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REPORT

OF THE

FOURTH YEAR EVALUATION

OF THE

IDRC/CIDA CO-FINANCED

BAIF RESEARCH FOUNDATION - RURAL RESEARCH PROJECT

PROJECT NO. 468/15018

FOR CIDA, IDRC AND BAIF

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ACRONYMS AND ABBREVIATIONS

AI	Artificial Insemination
BAIF	Bharatiya Agro Industries Foundation
BAM	Bamboo
BIRC	BAIF Information Resource Centre
BIS	BAIF Institutional Support Program
BMTC	BAIF Management Training Centre
CBR	Community Based Research
CC	Communication Cell
CCF	Cheap Cattle Feed
CIDA	Canadian International Development Agency
EDP	Electronic Data Processing
FST	Frozen Semen Technology
GIS	Geographic Information Systems
IDRC	International Development Research Centre
IPL	Indian Potash Limited
IRC	Information Resource Centre
LAN	Local Area Network

LIS	Library & Information Services
MRK	Marek's Disease
MP	Management Plan
MUSH	Mushrooms
MYCO	Mycorhizza
PAM	Project Approval Memorandum
PIM	Project Identification Memorandum
PPS	Post Production Systems
RPI	Rural Polytechnic Institute
RS	Rupees
SERI	Sericulture
SSC	Social Science Cell

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SUMMARY OF RECOMMENDATIONS

A. General

A1. Based on the excellent results achieved so far, and especially on the useful learning process that the next step is expected to generate, it is recommended that IDRC continue to fund the BAIF research program for a second phase.

A2. In the event that IDRC and CIDA are in a position to provide further support, the three organizations should meet to map out the general parameters for further support.

A3. Following this initial meeting, BAIF should prepare a detailed formal proposal to IDRC.

A4. In the event that there is a second phase, IDRC and CIDA should set up a small Phase 2 Coordinating Committee which would, *inter alia*, ensure consistency between the approval documents.

B. With respect to the management and administration of the projects and the program as a whole:

B1. IDRC, with input from CIDA where required, should review its internal system for technical and financial **program** monitoring, and should review the format and content of reports that are presented to the Ottawa-based decision making body.

B2. IDRC should set up a system for accurately logging **project** monitoring visits by Program Officers, should develop a format for monitoring mission reports, and should require that timely monitoring mission reports be drafted and that these reports be filed so that they can be used as a source of information for IDRC internal **program** technical monitoring reports.

B3. CIDA should be a full member of all decision making bodies where significant **program** issues are discussed.

B4. The IDRC Office of the Treasury, the Office of Planning and Evaluation or some other group in IDRC update Table 6 and 7 on a quarterly basis, and provide senior management in IDRC and CIDA with copies of these tables as part of IDRC's internal **program** monitoring.

C. With respect to the individual research projects:

C1. The frozen semen project has achieved its primary objectives, and should now move towards a more holistic buffalo improvement program. Four particular areas on which the project needs to concentrate during the next years will be the extensive field testing of frozen semen, the establishment of a heat induction system for buffalo, the control of potential disease transmission through semen, and progeny testing to assess the quality of different buffalo bulls used in AI.

C2. The economic feeding systems project's impact, and the promise of substantial benefits to farmers, is not as evident as it is in most of the other projects, and it is therefore suggested that its usefulness in the overall IDRC funded package be reassessed. The question of continuing this project within the future activities of BAIF's research program will then have to be resolved.

C3. It is suggested that the micro-carrier culture project be reviewed in BAIF's overall planning activities, where a decision needs to be made as to the future potential of this research activity. The possibility of collaboration with other research institutions, and potential alternative funding sources should also be explored.

C4. Regarding the sericulture project, before field trials and the wider introduction of the technology into the villages takes place, it is essential that a comprehensive extension package be designed by a sociologist, in cooperation with the project's technical staff. At the same time specific support on marketing and production technology will also be essential.

C5. For the implementation of the mushroom production technology project in the villages it is important to form an extension team, which will address the many challenges of fitting this activity into the women's workload, find the best

processing and marketing options, and establish an extension package for training and teaching farmers and village women who want to take up mushroom cultivation.

C6. The bamboo project should continue its promising work, and as soon as feasible needs to initiate the establishment of village nurseries.

C7. It is suggested that the Mycorrhiza project be reviewed in BAIF's future plans, in order to decide if the project will be in a position to generate substantial benefits for rural farmers in the near future, and if it thus fits with BAIF's mandate and the overall aims of the IDRC project. If not, alternative funding sources might be considered.

C8. It is proposed here that while the Post Production Technologies project should continue its work on specific technologies, the main focus should become the comprehensive support of the other research projects, when their technologies are ready to be introduced into the field. To properly fulfil this mandate, this support function should primarily provide marketing and economic expertise, and sociology and extension support.

C9. Regarding the Community Based Research project, in order to put all these sound activities into a proper institutional framework, it is suggested that this project be redesigned to allow all three activities, the gathering of information, the health care sector, and the implementation of projects, to take place as independent, but also interdependent activities. In order to properly understand the social dimensions of the community projects, it will be essential to set up a more rigorous social research activity. Here it will be important to have staff with the appropriate qualifications and experience, and to draw upon the expertise of the relevant IDRC Program Officers.

C10. In conjunction with the ongoing activities in the community projects, it is recommended that the technologies established by the IDRC funded program be field tested and implemented specifically in these areas.

C11. While the health component of CBR is essential, and should continue on the micro-level, its activities lend themselves well to the design of some integrated

health research projects, producing a comprehensive package aimed at overcoming specific identified health problems.

D. Overall BAIF-IDRC Program Recommendations:

D1. In order to make optimum use of the strengths of both BAIF and IDRC, the focus of a new phase of the project should be more in line with BAIF's mandate, the development of new technologies with a direct development impact for the rural poor, and on implementing a continuous project cycle consisting of village needs assessment, research into new technologies, socio-economic research (packaging), and the implementation of the newly developed technologies in the villages.

D2. The new technologies developed by the project should not be directly implemented in the villages, but need to go through a process of "Packaging", in order to assure that they are both economically viable and socially acceptable. They then need to be extensively field tested under the Community Project activities, and the results may call for some redesign by the scientists.

D3. The present Post-Production project needs to be enlarged to become an integrated support system, covering economics and marketing, the social sciences, and processing technology. Its new joint main objective should be the "packaging of technologies", in order to assure their fit into the prevailing social system, and to optimize the benefits of these to the recipient.

D4. Key emphasis in the next years needs to be given to the "Packaging" of these four projects (Buffalo, Sericulture, Bamboo, and Mushrooms), to assure that they fit into the social pattern of the communities, and that markets and marketing channels are established, and where the processing of products will be an integral part of the marketing strategy.

D5. Because of a degree of lack of fit of three projects (Micorrizha, Miicro-carriers, and Animal Feeds), it is suggested that their future be re-evaluated, with special emphasis on the project's aim of income generation and, through this, an improved living standard for rural people.

D6. The present Community Based Research project has achieved its initial aim of generating a fair understanding of how these communities function. It is recommended that the present project now be separated into its three components: the Field Testing of new Technologies, a continuing, but more sophisticated and focused Social Research Program, including a community defined Needs Assessment and Priority Setting process, and, in conjunction with ongoing health activities, the design of specific Health Research Projects.

D7. The key task of the redesigned Community Based Research project will be to evolve into a more formalized institutionalized learning process, based on an analysis of the data collection activity, and its extension into a formal needs assessment function, including the setting of priorities. Formal documentation of needs priorities should then form the basis for the design of new research projects.

E. With regards to the Information Resource Centre:

E1. BAIF should ask ICRISAT for help in locating and accessing some free non-conventional literature sources.

E2. While BAIF has made a good decision to keep many of its databases separate, BAIF should constantly revisit this decision, as computer capacity and computer sophistication in BAIF grows.

E3. Once the LAN is fully operational, BAIF should consider the decentralization of the maintenance of certain databases. In order to do this, BIRC will need to develop suitable user-friendly shells for some of the databases and to train staff in various operations associated with the maintenance and use of these databases.

E4. BAIF should review the services that are, or will be, provided by INET of the P & T Department to determine whether at some stage it would be useful to link the computers at the various BAIF campuses.

E5. BAIF should carefully review its GIS requirements, and then develop a realistic workplan based on these needs.

E6. BAIF should develop and then use a style guide for all of its publications.

E7. BAIF should conduct a careful review of its computer data storage techniques, with a view to making them more secure.

F. With regards to training:

F1. Training in both RPI and BMTC could both be furthered strengthened by:

a. using additional outside expertise to develop training modules;

b. establishing a separate cell or expanding the communication cell to prepare training material using the multi-media approach; and

c. developing well-organized backward linkages with research and development personnel in order to develop appropriate training modules.

F2. Systematic feed-back, short-term and long-term evaluations of the training programs should be made an integral part of the training program.

F3. The Rural Polytechnic Institute should be developed further. It should include:

a. a unit for developing training modules and materials;

b. a unit for identifying appropriate technology packages for backward linkages to production centres; and

c. facilities for audio-visual production of training materials.

4. The BAIF Management Training Centre should develop additional training modules in farm management, small-scale production unit management, marketing, cooperatives, and in rural development for field functionaries.

G. Regarding Women in Development:

G1. BAIF should prepare a document on women's policy, which will lay out the framework within which BAIF's entire women's development program will be situated.

G2. BAIF must carefully design its projects bearing in mind women's workload, women's capabilities and training needs, women's access to income, women's access to decision-making, producer organisations, etc. As a basis for such a project design, it is desirable that BAIF carry out sectoral studies.

G3. With the experience gained in involving women specifically in livelihood and income-generating activities, BAIF should set up pilot action projects in different sectors, to act as demonstrations for their wider application by Government, para-statal and non-Government bodies.

G4. BAIF should invest in providing the necessary capabilities for women-in-development and gender analysis to all levels of BAIF staff. Research, documentation and implementation skills consonant with women-in-development and a gender sensitive approach need to be systematically built up for all levels of staff, for both women and men.

G5. BAIF should initiate a series of workshops bringing together scientists, extension staff, field staff and grassroots women, in order to generate a better understanding of the specific social and economic environment, in which the research projects will be implemented.

G6. BAIF should initiate sensitive locale-specific studies on social issues such as polygamy, dowry, bride-price etc., as well as the specific curse of alcohol addiction. The studies should be taken back to the community, and with their help interventions can then be developed through a participatory methodology.

G7. A new project on energy use should be included in the new research program, and should be designed in consultation with women's groups at the village level.

1.0 INTRODUCTION

1.1 PURPOSE OF EVALUATION

Under the agreements between CIDA, IDRC and BAIF, an independent evaluation of the activities financed under these agreements would be carried out during the fourth year of the project. For BAIF, the evaluation will build on, and extend, its own project monitoring and evaluation activities, drawing on research and other available data, and provide guidance in documenting and refining its programs. For CIDA and IDRC, the evaluation will indicate what effects their support has had on BAIF, if and how the delivery of the support could be improved, and the anticipated benefits of further phases of funding.

The scope of the evaluation is based on the overall goal of the project, to strengthen BAIF's capacity to improve the standard of living and the quality of life of rural communities, focusing on scheduled tribes, scheduled castes, women and other underprivileged groups. The project seeks to do this by reinforcing BAIF's program for development research, thereby strengthening its field programs for integrated rural development.

1.2 METHODOLOGY

The evaluation was divided into three distinct Phases: Phase 1 was the preparatory work in Ottawa prior to going to India (October 21 - November 8); Phase 2 was the mission to BAIF to conduct the field work (November 11 - November 30); and Phase 3 was the analysis of data and information collected in phases 1 and 2, and the preparation of the report back in Ottawa, (December 2 - 20 and January 14 - 21).

The evaluation process began in Ottawa with interviews of persons in IDRC, CIDA and BAIF, and the reading of the documentation made available by CIDA and IDRC. This stage culminated in the preparation and approval of the evaluation workplan (see Appendix E).

In order to generate the desired evaluation results, the terms of reference foresaw two distinct levels of involvement by the evaluators. On one hand there was the Team Leader and the Rural Development Specialist, who were to take a general view of the overall project. To assist them, four Indian members were to join the team, who were charged with an in-depth look at particular projects or aspects.

Phase 2 of the evaluation may also be divided into three distinct parts. First, the evaluation team as a group was provided with a six-day tour by BAIF. The tour route is shown in the following map. During the second week, the six individual evaluation team members conducted the data gathering for their individual mission reports. The third and final week in India was spent preparing mission reports and conducting a series of debriefings of BAIF, IDRC and CIDA in Pune and New Delhi. This series of debriefings of the three principal partners in the project in three different venues was an invaluable process of testing the preliminary evaluation findings, and generating important feedback to the evaluation team before the main evaluation report was drafted.

In the field, the six person team was in a sense divided up into two groups. The Rural Development Group consisted of the Rural Development Specialist, the WID Specialist and the Livestock Expert. The Management group then was composed of the Team Leader, the Information Expert and the Training Specialist. The reports of the four Indian consultants are presented in a separate Annex.

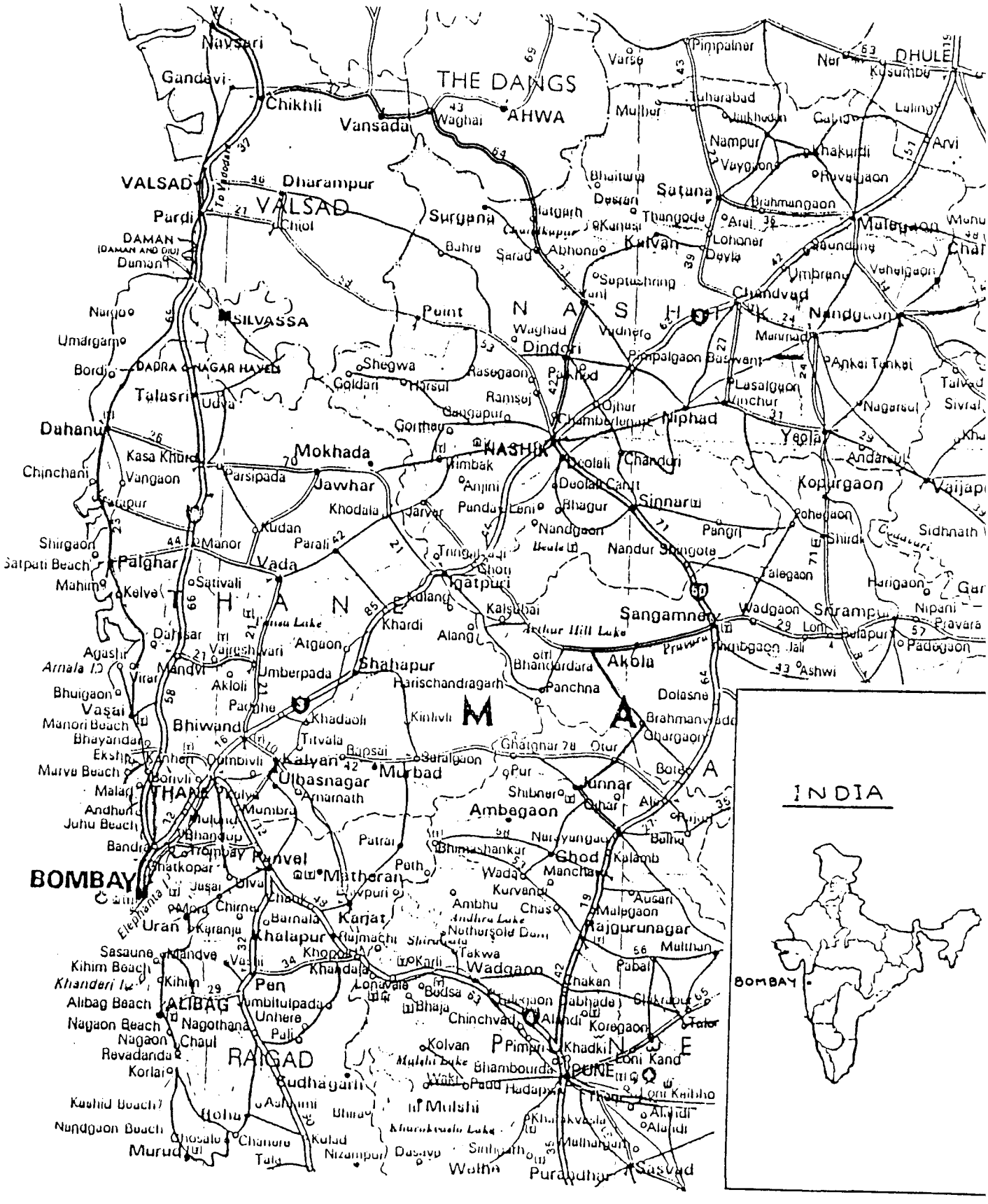
The final phase consisted of preparing and delivering a preliminary report to CIDA and IDRC by December 20, reviewing this preliminary report on January 14, and then completing it by January 21. The overall timetable for the evaluation work is presented as Appendix C.

1.3 BACKGROUND AND PHILOSOPHY OF BAIF

The BAIF Development Research Foundation is a large, non-governmental rural development agency in India. It generates applied research and agricultural technologies, and transfers them to poor rural communities. The organization was founded in 1967, has grown steadily over the years, and now operates four major programs:

1. cattle development;
2. animal health;
3. socio-economic rehabilitation of tribal people; and
4. afforestation and wasteland development.

Map of Project Area



BAIF has a distinct operational philosophy, as is shown from the following two quotes from BAIF materials.

DEVELOPMENT WITHOUT RESEARCH

IS OUTDATED

RESEARCH WITHOUT DEVELOPMENT

IS IRRELEVANT

BAIF Principle as stated in one
of the Briefing Presentations

Mission Statement of BAIF

BAIF is committed to provide instruments of gainful self-employment to the deprived strata of the rural population, through the intervention of relevant scientific and technological advances.

This objective is achieved through the selection, optimal use and adaptation of appropriate technologies to local needs, through extension (delivery) to operational areas, through innovative management practices, and a blend of Social Leadership with Technical and Managerial Expertise.

1.4 ORGANIZATION OF STUDY

The evaluation report is divided into six substantive chapters.

The purpose of chapter 2 is to review and assess the management, administration and monitoring of the IDRC-BIS Program. The first section reviews its organization chart, and the personnel qualifications of staff. The second section reviews the development and approval of the annual workplan and budget. The third section reviews administration and management in BAIF, while the fourth section reviews management and monitoring of the IDRC-BIS Program itself.

The overall program financial data prepared by IDRC is not presented in a format that is optimal for financial monitoring and management of the program by IDRC and CIDA. Chapter 3 attempts to overcome this problem by conducting an in-depth financial analysis of the program as a whole.

Chapter 4 provides a description of the relevant individual projects, and provides recommendations on how they might be improved.

Chapter 5 concentrates on issues common to all projects, and the recommendations address themselves to the main issues of the overall analysis. Here the outlook is largely towards a new phase, since the report will be too late to influence the last period of the present project phase, and the recommendations are proposals for a change of emphasis of a future phase, as well as its strengthening a new approach to the implementation of the research results, and the putting in place of a formal feedback loop.

Chapter 6 provides an analysis of the success of the IDRC-BAIF program in increasing the capacity of BAIF to design, conduct and manage development research projects. This chapter also provides an evaluation of three IDRC-BAIF projects not evaluated elsewhere in the report: the Information Resource Centre, the Rural Polytechnic Institute and the Management Training Centre.

Finally, chapter 7 reviews and assesses the involvement of women in the definition and formulation of research projects; the effects of the research on the daily lives of women; the 'voice' of women in program planning, delivery and evaluation; the mechanisms for feedback from women, whether the concerned technologies are consistent with their needs; and the economic impact on women, and women's control over income.

2.0 MANAGEMENT, ADMINISTRATION AND MONITORING

2.1 INTRODUCTION

The purpose of this chapter is to review and assess the management, administration and monitoring of the IDRC-BIS Program by BAIF, IDRC and CIDA. The first section reviews the organization chart and personnel qualifications of staff in the IDRC-BIS Program. The second section reviews and assessesthe development and approval of the annual workplan and budget. The third section reviews and assesses administration and management in BAIF. The fourth section reviews and assesses management and monitoring of the IDRC-BIS Program itself.

A crucial component of project management is the allocation of and monitoring of financial resources. Partly because it is such an important aspect of management, and partly because the current system of financial monitoring of the **program** as a whole within IDRC is currently not optimum, the whole of chapter 3 has been devoted to the financial analysis of the program.

2.2 ORGANIZATION

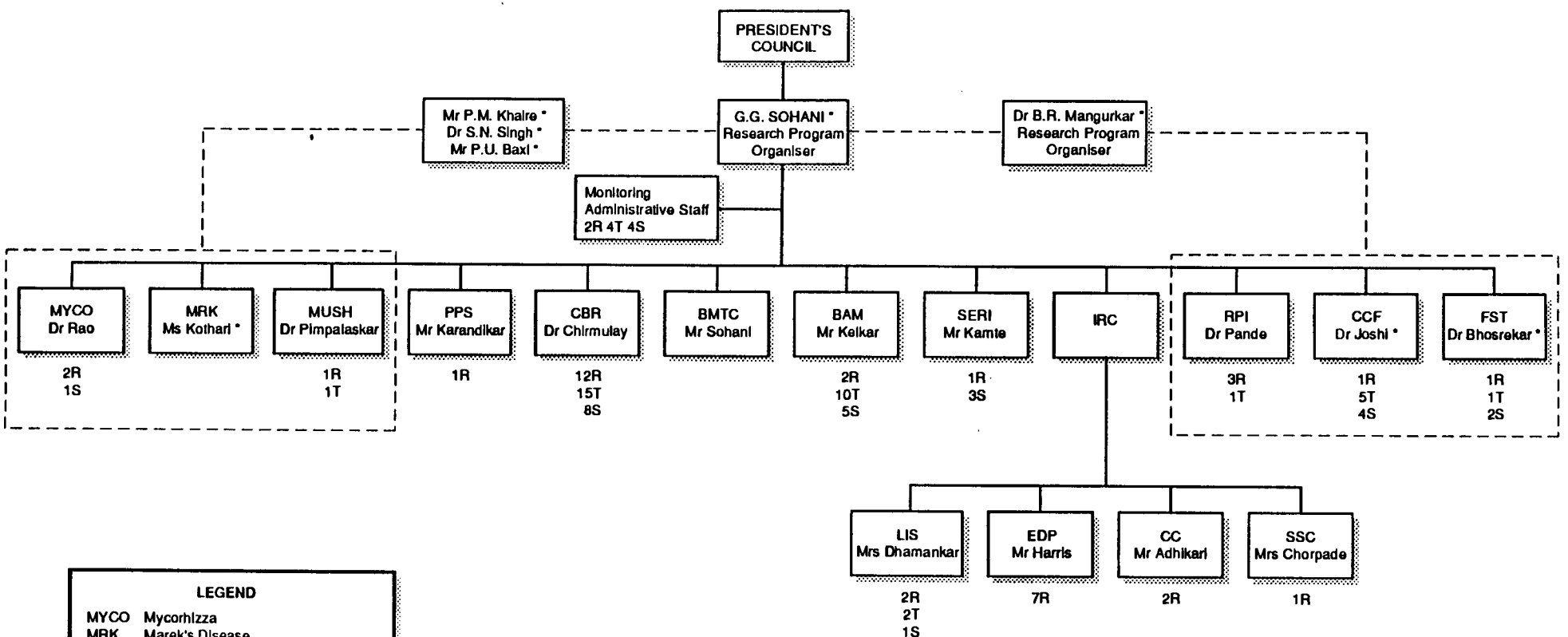
2.2.1 IDRC-BIS Program Organization Chart

The organization of personnel and the formal reporting relationship are crucial to the proper functioning of any project or institution. A useful means of describing this formal relationship is by means of an organization chart. Prior to the evaluation, BAIF had not prepared a formal organization chart, although it was clear from interviewing senior personnel in BAIF that they had a clear picture of the "organization chart" in their minds. To assist in the evaluation, and for future program reference, we prepared and organization chart with input and advice from BAIF staff. This organization chart is presented on the following page.

The organization chart shows that there are 113 people in BAIF, who are directly associated with the IDRC-BIS Program: 105 are paid directly through the program and eight through other sources of funding. Mr. Sohani is the Research Program Organiser. He reports to, and is a member of, the President's Council, which is the senior decision making body of BAIF. The senior researcher or project team leader of each of the twelve programs report

BAIF INSTITUTIONAL SUPPORT PROGRAM

ORGANIZATION CHART



LEGEND

MYCO	Mycorhizza
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SSC	Social Science Cell
RPI	Rural Polytechnic Institute
CCF	Cheap Cattle Feed
FST	Frozen Semen Technology
R	Researchers
T	Technicians
S	Support Staff
*	Persons whose salaries are not charged to the project

directly to Mr. Sohani, although six of the senior researchers report administratively to their respective research station managers. Of the 105 personnel financed directly through the IDRC-BIS Program, 38 are classified by BAIF as researchers, 39 as technicians, and the remaining 28 are classified by BAIF as support staff.

