 were released by the CSRTL to replace KA and NB4D2 after field trials. KA and NB7 produce oval shaped cocoons while NB4D2 and NB18 produce dumble shaped cocoons. M5 variety of mulberry was multiplied in the state silk farms and the cuttings were supplied to the sericulturists for plantation under irrigated condition. The research institute also brought about bulletins on improved technology in mulberry cultivation and silkworm rearing. Due to introduction of high yielding variety of mulberry and new bivoltine races of silkworms and due to introduction of chawki rearing centres, the unit silk production increased and renditta decreased.
Cocoon and Silk Yield Period (61-62 to 79-80)

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<tr>
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<tbody>
<tr>
<td>1. Mulberry area (ha)</td>
<td>72000</td>
<td>93200</td>
<td>110800</td>
</tr>
<tr>
<td>2. Cocoon production (M.Ton)</td>
<td>15100</td>
<td>29098</td>
<td>36248</td>
</tr>
<tr>
<td>3. Cocoon Yield / ha (kg)</td>
<td>208</td>
<td>312</td>
<td>327</td>
</tr>
<tr>
<td>4. Silk Production (Ton)</td>
<td>863</td>
<td>1775</td>
<td>2699</td>
</tr>
<tr>
<td>5. Silk Yield/ha (kg)</td>
<td>11.98</td>
<td>19.05</td>
<td>24.55</td>
</tr>
<tr>
<td>6. Silk percentage</td>
<td>5.72</td>
<td>6.10</td>
<td>7.45</td>
</tr>
<tr>
<td>7. Renditta</td>
<td>17.5</td>
<td>16.4</td>
<td>13.43</td>
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Silk production / ha increased from 11.98 kgs to 24.35 kgs and the renditta decreased from 17.5 to 13.43 kg.

The M5 variety was advocated under rainfed condition throughout the state. The two races NB7 and NB18 were to be advocated, four races viz KA, NB4D2, NB7 and NB18 were continued in the field. The average yield in bivoltine hybrids had not gone beyond 32 kgs for 100 dfls and cross breed was 40 - 45 kgs. The performance of bivoltine races in the field was very poor.

The loss due to disease in Mysore district, where mulberry was raised in rainfed condition, was heavy Flacherie and accounted for 70% of the total loss.

Problems of Sericulture During 1980

Karnataka state enjoys favourable agro-climatic conditions for expansion of sericulture activities. The activities which were confined to five Southern districts called traditional districts - Mysore, Kolar, Tumkur, Bangalore, Mandya, have been extended to other 14 districts recently called non-traditional districts.

The study of sericulture development in different countries revealed that industry has been declining in sericulturally advanced countries like Japan and South Korea. In China, production has increased from 14268 m tons in the year 1973 to 15000 in the year 1982-83.

The silk production per hectare in Karnataka is 24.35 kgs compared to 133.47 kgs in Japan. While the quality of silkworm produced in Karnataka fell below 'D' grade, silk produced in Japan, South Korea or even in China fell above 'A' grade. Any further development of silk industry in the state was possible by launching programme of production of bivoltine silk on sound footing. However, Karnataka state was lacking certain basic factors to launch programme of production of bivoltine silk in a big way. In temperate areas certain favourable facilities were seen.
Sericulture in Karnataka (1980-1988)

Karnataka Sericulture Project -I (KSP-I) -1980 - Objectives

With this, it is a pride to say that Karnataka being an apex state launched a project - Karnataka Sericulture Project, with a financial outlay of 79.85 crores assisted by World Bank. The pre-appraisal mission while appraising the project report suggested to strengthen the research base. Accordingly the research programme was set up with an outlay of 9.15 crores which accounts for 11.54 percent of the total outlay proposed. The project envisaged basically increasing the production of raw silk from 2700 m.ton to 4300 m.ton of which 1000 m.ton is bivoltine silk.

The main objectives envisaged in the project are:

a. To increase the raw silk production by about 1600 m.ton of which 1000 m.ton was bivoltine.

b. Bringing 18500 ha under mulberry cultivation.

C. Introduction of modern processing facilities and methods to upgrade the quality of raw silk and spun silk.

d. To introduce advanced technologies from leading silk producing countries and local research.

e. Strengthening of the main station CSRTI, besides establishment of two regional stations and 10 sub stations.

f. To take up basic research and teaching, necessary support to Bangalore University, University of Agricultural Science and Mysore University.

g. Establishment of Karnataka State Sericulture Development Institute.

h. For technical support to obtain the services of consultants for 70 man-months from sericulturally advanced countries. To upgrade the knowledge in various aspects of sericulture, provide training to the research and extension staff in sericulturally advanced countries for 380 man-months.

Measures Taken Up In KSP-I (Period 80-88)

Several steps were taken to strengthen the schemes aiming to increase the bivoltine silk production.

a. Adopting and identifying of farmers for undertaking large scale bivoltine rearings.

b. Strengthening the seed production coupled with streamlining the bivoltine seed area and effective management to meet the increased demand of seed cocoons.
c. Good extension services to educate the farmers to adopt improved techniques and practices both in mulberry plantation and silkworm rearing.

d. Providing incentive prices and subsidies for the bivoltine cocoons produced by the farmers. Crop insurance was also introduced for bivoltine rearings. Even the bivoltine seeds were made available on subsidized rates.

e. Concentrating the efforts in the R & D component to evolve suitable package of practices and methods of silkworm rearing coupled with evolving suitable strains of mulberry and silkworm.

f. Enabling the personnel to acquire higher knowledge in effective management by arranging overseas training programmes as well as consultancy programme of experts from Japan.

Initially, “Bivoltine Incentive Scheme” envisaging payment of Rs.5/- and Rs.50/- per kg of bivoltine cocoons and bivoltine silk to the farmers as well as silk reelers was implemented. Later, the scheme of ‘Basic Support Price’ for bivoltine commercial cocoons was introduced. This scheme envisaged various factors like shell ratio, percentage of recovery of raw silk etc. Inspite of implementation of the above scheme, the bivoltine rearers continued to complain regarding the hurdles faced in the cocoon market.

In respect of bivoltine seed cocoons produced in seed area, Anekal, KR pet in traditional districts, Sirsi, Hassan in non-traditional district, the procurement of all cocoons produced irrespective of seed demand throughout the year was taken. Whenever surplus seed cocoons are seen the cocoons are made available to KSIC in traditional district and Tolahunse in non-traditional district. The difference between seed rate and reeling rate was met by the department under the programme “Incentive for Bivoltine Rearers and Reelers”. This system is still being continued and the performance of reeling units is found to be quite encouraging. This scheme is not extended to non-seed areas.

**Progress Achieved During KSP-I (1980-88)**

The implementation of the project commenced from April 1980. As envisaged in the project, establishment of KSSDI, strengthening of CSRTI and the establishment of two regional stations and ten sub stations, besides introduction of sericulture for research and teaching in the three Universities was initiated. To co-ordinate the research and development programmes as contemplated under the project, a research co-ordination committee was constituted. The committee reviews the programme proposals received from the participating institutions and formulates the agreed annual programmes and evaluates the results from previous and on-going works. The other major parts of the component proposed were implemented and established.
Although the achievements of target was to the tune of 95%, notable feature was that production of bivoltine silk did not catch-up as contemplated in the project. From the progress achieved and experience gained during the project period, it is observed that the production of the bivoltine silk in the country is yet to be launched on a realistic and dynamic way. One of the reasons for slow progress is lack of conviction on the part of sericulturists and to some extent personnel of the department, regarding the success of bivoltine rearings. There is also an impression that bivoltine rearings need more exacting rearing conditions and is possible only during certain seasons of the year. The main factors responsible for poor yield and poor results at field level is due to defective bivoltine eggs, lack of rearing management particularly at young worm stage, lack of extension guidance at farmer level, lack of sound marketing for bivoltine cocoons and silk, unsuitable races for commercial rearings and the import policy of silk and thereby availability of bivoltine silk at a cheaper rate in the market.