We conclude that the reporting relationships described by Mr Sohani and as represented by the organization chart are efficient and effective.

2.2.2 IDRC-BIS Program Personnel

A second important ingredient to the efficient and effective running of an organization is the quality of the staff and their morale. We felt that it was especially important to evaluate this aspect of the program because staff hiring for the program,seems to have been an issue between IDRC and BAIF in the early phases of the program. Table 2.1 was developed by Mr. Sohani and Dr. Bucknall by taking a list of personnel in the program, reviewing their level of education, assigning each person's level to the equivalent of a western Ph.D, Masters or Bachelors degree, and then tabulating the results.

Table 2.1 shows the number of staff in each project and their level of education. Of the 113 people associated with the IDRC-BIS Program, 11 have Ph.Ds or equivalent, 22 have a Masters degree or equivalent, and 44 have a Bachelors degree.

The evaluation team does not feel competent to pass any detailed judgement on the quality of individual personnel within the organization. The data has been presented so that BAIF and IDRC can review it with a view to changing the mix of Ph.Ds, Masters and Bachelors over time if that is what BAIF deems to be appropriate.

TABLE 2.1

IDRC-BIS PROGRAM PERSONNEL EDUCATION LEVELS

Project	Ph.D or Equivalent	M.Sc or Equivalent	B.Sc or Equivalent	Diploma	Other	Total
IRC	2	4	8	0	1	15
CBR	2	6	14	10	3	35
FST	0	0	1	0	3	4
RPI	0	2	2	0	0	4
MYCO	1	1	0	0	1	3
MUSH	1	1	0	0	0	2
CCF	0	1	4	0	5	10
SERI	0	0	1	0	3	4
PPS	0	0	1	0	0	1
BAM	0	2	8	2	5	17
BMTC	0	0	0	0	0	0
MRK	0	0	0	0	0	0
ADMIN	0	3	4	0	3	10
Associated Staff	5	2	1	0	0	8
TOTAL	11	22	44	12	24	113

We would like to point out that the symmetry of the ratio of Ph.Ds, Masters and Bachelors of 1:2:4 is quite striking to a layman in scientific research, but appears to have considerable logic to it. It might be interesting for IDRC to analyze this ratio to determine how it compares with similar IDRC projects elsewhere. As will be pointed out in chapter 5, the evaluation is recommending increasing the number of staff in areas such as sociology, marketing and agricultural economics.

One area we can comment on with greater confidence is the level of morale in the program. Between the six evaluation team members, we spoke to a large proportion of the personnel in the IDRC-BAIF program. We have concluded unanimously, based on these interviews and general observations, that the morale in the program is high and that this is a significant factor in the smooth running of the program.

In summary, we conclude that a number of necessary ingredients for the smooth running of the IDRC-BAIF program are in place: the program is well organized, staff appear competent and morale is high.

2.3 DEVELOPMENT AND APPROVAL OF ANNUAL WORKPLAN

The single most important activity that governs the work undertaken by the program is the annual workplan and budget. This document states what is to be done during the following year, when, by whom and at what cost etc. We therefore reviewed and assessed the **process** for developing the annual workplan and budget, and reviewed and assessed the last two annual workplans and budgets.

The process for developing the annual workplan and budget starts in October when a memo is sent from the central office in Pune to each of the individual project team leaders, requesting a draft workplan and budget. Each project team leader then prepares a draft workplan and budget for their project which is sent to Mr. Sohani in the central office.

Around the middle of November, Mr. Sohani meets with each of the project team leaders on an individual basis. The purpose of this meeting was to clarify any outstanding issues for each project, to review the objectives and approach for the coming year's work, and to develop priorities within and between the individual projects. The project team leaders then re-work the draft workplan and budget and re-submit it to central office where the draft is finalized. If significant changes need to be made, in the finalizing process, these changes are referred back to the project team leader. Annual technical reports are produced for each of the projects as a parallel exercise. The draft workplan and budget, plus the technical report, are then forwarded to IDRC, New Delhi, which is responsible for the physical production of the workplan, and its distribution to each of the IDRC Program Officers.

The draft workplan and budget, plus the technical reports, are reviewed at the annual Liaison Committee meeting held each January in Pune. Attendees at the Liaison Committee meetings include the BAIF project team leaders, IDRC program officers and staff of the IDRC, New Delhi office. CIDA does not seem to have participated in these meetings.

In general, each Liaison Committee meeting follows a similar format. First, there is a plenary session, during which each of the technical reports are reviewed. Second, small groups meet to review (a) the technical reports in more depth, (b) the work of the preceding year, and (c) the workplan and budget for the coming year. Finally, there is a half-day plenary discussion of individual projects and the program as a whole.

Following the Liaison Committee meeting, BAIF modifies the workplan and budget, if necessary, and once again forwards it to IDRC, New Delhi. IDRC, New Delhi in turn forwards it to IDRC, Ottawa. The IDRC Interdivisional Director's Committee reviews the draft workplan and budget in Ottawa. Once reviewed and approved, the draft workplan and budget becomes the official workplan and budget for the coming year. CIDA does not participate in the Interdivisional Director's Committee.

The **process** for developing the annual workplan is well thought out, contains two separate opportunities for review, and provides an opportunity for BAIF and the Program Officers to interact, although, as shown in chapter 6, the workplan and budget prepared by BAIF may be a "fait accompli". We conclude that the process for developing the annual workplan and budget is efficient and effective. However, we think that CIDA should participate in meetings where **program** issues, as apposed to individual project issues are discussed.

In addition to reviewing the **process** for developing the annual workplan and budget, we also reviewed the last two annual workplans and budgets. With minor exceptions, such as individual work activities in one section of an individual project workplan not corresponding to the list of activities in the schedule of activities in the same project, these are professional documents and provide BAIF with a valuable tool for managing the individual projects, and they provide IDRC and BAIF with a valuable tool for monitoring progress of individual projects in the program.

2.4 ADMINISTRATION AND MANAGEMENT IN BAIF

The IDRC-BAIF program does not operate in isolation. It is an integral part of BAIF and draws heavily on common services provided by BAIF. It follows, therefore, that if these central services are provided efficiently and effectively, they will reflect positively of the efficiency and effectiveness of the IDRC-BAIF program. Conversely, if these central services are not provided efficiently and effectively, they will reflect negatively on the efficiency and effectiveness of the IDRC-BAIF program. The purpose of this section is to review certain standard operating procedures that are used in BAIF in general and the IDRC-BIS Program in particular to determine the efficiency and effectiveness of these procedures.

2.4.1 Procurement

The standard operating procedure for purchasing equipment in BAIF and in the IDRC-BIS Program is to complete and have approved a form entitled **Proposal for Approval of Capital/Major Expenditure.** This form identifies the project, the cost, details of expenditure, justification, recurring costs and alternatives. The form is submitted by the project team leader, certified that it is within budget by the Finance Coordinator, recommended by the Research Program Organiser, and approved by the President's Council. Purchasing in India follows normal BAIF purchasing procedures, i.e., a purchase order is written up, quotes sought etc. Copies of all documents are forwarded to the finance division and the responsible project team leader. Purchasing through IDRC involves forwarding the internally approved request to IDRC which then follows its normal purchasing procedures.

We conclude that the process for procurement within BAIF is efficient and effective and that the procurement needs of the IDRC-BAIF program are fully satisfied by BAIF and IDRC.

2.4.2 Finance Reporting, Accounting and Auditing

The BAIF-administered portion of the IDRC-BAIF program is over $4 million dollars. It is imperative that these expenditures be tracked properly both for accounting purposes and for management information systems. Timely and accurate financial reporting is essential to the efficient and effective management of any project. The accounting for the IDRC-

BAIF program is done by BAIF's centralized accounting cell. There is no separate accounting department for the IDRC-BAIF project. Financial reporting to IDRC is provided through the central accounting department.

The IDRC-BIS program set of accounts in Pune were reviewed. They meet professional standards. Several tests were conducted to confirm the financial data upon which the quarterly financial reports to IDRC are based. The Finance Coordinator was able to answer all questions in a completely satisfactory manner.

Accurate and timely financial reports are absolutely essential to the proper management and monitoring of a project. We reviewed the financial reports produced by BAIF for the IDRC-BAIF program. Essentially there are three such reports: (1) monthly financial statements for each of the 12 projects which are made available to Mr. Sohani and the relevant project team leader. An example of one such monthly financial statement is presented in section 2.5.1; (2) quarterly financial statements which are used internally by BAIF for management purposes, and which are provided to IDRC monitoring purposes; and (3) annual financial statements which are also used internally by BAIF for management purposes and are provided to IDRC for IDRC for monitoring purposes. We reviewed several samples of each of these three types of reports and judged them to be excellent. In fact, the three annual financial reports are the base data for the financial analysis which is presented in Chapter 3.

Our final evaluation approach to assess BAIF's financial management capabilities was to review BAIF's auditor's reports. BAIF is a Scientific Research Organisation approved for the purposes of section 35(1)(ii) of the Income Tax Act, 1961 with a Bombay Public Trust Registration No. E-376, Pune. Under the Act, BAIF's financial accounts must be audited on an annual basis, and this audit is done by G.M. Oka & Co, a firm of Chartered Accountants based in Pune.

We reviewed the last two years auditor's reports for the BAIF Development Research Foundation. The 1990 report indicated that:

a. The accounts are maintained regularly and in accordance with the Act and Rules.

b. The receipts and disbursements are properly and correctly shown in the accounts.

c. The cash balance at the end of the year as shown in the books and the vouchers in the custody of the Trustees were in agreement with the accounts.

d. All books, deeds, accounts, vouchers or other documents or records required to be kept by the Trust were produced.

e. The registers of the movable and immovable properties are properly maintained.

f. The Trustees appeared before us and furnished all the necessary information required by us.

g. No property or funds of the Trust were applied for any objects or purposes other than the objects or purposes of the Trust.

h. There are Rs.21,04,354/FS outstanding for more than a year, towards which a provision of Rs.10,92,238 has been made in the accounts. Sundry debit balances amounting to Rs.8,695 have been written of during the year.

i. Repairs and Construction exceeding Rs.5,000 have been carried out under the supervision of the management and tenders were invited.

j. No money of the Trust has been invested contrary to the provisions of Section 35.

k. No alienation of immovable property contrary to the provision of Section 36 has come to our notice.

l. We have no special matter to be brought to the notice of the Assistant Charity Commissioner or Charity Commissioner.

On the basis of the analysis presented in this section, we conclude that the common services provided by BAIF for the IDRC-BAIF program are efficient and effective, and support the efficiency of the IDRC-BAIF program.

2.5 MANAGEMENT AND MONITORING OF IDRC-BIS PROGRAM

The IDRC-BAIF program consists of a cooperative partnership of three institutions: BAIF, IDRC and CIDA. Each of these three institutions have different roles in the management and monitoring of the IDRC-BAIF program. The role of each of the three institutions is reviewed and assessed in this section.

2.5.1 BAIF

BAIF is responsible for the management of the BAIF-administered funds. The process for deciding how these funds will be spent is through the annual workplan and budget described in Section 2.3. The workplan and financial reporting will be evaluated separately.

The annual workplan and budget provides a good statement of what each individual project will do in the coming year, the schedule for completing each of the various tasks, and the budget available for each individual project. The annual workplan and budget is a thus good management tool.

When the program was first started, each individual project had a monthly meeting with Mr. Sohani. Now that the program is more mature, the project team meets with Mr. Sohani on a quarterly basis. Minutes are kept of these monthly and quarterly meetings, and copies are stored in the central office and in the project team leader's office. Each of the project teams holds a formal meeting each month. Minutes are kept of these monthly meetings, and a copy is sent to Mr. Sohani. Again, when the program first started, each individual project produced a monthly progress report for Mr. Sohani. This progress report is now produced on a quarterly basis. The format consists of a progress summary for the quarter, research studies in progress, and proposed workplan for the next quarter.

Samples of minutes from these monthly and quarterly meetings, and monthly and quarterly reports were requested from Mr. Sohani. They were retrieved within minutes and, upon review, appeared to be a useful summary of the proceedings of the meetings and progress in the projects.

In addition to progress reports coming from the project team leaders to the central office on a monthly or quarterly basis, the central office provides each of the project team leaders with a monthly financial statement about 21 days after the end of each month. A facsimile of one of these financial reports is reproduced below. Furthermore, as was discussed in section 2.4.2, the monthly, quarterly and annual financial reporting is good.

TABLE 2.2

IRC - COMPARATIVE STATEMENT OF EXPENDITURE AND BUDGET FOR JULY 1990 IN RUPEES

Account Head	Expense for July-1990	Total Exp. for 90-91	Sanction for 90-91	Unspent for 90-91
Salaries	30,921	129,654	424,800	295,146
Travel	4,222	15,627	53,000	37,373
Capital Equipment	93,466	285,045	333,000	47,955
Training	400	8,260	51,000	42,739
Research Expenses	8,029	58,962	367,200	308,238
Consultancy	247	247	26,000	25,753
Reports/Documents	0	1,992	69,000	67,008
Infrastructure	1,815	6,073	25,000	18,927
Books and Periodicals	57,317	61,635	102,000	40,364
Admin. Overhead	0	0	109,300	109,300
Total	196,419	567,496	1,560,300	992,803

It is a credit to the progress made in the IDRC-BIS Program in general, and the EDP group in particular, that these financial reports can be produced in such a timely fashion.

On the basis of our observations in the field and the analysis presented thus far in this chapter, we conclude that the management of the BAIF-administered funds is efficient and effective. Furthermore, we conclude that BAIF now has the management capacity to manage a second phase of this project, or other new projects by IDRC or CIDA.

2.5.2 IDRC

The role of IDRC in the monitoring of this program can be divided into two components: (a) technical monitoring and (b) financial monitoring.

2.5.2.1 Technical Monitoring

Technical monitoring of the twelve individual projects by IDRC is done by the Program Officers, usually through a visit to Pune at the time of the annual Liaison Committee meeting. We had hoped that the field reports of the Program Officers would provide us with source of information of the impact of the program on institution building. However, a careful review of the files in Ottawa and New Delhi produced a combined list of Program Officer visitsto BAIF since project inception, which was a sub-set of the list kept by BAIF of IDRC visits. Furthermore, we were unable to locate mission reports for some Program Officers who had visited BAIF over the years. We tried to overcome this lack of information by sending a telex to each of the Program Officers, but we did not get a positive response to this request. Thus a potential source of information for this external evaluation plus periodic IDRC internal evaluations that should be conducted on big programs such as this is not as useful as it might have been.

In the view of the evaluators, for the IDRC-BAIF program someone in IDRC should be responsible for (a) developing and maintaining a complete list of all people who visit BAIF, (b) developing a pro-forma for mission reports to BAIF, (c) ensuring that Program Officers prepare and submit a mission report within a reasonable period, and (d) maintaining a separate file of all mission reports in Ottawa and New Delhi.

The Program Officers each monitor their individual projects and their role is briefly discussed in Chapter 6. However, to the best of our knowledge, no one does a technical monitoring of the **program** as a whole. Such **program** technical monitoring could detect trends, extract lessons learned, determine the extent and under what conditions the IDRC-BAIF program might be replicable elsewhere in the world, etc.. The IDRC Office of Planning and Evaluation might be ideally suited to undertake this task: the Office contains an officer who has shown considerable interest in the program, has visited BAIF three times and is very knowledgeable about the program. A one-shot internal evaluation followed by comprehensive annual program monitoring could providevaluable insights to IDRC to improve this phase of the program, the design a possible phase 2, and to design similar programs that IDRC might wish to become involved in elsewhere in the developing world.

2.5.2.2 Financial Monitoring

Financial monitoring will be reviewed and assessed at two levels: (a) at the **project** level and (b) at the **program** level.

At the individual **project** level, the process of monitoring starts with the preparation of the annual budget. BAIF monitors monthly expenditures against annual budgets, and produces a quarterly financial report which is sent to IDRC, New Delhi. This quarterly financial report consists of a report on actual expenses, committed expenses, and actual and committed expenses by individual contribution agreement line item and by BAIF project. The first quarter report is for that quarter, the second quarter report is the accumulated expenses for the first two quarters, etc. These reports are expressed in Rupees. At the end of the year, BAIF produces an overall financial statement in Rupees with variance calculations, again by program line item and by individual project. These reports are forwarded to IDRC, Ottawa, which inputs the data into its computer and produces its own financial reports, largely in the form of detailed computer printouts, entitled BAIF-Institutional Support, Project Financial Analysis. A typical report consists of a one-page summary which is, in effect, a table supporting a request for approval of payment to BAIF plus about 15 pages of computer printouts. The computer printout report also contains a one-page schedule of payments to BAIF, a one-page summary of payments to date, five pages of summary financial data in Rupees and Dollars, and seven pages of journal items of expenses such as travel expenses, temporary salaries, logistical support, supplies, meeting expenses. This information is fully satisfactory for the accounting of program expenses, but is not in a form that is useful for many management decisions.

In summary, what IDRC senior officers have available to them for financial monitoring is a detailed accounting of BAIF-administered funds by project and expenditure category in Rupees, a detailed accounting of all IDRC-administered funds, and a summary of total program expenditures. What is missing is an integration of the BAIF-administered funds with the IDRC-administered funds in Dollars on a multi-year basis, with an analysis for management.

This information is essential for sound financial monitoring of the program. For example, had this information been available to CIDA and IDRC at the end of year 2 (almost 2 years ago when expenditures for year 1 and 2, and the budget for year 3 were known), it would have been clear that the program was substantially under budget. IDRC could then have initiated action to determine why it was under budget, and what should be done about the situation. For example, alternative uses of the remaining available funds could have included:

a) not increasing annual expenditures in year 4 and 5, but extending the 12 basic projects for a further year or so after the completion of the original five-year program;

b) spending all of the remaining funds during the five year life of the project, but with a thorough analysis of several alternative uses of the funds; and

c) some combination of a) and b).

In the event, IDRC and CIDA were presented at the end of year 3 with a single proposal for the expenditure of all of the remaining funds during the last two years of the program. We are told by OPE that even this decision was made more difficult because, initially at least, the financial data available to IDRC and CIDA was not in a format that would allow a proper analysis of the new BAIF proposal.

It goes without saying that proper financial monitoring and reporting by IDRC is extremely important to CIDA. CIDA must have a clear picture of the financial status of the program in order to (a) perform its own financial monitoring, (b) be able to respond knowledgeably to requests from IDRC for major shifts in expenditures of funds from one budget line item to another, and (c) know expected annual and total cash flow of the program so that it can manage the finances of its overall program in India.

In order to overcome this lack of knowledge about the financial status of the program on a multi-year basis, the evaluation undertook to develop this information for itself. The results of this undertaking are presented in Chapter 3.

2.5.3 CIDA

CIDA's role in the management and monitoring of this project has been as prescribed in the CIDA management plan with the exception that it does not attend the annual Liaison Committee meeting in Pune where the first round of decisions are made regarding the forthcoming year's workplan and budget. CIDA also does not attend the annual IDRC Interdivisional Director's Committee meeting in Ottawa. where the annual workplan and budget is approved, and no provision for its attendance was included in the original planning documents and agreements. In retrospect, this might now be considered as a shortcoming in the original project design.

2.5.4 Lessons Learned for Design of a Possible Phase 2

A number of lessons can be drawn from the above analysis which might be applied if there is a phase 2 of this program, or if CIDA and IDRC enter into a similar arrangement elsewhere in the world.

First, it is clear that while the technical and financial monitoring of the 12 individual **projects** by BAIF and IDRC is good, no one individual or group in IDRC is responsible for the overall technical and financial monitoring of the **program** as a whole.

Second, if some individual or group within IDRC is made responsible for technical and financial monitoring in a possible phase 2, serious thought must be given to the reporting format to the senior decision making body. Examples of reports to Project Steering Committees and of Project Monitoring reports can be obtained from other CIDA projects. For example, IDRC might want to review the reports to Project Steering Committee of the CIDA-India Potash Limited Project.

Third, thought should be given to the composition of the decision making bodies in the BAIF-IDRC program. BAIF, IDRC and CIDA must be members of decision making bodies where **program**, as opposed to where individual **project** issues are reviewed.

Whatever form of management and monitoring committees are used in a possible phase 2, the planning of phase 2 is going to require very close co-ordination between CIDA and IDRC. Phase 1 required a CIDA PIM, a CIDA PAM, a CIDA Management Plan, an IDRC Project Summary, a CIDA/IDRC Contribution Agreement and an IDRC/BAIF Contribution Agreement. Largely because of the long time-span involved in developing these documents, the program evolved, and this resulted in a number of inconsistencies between documents, especially in the area of purpose, goals, and objectives of the program. CIDA and IDRC must develop a mechanism to ensure consistency in the design of Phase 2, which will require some individual(s) to review all documents produced by IDRC and CIDA to ensure consistency. The mechanism might take several forms: (a) a two-person IDRC/CIDA committee; (b) one person from either IDRC or CIDA; or (c) an outside consultant who would assist both organizations in designing phase 2 and preparing the approval documents.

A second factor that might require further thought is how to optimize the usefulness of some of the approval documents. Take the CIDA Management Plan as an example. The primary purpose of this document is to lay out, in a simple format, what is going to be done, by whom, when, how often, what each activity will cost etc. It is the principal document used by CIDA, the Canadian Executing Agency (IDRC) and the recipient, to ensure professional management of the project. In phase 1, CIDA's role is more that of banker rather than manager or monitor. IDRC, in the eyes of CIDA, might be considered as the Canadian Executing Agency. IDRC sees itself more as the co-financer rather than the Canadian Executing Agency. Everyone, we believe, sees BAIF as the executing agency for the program. Thus, one is the most important audiences for the CIDA Management Plan is BAIF, yet they have never seen a copy of this document. Questions such as this should be resolved by the IDRC/CIDA Phase 2 Coordinating Committee.

2.6 CONCLUSIONS AND RECOMMENDATIONS

2.6.1 Conclusions

1. The BAIF Development Research Foundation is a well-managed organization. This was obvious from the field trip during the first week in India: this complex logistical exercise was completed without any problems. The professional management of BAIF was confirmed during the second week of the evaluation, when BAIF standard operating procedures for purchasing,

accounting, financial reporting, decision making and project monitoring were carefully reviewed. The IDRC-BIS Program is clearly operating in an efficient and effective organizational environment and, from a management point of view, we are able to conclude that BAIF could manage and administer a phase 2 of this program, or other CIDA programs, without any problems.

2. The BAIF Institutional Support Program is well managed internally by the Research Program Organiser and the individual project team leaders. In the early days of the program, the Research Program Organiser met individually with each of the eight project teams. Minutes were kept of these meetings. More recently, the Research Program Organiser meets with each of the twelve teams every three months. Each of the twelve teams hold monthly meetings and minutes of these meetings are copied to the Research Program Organiser. Monthly financial reports are generated for each of the twelve projects. These are made available to the Research Program Organiser and the responsible project leader. The internal management and monitoring of the BAIF Institutional Support Program by BAIF is efficient and effective.

3. The primary management tool for organizing the work of the program is the annual workplan and budget. The process of internal development and review of the annual workplan and budget, the role of the Liaison Committee in Pune in reviewing the annual workplan and budget, and the role of the Interdivisional Director's Committee in Ottawa in approving the annual workplan and budget was carefully reviewed. On the basis of this review, we conclude that the process is efficient and effective.

4. The 1991/92 Annual Workplan and Budget was reviewed. It provides a clear statement, for each of the projects, of the purpose of the project, the goals and activities for the coming year, the time schedule for completing these activities and the budget required. This document provides the Research Program Organiser, the individual project team leaders, the IDRC program officers, the Interdivisional Director's Committee in Ottawa, and CIDA with a clear statement of the work plan and budget for the coming year.

5. External technical monitoring by IDRC of individual **projects** is through the annual technical papers, the six-monthly progress reports, and visits by the IDRC program officers to the individual projects at the time of the Liaison

Committee meetings. All parties appear to be satisfied with the level of external technical monitoring.

6. External financial monitoring of the IDRC-BIS Program **projects** is through quarterly financial reports which are sent to IDRC, New Delhi before being forwarded to IDRC, Ottawa. These reports are timely and of high technical quality.

7. Internal monitoring by the Research Program Organiser and the project team leaders is efficient and effective.

8. No IDRC internal system for the technical and financial monitoring by IDRC of the **program** as a whole was put in place. As a consequence a learning process from the program which might be useful for other similar IDRC initiatives has not been developed. Furthermore, important financial information was not always available to IDRC and CIDA in a form that was useful to the issues at hand.

9. The staff of the IDRC-BIS Program are well-educated and highly professional. Morale appears to be very high.

2.6.2 Recommendations

1. IDRC should set up a system for accurately logging monitoring visits, should develop a format for monitoring mission reports, should require that timely monitoring mission reports be drafted and that these reports be filed so that they can be used as a source of information for **program** technical monitoring reports.

2. In the event that IDRC and CIDA are in a position to provide further support, the three organizations should meet to map out the general parameters for further support.

3. Following this initial meeting, BAIF should prepare a detailed formal proposal to IDRC.

4. IDRC, with input from CIDA where required, should at the same time review its internal system for technical and financial program monitoring and should review the format and content of reports that are presented to the Ottawa-based decision making body.

5. CIDA should be a full member of decision making bodies where significant program issues are discussed.

6. If there is a phase 2, IDRC and CIDA should give careful consideration to setting up a small Phase 2 Coordinating Committee which would, *inter alia*, ensure consistency between the approval documents.

7. CIDA should consider financing visits of senior IPL personnel to BAIF and senior BAIF personnel to IPL.

3.0 FINANCIAL MANAGEMENT AND ANALYSIS

3.1 INTRODUCTION

We saw in Chapter 2 that financial information on the program was not in a form that would have helped IDRC and CIDA consider what might be done with surplus funds that were emerging by the end of year 2 of the program. Nor was this information immediately available in an easily understandable form when the decision was taken to fund the BAIF Management Training Centre. This information was still not available at the beginning of this evaluation. We therefore had to undertake this analysis ourselves: partly so that we could understand what money had been spent on what projects, on what budget line items and when, partly to provide CIDA with a clear financial picture, and partly to suggest how program financial data might be presented in future, especially if there is a phase 2.

The purpose of this chapter is to provide a history of expenditures over the life of the program: starting with the original program budget, recording annual expenses during the first three years, estimating expenses in year four and five, and finishing with expected variances between expected life-of-program expenses and the budget. All financial reporting by BAIF is in Rupees, whereas all financial reporting by IDRC is in Canadian dollars. This makes it difficult to follow the financial history of the program. To overcome this difficulty, the Rupee data reported by BAIF have been converted into Canadian dollars. The principal BAIF data used are their annual expenditures by project and by line item. The methodology for converting Rupees to Canadian dollars, and the converted tables themselves for years 1, 2 and 3 of the program, are presented as Appendix F.

3.2 SOURCES OF FUNDING AND ORIGINAL BUDGET

There are three sources of funding for the IDRC-BAIF project: CIDA, IDRC and BAIF. The contributions of CIDA and IDRC are shown in Table A. CIDA is contributing up to a maximum of $4,603,900, and IDRC is contributing up to a maximum of $1,855,000, i.e., CIDA is providing 69% of the Canadian contribution.

TABLE A

BUDGET SUMMARY

Item	CIDA Contribution	IDRC Contribution	Total Budget
BAIF Administered Funds			
Development Research Activities	$1,459,700	$785,900	$2,245,600
Infrastructure	589,600	317,400	907,000
Capital Equipment	900,200	484,600	1,384,800
IDRC Administered Funds			
Technical Assistance	227,100	122,300	349,400
Capital Equipment	199,700	90,300	290,000
Inflation	457,600	0	457,600
Contingency	230,000	54,500	284,500
Total	$4,063,900	$1,855,000	$5,918,900

Table 1 shows the original budget of the IDRC-BIS Program as per the BAIF/IDRC Memorandum of Grant Conditions. The budget was divided into those funds which would be administered by BAIF and those which would be administered by IDRC. The budget for BAIF was $4,537,378 and the budget for IDRC was $366,600. The total budget was $4,903,978. We are told by IDRC's financial group that, while not shown in the agreement signed by BAIF and IDRC, a sum of $272,800 had been reserved for IDRC project monitoring. If this sum is added to the budget, as it is in Table 1, the IDRC administered funds increase to $639,400, and the total budget increases to $5,176,778.

The original budget forecast that annual expenditures would be higher in the early years of the program than in the later years. This was primarily because investment items such as infrastructure and capital equipment were expected to be much higher in the first two years than in the last two years of the program. As will be shown, actual annual expenses in the last two years of the program are expected to be much higher than actual annual

TABLE 1

CANADIAN CONTRIBUTION TO IDRC-BIS PROGRAM - ORIGINAL BUDGET

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
BAIF Administered Funds						
Salaries	$117,030	$182,790	$215,171	$213,272	$223,166	$951,429
Research Supplies	$88,147	$208,675	$233,260	$173,596	$179,192	$882,870
Consultants	$9,994	$4,997	$2,499	$0	$0	$17,490
Report Preparation	$4,697	$2,099	$13,092	$6,596	$16,790	$43,274
Support Services	$0	$0	$0	$9,994	$0	$9,994
Training	$5,497	$8,995	$19,188	$18,389	$18,489	$70,558
Travel	$18,789	$19,788	$18,789	$14,491	$12,493	$84,349
Books & Periodicals	$10,993	$31,981	$8,995	$9,694	$8,495	$70,158
Administrative Overhead	$0	$0	$0	$0	$0	$0
Infrastructure	$572,656	$183,890	$111,933	$35,479	$2,998	$906,956
Capital Equipment	$364,981	$429,742	$315,811	$254,347	$19,988	$1,384,869
Unallocated Reserve	$23,086	$23,086	$23,086	$23,086	$23,086	$115,431
Sub Total	$1,215,870	$1,096,042	$961,823	$758,945	$504,697	$4,537,378
IDRC Administered Funds						
IDRC Project Monitoring	$60,000	$51,100	$52,300	$53,700	$55,700	$272,800
Capital Equipment	$0	$130,000	$100,000	$0	$50,000	$280,000
International Travel	$3,700	$0	$3,700	$0	$0	$7,400
Workshops & Training	$13,400	$4,900	$0	$0	$0	$18,300
Consultants	$22,900	$9,000	$29,000	$0	$0	$60,900
Sub Total	$100,000	$195,000	$185,000	$53,700	$105,700	$639,400
Total	$1,315,870	$1,291,042	$1,146,823	$812,645	$610,397	$5,176,778

expenditures in the first three years of the program. This is almost entirely explained by large new infrastructure expenses in year four and five, which were not in the original budget.

3.3 EXPENDITURE BY BUDGET ITEM AND BY YEAR

There are a number of reasons for developing a budget. In the case of the budget presented in Table 1, the objectives were to present (a) the overall Canadian contribution to the IDRC-BAIF program, (b) what the expected cash flow will be in each year, and (c) how much will be spent on each budget line item by year. The budget is also used in the financial management of the program by comparing budget figures with actual figures. A significant difference between the budgeted and actual expenditures should then trigger an analysis of why this variance occurred. Both IDRC and BAIF conducted variance analyses within years, but we have found no evidence that a similar analysis was for a multi-year period.

Table 2 shows the total Canadian contribution to the IDRC-BIS Program over the first three years of program activities. An analysis of Table 1 and a comparison of Table 1 and Table 2 leads to a number of conclusions.

First, the column *Project Budget* in Table 2 is derived from IDRC's computer printouts, entitled BAIF-Institutional Support, Project Financial Analysis. There are a number of differences between this project budget and the original project budget contained in the BAIF/IDRC Memorandum of Grant Conditions. These differences are highlighted in Table 3. For example, the total BAIF administered funds are reduced by $94,469 whereas the IDRC administered funds are increased by $94,891. Furthermore, BAIF administered research supplies and capital equipment were reduced by $128,478 and $281,801 respectively, whereas the sum for infrastructure was increased by $166,973.

Second, actual annual expenditures were between $300,000 and $450,000 below budgeted expenditures in each of the first three years of the program. At the end of the first three years actual expenses were $1,168,285 under budget: budgeted expenditures were $3,753,735, whereas actual expenditures were $2,585,450. As will be shown later, under budget expenditures in years 1-3 are counterbalanced by forecast over budget expenditures in years 4 and 5. If the data presented in Tables 1 and 2, with a proper analysis of variance, had been available to people responsible for the program at the end of year 2, a study could

TABLE 2

CANADIAN CONTRIBUTION TO IDRC-BIS PROGRAM - BUDGET LINE

Item	Project Budget	Expense Year 1	Expense Year 2	Expense Year 3	Expense Year 1-3	Unspent
BAIF Administered Funds						
Salaries	$1,002,092	$114,916	$167,672	$212,733	$495,321	$506,771
Research Supplies	$754,392	$60,682	$120,846	$159,975	$341,503	$412,889
Consultants	$13,441	$471	$1,785	$1,743	$3,999	$9,442
Report Preparation	$48,995	$2,922	$4,678	$4,936	$12,536	$36,459
Training	$92,888	$8,995	$6,547	$12,329	$27,871	$65,017
Travel	$87,332	$10,693	$20,379	$28,509	$59,581	$27,751
Books & Periodicals	$69,979	$13,171	$16,199	$12,379	$41,749	$28,230
Administrative Overhead	$90,759	$21,185	$33,811	$43,261	$98,257	($7,498)
Infrastructure	$1,073,929	$485,779	$159,513	$69,519	$714,811	$359,118
Capital Equipment	$1,103,068	$207,659	$159,041	$109,402	$476,102	$626,966
Unallocated Reserve	$105,634	$0	$0	$0	$0	$105,634
Sub Total	$4,442,509	$926,473	$690,471	$654,786	$2,271,730	$2,170,779
IDRC Administered Funds						
IDRC Project Monitoring	$272,800	$0	$19,442	$28,326	$47,768	$225,032
Capital Equipment	$377,817	$33,875	$151,720	$2,291	$187,886	$189,931
International Travel	$36,265	$0	$8,042	$1,980	$10,022	$26,243
Workshops & Training	$24,716	$169	$7,103	$11,066	$18,338	$6,378
Consultants	$22,693	$0	$38,520	$11,186	$49,706	($27,013)
Sub Total	$734,291	$34,044	$224,827	$54,849	$313,720	$420,571
Total	$5,176,800	$960,517	$915,298	$709,635	$2,585,450	$2,591,350

TABLE 3

COMPARISON OF ORIGINAL AND REVISED BUDGET

Item	Original Project Budget	IDRC Project Budget	Difference Between Budgets
BAIF Administered Funds			
Salaries	$951,429	$1,002,092	$50,663
Research Supplies	$882,870	$754,392	($128,478)
Consultants	$17,490	$13,441	($4,049)
Report Preparation	$43,274	$48,995	$5,721
Training	$70,558	$92,888	$22,330
Travel	$84,349	$87,332	$2,983
Books & Periodicals	$70,158	$69,979	($179)
Administrative Overhead	$0	$90,759	$90,759
Infrastructure	$906,956	$1,073,929	$166,973
Capital Equipment	$1,384,869	$1,103,068	($281,801)
Unallocated Reserve	$125,425	$105,634	($19,791)
Sub Total	$4,537,378	$4,442,509	($94,869)
IDRC Administered Funds			
IDRC Project Monitoring	$272,800	$272,800	$0
Capital Equipment	$280,000	$377,817	$97,817
International Travel	$7,400	$36,265	$28,865
Workshops & Training	$18,300	$24,716	$6,416
Consultants	$60,900	$22,693	($38,207)
Sub Total	$639,400	$734,291	$94,891
Total	$5,176,778	$5,176,800	$22

have been initiated to determine the most appropriate use of the "excess" funds in years 4 and 5.

Table 4 shows that BAIF's financial contribution to the IDRC-BIS Program was the equivalent of $465,999 during the first three years of the program. This contribution was towards salaries, training, research, equipment, reports, travel and infrastructure.

Based on evidence presented in Chapter 2 and this section, we conclude that financial monitoring of individual **projects** by BAIF and IDRC was satisfactory, but that financial data and analysis for the **program** as a whole was not available in a usable form.

3.4 EXPENDITURE BY PROJECT BY YEAR

Table 5 shows the expenditures on each of the twelve projects in the IDRC-BIS Program for each of the first three years of the program. The Information Resource Centre and the Community Based Research were by far the largest projects during the first three years. They accounted for expenditures of $729,356 and $699,542 respectively, out of a total expenditure of $2,271,732 during the first three years of the program. The principal reason for these large proportions were the purchase of the Pradeep Chambers building in the case of the IRC and expenditures on salary and research supplies in the case of CBR. While both of these projects will continue to incur large expenses in the fourth year, by far the largest project in the fourth year will be the BAIF Management Training Centre, because of the large investment in building the Centre. This expense will continue into year five.

3.5 MODEL FINANCIAL REPORT

A recurring theme in both Chapter 2 and in this chapter is that further work on financial monitoring of the program as a whole, especially on a multi-year basis is required. The purpose of this section is to present such an analysis, but is simply an example format: other approaches could be used. For example, a particularly useful model of reporting can be found in the reports prepared for the Project Steering Committee of the CIDA-IPL project in India. The Project Monitor's reports to the Project Steering Committee also contain examples of useful financial reporting formats.

TABLE 4

BAIF CONTRIBUTION TO IDRC-BIS PROGRAM

Item	Year 1 1988/89	Year 2 I989/90	Year 3 1990/91	Total Year 1-3
Salaries	$36,790	$25,196	$30,298	$92,284
Training	$11,620	$6,829	$25,630	$44,080
Research	$45,549	$31,593	$54,738	$131,880
Equipment	$50,138	$8,895	$97,137	$156,170
Reports	$0	$0	$925	$925
Travel	$2,046	$1,751	$380	$4,177
Infrastructure	$0	$33,883	$2,599	$36,483
Total	$146,143	$108,148	$211,708	$465,999

TABLE 5

CANADIAN CONTRIBUTION TO IDRC-BIS PROGRAM - BY PROJECT

Project	Year 1	Year 2	Year 3	Total Year 1-3	Budget Year 4	Total
Resource Centre	$498,295	$107,603	$123,458	$729,356	$105,142	$834,498
Community Research	$213,481	$270,457	$215,604	$699,542	$139,109	$838,651
Frozen Semen	$13,162	$25,588	$41,804	$80,554	$26,246	$106,800
Rural Polytechnic	$0	$28,379	$17,942	$46,321	$84,076	$130,397
Mycorrhiza	$113,834	$94,228	$36,969	$245,031	$18,738	$263,769
Micro-carrier	$0	$14,193	$15,666	$29,859	$8,729	$38,588
Mushrooms	$0	$0	$4,464	$4,464	$13,471	$17,935
Cattle Feeding	$82,527	$66,441	$35,223	$184,191	$19,702	$203,893
Sericulture	$0	$26,443	$72,576	$99,019	$40,388	$139,407
Post-production	$5,175	$57,139	$39,127	$101,441	$21,835	$123,276
Bamboo	$0	$0	$51,954	$51,954	$48,828	$100,782
Management Training	$0	$0	$0	$0	$405,574	$405,574
Total	$926,474	$690,471	$654,787	$2,271,732	$931,838	$3,203,570

Tables 6 and 7 provide an historical financial summary of the IDRC-BIS Program over the first three and one half years of the program.

Table 6 shows BAIF administered funds and IDRC administered funds by **budget line item** for years 1-3. It also shows the budget for year 4 and actual expenditures by quarter for the first two quarters of FY 1991-92. Finally, it shows the unspent balance for the fourth year and the unspent balance for the individual line items and the program as a whole.

Table 7 shows the total BAIF administered funds by **project** for the first three years, the budget for year four, actual expenses for the first two quarters of year four, the unspent balance for the fourth year and the total expenses by project for the program to date.

If senior management of IDRC and CIDA find the financial summaries presented as Tables 6 and 7 useful, they might wish to ask the IDRC Office of the Treasury, the Office of Planning and Evaluation, or some other individual or group in IDRC to continue updating these tables on a quarterly basis.

3.6 PROJECTED EXPENDITURES TO THE END OF THE PROGRAM

Table 8 provides current best estimates of expenditures over the full five years of the IDRC-BIS Program. The estimated expenses for year four are expected to be accurate within one or two percent. The expenses for year 5 are current best "guestimates" provided by BAIF. However, these "guestimates" can easily be updated as soon as the year 5 budget becomes available in December 1991 or January 1992.

The final column shows the variance between the five-year project budget and the forecast five-year actual expenditures. There are three areas under the BAIF administered funds where the program may significantly underspend the budget: namely, salaries (-$172,000), research supplies (-$161,000) and capital equipment (-$237,000). The one area where it appears there will be a large budget overrun is for infrastructure ($631,000). The total budget overrun for the BAIF administered portion of the program is forecast to be $120,000. While only a guess at this time, this overspending in the BAIF administered funds may be counterbalanced by underspending in the IDRC administered funds.

TABLE 6

CANADIAN CONTRIBUTION TO IDRC-BIS PROGRAM - BUDGET LINE

Item	Project Budget	Expense Year 1-3	Budget Year 4	Expense Q1 + Q2	Expense Q 3	Balance Year 4	Balance Project
BAIF Administered Funds							
Salaries	$1,002,092	$495,321	$159,955	$87,285		$72,670	$419,486
Research Supplies	$754,392	$341,503	$81,216	$52,480		$28,736	$360,409
Consultants	$13,441	$3,999	$4,872	$444		$4,428	$8,998
Report Preparation	$48,995	$12,536	$11,369	$711		$10,657	$35,748
Training	$92,888	$27,871	$15,893	$8,123		$7,771	$56,894
Travel	$87,332	$59,581	$16,102	$12,066		$4,036	$15,685
Books & Periodicals	$69,979	$41,749	$9,188	$5,422		$3,766	$22,808
Administrative Overhead	$90,759	$98,257	$29,860	$16,653		$13,206	($24,151)
Infrastructure	$1,073,929	$714,811	$514,524	$1,545		$512,980	$357,573
Capital Equipment	$1,103,068	$476,102	$88,858	$22,494		$66,364	$604,472
Unallocated Reserve	$105,634	$0	$0	$0		$0	$105,634
Sub Total	$4,442,509	$2,271,730	$931,838	$207,224		$724,614	$1,963,555
IDRC Administered Funds							
IDRC Project Monitoring	$272,800	$47,768	$30,000	$11,456		$18,544	$213,576
Capital Equipment	$377,817	$187,886	$62,280	$54,147		$8,133	$135,784
International Travel	$36,265	$10,022	$17,230	$9,258		$7,972	$16,985
Workshops & Training	$24,716	$18,338	$19,800	$4,986		$14,814	$1,392
Consultants	$22,693	$49,706	$0	$5,085		($5,085)	($32,098)
Sub Total	$734,291	$313,720	$129,310	$84,932		$44,378	$335,639
Total	$5,176,800	$2,585,450	$1,061,148	$292,156		$768,992	$2,299,194

TABLE 7

CANADIAN CONTRIBUTION TO IDRC-BIS PROGRAM - BY PROJECT

Project	Expense Year 1-3	Budget Year 4	Expense Q1 & Q2	Expense Q3	Unspent Year 4	Expense to date
Resource Centre	$729,356	$105,142	$49,988		$55,154	$779,344
Community Research	$699,542	$139,109	$61,153		$77,956	$760,695
Frozen Semen	$80,554	$26,246	$7,014		$19,232	$87,568
Rural Polytechnic	$46,321	$84,076	$15,438		$68,638	$61,759
Mycorrhiza	$245,031	$18,738	$10,147		$8,591	$255,178
Micro-carrier	$29,859	$8,729	$1,332		$7,396	$31,191
Mushrooms	$4,464	$13,471	$1,441		$12,030	$5,905
Cattle Feeding	$184,191	$19,702	$10,131		$9,571	$194,322
Sericulture	$99,019	$40,388	$16,124		$24,264	$115,143
Post-production	$101,441	$21,835	$10,417		$11,418	$111,858
Bamboo	$51,954	$48,828	$22,412		$26,416	$74,366
Management Training	$0	$405,574	$1,628		$403,947	$1,628
Total	$2,271,732	$931,838	$207,224	$0	$724,614	$2,478,956

TABLE 8

CANADIAN CONTRIBUTION TO IDRC-BIS PROGRAM

Item	Project Budget Year 1-5	Actual Expense Year 1-3	Estimated Expense Year 4	Guestimated Expense Year 5	Forecast Expense Year 1-5	Variance Budget & Actual
BAIF Administered Funds						
Salaries	$1,002,092	$495,321	$160,789	$173,913	$830,023	$172,069
Research Supplies	$754,392	$341,503	$77,770	$173,913	$593,186	$161,206
Consultants	$13,441	$3,999	$3,878	$8,696	$16,573	($3,132)
Report Preparation	$48,995	$12,536	$8,182	$26,087	$46,805	$2,190
Training	$92,888	$27,871	$14,805	$43,478	$86,154	$6,734
Travel	$87,332	$59,581	$18,934	$43,478	$121,993	($34,661)
Books & Periodicals	$69,979	$41,749	$10,294	$21,739	$73,782	($3,803)
Administrative Overhead	$90,759	$98,257	$29,465	$43,478	$171,201	($80,442)
Infrastructure	$1,073,929	$714,811	$468,134	$521,739	$1,704,684	($630,755)
Capital Equipment	$1,103,068	$476,102	$85,557	$304,348	$866,007	$237,061
Unallocated Reserve	$105,634	$0	$0	$52,174	$52,174	$53,460
Sub Total	$4,442,509	$2,271,730	$877,809	$1,413,043	$4,562,582	($120,073)
IDRC Administered Funds						
IDRC Project Monitoring	$272,800	$47,768	$30,000		$77,768	$195,032
Capital Equipment	$377,817	$187,886	$62,280		$250,166	$127,651
International Travel	$36,265	$10,022	$17,230		$27,252	$9,013
Workshops & Training	$24,716	$18,338	$19,800		$38,138	($13,422)
Consultants	$22,693	$49,706	$0		$49,706	($27,013)
Sub Total	$734,291	$313,720	$129,310		$443,030	$291,261
Total	$5,176,800	$2,585,450	$1,007,119	$1,413,043	$5,005,612	$171,188

It should be noted that the "project budget" referred to in all tables, with the exception of Table 1, is a revised "project budget". If the original budget contained in the BAIF/IDRC Memorandum of Grant Conditions were used, the variances would, in some cases, be even larger. For example, underspending would be: salaries (-$121,000), research supplies (-$290,000), capital equipment (-$519,000), while overspending on infrastructure would be $798,000. However, inspite of this significant overspending and underspending on certain line items, the variance between the original budget and the forecast actuals results in an overspending of only $25,000: an insignificant amount which will possibly be eliminated by underspending in the final year, or by higher exchange rates than assumed.

3.7 CONCLUSIONS AND RECOMMENDATIONS

3.7.1 Findings and Conclusions

1. Financial monitoring of individual **projects** by BAIF and IDRC was satisfactory, but financial data analysis and monitoring by IDRC of the program as a whole, especially on a multi-year basis, could be improved.

2. There was a significant **underspending** of funds in years 1, 2 and 3 compared to the original budget: $330,525, $375,744 and $437,188 under budget respectively, and no analysis was conducted on (a) why this had occurred and (b) what the implications of this underspending would be for the rest of the life of the program.

3. There will be a significant **overspending** of funds in years 4 and 5 compared to the original budget: $194,474 and $802,646 respectively.

4. Line items where there will be considerable underspending from the original budget include salaries, research supplies and capital equipment: $121,000, $290,000 and $519,000 respectively. There will be a budget overrun of $800,000 on infrastructure.

3.7.2 Recommendations

1. It is recommended that the IDRC Office of the Treasury, the Office of Planning and Evaluation or some other group in IDRC update Table 6 and 7 (or similar tables) on a quarterly basis, in order to provide senior management in IDRC and CIDA with an accurate and useful periodic report of the project's financial situation.

4.0 OVERVIEW OF THE IDRC-FUNDED PROJECTS

4.1 THE EVALUATION MANDATE

In order to generate the desired evaluation results, the terms of reference foresaw two distinct levels of involvement by the evaluators. On one hand there was the Team Leader and the Rural Development Specialist, who were to take a general view of the overall project. To assist them, four Indian members were to join the team, who were charged with an in-depth look at particular projects or aspects.

In the field, the six person team was in a sense divided up into two groups. The Rural Development Group consisted of the Rural Development Specialist, the WID Specialist and the Livestock Expert. The Management group then was composed of the Team Leader, the Information Expert and the Training Specialist. Thus this chapter will draw upon the reports of both the WID Specialist, while the report of the Livestock Expert is integrated into the Section describing individual projects. We were then in a position to utilize and expand upon their findings and conclusions in the next chapter.

The Livestock Expert was specifically charged to give a detailed opinion on the scientific aspects of three distinct projects in his area of expertise. These three projects are therefore covered by him in considerable detail, and act as sampling of the scientific achievements of the overall capability of BAIF. All the remaining projects were covered by the Rural Development Specialist. Given his generalist background and interest, the same level of scientific evaluation was neither possible nor desired. Instead the approach taken on the basis of the Terms of Reference was to cover only the broader aspects. Thus each of the remaining projects was evaluated with particular emphasis on the present or potential impact on the recipient population. Any judgements made are therefore based on these considerations, and not on the learned judgement by an expert in that specific field.

In fact, given the diversity of projects, it would be quite difficult to find one person being expert on for example iron deficiencies in children, the action of growth hormones on bamboo, the quality of silk produced by different hybrid strains of moth, and the merit of different freezing techniques for buffalo semen. The following discussion should therefore be understood as being written by a generalist lacking the in-depth knowledge of all the different subjects to be evaluated.

4.2 THE INDIVIDUAL PROJECTS

The individual projects are here described as to their gaol, their achievements, their problems, and their fit into the activities of BAIF. Some detailed conclusions are drawn, and a number of project specific recommendations are made. Chapter 5 then attempts to look at the communalities of all the projects in its analysis, and makes recommendations of a more global nature.