Cocoon and Silk Yield (Period 80-81 to 86-87)

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<tr>
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<th>80-81</th>
<th>86-87</th>
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<tbody>
<tr>
<td>1. Mulberry area (ha)</td>
<td>114800</td>
<td>139109</td>
</tr>
<tr>
<td>2. Cocoon production (M.Ton)</td>
<td>38066</td>
<td>44374</td>
</tr>
<tr>
<td>3. Cocoon yield (per ha)</td>
<td>331</td>
<td>318</td>
</tr>
<tr>
<td>4. Silk production (M.Ton)</td>
<td>2876</td>
<td>4671</td>
</tr>
<tr>
<td>5. Silk yield / ha (kgs)</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>6. Silk</td>
<td>9.3</td>
<td>10.5</td>
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<td>7. Renditta</td>
<td>10.7</td>
<td>9.5</td>
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Problems of Sericulture During 1988

The evolution of present level of production in Karnataka state reveals that there were several bottlenecks in increasing bivoltine production in the state.

a. Supply of poor quality of bivoltine seeds due to lack of proper facilities to handle bivoltine silkworm eggs and cold storages, etc.

b. Lack of technical competence in providing advisory services at the field level.

c. Non-identification of the extension workers with the farmers.

d. Lack of suitable and adequate number of bivoltine races in the state.

e. Lack of suitable management of mulberry plantation for bivoltine rearings and also suitable mulberry varieties.

f. Lack of specific cropping programmes seasonwise and regionwise, planning, monitoring and proper followup action for bulk production of bivoltine cocoons.
g. Lack of sound marketing and reeling set up exclusively for bivoltine cocoons.

h. To introduce advanced processing facilities aiming for production of quality raw silk and fabrics, which can find better price in international market.

i. Strengthening and streamlining the R & D unit to meet the needs at various level (soil to fabrics).

j. Under OFD schemes, extend financial assistance for the construction of 10667 rearing houses, and sinking of 500 wells besides financial assistance for other purpose.

k. Under extension activities, organising 96 TSCs to extend technical services so as to boost up the production of cocoons by increasing the production per unit area is contemplated. Strengthening of existing silk farms, TSC, Grainages, cocoon market is also contemplated.

l. Establishment of 50 model chawki rearing centres to undertake rearing of chawki worms.

m. Organisation of 20 reeling TSCs to impart knowledge in several activities of improved techniques is contemplated.

n. Establishment of three semi automatic reeling units on the lines of mini silk filature organised at Tolahunse.

**Karnataka Sericulture Project - II (1989-96)**

**Objectives of the Scheme**

The Karnataka Sericulture Project with an outlay of 213.55 crores is proposed to achieve major objectives envisaged in the project proposal.

The objectives of the scheme are:

a. To increase the raw silk / production by about 3200 M.tons over the existing production, of which 500 M.Tons will be of bivoltine variety. The project envisages the production of 8000 M.Tons of raw silk of which 500 M.Ton would be of bivoltine silk. This entails the production of 4000 M.Tons of bivoltine hybrid cocoon and 800 M.Ton of bivoltine seed cocoons.

b. Increasing the productivity per unit area to bring down the cost of production as well as renditta from 10 to 8.5 and 12 to 10.5 under irrigated and rainfed conditions with a capacity to produce 45 M.Ton of bivoltine silk per annum.

c. Modernisation of outdated government silk filature at Kollegal with semi-automatic reeling machineries to be managed under joint sector is contemplated.
d. Under power loom sector, organisation of 25 power loom units, each unit with semi automatic facilities is contemplated. Each unit would consume 4.59 M.Tons of bivoltine silk / annum and thereby 25 units will be in a position to consume 125 M.Tons of bivoltine silk in a year.

e. Under extension activities, organising 96 technical service centres to extend technical services, so as to boost up the production of cocoons by increasing the production per unit area is contemplated.

f. Establishment of 50 model C.R.C. to undertake rearing of chawki worms.

g. Organisation of 20 reelets T.S.C. to impart knowledge in several activities of improved reeling technique is contemplated.

Measures Taken Up In KSP-II (Period 89-92)

Several steps were taken to strengthen the schemes aiming to increase the bivoltine silk production.

a. Conducted field trials involving progressive sericulturists.

b. Workshops have been organised inviting progressive sericulturists.

c. Film shows on various aspects of sericulture viz. good mulberry garden, better cocoon production and shoot rearing etc.

d. Exhibitions organised in Melas, Jathras, etc where large numbers of farmers gathered.

e. Demonstration of bivoltine plots especially for production and demonstration of hybrid bivoltine races.

f. Supply of literature on sericulture / handouts on disease, pests control etc.

g. Imparting practical training to persons who are identified as progressive sericulturists.

h. Women sericulturists trained by organising training camps at village level itself.

i. Incentive for bivoltine cocoons Rs.5/-per kg of bivoltine reeling cocoons at cocoon markets.

j. Disease control programme for control of disease of mulberry and silkworms.
Achievements During KSP-II (1989-90 to 1992-93)

Cocoon and Silk Yield (Period 89-90 to 92-93)

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<th>89-90</th>
<th>90-91</th>
<th>91-92</th>
<th>92-93</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mulberry area (ha)</td>
<td>146285</td>
<td>149785</td>
<td>154329</td>
<td>157935</td>
</tr>
<tr>
<td>2. Cocoon production (M.Ton)</td>
<td>57721</td>
<td>59033</td>
<td>51965</td>
<td>65565</td>
</tr>
<tr>
<td>3. Cocoon yield (per ha)</td>
<td>394</td>
<td>394</td>
<td>346</td>
<td>415</td>
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<td>4. Silk production (M.Ton)</td>
<td>6016</td>
<td>6214</td>
<td>5470</td>
<td>7460</td>
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<td>5. Silk yield/ha (kgs)</td>
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<td>42</td>
<td>35</td>
<td>47</td>
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<td>6. Renditta</td>
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Sericulture In Non-Traditional Districts

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<th>90-91</th>
<th>91-92</th>
<th>92-93</th>
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<tbody>
<tr>
<td>1. Mulberry area (ha)</td>
<td>17258</td>
<td>19416</td>
<td>19582</td>
</tr>
<tr>
<td>2. Cocoon production (M.Ton)</td>
<td>4578</td>
<td>4216</td>
<td>4675</td>
</tr>
<tr>
<td>3. Cocoon yield (per ha)</td>
<td>257</td>
<td>217</td>
<td>238</td>
</tr>
<tr>
<td>4. Silk production (M.Ton)</td>
<td>475</td>
<td>443</td>
<td>531</td>
</tr>
<tr>
<td>5. Silk yield/ha (kgs)</td>
<td>27</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>6. Renditta</td>
<td>9.5</td>
<td>9.5</td>
<td>8.8</td>
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Problems Of Sericulture During 93-94

During the II phase, the total silk target given for the World Bank Mission was achieved. The production of bivoltine silk could not be achieved as a result of the following constraints faced during the project.

a. Lack of suitable seasonal bivoltine silkworm races and combinations.

b. Import of silk resulted in lot of fluctuation in cocoon and silk rates in the market.

c. The implementation of the project being both by the project authority and also by the administration of Zilla Parishad.

d. Lack of post cocoon technology in non-traditional area.

e. Invasion of pebrine during 91-92 caused decline in the production of raw cocoons.
Earlier Attempts

Earlier records in the Bombay Gazetteer show that several attempts were made by the British Officials of the rank of collectors to introduce sericulture in various parts of the then Bombay Presidency. Success to some extent was also achieved, but due to bureaucratic approach there was no consistency. The efforts thus started in 1827 ended with failure in 1847 and were permanently discontinued by the order of the State Government declaring this area unsuitable for sericulture. Then there was a long gap of nearly 100 years that though a few stray efforts by certain individuals were made. It was around 1955, Dr. Devadikar, an eminent Botanist, Agricultural Scientist and Plant Geneticist, studied the situation in depth and initiated fresh attempt in a very comprehensive manner. Fortunately the feeler trials conducted at Pune, Mahabaleshwar and Panchgani by Shri. I. A. Kamte, proved to be successful and quite encouraging. A broad based comprehensive research programme emerged out of these efforts and a small Sericultural Research Station was established at Panchgani. The trials conducted at Panchgani, Wai and Pune were later extended to different agro-climatic regions like Sangli, Satara, Parabhani, Usmanabad in Marathwada.

The programme had the following components:

a. Collection, selection and cultivation of various plant varieties for mulberry and non-mulberry silkworm species. Varietal trials were initiated at Panchgani and Mahabaleshwar in Western Ghats and at Wai at the foothills. They were then extended to Sangli with the co-operative Sugar Factory.

b. Silkworm rearing:

i. Procurement, introduction and rearing of mulberry and non-mulberry silkworm species to assess feasibility.

ii. Comparative trials to assess their relative performance under local conditions and to acclimatize them and improve through selective breeding.

iii. Cytogenetic and phylogenetic studies of these species.
c. Transfer of Technology:

Extension programme including training, nurseries, grainages, post harvest operations was formulated to suit the agricultural and socio-economic needs of Maharashtra.

Achievements

Food Plants

With a view to maintain and supply superior strains of mulberry to the growers and silkworm rearers, efforts were made to identify and procure basic stocks from within the State and outside the State of Maharashtra. These also included Japanese dormant varieties like Goshio-Erami, Ichiei, Roso etc which were earlier procured by Shri. I.A. Kamte. Meticulous selections were made for the varieties whose dormancy was broken and sprouted all the year round. Seedlings from seeds of above varieties were raised and multiplied subsequently. These have now proved to be promising varieties for leaf yield and disease resistance. They were then acclimatised in different agroclimatic zones.

Rearing Trials and Cytogenetic Studies on Silkworms

Both the mulberry and non-mulberry silkworm species were subjected to rearing trials for their assessment and standardization of rearing methods to suit local conditions. Cytogenic studies were undertaken. Basic Chromosome numbers of Philosamia ricini, (the castor silkworm) Antherea assamensis (the Muga silkworm) and Actias selene (the Indian moon moths) were reported for the first time as n = 14, n = 15, and n = 31 respectively. The chromosome studies on B. Mori led to confirmation of the earlier reports.

As regards trials to evolve new races of Bombyx mori, the mulberry silkworm, a unique laboratory method, involving external fertilization trials proved to be successful. In these trials Nistid Yellow female from W. Bengal and male of Philosamia ricini were used. This was a successful case of anomalous parthenogenesis. The subsequent repeat trials were also found to be successful. These experiments led to evolution of two promising new multivoltine races of mulberry silkworm viz Wai 1 and Wai 4. These were perhaps the first test-tube babies of silkworms. Their performance was compared with the parental stock Nistid Yellow as well as other standard races viz Pure Mysore. It was found that these races are much superior and commercially useful in different agroclimatic regions of Maharashtra. These races have now been stabilised fully by their selective rearing through over 140 generations.

Further multi-locational trials will be necessary. These encouraging results can lead to formulation of further research and extension programmes. The Central Silk Board can extend its helping hand. The sericulture industry in Maharashtra has a very bright future.
Paithani Weaving

The Paithani derives its name from Paithan, the place where it has been produced for over 2000 years. It is essentially a silk saree with an ornamented sari pallav and border. The motifs used are mostly traditional views and flowers, shapes of fruit and stylized forms of birds. The saree is often known by the motif that dominates its border or pallav. Asavli (vine and flowers), Narli (coconut), Kuyri (Mango), Bangdi Mor (peacocks in a bangle) and so on.

Paithan is a simple small town in Aurangabad District in Maharashtra, on the northern banks of river Godavari, a quiet religious place. In olden days, Paithan was a prosperous trade centre and exported rich fabrics and precious stones to far-off lands. The rich fabrics no doubt included a saree called Paithani - a poem in silk and gold.

A special feature of the Paithani is that no mechanical means like the jacquard or Jala are used to produce the designs. Skilled weavers count the threads of the warp for each part of a design and using tiny cloth pirns or tellies, interlock the silk or gold yarn on the weft with them. Even a two and half inch border might need 15 to 20 separate tellies depending on the nature of the design. And when the entire spread of the Pallav is to be covered, there could be over 400 tellies arranged across the warp to be used in turn. The progress is slow, sometimes not more than half an inch a day in case of rich brocade saree.

The price of such painstaking workmanship is bound to be high. It takes at least a month and half to weave the simple (traditional) Paithani and from five to nine months to make the rich (brocade) one.

The oldest of the traditional Paithani designs are the Asavli (vine and flowers) and the Akruti (squarish flower forms), some other traditional designs are Narli (coconut), Pankha (Fan), Ruiphul (cotton flower) Kalaspatkli (Petal). Storks and swans were popular motifs during the Shalivahan era, while the golden lotus belongs to Yadav times. The Moghul period inspired new motifs derived from flowers, plants, trees and birds. The peacock motif used in the Bangdi Mor is a popular example. The Ajanta influence is seen in motifs like the Ajanta lotus, the triple bird and the seated Buddha. Some other design and motifs used in the Paithani are Kuyri Vel (Vine and Mango) Anaar
Vel (vine and grapes), Gokarna vel (vine and Gokarn flower), Tota-Maina (Parrot), Huma Parinda (Pheasant) and Behshtiparinda (bird of paradise). All these are richly ornamented broken forms of Paithan, but the real traditional Paithani is a plain one with ornamented border and pallav with/without tiny motifs called buttis, in various slopes like Tara (Star), Phool (flower), Paan (Leaf) Mor (Peacock), Popat (Parrot) and Kuyri (Mango).

Paithani : a Languishing Craft

There were once 500 families of expert weavers in Paithan and everything it took to produce a Paithani was done in Paithan itself; the making of silk-yarn, the drawing of zari from pure gold, the manufacturing of looms, the weaving of the saree. However, over the years Paithani weaving activity grew weaker. Many of the weavers took up other professions. Many migrated and even continued to weave at the new places, particularly at Yeola in Nasik district. The young generation, lured by better-paying jobs did not take any interest in weaving. Women from muslim community and old men from Hindu fold kept the art alive.

The Paithani Training-cum-Production Centre was established at Paithan in 1968, with a view to promoting the weaving of the Paithani by the State Government. MSSIDC took over its management in 1973. MSSIDC attracted younger generation by training them in Paithani weaving, offering high stipend and absorbing it in the production programme on complete training. In addition to 10 young boys and girls, 50 women were trained under NORAD scheme during 1985-86. Training programmes are still continued each year. 15 young persons are trained each year under the AIHB Scheme. Today, around 100 Paithanis are produced at the center and marketed through the Trimoutri chain of emporia situated at Bombay, Pune, Nagpur, at New Delhi and also by organizing exhibitions at prominent places in the country.

The Paithani is as durable as it is beautiful. The Paithani has a beauty that is itself preserving. But in the face of mechanisation and changing economic pattern, the Paithani has had to fight for survival. The Paithani was once a must for every Maharashtra bride. Clad in it, she stepped demurely into the state of wifehood. It would be preserved, when she was no more, by loving daughter and grand-daughter.
The Apex Voluntary Agency for Rural Development (AVARD), Chalakudy is the pioneer to introduce sericulture in Thrissur District of Kerala.

After conducting a careful study of the scope of introducing Sericulture, we conducted district wise awareness Seminars and Audio Visual Programmes to promote sericulture with the help of experts from R.E.C. Pallakkad. A study tour was also conducted to Malanadu Development Society where sericulture had been practised.

Sericulture Promotion Project

Our Sericulture Promotion Programme received a new life with the Central Silk Board approving our project proposal namely Sericulture Promotion Project in November 1990.

The objectives of the project was to establish a Model Mulberry Garden, a Model Rearing House and to impart training to 500 farmers in 3 years. The project also envisaged to construct a Chawki Rearing Centre having a capacity of 2000 layings at a time.

The establishment of the model farm and rearing house was completed by June 1991 and the project came into operation with the commencement of first batch of training in June 1991. Thus the project has completed 2 years of functioning and is now passing to the third year. Of course we do think the project is making steady progress in the special agro-climatic and socio-economic condition of Kerala.

Present Status

We imparted training to 118 farmers in 8 batches and brought 131.52 acres under mulberry cultivation. Two study tours were conducted in which 82 farmers participated. Cuttings were arranged to farmers with the assistance of State Khadi and Village Industries Board. A total of 4158 CB layings 557 BV layings were reared in the C.R.C. and distributed as worms after second moult.
Hurdles during the Course of Implementation

Entry of Other Agencies

As stated earlier, AVARD was the sole agency to promote sericulture during the time of our submitting the project. But later, other agencies like KVIB, under the State Government Programme; Kuriakose Elias Service Society (KESS), Thrissur; Thyagarajar Polytechnic, Amballur; entered the scene with Sericulture Promotion Programmes. Even agencies from outside the district like Welfare Services, Ernakulam also did much in promoting sericulture. Still we could impart training to 118 farmers through our programme and could bring 131.52 acres under mulberry.

Initial Setbacks and Prejudiced Farmers

a. The soil of Thrissur district is highly fertile. The abundant water resources and irrigation facilities gives the farmers a number of options of crops. Many of the farmers were curious about the performance of mulberry and silkworms at the time of introducing the new crop. When a few incidents of initial failure occured, not only those who failed gave up the cultivation, but many who had a positive plan for this gave it up from their mind. They turned to other traditional crops like Banana and Tapioca. This influenced much of our efforts.

b. Another set of farmers took this venture just for exploiting the loan facility. They uprooted the mulberry after getting loan. This also influenced others.

c. At times the farmers’ practice contradicts the appropriate techniques. Even trained farmers do this. They do not heed to even after repeated words of advice. Naturally, their crop fails often. It thus gives a negative feeling to others.

d. In very heavy rainy seasons like that occured in 1992, the cuttings were either washed away or decayed in many instances. Also the planting of mulberry during the onset of monsoon by some farmers caused an eventual drying up. Those farmers gave up after spending a few thousands of rupees for planting. This influenced others.

e. The fall in silk prices effected an automatic fall in price for cocoons. This developed a negative opinion by existing farmers which affects new farmers.

The Chawki Rearing Centre (C.R.C.)

The C.R.C. is intended to serve the needs of nearby farmers. Those who are far away from the C.R.C. do the rearing right from the start at their home. Also a few farmers go to other agencies like KVIB for layings in order to avail subsidies and marketing facilities. But the farmers benefitted by the C.R.C. find its service of immense help.
The Bivoltine Programme

It was proposed to popularise bivoltine variety of silkworms in the project. Our studies show that bivoltines could be successfully reared in the months of December - January when a cold and dry climate persists. But many of the farmers are not impressed by the risk potential involved and the consequent price offered.

What we did

The services rendered through the Seri Training Centre and C.R.C. have been already mentioned in the present status. Our programme has extended financial incentives too. Sixteen farmers have been assisted so far for constructing rearing house and for making-buying rearing equipment.