4.2.1 Frozen Semen Technology for Buffaloes

BAIF has been associated with crossbreeding cattle for the last twenty years, and has been able to create substantial income for a large number of farmers through this technology. But until recently it had not been involved in any buffalo development work. A large number of small farmers and landless labourers raise one or two buffaloes for milk production, and are able to supplement their income by the sale of this milk. These farmers had to depend on local non-descript bulls of low genetic potential for the service of their female buffaloes. BAIF was thus frequently approached by farmers with the request to also provide an artificial insemination service for their buffaloes. It was therefore decided that in order to meet the needs of the rural poor, buffaloes could not be left out. BAIF scientists however knew that the freezing and preservation of buffalo semen was much more difficult than that process is for cattle, and made a request for IDRC support in order to establish a functional frozen semen technology.

The project has made excellent progress during the period from 1988 to 1991. The technology of freezing buffalo semen has been upgraded to a level that it now can be used in field testing, and with limited further work can soon be made available by BAIF on a larger scale for the development of buffaloes. The scientists have made excellent progress in evolving a technology for deep freezing of buffalo semen showing significantly improved conception rates. A two-step dilution at 5 degrees celsius produced superior frozen semen, compared to the conventional single step dilution. It was also found that the 3 hour equilibration period was significantly superior to 6 hours, in terms of post thaw motility, intact acrosome maintenance, live count and aspartate amino transferase (AAT) leakage.

1,560 doses of frozen semen of Murrah bulls with different packagings (French medium, French mini, and German mini tubes) have now been distributed to eight centers in South Maharashtra for buffalo artificial insemination. Records show that 609 doses had been

utilized by the end of October 1991. 2,805 semen doses of Surti bulls have also been distributed to 10 centers in Karnataka State during September 1991. The reports on conception rates achieved with the use of these different packaging systems is likely to be available by the end of December 1991. After the analysis of the results on conception rates, the frozen semen technology will be standardized by the end of March, and large scale production and distribution for wider use will start in mid-1992.

The establishment of a functional frozen semen technology will improve the rate of success for artificial insemination in buffaloes. This new technology is expected to be in considerable demand among buffalo owners, who will be able to get over 60% higher milk production from the female offspring produced by AI. Higher milk production from buffaloes will earn their owners more money, and as buffaloes are generally managed by woman, who can retain the money they receive from the milk sale, the socio-economic condition of these women is likely to improve as well.

The project team is now starting to look at artificial insemination for Buffaloes in a more holistic way, and has identified a second serious limiting factor. In order to make the system of AI function, proper heat detection will become essential. This is much easier in cattle than in buffalo, which exhibit a marked seasonality in their breeding behaviour. A missed heat here can thus delay conception and milk production for up to six months. To make artificial insemination work in buffaloes, and to actually cash in on the completed semen production research, an additional and new research direction will be essential to undertake. The technology of heat synchronization is well established in developed countries, and the project leader feels that the adaptation of this technology for buffaloes has substantial potential. Under these conditions it will not be so much a synchronization of heat that is needed, it is rather heat induction and heat predictability, which has now been identified as the main limiting factor to using AI. for Buffaloes.

This project has thus been an outstanding success in achieving its set goals, but will need to continue for several more years to cash in on the first step of developing artificial insemination in buffalo.

Recommendation 1:

> **The project has achieved its primary objectives, and should now move towards a more holistic buffalo improvement program. Four particular areas on which the project needs to concentrate during the next years will be the extensive field testing of frozen semen, the establishment of a heat induction system for buffalo, the control of potential disease transmission through semen, and progeny testing to assess the quality of different buffalo bulls used in AI.**

4.2.2 Economic Feeding Systems for Ruminants

The project was started in 1988 with the title "Development of Cheap Cattle Feeds and Feed Supplements from Locally Available By-products". At the third Liaison Committee meeting of IDRC-BAIF in January 1990, the title, work plan and objectives were modified, resulting in a change of emphasis from cheap cattle feeds to the development of economical feeding systems. This was a distinct improvement over the earlier work plan and objectives.

A detailed survey of farmers with regard to feeding practices, and the seasonal availability of feed resources has been completed in two cattle development areas of Rajasthan State. Very useful information regarding land use patterns, the principal crops cultivated, and the feeding practices used have been collected for different categories of farmers, and the availability of nutrients has been assessed in comparison to the nutritional requirements of animals. This information has been put in the central data bank, and will form the basis for the development of feeding strategies in similar conditions.

The analysis of feed/fodder samples collected during the survey, consisting mainly of crop residues and locally available by-products, has been done, and their nutritive value assessed by *in-vitro* techniques. The evaluation of pearl millet straw and pigeon pea residue was also undertaken through feeding trials. Differences in the nutritive value of straw from different varieties of pearl millet were observed in the initial feeding trials, which indicate that more work needs to be done on this problem. The results also revealed differences in feed intake and digestibility, related to the nutritive value differences in pearl millet. The pigeon pea crop residue studies indicated that it could be considered as a medium quality forage with moderate protein content, useful as a supplement to straw diets.

Studies have been completed to measure the effect of urea treatment on digestibility, intake and nutritive value of maize straw. For a proper evaluation of this technology, a long term study with growing animals is now in progress. The information collected during the feeding practices survey has been used to identify the limiting nutrients and seasonal variations in their supply in relation to the nutritive requirements of the animals. This information will be used to devise suitable interventions in developing improved feeding systems. This program was initiated by providing 1500 kg of crop systems residue treated with urea to five farmers for field trials. Results of acceptance are awaited.

In terms of impact, it is too early to assess the benefits which this project has the potential to create. At this time the project has not reached a point where a new technology is ready to be taken to the farm. The project has furthermore not been convincing in showing that the potential technologies will generate a substantial tangible benefit to the farmers.

Recommendation 2:

> **This project's impact, and the promise of substantial benefits to farmers, is not as evident as it is in most of the other projects, and it is therefore suggested that its usefulness in the overall IDRC funded package be reassessed. The question of continuing this project within the future activities of BAIF's research program will then have to be resolved.**

4.2.3 Micro-Carrier Culture Technique

The project was started in 1988 with the title "Development of Improved Marek's Disease Vaccine." The main objective was to establish conditions for the large-scale production of Marek's Disease Vaccine, using Roller bottles and Micro-carrier cell culture (Cytodex) systems. At the third Liaison Committee meeting of IDRC-BAIF in January 1990, the title, the work plan and objectives were modified, in order to incorporate work on other viruses such as Foot and Mouth disease, Rinderpest, and several poultry diseases. The original project, as proposed by BAIF, had assumed that the Institute Armand-Frappier (IAF) of Quebec would collaborate with the BAIF laboratory at Wagholi. It seems however that IAF had obtained the technology for large scale production of Polio, Measles, Rabies and Marek's Disease Vaccine by microcarrier technique from M.I.T. in Boston, with support

provided by the Rockefeller Foundation. As a result, there was no participation of IAF when the project started.

For cell culture work, a Pathogen Free (SPF) Poultry flock was necessary, and has been established. Proper monitoring of the SPF status of this poultry flock is being done. Several laboratory techniques needed to be standardized as a prerequisite to cell culture technique. It has been observed that in roller bottles, higher cell densities can be achieved, and in microcarrier systems, using Cytodex I, the cell densities and cell yields are significantly higher than even with roller bottles.

The HVT FC-126 virus has been adopted on Chicken Embryo of Fibroblast (CEF) cultures, and the growth kinetics of HVT virus cell have been investigated for further improvements in virus yields. Techniques for quality assay procedures for Marek's Disease Vaccine, as per British Pharmacopoeia (Veterinary), have been standardized.

The quality of Marek's Disease Vaccine is judged in terms of plaque forming units (PFU) of HVT virus present in the vaccine. Higher pfu/ml are produced in microcarrier system at the level of 0.30 mio pfu/ml, compared to 0.16 mio. pfu/ml. in the conventional monolayer system. Work is now in progress for scaling up the production HVT FC 126 virus in CEF cell cultures from 250 ml to 500 ml.

In order to establish the technique of cell/virus propagation to anchorage dependent preparation of other immuno-biologicals, the microcarrier technique was tried for the cultivation of BHK cells, Vero cells, the Newcastle Disease virus, the Bursal Disease Virus, and the FMD virus, as well as other infectious diseases in livestock and poultry. A two-fold increase in cell and virus yields was achieved through the use of the micro-carrier technique in these cell and virus cultures, at quantities of up to 250 ml.

In order to also evaluate the cost effectiveness of the new system, the cost accounting section of BAIF Laboratory was asked to undertake a comparative cost analysis of the conventional and the new microcarrier technology. The material consumption and resulting cost of producing 1 million doses of Marek's Disease Vaccine are as follows :

Particular	Conventional Technology	Microcarrier Technology
Material Consumption		
Media and stabilizers (in litres)	70	47
Cytodex 1 (in g)	0	141
Cost of material consumed *		
Media and stabilizer (in Rs.)	9,923.80	7,049.20
Cytodex 1 (in Rs.)	0.00	13,874.40
Total cost	9,923.80	20,923.60
Additional cost for microcarrier technology		10,999.80

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* Cytodex 1 in 5 kg packing costs Rs. 98.4 per g as on 18. Nov. 1991.

The cost of labour, energy, packaging and transportation are the same in the two technologies, and hence are not included in this analysis. Using microcarriers for more than one culture/harvest cycle is NOT recommended. At the current scale of micro-carrier technology available to BAIF, and based on the cost of the microcarrier (Cytodex I), this technology is not economical. If the scale of production is increased, costs may be reduced to a level where it may become viable.

The constraints to large-scale cultivation of cells however include the pH change and accumulation of metabolic by-products, the sensitivity of cells to physical and physiological constraints to growth, as well as maintaining cultures at an optimum cell density and productivity by limiting excessive cell growth. These constraints could however be overcome with additional equipment and know-how.

Despite these problem areas, the microcarrier technology, even at the present scale of production, can be used for developing diagnostic kits by producing monoclonal antibodies by in-vitro cell culture systems. These antibodies are at present produced by growing hybridoma cells in the peritoneal cavity of mice. For the production of only 100 mg of antibodies, one mouse on average has to be sacrificed. The microcarrier technique can produce large quantities of antibodies without destroying laboratory animals. This will support the IDRC policy and philosophy regarding care and use of laboratory animals for biological studies.

The project has made excellent progress in developing and standardizing cell culture technology at a small scale of production, using the microcarrier culture system. The technology at this scale however is not cost effective, and the scaling-up of the process will require additional equipment and knowhow. Diagnostic kits, as and when developed from monoclonal antibodies produced by microcarrier technology, will meet a need of animal health personnel, and thus support the cattle development programs.

The question remains to be answered if at a larger scale the new technology would become cost effective. In that case considerable outside funding might be needed to provide the equipment necessary for such a larger scale production.

Recommendation 3:

> **It is suggested that the project be reviewed in BAIF's overall planning activities, where a decision needs to be made as to the future potential of this research activity. The possibility of collaboration with other research institutions, and potential alternative funding sources should also be explored.**

4.2.4 Sericulture Technology

The production of silk has been a successful industry in India for centuries, but has been limited to specific areas of the country, which had specialized in this activity, such as West Bengal and Kashmir. The opinion was that these areas have particular advantages for the growth of mulberry trees, as well as for the rearing of silk worms. This view was reinforced by the poor results from attempts to establish silk industries in new areas. However, more recently the prevailing view that specific environmental and climatic conditions are necessary

for silkworm rearing has been challenged. Since 1970 silkworm rearing has been introduced with some success to areas of Gujarat and Andra Pradesh, and the Indian Government is actively promoting the establishment of a silk industry in new areas. It has by now been established that if careful adaptation studies are carried out, both on the growing of mulberry trees, and on the breeding and rearing of silkworms, it will be possible to develop functioning production systems in new areas.

Silkworm rearing is considered an activity with a high potential for income earning for rural farming families, and is fully consistent with BAIF's overall aim to improve the livelihood of rural poor families through income generation. Undertaking a research program to establish a technological package to be used in Maharashtra state, and potentially elsewhere, was thus a sound decision, with the potential for considerable impact in generating additional income. The establishment of a functioning cottage industry for silk production however has many facets, from research into the growing of mulberry trees, to the genetic potential of different strains of the silkworm moth. In order to establish an integrated package, the research project had to address all these different aspects.

One of the important research topics was the identification of the best suited mulberry varieties for the project area. For this purpose some 15 local and exotic varieties were planted, and are being evaluated. Parameters of performance measured include growth indicators such as leaf yield and the number of shoots and leaves; and leaf quality parameters such as protein, carbohydrate and reducing sugar content. The mulberry research will then conclude with actual feeding trials. This research is well advanced, and the most promising varieties of mulberry trees are now established in on-farm trials. BAIF is anticipating to help a number of farmers to establish tree nurseries in the near future, and will provide them the cuttings of the recommended varieties.

The second important area is the adaptation of silkworm varieties to local conditions. Due to the cottage industry nature of their rearing in rural villages, climatic control of rearing rooms is not possible, and the silkworm varieties and strains therefore need to be selected according to their performance characteristics in natural environments. The pure varieties only perform in controlled environments, and thus a cross breeding program needed to be initiated. Cross bred varieties may have a lower level of performance in some productivity and silk quality aspects, but they will be less sensitive to variations in temperature and humidity. Cross breeding however also means that the eggs (grainage) have to be supplied on a permanent basis by a supplier such as BAIF.

The project has carried out trials by cross-breeding two proven exotic varieties with ten indigenous varieties of silkworm moth, and has measured a number of attributes in their offspring, among them fecundity, survival rates at egg stage, rearing stage and cocoon stage, as well as length, quality and reliability of the cocoon silk. The project has reared twelve generations, and is now in the process of field testing the best performing two cross breeds with selected farmers.

Subsidiary research activities have also established a method of removing the stickiness from eggs, which allows the eggs to be transported in plastic jars, and permits their storage in a cool environment, inducing a dormancy. Trials have also established the treatment of eggs in order to break the diapause common in some strains. And finally the project has designed a number of new mountages for the cocoons, to replace the traditional home made bamboo mountages. These new mountages have a number of significant advantages, which enhance the productivity of the silk production system.

The project has thus been very successful in designing a package of technologies for the rearing of silkworms in the project area under cottage industry conditions. It is now at the stage of field trials, and thus is entering a new phase. Many aspects of rearing, marketing and processing however are not yet clearly understood, and need to be established, in order to maximize the income the activity is expected to generate for rural women, who will carry the main workload. It has in particular been found (see WID Chapter), that the extension system was weak here, and that several crucial social aspects to the introduction of a cottage silk industry have not been properly addressed.

As the new phase moves from the laboratory, into the village, it is essential to have the expertise of a sociologist to design the best fit into the rural family, with special attention given to the workload of women. At the same time the specific support of a rural economist is needed to look at supply costs, production costs, and marketing and processing options, to optimize the returns to the producer. And not least, imaginative engineering support can produce optimal designs for mountages, rearing systems and cottage type reeling processes.

Recommendation 4:

> **Before field trials and the wider introduction of the technology into the villages takes place, it is essential that an comprehensive extension package be designed by a sociologist, in cooperation with the project's**

technical staff. At the same time specific support on marketing and production technology will also be essential.

4.2.5 Mushroom Production Technology

The growing of mushrooms was also considered an idea with considerable potential, producing a technology which can be adopted by poor rural families to provide a source of additional income. It was this consideration that attracted BAIF to propose this topic as a research project. In addition to its potential, the technologies used in the Wagholi laboratory could lend themselves well to the reproduction of mushroom spawn. This project was started only in early 1990, much later than most other projects under IDRC funding.

Rather than starting research into mushroom technology from the beginning, the approach chosen was to look only into the usefulness of three mushroom species, which were already utilized for artificial rearing, and thus to adopt existing technology rather than to establish a new one. There are three main species of mushroom grown in India, the popular Button mushroom, the Straw mushroom and the Oyster mushroom. Each species is particularly identified by the temperature and humidity range it grows best in. For BAIF's purpose, artificial climate control was not appropriate, and thus the selection of mushroom species had to be based on its performance under the prevailing temperatures of a village environment.

The initial research focused on the establishment of master cultures of a variety of edible mushrooms, the standardization of spawn production technologies and techniques for the evaluation of spawns. Based on this work, the different mushroom species were tested, especially as to their temperature and humidity requirements, and the Oyster mushroom was identified as the most suitable. Subsequent research on the various sub-species of this mushroom then identified the most suitable strain, which showed a high growth potential under wide ranges of temperature and humidity. As a result of these activities a spawn producing unit has been set up at Wagholi, to assure the continuous supply of high quality spawn of the Oyster mushroom for producers.

The second area of research was to investigate different cultivation methods, based on agro-wastes as economical substrates for growing mushrooms. A simple system of producing, sterilizing and inoculating the substrate has been developed, suitable for village use. A particular difficulty here was the prevention of contamination, which is problematic under

farm conditions. The inoculated substrate then needs to be kept in plastic bags for 21 days, until the spawn has established itself. It is then unwrapped, and within 5 days the first harvest of mushrooms is ready. One straw ball will produce approximately 150 grams of mushrooms, and a reasonable production of 2 to 3 kg can be expected per batch.

The project has also established that the substrate, at the end of mushroom production, can be used as a good animal feed, or can be composted. The project, in a very short time, has established a viable and sound technology for small scale mushroom production suitable as an income generating activity for rural women. It has now undertaken the first field trials in some remote villages, and is confident that the technology can be adopted.

As in the sericulture project, this technology is now on the verge of being introduced into villages. This is an important moment to look seriously at the economics of the project, and in particular at aspects of marketing the produce. Here the involvement of a marketing specialist or economist is essential, to set up marketing channels and outlets, as well as to establish produce quality and packaging standards. As important is the support of a sociologist, to find the optimum way to fit the project activity into the traditional village environment. And, depending on the marketing opportunities and constraints, drying technology may be needed to convert the product into a marketable commodity.

Recommendation 5:

> **For the implementation of this project in the villages it is important to form an extension team, which will address the many challenges of fitting into the women's workload, find the best processing and marketing options, and establish an extension package for training and teaching farmers and village women who want to take up mushroom cultivation.**

4.2.6 Adaptability Studies for Bamboo Species

BAIF has for a considerable time been active in promoting a number of forestry activities, especially the rehabilitation of wasteland, and as additional income for farmers in the form of agro-forestry. Of particular interest to farmers were those technologies, which could create income from unused land, such as the boundary areas between cultivated fields. Aside from the tree species promoted, it was realized that Bamboo has a particular niche

on the farm. It is often grown near the farmstead, or on plots of wasteland. It has a short growing time, and provides a harvest each year. Bamboo seems to be much in demand, the hollow type is used as building material, and the solid one as raw material for basket weaving, and both thus have a ready market.

The main problem area identified has been the difficult reproductive system of bamboo, which may not produce seeds for decades. To overcome this limitation, it was therefore essential to establish a technology for the vegetative propagation of bamboo, in order to make its multiplication independent of bamboo seed. At the same time it was necessary to survey the different types of bamboo species available, and to measure their performance under local climatic and soil conditions.

The project started later than other projects, and initiated its work with a germplasm collection of some 18 different species, and the establishment of three arboreta in different agro-climatic zones. The second aspect of the research concentrated on vegetative propagation methods. While some species of bamboo do propagate vegetatively under certain conditions, the majority do not. Thus the treatment of bamboo culm cuttings with plant growth hormones was considered the key to overcoming this problem. The research undertaken treated bamboo cuttings with five different growth regulators, to establish the best methods for vegetative reproduction. The results of this work will not be available until early 1992. Finally, initial field trials were started to establish the best uses of bamboo on the farm, and bamboo has been planted around homesteads, as field bound plantings, and as independent plots. Preliminary calculations show that even as a field crop bamboo may rival some agricultural crops in the income it can generate, and will certainly provide additional income to farmers if planted on unused land.

The future usefulness of this project will hinge on the identification of the most suitable species for this climatic region, and especially on the success of a simple vegetative reproduction technology. This can then be easily transferred to specific farmers wanting to establish bamboo nurseries, from where the seedlings are to be purchased by farmers. Although some marketing questions remain, the technology is simple, and the demand for bamboo is high, both by the farmers and by the market. There is little doubt that with some further work, a new technology bringing additional income to farmers will be the result of this project.

Recommendation 6:

The bamboo project is to continue its promising work, and as soon as feasible, needs to initiate the establishment of village nurseries.

4.2.7 Production Technology for VA Mycorrhiza

Among the low-cost technologies attractive to Third World countries, few have been so actively pursued as the replacement of chemical fertilizers by bio-fertilizers. Here especially the nitrogen-fixing Rhizobium bacteria has been widely used with legumes. Similarly VA Mycorrhiza has been identified as having a similar potential for phosphorus substitution. BAIF undertook research into the production of Rhizobium bacteria some years ago at its Wagholi laboratory, and pioneered the freeze-drying of the Rhizobium bacteria to extend its viability, and to facilitate transportation and storage. BAIF continues to produce Rhizobia for the Indian market, but indications are that demand has not been as high as anticipated.

To follow up on its earlier success with Rhizobia, it seemed a natural next step to initiate research into Mycorrhiza, especially since this work linked to one of BAIF's main field interests, agro-forestry. Here it was envisaged that trees could benefit from the inoculation with VA Mycorrhiza in circumstances where soil conditions are extremely poor, and where the use of fertilizers is uneconomical. Mycorrhiza inoculation would not only help young seedlings to cover their phosphorus needs even in the poorest of soils, but there are indications that it will also make micro-nutrients more accessible, and through its own root network will be able to extract more moisture from the soil, making the host plant more drought resistant. In Wagholi, BAIF had all the necessary infrastructure, knowhow and experience to undertake this new venture, and produce successful results.

The project has so far achieved remarkable results. It has been able to standardize techniques for the collection of Mycorrhiza from the soil, to isolate and identify six species of Mycorrhiza, and to standardize laboratory techniques to produce monosporal cultures.

However the main objective of the project, the mass production of VA Mycorrhiza, has proven to be more elusive. The fungus lives in a symbiotic relationship with the host plant, and it is thought that in order to multiply, it needs some unknown substances provided by

its host plant. Thus a complex chemical interrelationship seems necessary for the multiplication of the fungus, a process which is not yet well understood. It has therefore not been possible, as was the case with Rhizobium, to mass-produce Mycorrhiza in a standard fermentation process. Even an intermediate step, its mass production through root culture, has not met with success.

The project has nevertheless been successful in inoculum production on a pilot scale. Here the best Mycorrhiza strains, soil substrates and plant hosts have been identified, and the system has allowed the production of considerable quantities of inoculant. The lack of availability of inoculant had been one of the major limiting factors hindering research into different uses of Mycorrhiza. BAIF is now in a position to make inoculant available to a large number of scientists all over Asia. This in itself will result in considerably accelerated research into the subject, and will in time provide valuable information on yield improvement on various agricultural crops and forestry species, as well as the interactions of different hosts and different Mycorrhiza species, and the identification and assessment of different strains within the species now recognized.

An additional feature of this project has been the involvement of a Canadian consultant, who has contributed considerably to the project, and the establishment by IDRC of a Mycorrhiza network, where much fruitful interaction between scientists of the Asian region has been a major benefit.

Irrespective of the impressive successes achieved by the project, the limitations to mass production remain. And while farm trials can be undertaken, the large scale impact on agriculture and forestry will remain elusive until VA Mycorrhiza can be mass produced. Research into such mass production is carried out extensively worldwide, but to forecast if and when the hoped for breakthrough will occur seems quite impossible. Until then the promise of a major impact of this interesting new technology on the farmer remains unfulfilled. From the point of view of BAIF's main mandate to produce benefits to rural poor farmers, this project is therefore unlikely to fulfil these expectations for a considerable time to come.

Recommendation 7:

> **It is suggested that this project be reviewed in BAIF's future plans, in order to decide if the project will be in a position to generate substantial benefits for rural farmers in the near future, and if it thus**

fits with BAIF's mandate and the overall aims of the IDRC project. If not, alternative funding sources might be considered.

4.2.8 Research on Post-Production Technologies

The objectives of this project were initially quite vague, as it was necessary to first identify the traditional post-production systems in the various project areas. Based on these findings, the project was then to formulate specific interventions, either as research, or through the introduction of useful technologies existing elsewhere.

Very soon however the project began to be occupied with what turned out to be a major enterprise. The rural development projects of BAIF had under their agro-forestry program, and in response to farmer's requests, started to initiate the planting of fruit tree orchards. Here the main demand by farmers was for mango trees, and BAIF, through the establishment of tree nurseries and the introduction of grafting technology, had in its Vansda Tribal Rehabilitation project alone planted some 5,500 mango trees. While most of these trees are still immature, the area produced some 90 tonnes of mango fruit in 1990.