We introduced Group Marketing Scheme for farmers to save them from incurring much loss by taking individual lot of cocoons to distant markets like Coimbatore. One or two representatives of farmers along with our extension personnel carried the whole lot of cocoons to a common market and thereby reduced the expenses of marketing. Later by October 1992, we opened our Apex Silk Reeling Industries with gracious assistance from the Department of Science and Technology, Govt. of India. This offered a good marketing place for farmers where the assessment of cocoon is made by our trained personnel scientifically through which the farmers get a fair price for their cocoons. But the unit suffers much due to power failure.

A total of 109 seminars were arranged for popularisation of sericulture in which 2837 people participated. Various government agencies like Krishi Bhavan and Command Area Development Authority also extended a helping hand for arranging the Seminars.

We have promoted 3 co-operative societies of farmers which acts as a common platform for discussing various problems faced by farmers. A total of 22 gatherings of these societies have so far been convened.

Our extension personnel visit the farmers on a periodic basis. This helps the farmers a lot. A total of 1073 visits have been made so far.

What we learned

a. The cost of labour in Kerala is much more than that of other states. A few farmers who did depend entirely on rented labour for doing sericulture felt it uneconomical. A few of those even contributed to a negative influence in our efforts of popularising sericulture. We also see that those who are able to utilise the family labour still find it impressive. Many farmers who started right from the beginning are still continuing
and also attracting others to take up sericulture. So, after a period of initial confusion, many are coming forward gradually to take up the promising venture.

b. Bivoltine rearing is successful and possible in December - January months of the year.

What we propose to do

Our hopes and expectations naturally come from what we learned. We realise targeting to the right class to do sericulture i.e. medium farmers who are willing to utilise family labour in their land. So we feel a need for an extension of time for our programme for promoting this right class. Also we feel a necessity to continue technical assistance to the existing farmers.

Finally we express our deep gratitude for the kind co-operation and help extended by the Central Silk Board, the Department of Science and Technology, the N.S.P. office at Palakkad, the C.S.R. & T.I. and the Kerala Khadi & Village Industries Board in our endeavour to help in the upliftment of the rural poor.
A REVIEW OF SERICULTURE PROGRAMMES UNDERTAKEN BY MALANADU DEVELOPMENT SOCIETY - KERALA

Mr. S. Nylekumar
Co-ordinator, Malanadu Development Society, Kerala

Introduction

Sericulture was introduced into Kerala as a means of adding to the income of small and marginal farmers who found it difficult to make a living out of the earnings from cash crops like rubber, coconut, pepper and cardamom. Reports of high returns (upwards of Rs. 30,000 annually from as little as one acre of land) from this agro-industry in the neighbouring States of Karnataka and Tamil-Nadu encouraged certain organisations engaged in developmental work among small farmers to induce them to make a partial shift in the pattern of land use. The Malanadu Development Society was in the forefront of these organisations. Using the wide and effective infrastructural facilities at its disposal, MDS started out with a small group of farmers seven years ago, supplying them mulberry cuttings and later helping them to rear silkworms. The activity was concentrated in the area around Kanayankavayal and Anakkara in Idukki District and in course of time about 1500 farmers had taken up mulberry cultivation in this district in the High Ranges. Since paddy and coconut growers in the coastal belt faced much the same problems as the cash crop growers in the High Ranges, MDS launched mulberry cultivation in the coastal Alappuzha (Alleppey) District. Here again, the beginning was made with as few as four small farmers and the movement has steadily grown to cover over 500 farmers in that area.

In its pioneering programme, MDS secured the support and assistance of the Central Silk Board to such an extent that the Board’s Extension Offices were set up on the main campus of the Malanadu Development Society in Parathode and at Anakkara where the new activity was concentrated.

In brief, the situation in early 1980 in Idukki district was this. About 1500 small farmers had successfully grown mulberry on a portion of their holding and had taken to rearing silkworms and producing cocoons; the cocoons were not of the desired quality, in the majority of cases, and marketing was a problem with the result that the farmers were not able to get deserved returns for their labours; facilities for value-addition by way of reeling, and weaving were non-existent nonetheless, more and more farmers were becoming increasingly aware of the bright prospects for sericulture and were taking the plunge into the new enterprise.
Co-ops Network

This was the situation when NAVAJEEV* entered the scene, and having made a clear assessment of the problems faced by the farmers and the very deep crisis that lay ahead of them, drew up a project proposal to support them by bringing them together under a co-operative umbrella. NAVAJEEV believed that it was necessary to develop common facilities and strategies, and to co-ordinate endeavours not only to provide immediate relief to the farmers, but also to build a firm launching platform for the development of sericulture in Kerala.

To this end, NAVAJEEV formulated and implemented a project titled "Development of Sericulture Co-ops Network, Kerala". The project envisaged the formation of a network of primary co-operatives of sericulturists and an apex society to provide them training, equipment and funds so that they could successfully perform all functions associated with sericulture from growing of mulberry to weaving of silk, to set up effective arrangements for marketing so that the farmers could secure remunerative returns, to enable womenfolk to find gainful employment in their homes, and to establish a lending scheme linked to savings to meet periodic requirements of sericulturists.

As spelt out in the mutually accepted project document, the objectives of the project were:

a. To organise 12 sericulture co-operatives with approximately 25 members each, in Idukki district within a period of six months.

b. To establish a network of the sericulture co-ops with capability to provide technical services, marketing support and other inputs to the member co-ops.

c. To establish a savings and a credit facility for the sericulturists to make them self reliant in their capital requirements.

The project document also set out in detail the means to achieve these objectives and the expected results. This brings us to implementation of the project and achievements. For the purpose of this working session, and because of the limited time, I propose to concentrate on what was done rather more than how it was done.

The 12 primary co-ops were formed within the planned six months but formation of the Apex Society was delayed somewhat. So was the process of election of governing bodies of the primary societies. This was due principally to the nature of procedure and did not affect the project implementation in any noticeable measure.

The combination of promotional work and the package of services provided under the project created a wave of enthusiasm among farmers. The farmers had been

* NAVAJEEV - Special wing of Malanada Development Society engaged in sericulture.
passing through a difficult period and some of them had even begun to doubt the wisdom of taking up sericulture. The doubts were slowly dissipated and, in the event, NAVAJEEV had to accommodate more members than envisaged in the project. As of date, the members of the 12 co-ops are 423, against the planned 300, and 73 of them are women. The by-laws of the societies provide for inclusion of more members who deserve to be accommodated and all indications are that the vast majority of new members will be women.

Though procedural problems delayed the formation of the Apex Body, it must be stressed that activities under the project were unhindered. The paper-work suffered a little, but not the field work. Indeed, despite some shortcomings, the basic aims of the project have been attained and NAVAJEEV's overall developmental objectives and priorities have also been promoted to a significant extent.

a. The 12 primary co-ops have been formed with 423 members (73 women) against the planned 300.

b. The governing bodies of these societies were constituted and staff appointed. Ten out of 12 paid Technical Assistants appointed to each society are women.

c. The Apex Body has been formed and its governing body has been constituted. The governing bodies of primary and Apex Societies have been meeting according to plan for critical review, planning for future and laying down policy.

d. The strength of our co-ops is fully reflected in the governance of the Idukki District Sericulture Co-operative Federation in which our representatives have a majority in the governing body. This ensures that district-level decision-making affecting all sericulture co-ops will be fully in line with our objective of offering genuine protection and support to sericulturists. One of the Presidents of our co-ops is the Vice-President of the Federation.

e. A series of training sessions have been held at various levels so that the farmers, the primary members, the members of governing bodies, the technical personnel etc are fully equipped and motivated to perform their tasks.

f. Operational extension has reached the level of setting up of a reeling unit at Anakkara.

g. Steps have been initiated to extend training to the key areas of value-addition such as reeling and weaving.

h. A cocoon market has been set up to purchase even the smallest quantities of cocoons offered by individual farmers. All offerings are accepted and payments made in accordance with the quality of cocoons. A cocoon stifling chamber has been set up at Anakkara.
A Thrift and Credit Union has been set up in each society, and assistance under the project has been made conditional on sericulturists becoming members of the thrift and credit facility.

Wherever possible, members have been encouraged to raise cows using the mulberry feed waste as fodder. Also, farmers rearing cattle are persuaded to set up biogas plants to produce non-conventional energy for cooking and lighting. The cowdung slurry discharged from biogas plants is a highly enriched organic manure which also has prevention properties. Sericulturists are therefore being told to increasingly switch fully to organic manuring, eschewing chemical fertilisers and pesticides. This integrated “silk-and-milk” programme, with the concept of organic farming also included in it, is being progressively implemented.

Mulberry cuttings have been distributed to new farmers. Silkworm disease-free layings or dfls were supplied to them with the assistance of the Central Silk Board. Financial assistance was provided to about 301 farmers to buy rearing equipments and a sales counter for such equipment continues to function at the apex level. Rearing equipments have also been supplied to the primary societies for hiring out to members.

Training was given to staff on accounts and records. All the societies were inspected to ensure proper utilisation of funds and maintenance of accounts and appropriate directions were given where necessary. An internal audit system is in place.

Impact

In any assessment of the impact of the project, the prime point for consideration is that the sericulture movement in Kerala is in its fledging state. NAVAJEEV’s principal concern is that the small farmers who do make the switch to sericulture even partially should not have to rue their decision. From their point of view, there was an element of gamble. NAVAJEEV sought to provide an “insurance” cover for the sericulturists by extending to them the strength of co-operative endeavour.