This level of increase in the supply of fruit created considerable marketing problems. Bulk fruit purchasers from the north meet at harvest time with producers in a regional market, and in a strict supply - demand controlled system, the producer is generally shortchanged. To circumvent this market, the Post-Production project decided to establish a mango processing plant. Far from being intermediate technology, this plant in 1990 processed 42 tonnes of mangoes, and can at full capacity process up to 400 tonnes. The end product, mango pulp, is purchased both in bottled form by food retailers, and in bulk form for the flavouring of ice cream, and for fruit juices. The mango processing project has thus successfully established processing channels for a raw material, and in doing so both assured a reliable outlet for the fruit, and generated a higher price for the produce, than what the open fruit market was paying. The processing plant pays 50% more than the market rate, and the project over four years has paid out more than 500,000 Rupees ($ Can. 22,500) to some 159 farmers.

Research is now under way to develop alternative mango products, especially dried pulp as a sweet or candy, and different drying techniques are being tested for this product.

Similar marketing situations as shown for mangoes also exist for other new commodities introduced to increase the income of farmers; among them oilseeds and wood from agro-forestry projects. In all these cases the market is heavily slanted in favour of the buyer, and as a result the farmers are unable to fully benefit from the new technologies introduced by BAIF. In response to this situation the Post-Production project is now looking into possibilities of processing wood and oilseeds locally, to enhance their value, and to improve their marketability. At the same time the project has successfully introduced some pedal threshers as a demonstration project, and is testing a wood gasification plant to reduce fuel consumption of diesel engines used to pump water.

The project has thus achieved much more than it initially set out to do, and has met its challenges with considerable success. There is however an underlying problem: The post-harvest difficulties were largely economical, i.e. in the field of marketing, but because of the Post-Production project's orientation towards technology, it searched (and found) technical solutions. It may be argued that an Economics Project would have found marketing solutions. There is thus a feeling that the present concept of post-harvest technology is too narrow for the needs of BAIF, and that it should encompass at least as much a marketing and economics focus as a technology orientation.

At the same time, many of the other projects under IDRC funding have now reached the stage of moving from the laboratory to the field, and for this important step they will need both technology input, and especially marketing assistance.

Recommendation 8:

> **It is proposed here that while this project should continue its work on specific technologies, the main focus should become the comprehensive support of the other research projects, when their technologies are ready to be introduced into the field. To properly fulfil this mandate, this support function should primarily provide marketing and economic expertise, and sociology and extension support.**

4.2.9 Community Based Research

This project was originally intended to become the link between research and the community. One of its aims was to thoroughly study the communities, and to identify

relevant development interventions according to the needs of the communities. At the same time the project set out to carry out research on implementation strategies for income generation and health improvement. The initial IDRC program in fact divided this activity into two distinct projects, one in the tribal project areas, and the other for the non-tribal activities, located largely in the general area of Uruli Kanchan (the BAIF headquarters). In a recent revision of the project, the two were amalgamated into the present Community Based Research project.

The evaluation of this project gave the evaluators more problems than any of the other projects. This was in part due to the methodology of the evaluation, where the initial rapid visiting schedule left little time for in-depth work in the Tribal Areas, essential to generate a solid understanding of the project. But even more important, problems arose because the project is involved in so many activities, and covering so many different development aspects. Such a complex project thus demanded a considerable effort by the evaluators to sort out all its facets.

The first confusion arose from the title of the project: Community Based Research. Being led by the structure of all the other projects, it seemed reasonable to the evaluators to expect some rigorous social research activities. This was not found. What was found were several reports based on a number of information gathering activities, such as Population Census, Baseline Studies, Rapid Rural Appraisal Surveys and Health Status surveys. Only one document among these would have been classified as research in the narrow sense. To come to grips with these activities, it was necessary to redefine the concept of research in a much broader sense than as the classical scientific study. The term research is therefore used here in a much wider meaning, denoting the gathering of information useful to the better understanding of any aspect of community life. Under such a wider definition the activities undertaken could be quite acceptable as being most useful to the project. Based on this definition, it becomes clear that a considerable amount of excellent work has been done. The new understanding about rural communities which these data gathering activities have generated, especially of the tribal communities, is substantial, and essential for the design of future development interventions.

It became however quite evident that few project staff had an adequate level of social training, and that in this discipline IDRC support has also been lacking. This should be rectified as soon as possible, in order to initiate a more rigorous and sophisticated social research program. Here the present information gathering activities must become more focused, and properly designed, so that the results can become reliable indicators of the

present situation, what impact projects have, and what future interventions by BAIF would be of particular benefit to these communities.

The second area of difficulty was the multitude of activities undertaken. This is a typical reaction of development workers at the village level, who see so much need and so many problems, and want to solve them all. However this reaction can imply the danger that such a response by the heart leads to a "band-aid" approach of spreading the effort too thinly, with the result that only superficial remedies are carried out. Examples here can be quoted based on the limited time spent in villages, which may not be fully representative, but which nevertheless give an indication of the problem. One example is the community visited, which was keenly aware of the need for better hygiene. Even the primary school children knew every rule of hygiene, yet there is not a single latrine in the village, to put their knowledge into practice. Or the farmer who received hybrid sorghum, and achieved almost double the normal yield. But he ate all his sorghum, and has no seed for next year, and neither did he sell any to his neighbours. Such incidents show the shortcomings of too wide a spread of activities. It is not appropriate here to pass a value judgement, if such a "shotgun" approach is better or worse than a few targeted and sound interventions, based on priorities. However, this approach does not seem to fit with the rest of the projects BAIF carries out, which are based on the identification of a single and well defined need, followed by the design of a comprehensive package to respond to that need. It is proposed here that the two different community development approaches be carefully evaluated, and the one chosen that best fits the circumstances.

In addition, and based on the above decision, it seems to be logical that the research activities and the CBR project become integrated as much as possible, and that therefore the field testing and implementation of new technologies primarily take place in the CBR areas. This would then allow the careful monitoring of the implementation process, as well as a later assessment of their impact.

The third confusion arose from the fact that based on the project objectives, health seemed to be only one of many activities. Yet in the field every indication was that this was clearly a Health project, with the project leader being a medical doctor, and the IDRC Program officer responsible being from its Health Division. However much of the work in the health sector by the project seems to be a mix of data collection on health status, the teaching of better health practices through preventative health, and curative health activities through clinics. This component of the overall project therefore seems to carry out all the steps in a project cycle on a micro scale, identifying a problem and solving it. This is quite a

different approach from the other projects, and seems to lead to considerable ad-hoc activities. Problems are then not fully documented and understood, they are not necessarily the same for the whole project area, they are not prioritized, and the development solutions are not comprehensive. To give an example: Anaemia was identified as a problem in a morbidity survey. Now the women are taught to grow green vegetables during the dry season, and to go back to use the old iron pots instead of the new ones made from aluminium. These may be sound local solutions, but if Anaemia was considered a serious and widespread problem, then a proper research program could have been undertaken, to fully understand the problem, and to develop a package of interventions that would alleviate the problem, and could be used in any other area where this problem occurs. Similar examples could be mentioned on child mortality, hygiene and nutrition.

There seems to be a need here to combine the micro-level health activities with some distinct macro-level health research interventions. Based on the comprehensive local experience gained, specific village defined problem areas, be they in the health field (for example the mentioned anaemia), or in the social field (for example alcoholism), could lend themselves to a full research project. Thus out of the micro-activities, some specific macro-interventions can be defined, and these would the follow the same process as the present research projects.

And finally, there seemed to be a considerable component of project implementation. Of particular note here are the excellent activities of planting fruit tree orchards on land not usable for arable agriculture, and the activities in agro-forestry, through the planting of fast growing trees on field boundaries and hill sides. Other development activities seemed to include the construction of water pumps, and the building of temporary check dams for irrigation. These are all excellent interventions, helping communities to improve their livelihood, but they are not consistent with the project name "Research".

Recommendation 9:

> **In order to put all these sound activities into a proper institutional framework, it is suggested that this project be redesigned to allow all three activities, the gathering of information, the health care sector, and the implementation of projects, to take place as independent, but also interdependent activities. In order to properly understand the social dimensions of the community projects, it will be essential to set up a more rigorous social research activity. Here it will be important**

to have staff with the appropriate qualifications and experience, and to draw upon the expertise of the relevant IDRC Program Officers.

Recommendation 10:

In conjunction with the ongoing activities in the community projects, it is recommended that the technologies established by the IDRC funded program be field tested and implemented specifically in these areas.

Recommendation 11:

While the health component of CBR is essential, and should continue on the micro-level, its activities lend themselves well to the design of some integrated health research projects, producing a comprehensive package aimed at overcoming specific identified health problems.

4.3 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

4.3.1 Findings and Conclusions

The initial program of the IDRC funded individual projects has now almost completed its first phase. There is no doubt that BAIF and IDRC must be congratulated for the results achieved. If any weaknesses have been identified with individual projects, this is certainly not directed at the leadership and project staff of BAIF. Throughout this evaluation the dedication, hard work and technical competence of project staff at all levels were found to be of the highest calibre. It is this very strength in staff that has generated the remarkable results. If some of the projects are considered less successful than others, this is more a function of project choice, and part of a learning process, gaining experience. Nevertheless the moment of an evaluation gives time to look back on the activities of the last years, to reflect on the successes and failures, to analyze the decision making process, and to look into the future, to plan the next steps. This therefore provides an opportune time to look at the lessons learned, as a starting point to the decision making process for the design of what will happen over the next years. Here one should not be reluctant to identify the weakest activities, and to decide if new initiatives could pay better dividends than the

continuation of some old projects. The next chapter looks at these more general issues, considers the lessons learned, and draws a map for the planning of future activities.

4.3.2 Recommendations

1. The frozen semen project has achieved its primary objectives, and should now move towards a more holistic buffalo improvement program. Four particular areas on which the project needs to concentrate during the next years will be the extensive field testing of frozen semen, the establishment of a heat induction system for buffalo, the control of potential disease transmission through semen, and progeny testing to assess the quality of different buffalo bulls used in A.I.

2. The economic feeding systems project's impact, and the promise of substantial benefits to farmers, is not as evident as it is in most of the other projects, and it is therefore suggested that its usefulness in the overall IDRC funded package be reassessed. The question of continuing this project within the future activities of BAIF's research program will then have to be resolved.

3. It is suggested that the micro-carrier culture project be reviewed in BAIF's overall planning activities, where a decision needs to be made as to the future potential of this research activity. The possibility of collaboration with other research institutions, and potential alternative funding sources should also be explored.

4. Regarding the sericulture project, before field trials and the wider introduction of the technology into the villages takes place, it is essential that an comprehensive extension package be designed by a sociologist, in cooperation with the project's technical staff. At the same time specific support on marketing and production technology will also be essential.

5. For the implementation of the mushroom production technology project in the villages it is important to form an extension team, which will address the many challenges of fitting into the women's workload, find the best processing and marketing options, and establish an extension package for training and teaching farmers and village women who want to take up mushroom cultivation.

6. The bamboo project should continue its promising work, and as soon as feasible needs to initiate the establishment of village nurseries.

7. It is suggested that the Mycorrihiza project be reviewed in BAIF's future plans, in order to decide if the project will be in a position to generate substantial benefits for rural farmers in the near future, and if it thus fits with BAIF's mandate and the overall aims of the IDRC project. If not, alternative funding sources might be considered.

8. It is proposed here that while the post production technologies project should continue its work on specific technologies, the main focus should become the comprehensive support of the other research projects, when their technologies are ready to be introduced into the field. To properly fulfil this mandate, this support function should primarily provide marketing and economic expertise, and sociology and extension support.

9. Regarding the community based research project, in order to put all these sound activities into a proper institutional framework, it is suggested that this project be redesigned to allow all three activities, the gathering of information, the health care sector, and the implementation of projects, to take place as independent, but also interdependent activities. In order to properly understand the social dimensions of the community projects, it will be essential to set up a more rigorous social research activity. Here it will be important to have staff with the appropriate qualifications and experience, and to draw upon the expertise of the relevant IDRC Program Officers.

10. In conjunction with the ongoing activities in the community projects, it is recommended that the technologies established by the IDRC funded program be field tested and implemented specifically in these areas.

11. While the health component of CBR is essential, and should continue on the micro-level, its activities lend themselves well to the design of some integrated health research projects, producing a comprehensive package aimed at overcoming specific identified health problems.

5.0 ANALYSIS OF THE BAIF-IDRC PROGRAM

5.1 A NEW TYPE OF COOPERATION

The program under evaluation is in many ways unique, and now, towards the end of the initial phase of this collaboration, it is an opportune moment not only to look at the results achieved, but beyond that at the usefulness of the model of this type of cooperation, and the contributions that the two partners have made. From the beginning the partnership was understood by both parties as a new approach to development. Thus IDRC covered new ground by funding multiple projects with one recipient institution, and BAIF also has had to break new ground to collaborate with a research oriented donor. Both parties have from the outset looked at their cooperation as a type of symbiosis, a partnership which would provide substantial benefits to both parties.

5.2 THE SYMBIOSIS BETWEEN IDRC AND BAIF

The outstanding strength of BAIF had long been recognized as being its close links to the village, the farmer and the rural poor. Its leadership had set itself the mandate to take a special new initiative, by developing a number of new technologies, which were to form the basis for projects aimed at improving the life of the rural poor. In this endeavour, BAIF could look back to an excellent record in the development of new technologies, while it also had made considerable progress in carrying out research oriented activities. It is thus recognized as one of very few development oriented organizations, which are able to combine sound knowledge of the recipient and his environment with considerable experience in the development of new technologies. This is even more remarkable since BAIF is a foundation, and thus an NGO with limited permanent funding sources.

The successes of the past, and the resulting growth of the organization, however had caused a lagging behind of certain aspects of administration and support functions. BAIF was therefore looking for a donor who could be of assistance in these areas, as well as help with the initiation of new research programs.

IDRC, with its mandate of promoting and funding development oriented research activities, has a long history of successful development of research-based technologies in developing countries. Indeed both BAIF and other research institutions in India had collaborated with

IDRC on previous occasions. IDRC however had from time to time had to struggle with situations where technically sound research results were not adopted by target groups as expected. It had identified one of the potential causes of this problem a lack of a clear understanding of these target groups, and a lack of a system to allow input by these target groups into the research planning, design and execution process. IDRC was therefore keenly interested in finding a partner who had a solid record in working with poor rural communities, had a sound understanding of their needs, and thus provided excellent opportunities for learning how applied research is designed, executed and implemented in the rural communities, an opportunity for learning, which few other institutions could offer.

When IDRC became interested in a larger funding support package for BAIF, it was thus with the clear understanding that this was an unusual partnership, which had the potential to generate considerable benefits for both BAIF and IDRC. For the latter, the feedback provided from the implementation of projects in villages, and the generation of new technologies through research, growing out of a needs assessment in rural villages, showed promise to become a model of potential use elsewhere. BAIF on the other hand could initiate some new and promising research projects, and at the same time strengthen both its administrative capacity, and its rural development activities.

5.3 THE EVALUATION RESULTS

The preceding chapter and the supporting documentation of the WID Specialist have left no doubt that an impressive amount of excellent work has been carried out by BAIF in a relatively short time. Its administrative capacity was found to be impressive, its research has produced some most useful results, and its work in villages and tribal areas has seen some outstanding success. Based on this fact alone, there is no doubt that this work should continue. However, the stage at which many of these projects now are deserves special consideration. The first three years have largely been spent in a laboratory environment, to develop the technologies, activities not too different from other IDRC funded projects. These projects are now on the verge of field testing the developed technologies, and thus move out into the villages with pilot projects. It is this activity which BAIF is uniquely suited to establish, and it is this activity which IDRC is most interested in. It is therefore essential that these projects move into a second phase, both in terms of making best use of the research results achieved so far, and even more so for the crucial step of introducing the technology to the village environment of the intended recipient. Such a next phase will furthermore provide the opportunity for the setting up of a comprehensive and ongoing

research-to-village process, including a feedback loop to define new research topics based on a needs assessment process in the village. The following discussion is therefore a combination of an analysis of strengths and weaknesses of this IDRC-BAIF program, as identified by the evaluation, of learning some lessons from this analysis, and of incorporating these lessons into a plan for future work. It is however fully dependent on the acceptance of the following recommendation.

Recommendation 1.

> **Based on the excellent results achieved so far, and especially on the useful learning process that the next step is expected to generate, it is recommended that IDRC continue to fund the BAIF research program for a second phase.**

5.4 THE FUTURE FOCUS OF THE PROJECT

Both BAIF and IDRC have taken a keen interest in this project because of the applied nature of its research. Most research areas chosen had the promise of generating tangible and applicable results in the villages by the end of the first phase. It is here that the strengths of the two organizations meet, and where the unique experiences of both can combine to produce results of a magnitude not often achieved elsewhere. In order to continue to optimize the contributions of both institutions, it is essential that this focus continues.

The design of the present IDRC-BAIF project was also unique in its focus on a number of specific needs of BAIF as an organization. These were particular areas where strengthening was needed, and as a result the package of projects was to some extent, and by design, not coherent. Rather, the individual projects were chosen based on particular specific needs within the organization, where enormous progress has been made, and the desired strengthening has to a large extent taken place. This progress should now allow BAIF to consider a degree of focusing in a future project package. It allows in particular to bring the project into line with the main mandate of BAIF, to generate new technologies to increase the income of rural poor people, and through this to improve their livelihood and well-being (see the BAIF Mission Statement at the beginning of this evaluation report). A new IDRC funded project should therefore be true to the mandate of BAIF, by becoming more concentrated on research which will develop such technologies, and on their

application in the villages: as BAIF so succinctly states, **research without development is irrelevant.** Furthermore a new project should begin to build on the most useful results of the Community Based Research project, both in evaluating the new technologies, and in providing a feedback loop to the planner and scientist, defining priorities for new research needs for rural communities.

Recommendation 2.

> **In order to make optimum use of the strengths of both BAIF and IDRC, the focus of a new phase of the project should be more in line with BAIF's mandate, the development of new technologies with a direct development impact for the rural poor, and on implementing a continuous project cycle consisting of village needs assessment, research into new technologies, socio-economic research (packaging), and the implementation of the newly developed technologies in the villages.**

5.5 THE DEVELOPMENT OF INTEGRATED PACKAGES

Almost all research oriented projects have reached their initial goal of establishing new technologies within the framework of BAIF's mandate to generate income generating activities in the rural villages. The focus of activities is therefore now beginning to shift away from the laboratory, and towards the application of these results. This is a crucial area, and it is just where BAIF may be somewhat lacking in capacity and expertise. These aspects thus will need to be strengthened, if the implementation of these technologies is to be carried out successfully.

BAIF has clearly shown its capability to carry out research, and has built up substantial expertise in implementing projects in the villages. However the linking of these two activities is not as simple as is generally assumed, and will require different and specific expertise to assure the success of the system. In its staffing, BAIF has been found to lack strength especially in the areas of economics and marketing, and it is essential that the new technologies developed be packaged through the design of optimum economic inputs and the most beneficial marketing strategies. Interviews in the villages also indicated that a lack of understanding of social parameters, essential for the successful field testing and implementation of the technologies. Here staff strength and expertise in the Social Science

Cell seems less than adequate in relation to the task, and needs to be not only increased, but moved into a position within the BAIF structure, where more direct involvement with the research projects is possible.

The scientist developing the new technology may have a general idea of its usefulness, and some ideas of how it is to be implemented on the farm, or with the rural women. The scientist is nevertheless neither trained, nor in a position to spend much time in the village, and is therefore not in a position to gain a clear understanding of how the technology is to be implemented. Yet it is exactly this weakness, which is the cause for many research projects not to be adopted. It may simply be that the farmer knows he will not gain an economic advantage, or there is no market, or he finds alternative use of his resources more profitable. The adoption of new technologies may also fail due to social incompatibility, where it may add an additional workload to women, or demand activities outside the social norm.

It is therefore essential that before these new technologies are widely promoted in rural villages, they need to be converted from a laboratory technology into a proper comprehensive "Implementation Package". Such a package will include a clear understanding of the needs, abilities and constraints of the recipient, based on the input of sociologists. Equally important is the development of sound market outlets, so that the aim of income generation is fully realized, requiring the expertise of agricultural economists and/or marketing specialists.

And last but not least, an essential component of the marketing process will be appropriate processing activities, to both increase the product's value, and to convert it into a more marketable form. Several projects are now reaching the stage where this "Packaging Process" becomes an essential second step (see Flowchart 1). Beyond the packaging itself, there is a need to extensively field test these new packages, both to assure their envisaged benefits, and to correct, and improve upon, potential initial flaws.

Recommendation 3.

> **The new technologies developed by the project should not be directly implemented in the villages, but need to go through a process of "Packaging", in order to assure that they are both economically viable and socially acceptable. They then need to be extensively field tested**

under the Community project activities, and the results may call for some redesign by the scientist.

5.6 AN ENLARGED CONCEPT OF POST PRODUCTION SYSTEMS

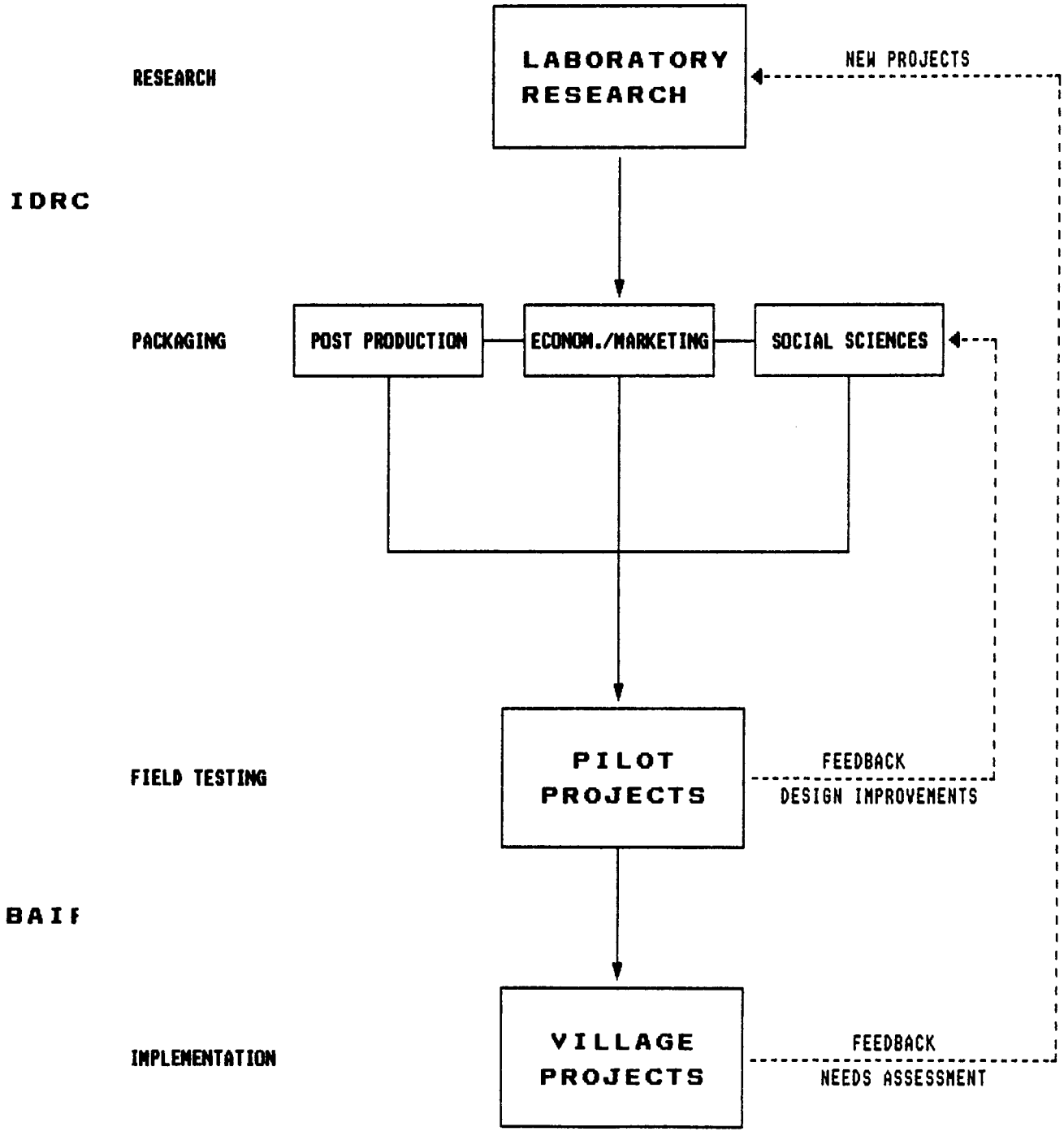
The present specific project of Post Production Technology has done some excellent work on the processing of mangoes, and has initiated a number of other useful areas of activity. Its initial focus has been quite independent of other IDRC projects, but over the last year it has been realized that many of the other projects will have technology needs as part of their implementation strategy. More recently several linkages have thus been initiated, the most remarkable being the design of new, more efficient, and cost effective mountages for silkworm cocoons. As other projects are becoming more application oriented, they have also started to identify specific processing needs. Despite this new support role the focus of the Post-Production project has remained narrow, concentrating on intermediate technology solutions.