Viewed against this background, the project’s impact must be seen as both positive and substantial. Though in physical terms, the achievements are rather limited, the benefits of co-operative endeavour have been clearly established and farmers are now eager to join the existing societies or form new ones. The network is certain to expand, and because of the infrastructure of facilities already created, especially the facilities for training, for supply of materials and equipments, and the starting of the reeling unit, the expansion will be along the right lines.

The network serves to promote and put into practice the concept of organic farming, not only for mulberry but also other spice crops that the farmers are retaining.
Training activities, particularly farmers' meetings, have been effectively used to promote NAVAJEEV's ideal of bringing rural communities back to traditional and wholesome life-styles in all matters including food habits, a working pattern that ensures production of milk, cultivation of vegetables etc. in each household, health care based on proper sanitation and hygiene and (where medication is necessary) the use of herbal and other non-toxic medicines, commitment to protection of the environment, rejection of the consumerist culture and inculcation in children's minds, from the nursery school level, a sense of close affinity to nature. In other words, the impact goes beyond the attainments of pre-set physical targets.

One area where the achievement has not been up to expectation is the generation of income. Here, we have rather a mixed bag. There are some spectacular success stories like those of Augusthy Abraham, President of the Upputhara Panchayat Sericulture Co-operative Society and Gracy Kutty Mannanchery, a member of the Ayyopankovil Panchayat Sericulture Co-operative Society. By growing mulberry on just one acre each, the former managed to earn Rs.33,000/- and the latter Rs.31,000/- within a single year. These two concentrated on producing what are called "seed cocoons" which fetch high prices because they are bought not for the silk in them but for the healthy moths that will emerge and lay good eggs. But the rather more common achievement is typified by the family of 22 year-old Jessy Augustin a member of the Arakkulam Panchayat Sericulture Co-op Society. The family grew 2,500 mulberry plants on half an acre of land and had the highest earnings of Rs.1,900/- from the sale of 14.5 kg of cocoons in January 1992. Their first sale, in February 1991 was a mere 5 kg of cocoons. Their total earnings in 1992 was a little over Rs.5,000/- but the important thing is that the income is spread over the year rather than in just a single annual sale as in the case of pepper or cardamom. There are growers who have fared worse, but what is heartening is that all are now fully aware of the possibilities and are persevering. The poor quality of the cocoons and avoidable losses contributed to reduction in earnings, and with improved practices, earnings can be expected to go up.

The total production of cocoons by members of all 12 Societies in 1991 was 4341 kg for a realised value of Rs.4,32,300/- and in 1992, 4401 kg for a realised value of Rs.4,46,545/-. Production upto July 1993 was 2700 kgs and the value realised is Rs.2,50,000/-. These figures do look rather discouraging but earnings are certain to improve substantially from the current year onwards.

Market Share

Reliable statistics are not available to determine the market share of the co-ops network. Here again, the reason is that the programme is in its infancy. However, it is estimated that 10,000 acres are under mulberry in the whole of Kerala at present. The area under mulberry within the 12 co-ops network is 320 acres.
Women's Role

One of the most positive aspects of the project is the very effective role that women can play in sericulture. We had not paid adequate attention to this aspect at the formation stage of the societies, with the result that their membership was relatively low. Also, only in one out 12 societies was the post of Secretary given to a woman. However, in the course of functioning and implementation, it became quickly clear that women were showing keener interest in all project-related work. They have fully grasped the significance of the “Silk and milk” cycle and the importance of organic farming. They easily pick up the skills of reeling and weaving. It has also been observed that the Kumily Panchayat Sericulture Co-operative Society, which has a woman secretary, has put in the best performance. In those to be formed in future, women must be allowed to have a decisive say.

Prospects

The importance that is now attached to sericulture is evident from the fact that the Government itself has actively come into the picture. It is providing incentives to extend mulberry cultivation on 50,000 acres over the next five years.

The launching of the co-op network therefore marks an excellent opportunity to bring more and more sericulturists into the co-operative fold. It has been demonstrated that their interests can be best protected through co-operatives. There are certain lacunae to be filled urgently. These include the creation of adequate marketing and processing facilities. A very encouraging development is that the Government, through the Khadi and Village Industries Board, has started purchasing cocoons from farmers. It should be possible to purchase all the cocoons brought in by small farmers and there should be facilities of the highest class for processing cocoons, spinning, reeling, weaving, and printing etc. The aim should be to establish a high-quality image for “Kerala Silk”. In other states, there is the tradition of centuries, but we have their experience to draw on. The newcomers here can gain from efforts made by the pioneers in the co-operative movement and they stand to suffer fewer losses if sufficient facilities are created. We fortunately have learnt a great deal and have established sufficient contacts to make full use of expertise available elsewhere.

It is our firm conviction, that progressive development of sericulture as a zero-waste industry (Coupled with rearing of cattle, building of biogas plants etc) would make a significant contribution to improving the lot of small and marginal farmers in all parts of Kerala and serve to improve the quality of life and environment in conditions conducive to sustainable development. Our efforts should now be directed to this end.
"Women's Development" is the newest bandwagon for the development field. I think we need to first define the term "Women's Development" - and what are the issues in sericulture with which this can be combined.

A large part of the rural population is underemployed, as casual labour. A large percentage of this population are women, who must earn outside the house in addition to looking after the home and family. It is a fallacy that only urban women work outside the home. In fact, in rural areas most women, except a handful from extremely well off families, work outside the home. Even if a family has some land, the women out of necessity must work on other people’s fields to supplement their family income. Yet the woman has very little say regarding the use of her earnings, or any decision regarding where she is to work, or how much she is to be paid. With the introduction of more farm machinery, women’s labour is getting further and further pushed into the unskilled category.

This entire process ensures the continued marginalisation of women.

If sericulture is to be taken up as a true development activity, then these same problems / mistakes / processes / trends should not be repeated.

If possible, mechanisms to prevent or even reverse these processes should be incorporated into the development of this industry.

Most importantly, the potential that this industry has for women’s development should be realized.

By women’s development one means that process by which women have the freedom and opportunity to develop their personalities, have control over their own social and economic lives. Other related issues - women's and children's health-is affected by the time the mother has available, for childcare and attention to her own needs. Control over her earnings ensures a higher living standard to the family and therefore a sustained economic and social development of the family is possible.
Therefore, this industry can:

a. provide an income generating activity which has multiple advantages for women.
   i. since this can be done in the home, the women gets a fairer deal from the economy- for less effort, she earns more.
   ii. she can combine this work with her other duties which she must execute anyway.
   iii. she can control therefore, her timing, rather than having to be at some other person’s beck and call.
   iv. she controls her own earnings - the harder she works, the more she earns.
   v. she is ensured of a year-round income.
   vi. she learns to deal with people outside her home/community/village, and develops her own personality and self-confidence.

b. For all of the above, group processes would facilitate these changes faster.

Therefore the focus should shift to working with women, by developing groups, co-operatives/collectives. Therefore, change at village level of women’s status, which is so important for any sustained women’s development work, could take place. This could be done by:

i. rearing centres run by the co-ops - mulberry plantations on village common lands, the yield sold to the centre which is run by women. Thus this would be income generated for the co-ops also.

ii. groups of women working together - one doing rearing, one growing mulberry, etc.

iii. ripple effect - women’s groups formed for sericulture would lead to other development activities in the village. This is also necessary because as long as the women engages in it through the family, because of her husband, she remains at labour level, rather than in any equal partnership.

For the above, what is the government doing, to facilitate all this?

Are the implementing bodies (CSB, KVIB, etc) working towards these objectives? If they are, how?

What policies/subsidies/enabling factors are there for “Women’s Development through Sericulture”? Most importantly for the sericulture industry, experience has shown that those projects implemented through women have a higher success rate than those implemented through men! So - shouldn’t our focus start shifting?!?
Women contribute 60 percent of the total work in sericulture. Presently, various training methodologies have been adopted for imparting training to women sericulturists. It is necessary to evaluate the impact of these training programmes. Hence, the study was taken up to know the impact of training on knowledge and yield. The study was conducted in Hassan, Kolar and Bangalore districts of Karnataka considering four types of training viz, peripatetic (CSB45), 10 days “insitu” (DOS10), 60 days farmers training (CSB60) and sericulture training school (DOS 30). Ninety eight trained and thirty six untrained sericulturists were selected by simple random procedure and data was collected by using a pretested schedule. It was observed that gain in knowledge of trained sericulturists was higher with respect to all practices compared to untrained sericulturists and knowledge about silkworm rearing practices were better than mulberry cultivation. Among all training programmes, knowledge level was higher in case of CSB45, followed by CSB60, DOS10 and DOS30.