The needs of the other projects, and indeed of some of the Post-Production projects, are however much broader than the present technology focus, and these needs have to be addressed. As was seen in the previous discussion on mango processing, the problem encountered was essentially a marketing problem. The same can be said for the needs of the projects now starting this packaging phase. These projects have an immediate need for specialist advice in economics and marketing, as well as on social issues.

In order for the Post-Production project to become useful to these other projects, its present narrow technology focus needs to be broadened. Its overall objectives should be adjusted to cover all activities between the end of production of a commodity on the farm, and the market where the income is generated. This generation of income is the overall aim of the project, and of BAIF in general, and is ultimately an economic aim, and the technical activities are only a means to this end. It is therefore essential that economics play a key role to maximize the benefits to the farmer from the new technologies introduced.

The present Post-Production project should therefore become more of an integrated support function to other projects, rather than remain a freestanding project (see Flowchart 1). But aside from the support of these new projects, the expanded PPS project will also need to continue the ongoing activities of Mango processing, and take a close look at the economics of wood marketing, to maximize the benefits from BAIF's agro-forestry program.

FLOWCHART 1: THE PROPOSED BAIF SYSTEM: RESEARCH TO IMPLEMENTATION



Each technology will have different demands of social, economic and technical input, but the overall goal should be to optimize the return to the producer from the new technology. To achieve this it is proposed that a new Post Production Unit be formed, consisting of a somewhat modified present Post-Production project, and being joined by a strengthened Social Science cell, as well as a new marketing and economics cell, yet to be established. This unit would then be a true integrated Post Production System, as an essential support function to make the technologies developed by BAIF reach their full potential, to achieve the optimum impact in the village.

Recommendation 4.

> **The present Post-Production project needs to be enlarged to become an integrated support system, covering economics and marketing, the social sciences, and processing technology. Its new joint main objective should be the "packaging of technologies", in order to assure their fit into the prevailing social system, and to optimize the benefits of these to the recipient.**

5.7 HOW THE INDIVIDUAL PROJECTS FIT THIS NEW MODEL

From the above discussion the general direction of a new phase based on the lessons learned has been established, and the type of project which optimizes the benefits to IDRC, BAIF and the recipient has been identified. Based on these considerations it will now be opportune to take a second look at the individual projects, to consider their fit into the proposed new project design. These considerations are largely based on the findings of the previous chapter, which discussed each project in more detail.

5.7.1 Projects that Fit the Model

There are basically four projects within the overall IDRC-BAIF program, which have done excellent work in finding new technologies, or in adapting existing technologies to a new environment. All four are now in the process of moving from the lab to the field, and all are in considerable need for "Packaging", before they can successfully be disseminated on a wide scale. These projects are:

- Sericulture Technology Development

  will not only have to establish on-farm models of mulberry plantations, but also low-cost technologies in the rearing of silkworms in village conditions. In addition considerable attention needs to be given to processing and marketing options. At the same time the need for irrigated agricultural land, and the high labour demand, especially for women, may make it difficult to fit sericulture into the other on-farm activities.

- Bamboo Species Adaptability

  will soon need to establish farmer preferences, as well as to identify optimum marketing opportunities, before the promotion of selected varieties can be undertaken on a larger scale.

- Mushroom Production Technology

  is a project which will need to take a careful look at marketing and processing options, and to find cost effective drying and packaging processes, to assure that the promised income generation will materialize.

- Buffalo Frozen Semen Technology

  has established an effective buffalo semen technology, and is now in a position to look at other related bottlenecks to increasing buffalo milk production, such as heat synchronisation and disease control. Here the training of community members, especially the women who look after the animals, will be essential.

The specific new needs for these four projects will have to be provided by the new and expanded Post-Production Unit, to undertake the social and economic packaging of these four new technologies. The next step will then be the field testing of these four new technologies in pilot projects.

Recommendation 5.

> **Key emphasis in the next years needs to be given to the "Packaging" of these four projects, to assure that they fit into the social pattern of the communities, and that markets and marketing channels are established, and where the processing of products will be an integral part of the marketing strategy.**

5.7.2 Projects Which Do Not Fit So Well

While the above four projects are a very good fit for the proposed new project design, some of the other projects do not conform so well:

- Development of Agricultural Byproduct Feeding Systems

  was to generate a cheap and simple technology of treating non-digestible cropping by-products, to convert these into cattle feed, and to design integrated feeding systems. This does not seem to have materialized to the extent expected.

- Production Technology for VA Mycorrhiza Inocula

  has made considerable progress in the establishment of Mycorrhiza as an inoculant for agricultural and forestry plant species. The absence to date of a cost effective mass production system however is expected to delay its wider application in agriculture and forestry.

- Standardisation of Micro-Carrier Technology

  is a project with considerable merit, but one which fits better into the Research and Development program of a Pharmaceutical company, than providing a readily applicable technology for poor rural farmers.

It must be stressed here that this evaluation is not in a position to give an opinion on either the scientific merit of these three projects, nor the future potential results these may offer. Suffice it to say here that in the process of consolidation of the overall IDRC-BAIF project,

these three projects do not fit well into the overall objective of generating specific income generating technologies for poor rural communities.

Recommendation 6.

> **Because of a degree of lack of fit of three projects, it is suggested that their future be re-evaluated, with special emphasis on the project's aim of income generation and, through this, an improved living standard for rural people.**

5.7.3 Community Based Research (CBR)

This project has been the most difficult to understand, and to come to grips with for the evaluators. Part of the problem was the very title of the project, but this clearly depends on the definition of the concept "Research". If social research is defined in its broader sense of information collection, then Baseline Studies, Population Census and Rapid Rural Appraisal may well be very useful tools to gather information, and thus quite appropriate.

Besides data collection, a number of other activities are part of the CBR project, which gives it a very wide area of scope, consistent with the concept of Integrated Rural Development. This broad approach however has some disadvantages, and it is proposed that the project be redefined, by dividing it into its three main present component activities. This will give it a better fit within the overall process proposed, and will make each component much more useful to the overall aim of a new phase of the IDRC-BAIF project, and to BAIF in general (see Flowchart 2).

- Field Testing of new Technologies

  The main new focus of this project should be the wide testing of the new technologies developed under actual field conditions. These technologies have not proven their usefulness yet, and will need to be implemented under controlled conditions on a fairly wide scale, in order to assure their technical soundness, their fit into rural society, and their capacity to earn income. Such field testing will have a strong research component, as careful monitoring and measuring will be required. To achieve this, it will be necessary to establish a feedback mechanism to the research team, and to the Post-Production Unit, with the aim to fine-tune these technologies. This may be best

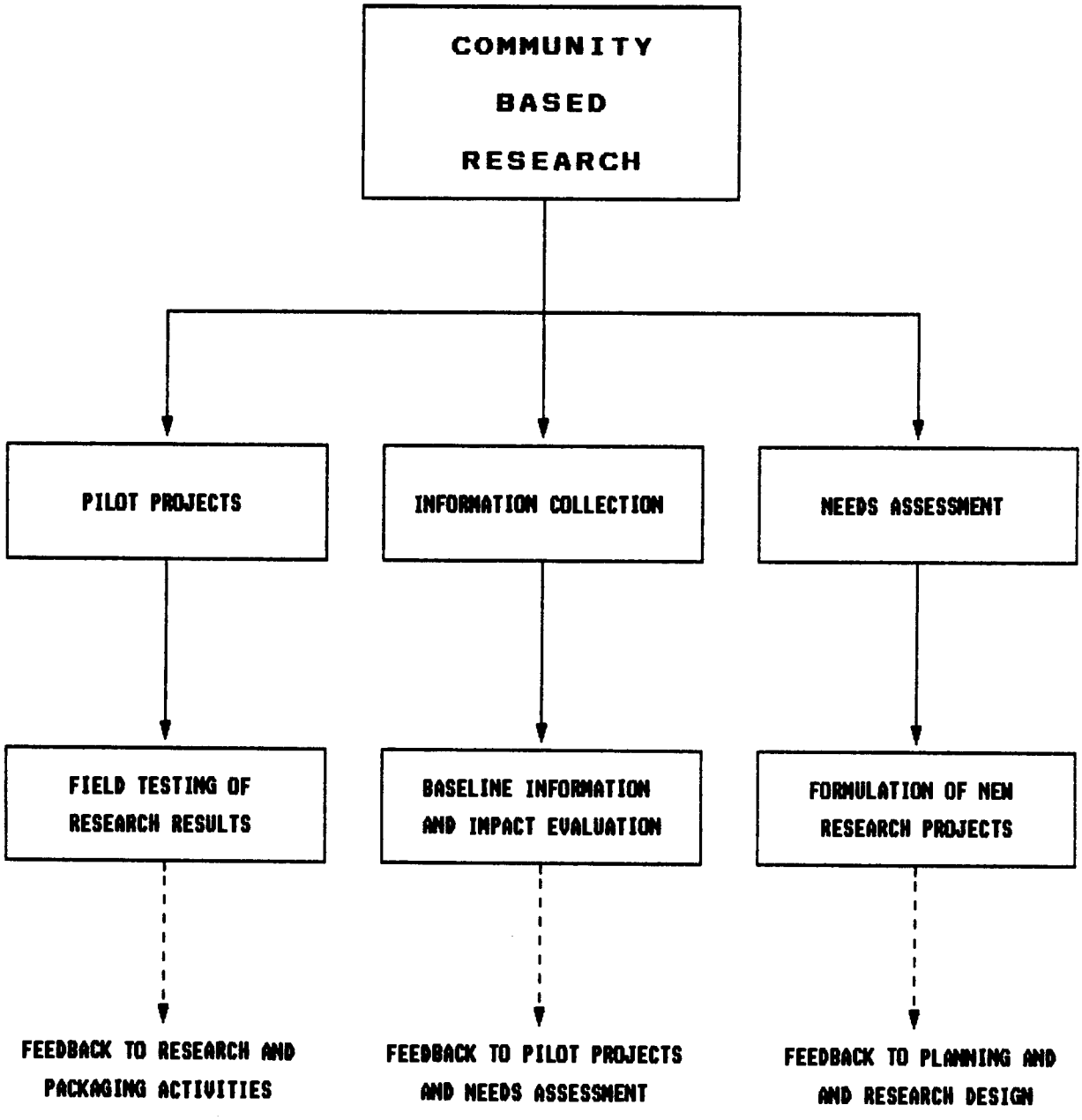
achieved by closely linking the research activities with the Community Project, and to field test and implement the new technologies within the activities of this project.

- Community Data Collection

This activity has been a key part of the CBR Project. It has provided valuable information on the communities, their culture, activities and health status, and should continue and be further strengthened. However up to now this activity has lacked the availability of specific social scientist knowledge, and has had limited support from IDRC Social Science Program Officers. This needs to be corrected, and with this new expertise a more defined, focused and rigorous social science research program can then be implemented. Of particular importance will be the development of a methodology to measure project impact, both direct, and indirect, as an introduced change may cause a ripple effect causing other changes, both positive and negative.

One other specific task which will need to be carried out in a more formal way is to focus on needs assessment. Here specific areas of need have to be defined, and, more importantly, prioritized in cooperation with the communities. BAIF, or any other organization, simply can not carry out all desirable development tasks in all villages, and therefore a degree of setting priorities is unavoidable. However, the particular strength of BAIF is that it now has the organization in place, and has built up the trust of the village people. This foundation will allow village people to define their own needs, and to set their own priorities. This is in marked contrast to most research organizations, where either management or the scientist sets these priorities. Instead the social science activity is to empower the communities to decide on their own needs and priorities. This activity will then be expected, in conjunction with BAIF scientists, to propose and design appropriate new research activities.

FLOWCHART 2: THE PROPOSED ORIENTATION OF THE COMMUNITY BASED RESEARCH PROJECT



- Focused Specific Research Projects

The CBR activities have gained valuable insight into many parameters of community life. Especially valuable has been the data collected on the many aspects of health and nutrition. This data has indicated some specific problem areas, and this information can now form the foundation for more specific research action. It is therefore recommended, that in line with the above proposed needs assessment, some specific areas of health needs be defined, and that these are used in the design of more formal health research projects, which would join the ongoing projects BAIF is expected to continue, if the IDRC funded program is to continue. This process will allow similar integrated technology packages to be designed in the health field, as they have in agriculture, using the same research approach. These health technology packages can then be implemented in the needy communities along the same lines as the present research projects.

Recommendation 7.

The present Community Based Research project has achieved its initial aim of generating a fair understanding of how these communities function. It is recommended that the present project now be separated into its three components: the Field Testing of new Technologies, a continuing, but more sophisticated and focused Social Research Program, including a community defined Needs Assessment and Priority Setting process, and, in conjunction with ongoing health activities, the design of specific Health Research Projects.

5.8 PLANNING AND THE FEEDBACK LOOP

The final area to consider in this analysis is the feedback loop between evaluation and planning. BAIF has, as its main strength, the close linkage with the village, and thus a clear understanding of the issues and concerns there. It is therefore in an excellent position to overcome one of the main problem areas of research: a inadequate understanding of the end user. The lack of this understanding has been a reason why some research results, as sound as they may have been, are not adopted by recipients. BAIF has this link, and this puts it into an excellent position to implement a formal learning system, where the choice

of research project is based on the needs assessment and the priority setting of the farmer, the rural women and the villager. The data collection capacity is now present, to set in motion such a needs assessment and priority setting process by the rural communities. The only part which needs to be strengthened is the feedback of this information into the planning process. BAIF needs to set up a formal system to define community needs, to prioritize these, to communicate them as potential future research topics, and, with the help of scientists, to formulate these needs into research proposals. This will reflect better the maturity BAIF has attained as a development agency, where it can now define its own activities based on an internal learning process, in conjunction with development ideas promoted from outside.

From the superficial impressions gained during the evaluation, priority research topics might be "Water and Hygiene", "Iron Deficiency in Women and Children", or in "Nut Tree Orchards" (cashews). These are areas where specific intervention packages of considerable value could be designed, researched, and later on implemented.

5.9 RECOMMENDATIONS

1. Based on the excellent results achieved so far, and especially on the useful learning process that the next step is expected to generate, it is recommended that IDRC continue to fund the BAIF research program for a second phase.

2. In order to make optimum use of the strengths of both BAIF and IDRC, the focus of a new phase of the project should be more in line with BAIF's mandate, the development of new technologies with a direct development impact for the rural poor, and on implementing a continuous project cycle consisting of village needs assessment, research into new technologies, socio-economic research (packaging), and the implementation of the newly developed technologies in the villages.

3. The new technologies developed by the project should not be directly implemented in the villages, but need to go through a process of "Packaging", in order to assure that they are both economically viable and socially acceptable. They then need to be extensively field tested under the Community Project activities, and the results may call for some redesign by the scientists.

4. The present Post-Production project needs to be enlarged to become an integrated support system, covering economics and marketing, the social sciences, and processing technology. Its new joint main objective should be the "packaging of technologies", in order to assure their fit into the prevailing social system, and to optimize the benefits of these to the recipient.

5. Key emphasis in the next years needs to be given to the "Packaging" of these four projects (Buffalo, Sericulture, Bamboo, and Mushrooms), to assure that they fit into the social pattern of the communities, and that markets and marketing channels are established, and where the processing of products will be an integral part of the marketing strategy.

6. Because of a degree of lack of fit of three projects (Micorrizha, Miicro-carriers, and Animal Feeds), it is suggested that their future be re-evaluated, with special emphasis on the project's aim of income generation and, through this, an improved living standard for rural people.

7. The present Community Based Research project has achieved its initial aim of generating a fair understanding of how these communities function. It is recommended that the present project now be separated into its three components: the Field Testing of new Technologies, a continuing, but more sophisticated and focused Social Research Program, including a community defined Needs Assessment and Priority Setting process, and, in conjunction with ongoing health activities, the design of specific Health Research Projects.

8. The key task of the redesigned Community Based Research project will be to evolve into a more formalized institutionalized learning process, based on an analysis of the data collection activity, and its extension into a formal needs assessment function, including the setting of priorities. Formal documentation of needs priorities should then form the basis for the design of new research projects.

6.0 INSTITUTION BUILDING

6.1 INTRODUCTION

In most development assistance projects, institution building involves, *inter alia*, the building up of the capacity of an organization to perform its existing functions better and to take on new functions in a self sustaining manner. Institution building includes some or all of: engaging additional staff; training existing and additional staff; providing resources such as money, buildings, vehicles and equipment; and providing outside technical assistance.

The IDRC-BAIF program has provided many of these inputs. The financial contribution has facilitated engaging new staff, training, the purchase and renovation of existing buildings, the renovation of existing BAIF buildings and the construction of new buildings, and the purchasing of new equipment and materials. Furthermore, IDRC has provided considerable technical assistance through the visits of Program Officers and the provision of the services of many consultants.

At one level, the evaluation of the success of the IDRC-BAIF program in building up BAIF's institutional capacity to conduct development research is simple. As a direct result of the BAIF-IDRC program, BAIF has engaged additional staff, they have been provided with training, the stock of buildings has been increased and upgraded, and the stock of research equipment and materials has also been increased and improved. Furthermore, not only has the stock of human and physical capital been increased and improved, but it is being used effectively by BAIF to conduct research and manage research programs. Thus, as a direct result of the IDRC-BAIF program, the institutional capacity of BAIF to conduct and manage research has been significantly increased.

At another level, however, we found the evaluation of institutional building difficult because of the lack of accurate and relevant information. In those areas where an institutional capacity already existed in BAIF, institution building can only be measured by the incremental increase in capacity resulting from the IDRC-BAIF intervention. This, of course, requires that knowledge of the capacity of the institution before the intervention started. Possible sources of such information would include base-line studies, mission reports of Program Officers, and internal reviews, evaluations and monitoring by IDRC. Unfortunately, we were unable to find any useful base-line studies or internal reviews of the

program as a whole. Nor were the Program Officer reports that we could find particularly helpful in this aspect of the evaluation.

Within the bounds of these constraints of imperfect knowledge, the purpose of this chapter is to evaluate several IDRC-BAIF projects whose primary purpose is institutional building: the Information Resource Centre, training in general, the Rural Polytechnic Institute, and the Management Training Centre. The chapter also presents a review and assessment of the role of the IDRC Program Officers in institution building, the usefulness of the IDRC-BAIF model for other IDRC programs in the third world, and future directions for institutional development in the IDRC-BAIF program.

6.2 BAIF INFORMATION RESOURCE CENTRE

6.2.1 Objectives of Information Resource Centre (BIRC)

The objectives of setting-up BIRC were as follows:

1. to document and create databases of BAIF's research and development achievements;

2. to provide information services to BAIF's scientists;

3. to train BAIF staff in the use of micro-computers;

4. to develop and procure communication material such as audio-visual and printed aids to facilitate training; and

5. to assist in the publication of BAIF's Annual Report, books, newsletters, and promotional material.

BIRC is made up of three cells: Library and Information Services Cell, Computer Services Cell, and Communication Cell. Each of these three cells will be reviewed and assessed in the following paragraphs.

6.2.2 Library and Information Services Cell (LISC)

6.2.2.1 Proposed Activities

The five operational areas of LISC are: (1) creation of a central information base; (2) setting-up regional information dissemination centres at different BAIF campuses; (3) use of computers to create and maintain databases; (4) dissemination of relevant information services and products to user groups within BAIF; and (5) to act as an information resource centre on appropriate technologies for development.

6.2.2.2 Accomplishments

LISC's main information base is its library at Pradeep Chambers in Pune. Small reference libraries also exist at Kamdhenu, Uruli Kanchan, Wagholi, Akole and Vansda campuses of BAIF. There is a steady growth in the library collection. These libraries now contain for 4,780 books, 421 journals, and 832 documents on microfiche. The library acquires documents through purchase, membership and gratis. The growth of documents acquired by the library is shown in Table 6.1.

TABLE 6.1

GROWTH OF LIBRARY COLLECTION

Year	Books	Journals	Microfiche
1989	1,562	108	0
1990	1,262	135	832
1991	1,956	178	0
Total	4,780	421	832

LISC has used the computer facilities to develop several databases using software developed by UNESCO. These databases include: (1) CRS database; (2) IRC database; (3) biogas database; and (4) Leucaena database.

BIRC operates information services both for researchers and field staff of BAIF. The services provided to researchers are: (1) monthly information update; (2) article alert service; and (3) journal contents service.

BAIF made a decision early on in its program that it would not create an all-inclusive library, but would rather create a library to supplement the many other good libraries in Pune. We conclude that this was a good decision although, as additional funds become available, BAIF may want to add additional core books and periodicals to the library. Furthermore, free sources of library material exist, and BAIF may want to ask ICRISAT to help it locate and assess some of these non-conventional free literature sources.

6.2.3 Computer Services Cell (CSC)

6.2.3.1 Proposed Activities

The CSC provides data processing support to BAIF management for its ongoing programs. Its area of operations include: (1) selection of hardware and software; (2) design and development of application software; (3) storage and analysis of field data; and (4) training of BAIF staff.

6.2.3.2 Accomplishments

The CSC has spent its initial years building up staff, hardware and software. The cell has seven professionals: 1 joint program coordinator, 1 senior programmer, 3 programmers and 2 junior programmers. The cell has 25 different software packages. Many of the professionals in CSC have undergone short-term training in system analysis and design, statistical techniques and the use of special software.

The design and development of application systems were done in conjunction with IDRC and BAIF personnel. Thus far BAIF has ten application systems operating, including: payroll, financial accounting, project monitoring, personnel, Wadi monitoring, MCH monitoring, dairy cattle, provident fund, and inventory control. All of these applications were found to be operating in a satisfactory manner. The evaluation team was impressed by the competence of the people in the computer cell and the quality of its output.

The CSC has helped BAIF's research and development programs to analyze data from surveys to produce reports. The collected data is usually organized in the form of a Foxbase database. Six studies have been undertaken, including: baseline surveys at Vansda and Uruli Kanchan, nutritional status of mothers and under fives in Akole, data analysis of diagnostic camps, study of Wavli practices amongst tribal women in Vansda, agro-forestry data analysis, and an impact study of health education in school children.

The CSC is also establishing a local area network (LAN) to connect computers located in the offices of BAIF at Pradeep Chambers, Pune. The purpose is to share expensive resources such as laser printers, hard disks and software. A recently acquired AT-386 will act as the file server. CSC will need to develop user-friendly shells before the LAN becomes fully operational. BIRC is also trying to connect other major campuses of BAIF though INET of the P & T Department.

In spite of the progress that has be made by the Information Services Cell, we suggest that (a) BAIF should review the services that are or will be provided by INET of the P & T Department, to determine whether at some stage it would be useful to link the computers at the various BAIF campuses, and (b) BAIF should review the services of Specific Dissemination of Information to determine whether this is a cost-effective way of providing information to researchers. ICRISAT and UNESCO might be able to assist BAIF in this review.

The annual workplans for the last two years have called for the development of a Geographic Information System. This system would be used for watershed development planning, area planning, and reporting and documentation. So far, the principal activity has been the training of one staff member. BAIF now needs to decide exactly what it wants to get out of the GIS project, and then develop a realistic workplan.

Both in the outlying campuses and in the central office, the evaluation team observed that important computer data was not secure. For example, we observed in the field that data on hard disks was not backed up, so that a hard disk crash would have resulted in the total loss of data on that disk. Similarly, and potentially far more damaging, at the central office, back ups were made, but these backups are then stored next to the computers themselves. In the event of a disaster at Pradeep Chambers, such as a fire, all of BAIF's computer records would be destroyed. It is strongly recommended that BAIF conduct a careful review of its computer data storage techniques with a view to making them more secure.

6.2.3 Communication Cell (CC)

6.2.3.1 Proposed Activities

The purpose of creating the Communication Cell as part of BIRC is to disseminate information generated within BAIF to the grassroot level, and to develop training materials for its extension staff. In addition, the CC conducts surveys of communication needs, selects the proper communication mode, and publishes materials, including the BAIF Annual Report.

6.2.3.2 Accomplishments

There are two staff in the Communication Cell and they plan, coordinate, design, pretest, and produce the materials. They also edit articles, books and papers prepared by BAIF staff. The staff of the CC also interact with different programs of BAIF to assess their communication needs, and then develop communication materials for them.

The items produced by the CC include: VHS films; printed materials such as books, reference manuals and booklets; slides; radio programs; and posters and charts. Some of the products of the CC have received national recognition: (1) the film *Golden Earth* on soil and water conservation won a national award; and (2) the book, *Mother Nature* won a national award in the national prize competition for children's literature.

In spite the high quality of most of the work coming out of the CC, the printed materials do not project a distinct style of their own and considerable variation exists in presentation and organization of text, tables etc. It is suggested that the Communication Cell develop a style guide for BAIF publications and make full use of computer software for spell checking.

6.2.4 User Evaluation

Interviews were conducted by the evaluation team with 17 senior staff and field workers to (a) determine their views about the facilities and services provided by BIRC and (b) obtain their suggestions for operational improvements of BIRC. The following section provides some of the more pertinent comments made by staff.

1. The library reference materials are not fully adequate and the core collection of books should be built up as fast as possible.