Significant difference in the knowledge level was observed between all types of trainings and untrained sericulturists, except in case of DOS30 with untrained. Majority of respondents were found in medium yield level in case of CSB45 (40%), CSB60 (35%) and DOS10 (33.33%). However 30% of respondents were found in high yield level in case of CSB45. Non-significant difference in the yield levels before and after the training was observed in all types of training, indicating no impact on yield, and also non-significant difference in the yield levels between the training programmes was observed. Further, it was opined by trained sericulturists that coverage of mulberry cultivation and silkworm rearing was good while that of post cocoon technology was poor. The use of extension teaching methods in all training programmes was inadequate.
10. OPERATIONAL EXPERIENCE OF INSTITUTIONAL CREDIT SUPPORT FOR SERICULTURE PROGRAMMES

Mr. N. Krishnan
Dy. Manager, NABARD

Introduction

a. Sericulture is an ancient activity in India and holds an important place in the Indian economy. It not only provides employment to nearly 5.3 million people in rural areas, but also is an important foreign exchange earner. The traditional production centres in India have been located in West Bengal, Karnataka and Jammu & Kashmir. India is the world’s second largest producer of mulberry silk. About 90% of Indian silk is mulberry silk, the production of which is mainly confined to Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu & Kashmir. Karnataka alone accounts for 62% of the production.

b. India’s comparative advantage in sericulture lies in its favourable climate, permitting low-cost and near year-round mulberry leaf and cocoon production and with low labour costs compared to traditional producers such as Japan and Korea. Compared to most other rural sector activities in India, sericulture offers good returns to producers even at the present low yields. The prospects for sustained growth of the Indian sericulture sector are good. The sector contributes directly to the country’s employment and social objectives. Sericulture’s highly land based and labour-oriented nature makes it an ideal activity for the small land holder. The employment and income generation takes place primarily among disadvantaged groups.

c. Silk production cycle known as ‘Sericulture’ consists of 4 distinct activities. They are:

   i. Silkworm rearing from layings to cocoons.
   ii. Mulberry cultivation for the feeding of silkworms.
   iii. Silk reeling which transforms cocoons into a continuous filament called raw silk.
   iv. Silk weaving in which silk filaments are twisted and woven into silk yarn.

d. Success of sericulture as a viable crop largely depends on the production of mulberry leaf and its conversion to cocoons at economic costs. Mulberry leaf quality, rearing technique, productive breeds and seed quality are the important
factors that contribute to successful silkworm rearing. Their full impact can be realised only when hygienic rearing conditions are provided, ensuring effective disinfection, rearing space and specific environmental conditions like temperature and humidity.

e. There are certain natural factors coming in the way of rearing of silkworms. For example, rearing is confined to certain seasons in a year and requires low humidity and temperature (20° to 23° C). To improve the level of earnings of the farmers, steps have to be taken to increase the number of crops during the year.

f. In the economics of silk production there are three factors namely:
   1. Conversion factor of mulberry leaves to cocoon-the weight parities.
   2. Quality of filament and its length in the cocoons.
   3. The Renditta - the proportion by weight of raw silk in a cocoon.

g. The requirement of dfls is roughly 1600 layings for an acre of irrigated land and 2500 layings for an acre of land under rainfed conditions. Most of the land under mulberry cultivation in the country is rainfed. This is another area where we have to help the farmers to bring more and more land under irrigation, with a view to increasing production of mulberry leaves for raising more number of crops.

h. Rearing activity takes about 25 to 35 days after which the cocoons are ready for sale. Mortality rate varies between 15 and 50 per cent during the first two months. To help the farmers to reduce the mortality they should be encouraged to go in for a separate rearing house. On the contrary, most of the sericulturists do not have a separate rearing house. They still have a rearing-cum-dwelling house. In such houses disinfection cannot be done properly and hygienic conditions cannot be maintained. A farmer with one acre of mulberry garden requires a rearing house of 300-350 sq.ft. floor area for shelf rearing and 500-600 sq.ft. for shoot rearing.

i. It is possible to produce 400 kgs of cocoons with mulberry leaves from one acre of irrigated land and 125 kgs of cocoons from one acre of rainfed plantation per year. Almost 25 kgs of mulberry leaves are required to produce 1 kg of cocoon and 15 to 16 kgs of cocoons are required to produce 1 kg of raw silk. Farmers should be encouraged to reach at least this minimum level.

j. Another point of interest is that of the price of raw silk. There is a world wide fluctuation in the prices of raw silk. In the current free market economy the important question that will arise is whether the Indian farmers and reelers can compete with others, particularly from China.
k. Credit for Sericulture Activities

Farmers who take up sericulture require the following type of assistance from credit institutions.

i. Establishment of mulberry plantation.

ii. Maintenance cost for the subsequent years.

iii. Investment cost on building rearing house.

iv. Cost of rearing equipments like rearing stands, feeding stands, wooden rearing trays, bamboo round trays, Ant well, bed cleaning nets etc.

v. Rearing Expenditure i.e. cost of dfls, wages for labour, paraffin paper, formalin, marketing cost etc.

vi. Establishment of reeling and twisting units.

(Details of unit costs in Karnataka are given in Annexure 1)

l. Banks can take up financing of all the above activities to the farmers. In cases where no land is available to a sericulturist, he can take up only rearing activity which can also be financed by banks as an independent activity. The entire requirement of the farmer can be sanctioned as a term loan. The most important aspect is provision of timely credit.

m. While mulberry cultivation and rearing of silkworms are considered as on-farm activities, reeling and twisting activities are in the nature of tiny or cottage industries. Mulberry cultivation and rearing activities are carried on by individual farmers whereas reeling and twisting are done by either individuals who are generally not farmers or by co-operatives formed by reelers.

Before the formation of NABARD in 1982, ARDC was providing refinance for mulberry cultivation and rearing activities but was not providing refinance for processing activities like reeling and twisting as a general policy. After the formation of NABARD, a task force on sericulture was constituted in September 1982 to examine the need for various types of credit to sericulturists, to assess the credit gaps in institutional financing arrangements and to suggest the role NABARD can play in improving the credit delivery system for sericulturists. The Task Force submitted its report in April 1983 and based on its recommendations, NABARD issued guidelines to banks for financing various sericulture activities.

n. Earlier World Bank Projects

The Karnataka Sericulture Project was implemented with IDA assistance over a period of 5 years from 1980-81 covering 13 of the 19 districts of Karnataka. The
total project outlay was Rs.8140.98 lakhs, of which the outlay on on-farm development was Rs.664.05 lakhs. The actual disbursement by banks under the project was Rs. 770 lakhs and refinance disbursed by NABARD was Rs.754.4 lakhs. IDA assistance of US $ 3.1 M routed through NABARD was drawn in full.

o. National Sericulture Project

The National Sericulture Project is under implementation since September 1989 in the 5 traditional states of Karnataka, Tamil Nadu, Andhra Pradesh, West Bengal and Jammu & Kashmir and in pilot districts of 12 non-traditional states viz. Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Kerala, Maharashtra, Madhya Pradesh, Orissa, Punjab, Rajasthan and Uttar Pradesh. The project is to be implemented over 5 years and the approximate project cost is Rs.5555 M. (US $ 347 M). The external assistance available under the project is US $ 30 M. from IBRD, US $ 147 M. from IDA and US $ 25 M. from SDC. There is no assistance under the project for the credit component. The credit requirements estimated at about Rs.165 crores are to be provided by the banks with refinance support from NABARD/IDBI.

While NABARD is envisaged to provide, by way of refinance, Rs.114.50 crores, Rs.50.70 crores would be provided by IDBI and State Finance Corporations. The total amount of credit to be provided for on-farm and non-farm activities are Rs.101.73 crores and Rs.63.47 crores respectively.

p. Status of refinance disbursed by NABARD

It may be pertinent to mention that NABARD has no refinance from the World Bank in respect of the credit component under the programme. Despite this, NABARD is closely involved in monitoring the project activities and in helping achieving the project targets on time. Besides, NABARD's timely intervention and advice to banks is also paving the way in the bank's financing of sericulture activities. As stated above, the refinance from NABARD for sericulture activities under NSP is being disbursed under various heads like IRDP, NFS, Schematic lending etc. As a result of this, it is not found feasible to quickly retrieve the information of total refinance made available from the inception of the project. However, rough estimates indicate that a total amount of Rs.2640 lakhs has been disbursed for the project activities as on 31 March 1993. It may be stated that this amount may not fully reflect the position of total disbursements made under the project in view of the difficulties in retrieval of information.

However, from 1992-93 the new monitoring system under SAA provides for sectoral information of not only planning and monitoring of credit in respect of
sericulture but also recovery of loans thereunder. The actual disbursement details are being collected from the State Level Bankers and the position will be available by September 1993.

q. **Operational Problems**

**Unit Cost**

NABARD is well aware that there can be wide variation in the unit costs of sericulture activity from one state to another. As far as possible, NABARD has been trying to maintain similar unit costs for similar agro-climatic zones. However, an element of difference in the costs of local labour and other input costs have to be taken into account while fixing the unit cost for respective states.