2. The campus libraries should be provided with catalogue cards for the books which are kept there.

3. The information update service provided by the Library is considered efficient and effective by the BAIF staff.

4. There is a mixed reaction on the article alert service. Some felt that it is a good service, while others thought that it contained items of marginal interest.

5. Information services for field staff should be strengthened, e.g. more reference materials, handbooks and manuals should be prepared and provided.

6. Bibliographic databases should be expanded to contain data from international sources.

7. The CSC contains competent people and provides an efficient service. The databases are well-managed and data analysis results are provided on time.

8. The computers at the various campuses of BAIF, and the main computer office at BIRC should be linked, so that data can be shared.

9. Databases used by a single project should be handed over to that project.

10. The Computer Cell is helping BAIF staff become computer literate.

11. There is sometimes a delay in getting materials from the Communications Cell, which may be due to a shortage of manpower.

12. More audio-visual materials should be prepared for field staff.

Many of these comments appear to be valid to the evaluators but BAIF has not yet been able to implement them because of lack of funds. As additional funds become available, BAIF should review these comments made by its staff, and implement those which are feasible.

6.2.5 Findings, Conclusions and Recommendations

1. A review of the available data and interviews with users indicates that BIRC is providing the services and meeting the objectives set forth in the IDRC/BAIF agreement.

2. BIRC has done a first class job in absorbing new technologies. In three years, BIRC has created a library, automated various routines, created many databases, provided computer-based information services, analyzed data and produced numerous reports, and published a lot of training material.

3. BAIF should ask ICRISAT to help it locate and access some free non-conventional literature sources.

4. While BAIF has made a good decision to keep many of its databases separate, BAIF should constantly revisit this decision, as its computer capacity and computer sophistication grows.

5. Once the LAN is fully operational, BAIF should consider the decentralization of the maintenance of certain databases. In order to do this, BIRC will need to develop suitable user-friendly shells for some of the databases, and to train staff in various operations associated with the maintenance and use of these databases.

6. BAIF should review the services which are, or will be, provided by INET of the P & T Department to determine whether at some stage it would be useful to link the computers at the various BAIF campuses.

7. BAIF should carefully review its GIS requirements and then develop a realistic workplan based on these needs.

8. BAIF should develop and then use a style guide for all of its publications.

9. BAIF should conduct a careful review of its computer data storage techniques with a view to making them more secure.

6.3 TRAINING

6.3.1 Introduction

The purpose of this section is to review general training in BAIF and specific training under the IDRC-BIS program.

Training has always been an important component in BAIF's overall activities. Under the BIS program training has increased substantially, particularly under the following projects:

1. BAIF Information Resource Centre;

2. Community Based Research; and

3. Projects linked with agriculture and technology development projects such as frozen semen technology, sericulture, bamboo, mushroom production, post production systems, and the Rural Polytechnic Institute.

Training needs in management for BAIF project staff as well as other NGOs has also been identified as a specific new need resulting in the establishment of the BAIF Management Training Centre.

BAIF is conducting human resource development activities through:

1. BAIF staff training in management;

2. training of extension staff in program activities;

3. training to program participants in livelihood and health activities; and

4. community training.

Each of these will be described in some detail in the following four sections.

6.3.2 BAIF Staff Training

BAIF staff training is mainly for staff working at headquarters and regional stations and is aimed at strengthening technical, management and professional capacity. Training for the staff is provided by:

1. deputing BAIF staff to attend training sessions and workshops organized by other institutions;

2. organizing in-house training programs and workshops; and

3. regular training programs for extension staff and community functionaries.

During the four-year period 1988-91, 64 training programs were organized mostly in the areas of (a) computer applications and technology, (b) information management, (c) orientation and training in research methodologies, (d) organization and management, and (e) acquisition of expertise in new areas such as ferro-technology, mushroom production, sericulture etc. Out of these 64 programs, 16 programs were related to computer application and information management. Twenty-eight participants and newly recruited staff were trained in these sixteen programs, while 113 persons participated in the other 48 training programs.

6.3.3 Extension Staff Training

Extension staff training is for field level staff in different programs undertaken in various development areas such as agriculture, agro-technologies, health and social development. Extension staff training is the single most important component of training for the success of projects and programs in BAIF. The training program is carried out under both general BAIF programs and under IDRC-BIS programs. Under BAIF programs, information is only included from those areas in which the IDRC-BIS program operates.

The training is mainly carried out at Uruli Kanchan, Vansda and at communities where projects are implemented. Various training activities are grouped in the following areas: (a) agriculture; (b) health; (c) social sciences and (d) general.

Under agriculture, courses were given, *inter alia*, in cultivation of watermelons, vegetables, nursery fruit trees, grafting, livehedge cultivation, sericulture, land development, intercropping, fertilizers, Wadi, Wavli, farm ponds, artificial insemination, dairy and livestock management.

Under health, courses were given, *inter alia*, in health camps, water, nutrition, anaemia and immunization, medicinal vegetables, VHW training, Bhagats training and malaria.

Under social sciences, courses were given, *inter alia*, in kindergarten, role of teachers, child development, non-formal education, school children, personal hygiene, general health, youth clubs, self-health groups, parents education, and community and rural development.

Under general, courses were given, *inter alia*, in stone block making, oil and gasifier engine operation, mango processing, fruit preservation, wood carving and furniture making.

Table 6.2 shows the number of courses and participants trained under general BAIF programs during 1989/91. This table shows that there were 421 training programs, that 14,216 individuals participated and that 20,408 person-days of training were provided.

TABLE 6.2

BAIF TRAINING PROGRAMS

Type of Participant	Number of Programs	Number of Participants	Number of Participant days
Extension workers	15	473	4,952
Community members	14	254	1,006
Project participants	212	13,489	14,450
Total	421	14,216	20,408

Table 6.3 shows the number of training programs conducted under the IDRC-BIS program during the period 1989/91. This table shows that there were 93 training programs, that 2,890 individuals participated in these training programs, and that 16,551 person-days of training were provided.

TABLE 6.3

IDRC-BIS TRAINING

Type of Participant	Number of Programs	Number of Participants	Number of Participant days
Extension workers	19	143	3,510
Community members	74	2,647	13,041
Total	93	2,890	16,551

While not shown in the two summary tables above, the data in Dr. Takwale's report, which is a separate annex to this report, show that:

1. IDRC-BIS training supports already existing training activities provided by BAIF;

2. the participation of women is equal to that of males in most programs, and is exclusive in the Wavli programs;

3. the number of participants over the last three years has increased considerably.

6.3.4 Project Participant Training

Program participant training for farmers and their families is for specific development activities such as Wadi, Wavli, sericulture, dairy, etc., and is aimed at:

1. obtaining gainful self-employment in the rural community where the family lives;

2. imparting knowledge and functional skills for better utilization and development of land, livestock, water etc.;

3. acquiring newer techniques and functional skills based on modern science and technology for upgrading of farm practices; and

4. self-sustained development.

Some of the more important results of the training include:

1. tube-well handpumps are well maintained by trained tribal boys and girls;

2. engines are operated and maintained by trained tribal boys;

3. Sixty-three women have earned Rs 60,000 through watermelon production and marketing training and another fifty-three groups of 347 tribal women have demanded participation in this training program;

4. In the Wadi program, 2,794 women under Wavli earned Rs 1,750,000 during three years through fruits and forestry nursery; and

5. In Akole 100 women raised one million seedlings and earned Rs 250,000 and 25,000 plants were grafted by tribal grafting technicians.

6.3.5 Community Training

The community health program in BAIF is one of the major activities in the development program and is an integral part of improving the quality of life in rural communities. Income generation forms the basis of health care as improved income should lead to improved nutrition and better general health. The community health activities concentrate on health education and the involvement of women and students, and include immunization, improved sanitation, routine anti-natal care, under-five year old check-ups, and growth monitoring of infants.

Community health activities are taken-up in a group of 37 villages in Vansda, 14 villages in Akole, and 12 villages around Uruli Kanchan. The BAIF health program is designed around an holistic approach and is based on participation of the people in order to improve health along with the economic and social quality of life.

A large number of training programs have been organized under community training. Most of these are in the area of community health and include:

1. 2,187 participants were treated for scabies in Vansda;

2. 1,493 participants attended courses at general health camps;

3. 700 children were trained to chlorinate drinking water wells;

4. 180 teachers at Uruli Kanchan and 48 teachers at Akole were trained in primary health care and rural development;

5. 1,000 women were trained in MCH care during 1988/91; and

6. Forty-four tribal boys and girls from Vansda have undergone sericulture training for 45 days, while 16 families have started silk worm rearing and 42 families have started mulberry plantations.

BAIF has also shared its experience and expertise with outside agencies, state governments and Khadi Village Industries Board at Uruli Kanchan. Between 1984 and 1990, six agencies sent 1,044 participants for a total of 7,264 training days.

Based on observations in the field, data presented in Dr. Takwale's report and the information presented above, we conclude:

1. The training programs are playing a vital role in motivating men, women, families and communities to participate in development activities.

2. The size and extensive geographic and subject matter coverage of BAIF's training programs has resulted in a major challenge to BAIF, but it has been up to the task.

3. Internal training is an ongoing and integral part of BAIF's development activities: both in BAIF and as part of the IDRC-BIS.

4. The community training programs are not only helping in community development through greater participation, but are also expanding the horizons of participants. Many individuals, families and communities are now demanding additional training activities in income generation, management and marketing.

5. Individuals and families participating in BAIF's Wadi program and other BAIF activities are used for training in other regions. Not only has this helped in training, but it also increases the confidence of both trainers and trainees.

6. The training programs for sericulture and mushroom production appear to have made a good start and have considerable scope for expansion.

In addition to all the training programs conducted by BAIF, the IDRC-BAIF program has undertaken two significant training projects: the Rural Polytechnic Institute and the BAIF Management Training Centre. These are discussed in the following two sections.

6.3.5 Rural Polytechnic Institute

Major problems of rural India are unemployment, migration to cities and lack of training facilities in agriculture and agro-technologies. The need for such training for women near their villages is particularly important. To service this training need, a multi-locational and multi-disciplinary polytechnic was established in 1989.

The stated objectives of RPI are to:

1. identify training needs of rural youth and artisans leading to sustainable and gainful self-employment;

2. develop appropriate training courses;

3. train participants; and

4. provide post-training guidance and support for gainful livelihood activities.

The accomplishments in the first two years include hiring four full-time personnel, surveying 12 villages around Uruli Kanchan to determine possible employment opportunities and training needs, and identifying 10 courses. Table 6.4 shows the number of courses conducted by RPI during the last two years.

TABLE 6.4

COURSES CONDUCTED AT RURAL POLYTECHNIC INSTITUTE

Year	Number of Courses	Number of Trainees	Number of Training Days
1990	6	146	1,021
1991	6	102	4,544
Total	12	248	5,565

Training modules have been prepared for five courses and materials have been prepared. Multi-media materials in the form of charts, models, audio-visual, and booklets are being prepared but are, at present, on a small scale only.

Internal evaluations of these courses conducted by BAIF at the end of the courses revealed the following:

1. longer courses should be split into a number of short courses with the maximum length not exceeding six to seven days;

2. more emphasis should be placed on hands-on training and practice on the farm;

3. more demonstrations be given before expecting participants to do the task themselves;

4. more individual work rather than team work; and

5. more post-training support for acquiring equipment and materials, and in marketing.

The RPI is expected to establish backward linkages with BAIF's research and development programs as well as forward linkages by setting up a production and marketing centre. The marketing centre appears to be particularly relevant in light of the suggestions made in chapter 5 for upgrading the economics and marketing capabilities in IDRC-BAIF program. A production centre for providing post training support is planned in mangos, carpentry, baking, ferro-cement technology and mushroom technology. The production centre is expected to be self-supporting and will offer (a) facilities for the trainee and practical experience, (b) advise in setting up individual or group production units in rural areas, and (c) help in marketing.

Based on observations in the field, data presented in Dr. Takwale's report, and the information presented above, we conclude:

1. When considering the needs of the wide variety of potential target groups and BAIF's development philosophy, the Rural Polytechnic Institute fits well into the strategic needs of BAIF. It will help in particular in:

   a. developing approaches and methodologies for forward and backward linkages;

   b. developing training packages which could be delivered in different project regions, thus strengthening training at the community level; and

   c. transferring appropriate technologies to rural individuals, families and communities.

2. For the development of effective training modules and materials, RPI will need:

   a. outside expertise to help design and produce training material;

   b. some more advanced training modules which use appropriate training technology;

   c. well-organized backward linkages with research and development personnel in order to develop appropriate training modules; and

   d. systematic feed-back and evaluation of the training programs.

6.3.6 BAIF Management Training Centre

Non-government organizations in India have taken a leading role in initiating rural development activities at the grassroots level. While rural people are not able to benefit from the majority of government sponsored development programs, NGOs have successfully shown ways to establish a link between the centralized project implementing agencies and the rural communities. Many NGOs have also succeeded in developing innovative models of rural development worth replicating. However, most of the NGOs working in rural areas lack the technical skills and managerial know-how for smooth implementation of their

projects. With suitable training to strengthen their technical and managerial ability, this problem could be overcome in the future.

The field technicians and extension workers employed by the NGOs are generally less qualified and need a tailor-made training program in management. With their inadequate formal educational background, they find that it is difficult to receive any formal management training as conducted by management schools and universities. Special courses designed for these categories of field personnel should take into consideration their field problems and the need for special educational aids. Such training will need to cover technical, financial, and general administration of project management.

To meet the above needs, the goals and objectives of BMTC will be to:

1. identify the needs of NGO functionaries;

2. develop training modules and materials; and

3. train participants.

6.3.7 Recommendations

1. Training in both RPI and BMTC could both be furthered strengthened by:

   a. using additional outside expertise to develop training modules;

   b. establishing a separate cell or expanding the communication cell to prepare training material using the multi-media approach; and

   c. developing well-organized backward linkages with research and development personnel in order to develop appropriate training modules.

2. Systematic feed-back and short-term and long-term evaluations of the training programs should be made an integral part of the training program.

3. The Rural Polytechnic Institute should be developed further. It should include:

a. a unit for developing training modules and materials;

b. a unit for identifying appropriate technology packages for backward linkages to production centres; and

c. facilities for audio-visual production of training materials.

4. The BAIF Management Training Centre should develop additional training modules in farm management, small-scale production unit management, marketing, cooperatives, and rural development for field functionaries.

6.4 THE ROLE OF IDRC PROGRAM OFFICERS

Based on the normal operation of IDRC, its Program Officers have specific functions to carry out. For the BAIF-IDRC program, these functions largely centred around designing the actual program, and then providing ongoing support, guidance and monitoring, through periodic visits to the individual projects. In order to assess this aspect of the program, it was essential to compile a record of all these visits, their purpose, the tasks carried out, as well as their duration and itinerary. This has been a rather difficult task. The IDRC filing system of trip reports was not conducive to compile this information, and the trip reports themselves are often not indicative of the actual activities, nor the time spent on the project.

Feedback from a wide cross-section of BAIF staff indicates not only an excellent relationship with the respective IDRC Program Officer, but also the usefulness of their advice, and the support they provide, especially through linkages with other scientists, institutions and organizations. Although BAIF project leaders have become more confident, and carried out their research tasks with increasing expertise, the need for close support has remains important. The available information shows that most Program Officers visited the project on average less than four times over the last four years. Given the importance of their involvement, this seems rather inadequate, and one visit every six months should be a more useful level of contact, especially where one Program Officer covers several projects.

One exception to this general observation of a close working relationship with IDRC Program Officer contact has been the Community Based Research Project. Here the linkage to IDRC was largely limited to the Health field, and little attention has been given to Social Research, one of the important aspects of the CBR project. It will be particularly

important that this project receive more input from the Social Science Program Officers in the future, to bring the Social Science research to an acceptable level.

And in line with the proposed new emphasis of the BAIF program on "Packaging" of the technologies, IDRC Social Science Program Officers will also be expected to play a major support role here. At the same time such support will also be essential in the areas of economics and marketing, where IDRC has up to now not made a significant contribution.

The present role of Program Officers in monitoring and planning also needs to be considered. Records show that most of their visits coincide with the Annual Meeting, which they attend. It seems from the trip reports that their time is often too short to both work with project staff on a review of the project, and also to fully participate in the meeting. At the same time there is a need to question the usefulness of the way the system has established itself. Presently BAIF project staff design the annual work program, and send a copy to the respective Program Officer by the end of the calendar year for his comments. By the time of the annual meeting, the annual workplan appears to the evaluators to be more or less a "fait accompli", and the meeting then only allows fine-tuning. It might be more useful if Program Officers were involved in the design of the annual workplan, based on a review of both the progress made, and the budget situation.

Finally, we think that in future periodic internal financial and technical reviews of the program as a whole should be undertaken by IDRC.

6.5 THE USEFULNESS OF THE MODEL

The linking of IDRC and BAIF has generated considerable benefits for both parties, and has every indication of producing a major impact on development in the areas covered by BAIF. If it has in some quarters been seen as the "ideal" model, then this evaluation report may be disappointing. While the first few years of cooperation between the two institutions has clearly shown the potential of this type of cooperation, this evaluation has also indicated some weaknesses. In a realistic assessment, this is to be expected, and rather than being perfect, it is the learning process which is so evident from this assessment. In order to reach the high expectations, this learning process will need to continue. It is the opinion of the evaluators that the model is a good one, and that the foundations are there to achieve success. This is, however, conditional on the notion that both parties conduct periodic internal reviews and evaluations, and be open to further changes and improvements.

If the model shows promise, then one might be interested to find out if it has applications elsewhere. It is clear that BAIF is a unique organization, and it is unlikely that similar institutions exist in other developing countries. BAIF's ideology based on the principles of Mahatma Gandhi, its involvement in sophisticated research, its philanthropic orientation, and its emphasis on rural development are unlikely to be replicated elsewhere. It is thus unlikely that this exact model can be used with other institutions.

There are, however, opportunities to at least apply some of the lessons learned with BAIF to other projects. If an organization does not exist which combines research with grassroots rural development, then a promising alternative would be a "twinning" of two more specific organizations. Here one of the partners would be research oriented, but keen on cooperating with an implementation agency. The latter would have to be equally keen to field-test and implement the research results of its partner. Such close cooperation between two compatible institutions may be the nearest thing to BAIF which could be found in other developing countries. Such a model could likely be used in an number of development situations, and could follow the same pattern as BAIF, but based on two cooperating entities rather than one.

The most interesting aspect of such a cooperation would be the decision on research topics, which should be identified and initiated by the Rural Development organization. One could even imagine a system, where this partner would control the research budget, and in a sense sub-contract the research to a research organization of its own choice. This would assure not only the quality of the research, but its immediate usefulness to the Rural Development organization, and thus to the rural community, the farmer or the rural poor women.

The experience gained with BAIF as a model could thus open up new, somewhat different, but no less exciting approaches to the funding of development research, where the useful application of its results would be built into the model.

6.6 FUTURE INSTITUTIONAL DEVELOPMENT

One of the major impacts of the IDRC funded projects on BAIF has been in the area of management, especially the computerization of the BAIF headquarters. This has allowed BAIF to take a large step forward in terms of management of the institution. Through this step it has been enabled to expand its research and development activities, and will be in a good position to show its ability to continue to manage increasingly complex projects.

In order to be able to evolve further, in anticipation of future needs, a different area of institutional strengthening now needs to be focused on. In summary, it is considered essential that the technologies developed are "Packaged", before they can be usefully implemented in the recipient communities. This packaging will form the essential link between the laboratory and the village, where input is needed in three distinct areas:

- social science input to match the technology's potential to the given social circumstances in the village;

- economic and marketing advice in order to maximize the return of the new technology to the producer; and

- technical advice in terms of processing and packaging the produce to make it a more marketable commodity.

The fulfilment of this role will call for a new unit within BAIF, which is envisaged to be an inter-disciplinary team focusing on fitting a technology into a community, and optimizing its benefits to the recipient. This may be called the Post-Production Unit, and will combine the present Post Production Project, the Social Sciences cell, and an economics and marketing cell. This should become a distinct project, aimed at fulfilling a supporting role for the present and future technologies. As such it will need appropriately qualified staff, and the support of IDRC Program Officers in the respective fields.

6.7 IMPACT ON BAIF'S ABILITY TO MANAGE PROJECTS

As the name of the program implies, IDRC-BAIF Institutional Support Program, one of the primary goals of the program is to build up BAIF's capacity to design and implement research and development projects. Table 6.5 shows the growth of BAIF over the life of the IDRC-BAIF program. The indicators that we have collected over time are the number of (a) projects in operation, (b) cattle development centres in operation, (c) families in the tribal rehabilitation program, (d) financial outlays and (e) BAIF staff.

TABLE 6.5

GROWTH OF BAIF DURING LAST FOUR YEARS

Year	Projects	Cattle Centres	Tribal Families	Rupees	Staff
1988	55	401	4,850	77.7 million	1,084
1989	66	450	7,063	83.5 million	1,363
1990	83	526	9,118	96.5 million	1,542
1991	95	545	-	-	1,544

All five indicators show that BAIF has grown very rapidly over the life of the program. It is difficult to see how this growth could have been managed without the computers supplied by the program and the support of the IDRC-BIS created Information Resource Centre in general and the Electronic Data Processing cell in particular.

7.0 WOMEN IN DEVELOPMENT

This chapter is based on Mrs. Viji Srinivasan's report.

7.1 INTRODUCTION, OBJECTIVES AND METHODOLOGY

I, Mrs. Viji Srinivasan, was given the task of reviewing the women's development program of BAIF, with special reference to the IDRC Research Projects, as part of a multi-disciplinary team.

The objectives were to assess the involvement of women in the definition and formulation of research projects; the effects of the research on the daily lives of women; to review the 'voice' of women in program planning, delivery and evaluation, and the mechanisms for feedback from women; to assess whether the concerned technologies are consistent with the needs of women; to assess the economic impact on women; women's control over income; the impact on women's role-models and self-esteem; women's participation in extension activities, and the empowerment of women and men.

Thus the methodology consisted of observation, group interviews of grassroots women's groups, and men's groups; interviews of grassroots women; interviews of field-level staff, middle-level staff, scientists, and the top management of BAIF.

7.2 VILLAGE PROFILE 1

Navlakh Umbre, Maval area, Poona district.

November 19, 1991.

Visited by: Ms Viji Srinivasan
Accompanied by: Mr. A.V. Karandikar, Mr. I.A. Kamte, Mr. J.K. Belose, Mr. R.R. Pisal

Title of Research: Development And Standardisation of Sericulture Technology

Snuggling against the barren, eroded Sahyadri and Western Ghats, Navlakh Umbre is a poor village. The black cotton soil is here and there interspersed with bright green jowar plants. The hills are full of dark grey rocks, the top soil is gone, the thorny *babul* is the only remaining tree. Its foliage is a delicate trace against the grey, cloudy sky. The dirt track leads to a brightly painted temple of Pandurangan and Rokhamayi in Bhadalwadi (a hamlet of Navlakh Umbre).

We go to one of the houses opposite the temple. The family has a mulberry plantation. The young wife is at home. Her name is Shanta Bai Jaiwant Bhadale. She wears a thin cheap cotton sari, a tiny black bead necklace and dark green glass bangles. "What were you growing before mulberry?" I ask. The men of the village, who are present, chime in: "She won't know, she won't know." Mr. Karandikar says: "This is not an examination, let her answer." "Where is you husband?" I ask. It is translated as *yajman* (meaning master), but I let it pass. "He has taken milk to Talegaon by cycle, and then to Pune by train." They have one hectare of land.

"What work do you do?" I ask. "When rural women are not educated, can't write, can't sign their names, what else to do except agriculture?" "I do weeding, harvesting, transplanting of paddy; same for jowar. Sometimes in peak season I employ labourers. Men are paid 15 Rupees per day, women 10 Rupees. I too work on other people's land for these rates."

"We have four buffaloes, one cow (*desi*). My husband does the milking, I don't know milking. When he is away I call someone to do the milking. You won't find any women

in this village knowing milking. I do all other work related to dairying - cleaning of shed, cow-dung cakes, feeding, bathing ... etc."

"We get 5 to 6 Rupees per litre of milk. It is given monthly. I don't know how much he gets. He buys everything. If something is needed, I ask him." "In general in this village, you won't find women having any money. Women are only expected to work."

I ask "Why did you take up mulberry?"
She says, pointing to Mr. Belose: "He came, held a meeting, some farmers decided to plant it."
"Your husband didn't ask you?" I ask.
"No! Many (all) rural husbands are like this. They won't ask the wives", she says.
"What operations will you be doing after the mulberry grows?" I ask her.
"I don't know."

"What is mulberry for?" "I don't know."
"Do you do any work in the mulberry field?" "Watering, weeding." "Have you seen a silkworm?" "No, never."
"You already have agriculture, dairying. How can you do sericulture also?" "To survive, we must."

Mr. Pisal says: "In meetings only men gather. The husbands will tell their wives. When we actually begin rearing, women will learn practically."