**Security**

As many farmers were having difficulty in providing security for sericulture activity, NABARD and RBI have initiated necessary steps to streamline the margin and security norms. Where subsidy is available, no margin will be collected. In other cases, a margin of 5/10/15 percent to SF/MF/OF have been prescribed respectively. Security requirement has been relaxed for loans upto Rs.20,000 under NSP.

r. In the traditional areas, the technology for the production of improved quality of cocoons through the cultivation of hybrid variety of mulberry and adoption of improved techniques of silkworm rearing, and the infrastructure for the activity are fairly well developed. However, the promotion of this activity in non-traditional areas requires the strengthening of the extension services for transfer of appropriate technology and creation of adequate infrastructure by the State Governments.

s. The constraints in the development of this activity, which need to be tackled, for ensuring increased flow of institutional credit are many. They can be classified into (i) Selection (ii) Extension (iii) Linkages (iv) Monitoring and (v) Recovery. Only coordinated effort on the part of Bankers, Central Silk Board, State Government departments and Research and Training Institutes can remove the impediments.

t. **Constraints**

**Selection**

(i) Selection of beneficiary -

Many a time the farmers identified by the departments are ineligible to borrow money on account of earlier defaults to credit institutions.
ii. Suitability of activity -

Even farmers without land can be encouraged to take up rearing activity by arranging for regular supply of mulberry leaves. Thus the plantation and rearing can either be a separate operation or a combined activity.

iii. Lack of training to selected beneficiaries who are taking up this activity for the first time.

Extension

i. Non-availability of dfls - adequate and regular supply of dfls are required for the successful implementation of the project.

ii. Lack of proper guidance in maintaining hygienic and specific environmental conditions - the extension agencies to provide training as also periodic supervision.

iii. Lack of timely credit by bankers

iv. Non-availability of cuttings for mulberry plantation in some far-flung areas.

Linkages

i. Lack of adequate infrastructure facilities - mainly for marketing.

ii. Non-availability of sufficient number of skilled reelers coupled with inefficient management of the reeling units in the private sector have resulted in failure of the existing units. In order to overcome this, the State Government departments should consider imparting the necessary skills to the local persons, at least in the areas where the cottage basins are already set up.

iii. Support price for cocoons.

iv. Delay in release of subsidy.

Monitoring

i. Lack of proper monitoring results in the misutilisation of funds.

ii. Release of second and subsequent instalments without verification of end use of previous instalments creates a situation where the funds are either underutilised or diverted to other unwanted and unrelated activities resulting in overdues.

iii. Departmental monitoring is required in mid-way correction.
Recovery

i. The high overdues to the banks under this activity could be reduced, if recovery is linked to marketing, since the arrangement for regulated marketing are good and tripartite agreement between the borrowers, the marketing agency and the bank could be reached;

ii. To reduce defaults arising as a result of cocoon crop failure, the State Government should endeavour to cover the entire sericulture area under a silk insurance scheme on the lines of crop insurance scheme.

u. Constraints as indentified by ROs in the implementation of NSP

Orissa

i. Mulberry sericulture being labour intensive needs greater skill and tribals of Koraput could not be sufficiently motivated to take up this job.

ii. From the beginning the programme has been implemented as a poverty alleviation programme thereby limiting the scope of the farmers.

iii. Relaxation of security norms by RBI has not percolated to ground level bankers.

iv. Family labour is an important component in sericulture. But the selection procedure did not take this aspect into account and hence the cost of hired labour has become uneconomical.

v. Delay in the supply of inputs has resulted in delayed planting, thereby reducing the yield of leaf and cocoons.

Kerala

i. Many farmers have discontinued this activity after initial failure due to lack of training, non-availability of dfls and marketing support.

ii. The recurrent attack of disease (Pebrine) caused a major setback to this activity.

Himachal Pradesh

i. The rate offered to farmers by CSB is very low as observed by many farmers. In addition Rs. 10/- per kg is collected by CSB towards packing which is considered very high by farmers.

ii. In addition, CSB is withholding 10% of the value of the produce to be paid at a later date. The farmers observed that invariably this amount is never paid indicating the final sale price was very low.
iii. CSB is purchasing only ‘A’ grade material. As there is no local market for lower grade produce, it acts as a disincentive to farmers to continue this activity.

iv. Production of leaf is low and so the production of cocoon is also very low. The average yield of cocoons was around 25 to 35 kg. per acre per crop.

**Rajasthan**

i. Lack of initiative on the part of bankers to finance this activity in the field.

ii. Lack of coordination between various agencies implementing the scheme.

iii. Poor selection of beneficiary.

**Bihar**

i. The production of mulberry leaf was very low.

ii. Due to drought conditions, poor people who have taken up mulberry plantation on leased land are not in a position to sustain the plantation.

iii. Lack of proper rearing facilities like separate rearing shed, has resulted in poor yield.

iv. Lack of adequate and timely supply of DFLs by agencies.

v. Banks reluctance to take up this activity on a large scale.

vi. Lack of quality equipments/rearing material affected the yield.

vii. Absence of proper marketing facilities.

**Uttar Pradesh**

i. Poor land holding of farmers discourages to take up this activity on an economic scale.

ii. Many identified farmers are ineligible due to defaults.

iii. Delay in the release of payments to cocoon rearers / farmers.

**v. Issues for discussion**

i. How can the controlling heads of various banks intervene to see that the National Sericulture Project gets a momentum?

ii. The Low Productivity in Sericulture sector - How can it be raised?

iii. The profitability of sericulture depends upon the harvest of a number of crops for which irrigation is a must. How do we ensure that adequate facilities are made available as a part of the package?
iv. What type of infrastructure support from Government and CSB is required?

- to reduce mortality rate
- assured market for cocoons
- proper technical advice
- proper extension facility
- use of hybrid seeds / dfls

w. Conclusion

The implementation of World Bank aided Sericulture Project I and II has helped in the creation of the necessary infrastructure like technical service centres, establishment of grainages for supplying dfls, Government Silk Farms, Cocoon Markets, Reeling Units etc. In view of this, a potential exists for financing 48,000 ha. mulberry cultivation in the traditional and non-traditional areas during the VIII Plan period and 2,12,000 ha. in the long run.
### ANNEXURE 1

**SERICULTURE (ONE ACRE MODEL) STATE: KARNATAKA**

<table>
<thead>
<tr>
<th>Unit Costs</th>
<th>(Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) New Mulberry Plantation (irrigated)</td>
<td>3,500</td>
</tr>
<tr>
<td>(ii) Rearing Equipment (300-400 DFLs)</td>
<td>5,100</td>
</tr>
<tr>
<td>(iii) Rearing House (375 sq.ft.)</td>
<td></td>
</tr>
<tr>
<td>(a) RCC roof</td>
<td>30,000</td>
</tr>
<tr>
<td>(b) Mangalore tile roof</td>
<td>24,000</td>
</tr>
<tr>
<td>(iv) Cottage basins</td>
<td></td>
</tr>
<tr>
<td>(a) Pucca shed</td>
<td>12,000</td>
</tr>
<tr>
<td>(b) Machinery</td>
<td>15,000</td>
</tr>
<tr>
<td>(c) Water softener</td>
<td>5,000</td>
</tr>
<tr>
<td>(d) Working Capital</td>
<td>51,900</td>
</tr>
<tr>
<td>(v) Improved Charkas</td>
<td></td>
</tr>
<tr>
<td>(a) Cost of 2 Charakas</td>
<td>8,400</td>
</tr>
<tr>
<td>(b) Working Capital</td>
<td>16,100</td>
</tr>
</tbody>
</table>

#### Yield - under ideal conditions - in irrigated areas

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Dfl per crop</td>
<td>300</td>
</tr>
<tr>
<td>(ii) No. of crops</td>
<td></td>
</tr>
<tr>
<td>(a) First year</td>
<td>2 crops</td>
</tr>
<tr>
<td>(b) Second year</td>
<td>4 crops</td>
</tr>
<tr>
<td>(iii) Yield</td>
<td></td>
</tr>
<tr>
<td>(a) Per 100 dfl</td>
<td>45 kgs</td>
</tr>
<tr>
<td>(b) First year</td>
<td>270 kgs</td>
</tr>
<tr>
<td>(c) Second year</td>
<td>540 kgs</td>
</tr>
<tr>
<td>(iv) Sale Price</td>
<td></td>
</tr>
<tr>
<td>Sale price of cocoons</td>
<td>Rs.90/-per kg</td>
</tr>
</tbody>
</table>

#### Net Income

<table>
<thead>
<tr>
<th></th>
<th>(Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Total income</td>
<td></td>
</tr>
<tr>
<td>(a) First year</td>
<td>Rs.24,300/-</td>
</tr>
<tr>
<td>(b) Second year</td>
<td>Rs.48,600/-</td>
</tr>
<tr>
<td>(ii) Expenditure</td>
<td></td>
</tr>
<tr>
<td>(a) Mulberry plantation</td>
<td>Rs.3,000/- per acre/per year</td>
</tr>
<tr>
<td>(b) Rearing</td>
<td>Rs.1500/- per crop</td>
</tr>
<tr>
<td>First year</td>
<td>Rs.3000/- (2 crops)</td>
</tr>
<tr>
<td>Second year</td>
<td>Rs.6000/- (4 crops)</td>
</tr>
<tr>
<td>(iii) Net Income</td>
<td></td>
</tr>
<tr>
<td>Second year onwards</td>
<td>Rs.39,600/- (per acre)</td>
</tr>
</tbody>
</table>
## ANNEXURE 2

### DISBURSEMENT UNDER NATIONAL SERICULTURE PROJECT AS ON 31 MARCH 1993

(Rs. in lakhs)

<table>
<thead>
<tr>
<th>Traditional States</th>
<th>Cumulative Refinance Disbursement upto 31.3.92</th>
<th>Refinance Disbursement during 1992-93</th>
<th>Cumulative Refinance Disbursement upto 31.3.93</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karnataka</td>
<td>902.225</td>
<td>735.797</td>
<td>1638.022</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>355.149</td>
<td>238.337</td>
<td>593.486</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>172.915</td>
<td>144.840</td>
<td>371.755</td>
</tr>
<tr>
<td>West Bengal</td>
<td>24.312</td>
<td>N.A.</td>
<td>24.312</td>
</tr>
<tr>
<td>Jammu</td>
<td>0.081</td>
<td>1.820</td>
<td>1.901</td>
</tr>
</tbody>
</table>

Sub-Total  1454.682  1120.794  2575.476

<table>
<thead>
<tr>
<th>Non-Traditional States</th>
<th>Sub-Total</th>
<th>Refinance Disbursement during 1992-93</th>
<th>Cumulative Refinance Disbursement upto 31.3.93</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Total</td>
<td>68.832</td>
<td>N.A.</td>
<td>68.832</td>
</tr>
</tbody>
</table>

| Total                  | 1523.514  | 1120.794                              | 2644.308                                      |
The focus of the workshop is on sericulture development in nontraditional areas and this session is comparing different types of activities centering around NGOs. Whatever sericulture development took place in traditional areas, the technological breakthrough was obtained by CSB through its constant efforts. The contribution of the Scientists has now made non-traditional areas to come forward for sericulture development.

In non-traditional areas the state governments were mainly instrumental in sericulture development, with limited resources and with limited infrastructure. At the same time, since the activity was quite well established and the economics was well-known everyone wanted to take up sericulture. With limited input support (technological, material and service input) people started on their own at various places in non-traditional areas.

Subsequently, because of limited knowledge, in-adequate information and very limited skills, based on whatever results they obtained, they started passing messages to everybody that either sericulture provides very good means to rural poor or that this is something which is not possible for us to take up as there are problems regarding receiving proper prices to the produce, and so on. As a result sericulture development is not taking definite shape in nontraditional areas.

With the help of proper credit support and organisation at the national level, CSB pushed various activities in non-traditional areas. Various schemes were launched in a big way but considering the awareness for taking up sericulture among the people, the infrastructure was very much on the limited side. Now in this entire scenario there is a possibility, that in the near future, perhaps the sericulture directorates or the agencies which are involved in sericulture development in non-traditional areas, may not be able to meet the expectations of the people. So this has given an important role for NGOs to come forward and take up programmes to take care of the infrastructural needs. In this process, when we are suggesting that NGOs should come forward, we have to define their exact role, which is not a one time affair. It would be a process. But when we are expecting NGOs to play role actually it matters very less whether it is a department, or an NGO, or an individual, because nobody’s knowledge, information and skill is as well-tested, as in case of traditional areas.
So we are making all our efforts but we are not getting proper knowledge, adequate information and skilled manpower at the grassroot level. When NGOs are stationed in very remote area and expect that CSB should come forward to support in terms of manpower or infrastructure, it will be rather difficult.

But, there is a possibility that NGOs themselves can take up this role and perform well if they don’t just rely on other agencies, because they are also crawling in the dark. They have limited resources, it would be rather difficult for them to come and meet all requirements.

The basic plus point when NGOs are coming in sericulture activity is that NGOs have a very good linkage with the people. Second point they can form farmers’ groups and function through the people. In sericulture what is required is constant supervision, and educating people on the job, in the field itself, is very important. If somebody has produced on the lower side, identifying his individual problems with a personalised approach, is very much essential here. Extension support with personalised approach is essential, so for that purpose whatever is the concept of Technical Service Centre, Chawki Rearing Centre, Extension Service Units and so on, NGOs should develop their own design, they should not go by CSB norms alone.

Many times credit does not flow properly, the way it is required. We have received messages from the credit institutions that there is no difficulty. But we have to properly educate the farmer see the economics, and provide finance as when required. What is required is that, at the local level, somebody should come forward to help the farmers so that requirements are met, linkages are established, and all input service support is made available to them.

With this type of personalised approach, and ensuring that the infrastructure needs are made available upto the operational level, there won’t be any difficulty in achieving success in the non-traditional areas.
All my talk is based on whatever has been done in the State of Maharashtra and whatever has been achieved has now fortunately been taken up for its implementation by the NGO BAIF. As per earlier records it was seen that several attempts have been made to introduce sericulture in Maharashtra in the 19th century. Success to some extent was also achieved but due to bureaucratic approach and transfers or terminations of government officials of the ranks of collector who initiated these trials, there was no consistency in the region. It was started in 1827 ended with failure in 1847. Then onwards there was a stoppage by the order of the government itself.

Later, efforts were made, but without success. It was Dr. G.P. Dewadikar, an eminent botanist and agricultural scientist and also cytogeneticist who studied in depth and made a comprehensive attempt in around 1956-57. Of course this was possible only due to some backup or support from various corners.

Mr. I.A.Kamte, initiated this effort at that time on his own to introduce sericulture in Maharashtra and achieved good success. Then few trials on a very small scale were undertaken which proved to be very successful and encouraging. A broad-based comprehensive programme then encompassing various components was drawn out.

Firstly, it was related to cultivation of various fruit plants. So mulberry and non-mulberry fruit plants were collected and their collection, selection and cultivation was undertaken. Then, varietal trials were initiated at Panchgani and Mahabaleshwar and at Wai at the foot hills. This was followed by different trials under different agro-climatic regions in Maharashtra. This led to standardisation of agricultural practices to some extent.

Various species of mulberry and non-mulberry were collected from various states of India and they were also tried. Then comparative trials to assess their relative performance under local conditions and their acclimatisation through selective breeding was attempted.

Cytogenetic studies and phylogenetic studies were also undertaken. Extension programmes were also drawn out based on these results which included formulation of a pattern which will be helpful to the various agriculturists, and while formulating this,
various agricultural and socio-economic needs were taken into consideration. So these achievements were made with a view to maintain a supply of superior trees of mulberry to the growers and rearers.

Efforts were made to identify superior stocks from the existing local stores as I told you that they were procured from outside Maharashtra.

The clones of mulberry bushes were subjected to varietal trials. Two Mahabaleshwar varieties viz. LM-1 and LM-2 were found to be superior for refill, palatability and disease resistance. Their cost of production were worked out and were found to be very low. Multi-locational trials for their cultivation were subsequently undertaken in different agro-climatic areas representing irrigated, rain-fed and drought-prone areas. Similarly some exotic mulberry varieties were also procured through the efforts of Mr. I.A.Kamte. Their dormancy were found to be broken under the local climatic conditions and such of these plants were selected for further multiplication for growing the seedlings by collection of seeds.

Cytogenetic studies, rearing trials were also undertaken. For these basic fundamental research programme was also undertaken. Basic chromosome numbers of eri silkworm (Philosemia racina) and muga silkworm (Antheraea assamesis) and Actias Selene, the Indian moon moth were reported for the first time as N=14, N=15 and N=31 respectively.

The chromosome studies on Bombayx Mori led to confirmation of earlier reports. As regards trials to evolve new races of Bombyx mori, the mulberry silkworm, a unique laboratory method involving external fertilisation trials proved to be successful. In these trials they gave rise to new two races i.e Wai1 and Wai4.

These were perhaps the first instances of a test-tube baby in silkworms.

These experiments of course were very much successful and these two races were assessed for their performance taking into consideration 15 parameters (qualitative and quantitative) and now their multi-locational trials are intended and they have fortunately been taken up by BAIF. These encouraging results led to formulation of further research and extension programmes. It is however a little unfortunate that the pace of progress is not to the expectation because of various constraints in their actual implementation.

NGOs like BAIF have fortunately come forward to rectify this situation and implement it in a big way. The Khadi Village Industries Board and the State Government of Maharashtra are also trying their best but what is needed now is good co-ordination of programmes.
In the future, grainages for seed organisation programmes should be taken up for bivoltine and multivoltine races. Bivoltine could be confined to the Western Ghats where the altitude ranges from 3000 to 4000 ft. and for post harvest technology also, and for reeling and weaving also and of course this should include trainings which are taken up by the Khadi and Village Industries Board. If NGOs come forward and establish such research stations for their local geographical needs that will be very much fruitful.
KOSHIKA: GUNNY CLOTH MOUNTAGE DESIGNED BY BAIF

SHISHUKA: CHAWKI WORM CARRIER DESIGNED BY BAIF
Sericulture has tremendous potential to provide sustainable livelihood in the rural areas and fulfill Mahatma Gandhi’s dream of tackling underemployment of the rural masses. Its implementation needs to be done in a sound business-like manner.