"What are women's problems?" I ask.
"Drinking water. I have to bring water from two kilometres away. "Fuelwood, in my 'free' time I bring fuelwood from the nearby hills. We had biogas, but it is not working any more. It is 9 years old, and it needs to be cleaned." "Now we burn dung cakes."
We get 10 litres of milk a day, we keep one or two litres." "I have three sets of clothing (saris)", she says. Here all the men who have been watching so far interject: "Tell the truth, you have only two." One says: "You make sure you are writing everything properly, otherwise her husband will return and scold her."

On social issues she says: "There is TV in the temple, but women don't go." "I think that in this village there are no dowry problems, but I have heard of two cases of dowry deaths." "There is no widow remarriage. Girls are married at 15 years, boys at 17." "The Gram Panchayat has two women members, but from other villages ..."

On my asking, she says: "A Mahila Mandal is a good idea, feasible also."

Mr. Pisal says her husband will go to Uruli Kanchan for training in sericulture. "How many will go?", I ask. "22 all together ..." "How many women?" "None."

As we leave I see another women in the house. A shadow. I ask "Who is she?" The men laugh. She is the second wife.

We then meet with a group of men, including the *sarpanch*, in the temple. The deities are Pandurangan and Rokhamayi ..., dark and beautiful. There is a stone slab floor. There are delicate flower decorations, mostly of bright orange marigolds ... There are huge leather and brass/copper drums ..., called *tashas*, and cymbals hung on the walls. Women pass by, laden with three big pots of brass/copper full of water, mostly in traditional saris and blouses, -the gorgeous 'Poona' handloom.

The *sarpanch*, Mr. Bhadale, tells us about his work. He was elected three years ago. "The main problem of the area is the lack of water, both for irrigation and for drinking." "When Mr. Belose came here and talked of sericulture at a panchayat meeting, we decided to try. Twenty began. Four mulberry plot owners are here. The meeting was held here."

"Did the twenty consult their wives before planting mulberry?" "No." "There is no such *paddhati* (system)." "The meeting was held here, the decision was made here ! Women don't come to meetings!" "Who will do the work of rearing silkworms?" Two men say: "Women." "Both men and women", say two other men. "Overall who does more work?", I ask. "We admit, women do much more work then men."

"What other income-generating activities are suitable for this area?" "Poultry for women, Jersey cows for men."
"Is there a Dairy Cooperative Society in the village?"
"We have just sent the papers"; "all are Maratha, 15 per cent illiterate." "51 men members."

"Why no women?" "Men do the milking." "Land is not in women's names." "What is the use of having women?" "The Government will ask for men only, because of the assets. Loans can be only be given to men members. IRDP loans are given only to men." I say: "30 per cent of IRDP beneficiaries have to be women." The *sarpanch* says, emphatically: "There is no such rule." (Such a rule has been in force for the past 10 years!)

"What do the SCs do?" "They are head loaders. They bring fuelwood from the hillsides and sell it" ... No wonder the hillsides are barren.

"Mahila Mandals?" "Good idea." "Suitable activities?" "Drinking water, poultry."

I ask about widow remarriage. "It is somewhat common."
I ask about polygamy. "It is somewhat common too."
We leave. I am troubled.

We next go to the plot of three brothers. There their three wives meet us (Surekha, Meera and Parvati). One is dressed in a pure Varanasi silk sari.

"What is the mulberry for?" I ask. Two blink. One says, tentatively "to prepare silk." I press her: "How?" "We have never seen it, so how can we know?" "Even if our husbands know, they will not tell us." "It is taken for granted that we will do the work." "We have never seen a silkworm or a cocoon." "Cuttings were brought from outside. We did all the work, including the planting. We can only tell you what we have done!" "The men went to the meeting, not the women."

"We have two Jersey cows, two *desi* cows, two buffaloes. We do most of the work. Men do the milking. But we also milk."
"Who sells the milk?" "My husband." "How much land does the family have?" "We don't know. May be 15 or 16 acres!" "Who does the work?" "We do! Sometimes we employ labourers." "How much are the labourers paid?" "15 Rupees for women, 25 Rupees for men." "Why this difference?" "Women actually do all the work, but in the end she gets recognised through the man only!"

"Would you like to have training in sericulture?" "Yes."
"Can you go to Uruli Kanchan with your husband?" "Yes." "What other work do you do?" "Collect and make cow dung cakes." "We don't have bio-gas."

The next plot. Two brothers. "Did you consult your wives before planting mulberry?" "No. Why?" "What if she refuses to do the additional work?" "I have an obedient wife."

The next plot is at some distance. It is a nice tiled house, with a picturesque back-drop of the Western Ghats. I meet mother and daughter (Thanu and Subhadra). She has five children. "Who decided to plant mulberry?" "My husband. But he wanted to plant all of

our land (8 acres). I said, let us try on part of the land only, - he agreed to that." "I don't know what use mulberry is. Whatever work was needed I did, how can women ask such questions?"

"We have no animals. But we have eight acres of land. We grow paddy, jowar, onion, garlic; we do all the work! The man only starts the engine and provides water!"

I ask the mother: "How have women's lives changed?"
"They have not changed for the better. Work has increased. Earlier we did all work inside the house only. Now women have to do 'outside' work also. Our work load has increased."

I ask about social issues. The mother says: "There is dowry now. It was not so earlier." "Widow re-marriage? No! No! ..., how can we say?" "Girls are married at thirteen or fourteen, boys seventeen or eighteen."

"Mahila Mandal?" "Good idea." "What would you do ?" "Don't know ..., we'll think." Her husband also says: "Good idea." "What should they do ?" "Poultry."

The next plot is completely dried up (all the earlier plots had bright green thriving mulberry). Changuna Bai - she is so dynamic! She shows us her dried up mulberry plants. "No water" she repeats in mock anger. "Did your husband consult you before planting mulberry?" "He was not here, he had gone out of the village. My son went to the meeting. He come home and told me about it. So we decided to try." "Please help us with water ..., we'll try again." She is free and happy, even though she is the only women in the entire group of men. The men laugh at her, she laughs back. Her husband is also here.

"Our lives are worse now. Men drink constantly. They go to the temple, put on a *tulsi-mala*, and swear to stop. But they return and begin again. Dowry has spread to the village from urban areas. Inflation is a big problem ..., we are much worse off .."

I ask Mr. Kamte: "Why should women be involved in sericulture?" "Sericulture is light work. It is a silkworm nourishing job, which women will do well. She will nourish each worm. She will rear them like her children. Hygiene is very necessary. There is also a need for humidity and temperature control. In all this she will be better. Then the women will get a cash income every two months, and she will gain prominence after some years."

I ask him about the IDRC - supported research on sericulture.

"We are trying out different races of silkworms and different races of mulberry." "We are also trying out different types of mountages."
"What about the impact on women?"
"With the new leaf preservation methods, her labour could decrease. She need not go as often to the field. But with different types of mountages her work may increase, she will have to wash the gunny sacks and store them. With certain races of silkworm her work may also increase. Indigenous races spin cocoons in 22 days; other races in 30 days."

7.3 VILLAGE PROFILE 2

Konegaon, Karad area, Satara district.

November 21, 1991

Visited by: Ms. Viji Srinivasan and Dr. Marcel Zollinger

Accompanied by: Dr. B.R. Mangurkar, Dr. Y.P. Phadnis.

Title of Research: Upgrading of Frozen Semen Technology for the Development of Buffaloes

We travel to Karad to see the buffalo breeding program (one of the IDRC supported research projects). Dr. Mangurkar and Dr. Phadnis travel with us. Once more the drive is through barren hill-sides of the Western Ghats, rocky, full of agave and the thorny prosopis, though there are some green plantations here and there.

Our village visit is to Konegaon, where the veterinary Dr. Deshpande meets us. We go to the Panchayat Bhavan. It is an all-male audience. "The village has around 350 buffaloes and 11 cows. The buffalo frozen semen we have developed under the IDRC programme is being tested here. The local non-descript buffaloes are called Pandharpur buffaloes. The heat synchronisation is also being tested. The Cooperative gets around 160 litres of milk a day. All members are men."

In response to a question from me, Dr. Deshpande says: "More than 60 per cent of the work is done by women. We have done training programs for men and women, where 30 out of 80 trainees were women."

At this point, one woman arrives. Her name is Sushila Pawar. She is a *Kotwal* (a functionary). I make her sit next to me.

Then we go to see the buffaloes. Five buffaloes are tied next to each other. Their "owners" arrive (women). "Often I meet only women," says Dr. Deshpande. Slowly more and more women arrive, out of curiosity; the AI cards from BAIF are all in the names of men. I suggest that we sit in one of the houses, and an informal meeting of women takes place.

"What work in buffalo rearing do women do?" "Cleaning, feeding, bathing, grazing, milking." I check up again on the grazing. "Yes, we do it." I check up on the milking: "Yes, we do it." The male link person and Dr. Mangurkar also confirm this.

"What do men do?" I ask. The women laugh. "Bringing sugarcane tops." "How about taking the milk to the cooperatives?" "Oh we women do it." "Who gets the money?" "Men, they are the members."

I suddenly see a man carrying sugarcane tops, and run to take a photo. This creates mirth and merriment for the women. "What else do men do ?" "When the buffalo is in heat, if natural service is to be done, he takes it to the bull." "For AI?" "Oh,no, then the doctor comes here, we take care of that." "Which is better?" Only one women says: "Both should be tried." The others all say: 'Doctor!' Even a doddering old lady says: "Now that there is a doctor here, we should use him!"

"This (AI) is easier (for women), we only need to leave a message in the Cattle Development Centre! That we can do ourselves - not like the natural service." I ask if the women present have been there. An overwhelming "Yes."

"Are you all giving the milk to the Dairy Cooperative Society?" "Yes." "Not to the cycle milkman?" "No, No!" "Is the Cooperative better ?" "Yes." "Why ?" "Lump sum payment (monthly)." "Payment is guaranteed." "But from the cycle milkman it was you who were getting the money, from the Cooperative your husband will get the money." "No, no, our husbands give us the money." "They only collect the money in the Cooperative, but they give it us. Traditionally the milk money has always belonged to women. It is a long

tradition." "But why are women not members?" "Women are shy of going to the Panchayat Bhavan, they have never been there!"

The afternoon is spent at the office of the Cattle Development Centre of BAIF. Dr. Mangurkar and Dr. Phadnis tell us about it: "Before BAIF came in, there were a lot of problems regarding AI in the area. It did not reach the doorstep of the farmers. The Sugar Factory approached us, and is now supporting three Cattle Development Centres." "Anyone can come, we do not discriminate. People leave chits here when their animals come in heat." We are shown some of the chits. "We are now also popularising buffalo insemination."

The veterinaries and the technicians of the three Cattle Development Centres are also here to meet us. We discuss matters with these men in an informal meeting: "Women take more interest in animals than men." "80 per cent of times, the men are not even there." "Women are always with the animals, they take care of them."

"AI work could also be done by women. It is only transport that would be a problem, young women driving motor cycles on their own would be difficult. But the technical skills can certainly be transmitted, and women can do it."

I ask why women are not members of the Dairy Cooperative Societies. "There is no restriction, no bar." "Women do everything in dairying. Even in agriculture, the husband only does the ploughing, and begins the sowing, and then he leaves. The women do everything else."

"We in BAIF have to keep aloof from local affairs." But when we were popularising heat synchronisation in buffaloes, women were also there. Four or five women had brought buffaloes. And the women asked us: Why didn't you think of this before? And many couples had come to our training programs." "One lady near town has a milking machine, and a big herd. She manages it all with one labourer." I ask them: "Why involve women?" Dr. Bhide says: "For better results."

7.4 INTERVIEWS

Note: In this and other interviews, only the answers are recorded, except where necessary.

6.4.1 Interview with Dr. A.L. Joshi (November 22, 1991)

Research Project: Development of Economic Feeding Systems for Ruminants from Locally Available Byproducts.

The Reference Note does not mention women.

"Feeding is usually done by women, she has a major role in the whole affair." "In animal husbandry there is lot of potential to involve women, women are progressive farmers also."

"There are many different ways of feeding; technical and economic factors should be researched, and least-cost ration should be evolved, maybe there is a produce which they already have, but don't use."

"It might mean additional workload for women - to increase the food intake of cattle, but feeding thrice a day may be better than twice a day. But it is worth it in terms of additional milk yield and additional income; and concentrate use may be reduced, so the cost of milk production will be lower."

"The genesis of this research was that a large amount of animal nutrition research exists, but adoption is not seen in the field." "Why?" "Sustainability in the field situation has not been studied, since research has been away from the field. We need to study the village systems, then there is better likelihood of success."

I ask: "Why should women be involved?" "BAIF has defined the unit as a family. If a family has to improve, there can not be discrimination. I look at it as a family, not woman or man - I may be called biased!" "For example, wives of field staff in Gujarat have collected data on urea treatment. They found that women complained - men do it all in one day, we have to store it and take it out every day." "Joint membership in Dairy Cooperative Societies could be one way."

7.4.2 Interview with Dr.M.R. Bhosrekar (November 22, 1991)

Research Project: Upgrading of Frozen Semen Technology for the Development of Buffaloes.

The Reference Note says: "In the majority of places buffaloes are looked after by women and children. The income through sale of milk normally goes to the women of the farming families. Through the improvement in buffalo breed and breeding procedures more calvings and more milk is expected in a given time, which will help increase the income of the women of the families."

"Buffaloes are being looked after by women and children, they do the feeding and milking, even the selling. Earnings from the sale of milk go to women - traditionally, the *ratib* is a custom, by which she carries the milk on her head, and goes from house to house, she gets the monthly payment." "So if the milk yield is increased, she will earn more for the family."

"Some buffaloes are now also being heat synchronised by us - of 20, three were brought by women, one by a child. I have a photograph of the child" "Not of the woman?" "No!"

I ask: "Can you make a special effort, so that more women participate in training programmes?" "For AI, this is difficult, she will feel shy. But in Sweden there are ladies who even collect semen. Here it will be difficult. But for generalised training, and in heat detection, such training can be given. It can also be given to couples."

"The idea for this research came from farmers; they always keep one or two buffaloes to mix with cow's milk, to increase the fat content, when supplying milk to the Dairy Cooperative Society. They wanted us to develop frozen semen technology for buffaloes. If buffaloes have long inter-calving periods, this will reduce her income!"

"Social scientists can study the impact on women. 60 to 70 per cent of the work is done by ladies. This is in addition to household work, a lot of farm work, and taking food to the husband."

"In Gujarat women run Dairy Cooperatives Societies. It is not the system here. But in Maharashtra some panchayats are run by women." "Women should be involved in BAIF's programs. Women want to work. They don't take credit for the work." "In field programs,

women functionaries could make better liaison with families, they could talk better to ladies."

7.4.3 Interview with Dr. S.N. Singh (November 25, 1991)

Title of Research: **Standardisation of Micro-carrier Culture Technique using Marek's Disease as a Model.**

"Our understanding is very clear. The families are to be economically rehabilitated. She manages the family, its economy, its labour, food for husband. She has so many pressures. If she is not playing a pivotal role, if she is not given such a role, our program will be a flop. She is very professional. If she understands, she will take care. She has to have total acceptance. The husband will forget, or he is only understanding politics. She will communicate with children also."

"She will remove the bottlenecks of research. The needs of women in local conditions vary. This should be considered in conceptualisation, designing of research and in implementation."

"Women will take care of cows, buffaloes, sheep, goats, just like babies. She will relate immunisation to cattle and to children. When rural doctors don't know, she will give them hot water and new needles."

"What planners and intellectuals don't know, she will tell us."

7.4.4 Interview with Ms. H. Kothari (November 22, 1991)

Title of Research: **Standardisation of Micro-carrier Culture Technique using Marek's Disease as a Model.**

"We want to uplift rural areas. Women have a close touch with the family. If the husband has gone out, if she is aware of the cold chain, then when the doctor comes, she can understand about complete immunity. She is taking care of animals within the home."

"I have not visited BAIF villages."

"Rural women have no problems as such. Maharashtrian women are free, they are ready to work. There is no *burka* or *ghungat* (veil)." "In my class in University we were only seven women, out of 120 students."

7.4.5 Interview with Dr. M. Pimplaskar (November 25, 1991)

Title of Research: Development of Mushroom Production Technology.

"BAIF's philosophy is good. The objective of social work appeals, it is not money-making." "The overall objective of BAIF is to uplift families. Unless the women is aware, how can she do anything?"

"Mushroom cultivation holds promise. It is scientists' top and latest technology. We are not going backwards." "This research project was identified at brainstorming sessions." "I tested this at the Akola project. I couldn't believe that it is possible for women to participate like this. That too, as uneducated as they are."

"BAIF is interested in field programs with downtrodden families. In farmers' families women are one component. The women agricultural labour force is sometimes idle. BAIF wants to give justice to these women labourers by bringing technology to their doorsteps."

7.4.6 Interviews with Women Balwadi-cum-Field Guides

Title of Research: Community Based Research

As part of the Community-Based Research, there are eight women Balwadi-cum-Field Guides in villages near Uruli Kanchan. I interviewed them as a group.

- **Rajani and Nanda**

Nanda is a beautiful young smiling women, Rajani older, mature, respected in the community. Rajani says: "My husband is a primary school teacher in Bharatgaon (my place of work now). I was brought up in Poona, and initially I had difficulties in mixing with the rural community. But my husband helped me to integrate. Gradually women began to

come to me and ask how to improve the village facilities. The women said: Your husband is not letting small children sit with their older brothers and sisters in the school; so you start a *Balwadi*! Working mothers also had problems. So when BAIF workers came, I said that I wanted to start a *Balwadi*. So BAIF arranged a six month training course at Uruli Kanchan. My relatives said to me: This job will not pay, this job is low-status, etc. But I persevered. I did a survey with Nanda's help, and identified 70 children, of which 40 now come to school."

"Then I asked the *sarpanch* for a place. He was very reluctant, as the panchayat's TV was kept in the room. After one and a half months of persuasion he agreed. I and Nanda started together, and now there is no complaint about the TV. In fact the room is cleaner! People offer us prizes for Independence Day and the cultural programs at Republic Days."

"I always liked social work. I was more motivated by BAIF, now I like it very much, but I got direction from BAIF. I handed over this *Balwadi* to Nanda, and she runs it by herself now. Then I began another *Balwadi* in a village called Kasurdi. I handed that over to another girl too. Then I started a third *Balwadi* in the 'shepherds' village of Dhangar basti. They, after a lot of work, now see it as their *Balwadi*, and support it completely."

"They rear sheep and goats, and both men and women migrate for 8 months in the year. Their children are left with the grandparents. Even if she has delivered a baby a day earlier, she still goes!" "They grow pearl millet in the rainy season, and they sell goats, wool, and carpets."

- **Nanda**

She talks of her *Balwadi*: "The women's problems are that there are no hospital, no immunisation, no employment in the village, the lack of a minimum wage, lower wages than men, work burden." "In cities men are understanding that they should help in housework, but in villages not at all." "We are also trying to change this through the *Balwadi*."

- **Madhumalati**

"The women are not independent in their decision-making. Men remarry if the wife doesn't have a son. It is a son-preferred society."

"Now people like my *Balwadi.* The panchayat pays me 50 Rupees a month." "I've developed a lot of programs; nursery, mini kit (I did not choose men who were drinking." "20 women are in my self-help group. When I am with the *Balwadi* children, I forget all my worries!" "My husband is schizophrenic, and I had lot of problems."

- **Aruna and Chhabutai**

"We have been Resource Persons to other projects. We liked it". Aruna and Rajani went to a workshop on 'women's labour' in Nasik. Household chores are never thought of as work, nor recognized. This is the same in my village!"

- **Surekha and Swati**

"Rajani helped me a lot. Most of the children are Harijans. After attending a gynaecological camp, I took 20 women to Poona, as referrals. I've got congratulations from the medical social worker. I've done other programs also".

"After my elder sister got married, I began running the *Balwadi.* Parents were surprised. I've introduced weaning foods and discouraged bottle feeding, a chlorination demonstration, school health checkups, *arogyapatrika* and nutrition education, and a library. My women's main problem is alcoholism by the men. Each women should talk to her husband, and the men should take out a *morcha*!"

- **Rekha**

"Sheela suffered, since she was a Harijan, and the *sarpanch* objected. Now I have no problems, and the parents pay 5 Rupees per month as fees. I've done a lot of work with cross-bred cows and artificial insemination, and I like the cattle development program."

The Block Program Officer, N. P. Chandgude said that he contacts the Balwadi-cum-Field Guides all the time, he also contacts women. He felt that those who have Matric could certainly do a Diploma in Agriculture. Pushpa, one of the *Balwadi* teachers, has now got a job as an *anwanwadi* worker (ICDS), and has been elected to the panchayat.

I then tell them about my experience with women in sericulture development in Maval: "The women are doing it not out of obedience, but out of fear, and there are other

extraneous factors and pressures, even if she doesn't want to do it." "Both men and women should be consulted, and both have to be sharing the responsibility."

I then tell them about buffalo breeding in Karad: "Women should be members of the Dairy Cooperative Societies - at least 50 per cent." "Men should not be paid without telling the wife." "Animals should be jointly owned." "Land should be jointly owned."

On the testing of research findings: "We can do it very well in our village. We are aware of people's assets, we are familiar with people, they won't think we will be snatching their assets, we can select a sample."

The above-mentioned record is bland. It does not communicate the courage, the commitment, the maturity, and the capability of developing creative responses to women's needs and aspirations, nor the understanding of the complexities, nuances and subtleties of women's development.

7.5 PROJECT FINDINGS

7.5.1 Integration of Rural Women into Mainstream Development

BAIF is very sincere and committed in its keen interest in integrating rural women into mainstream national development. The women's contribution is warmly and openly acknowledged, and women have a high visibility. This is in spite of the fact that gender issues have not formed part of the initial IDRC-BAIF agreement, and that IDRC has not pushed women-in-development. Therefore, it all the more reflects BAIF's genuine commitment, and the organisation is clearly pro-women; this is not just a superficial phenomenon.

7.5.2 Policy Document

The kernel of a specific BAIF policy document regarding women is already there: "Rural women are at the forefront of development programs", and: "Once we decide on an activity for women, it is kept exclusively for women" are quotes from BAIF documents. There is also a document 'Women In Development', which may be too general, but it can be used

as a base. It will however need to clearly differentiate between women's economic, social, political, day-to-day situations.

Nevertheless certain ambiguities remain. For example several BAIF senior staff said: "We don't want to get into areas of social conflict". But then, whether BAIF likes it or not, it has already been involved in "social conflicts". It did so when it decided to make 'drinking', and its abdication, a condition for the WADI programme. (Incidentally, this strategy initially appeared very moralistic; but my later experiences now suggest that this rule should be extended to non-tribal areas). BAIF also got involved when it decided to support Balwadi-cum-field guides, since some of them were getting out of intolerable family situations.

Many other important women's issues have not been articulated as women's issues. One example is bio-gas - women are the main (or only) users of the kitchen, the vessels don't get black, which relieves the drudgery, they don't inhale smoke. The BAIF document on energy does not even mention women.

7.5.3 Initiatives for Integration of Women

On the ground, there are five main initiatives for the integration of women, and for linkages with women:

- there are women health guides (37) in the Community Based Research (CBR) at the Vansda Project,

- CBR near Uruli Kanchan has a group of women Balwadi-cum-Field Guides in 12 villages,

- in Gujarat, Dr. and Mrs. Rangnekar are working with a women's team of wives as Field Guides,

- in all Cattle Development Centres, the staff are informally reaching out to women cattle-keepers,

- in the Vansda Project, an entire women's programme has been based on a traditional concept called wavli, over which women have full control.

7.5.4 IDRC Research Projects Findings

The IDRC Research Projects in general may not be formally and specifically linked to women at the present stage; but certain processes have been set in motion, and these can be easily built upon; and mechanisms put in place wherever needed. Informal linkages exist to a very great extent, which can easily be strengthened. Overall, there is a definite 'hidden' participation of women behind the scenes; there may not be complete decision-making by women; but there is a strong undercurrent of faith and trust in BAIF.

However, in the definition and formulation of research projects, it is doubtful that women were involved in any of them. Most of these seem to have been defined and formulated by the scientists. Only one project seems to have originated in the field, the frozen semen technology for buffaloes. It is also doubtful if data was gathered from women, or if the 'voice' of the ordinary woman has been heard in program planning, delivery and evaluation. However, many projects are not so far ahead yet.

It is clear that technology alone is not the answer. It is important to develop women's membership in producer organisations. The economic impact on women of the research results (or potential results) is likely to be very positive for most of the projects, especially for buffalo frozen semen, bamboo and mushroom production. Such direct benefits are less likely to materialize for women in mycorrhiza innocula, the rural polytechnic, post-production technology, economic feeding systems, and micro-carrier technology.

However in the case of sericulture, the additional work burden has to be carefully studied. And in the Social Science Research the study of the *wavli* practice is dynamic and well documented. But most of the other social science research is rather general, and the focus is not sharp. For example, the study on the status of rural women does not reflect the complexities, nuances and subtleties of women's specific situations.

And women's participation in all producer and marketing organisations is crucial. The term 'producer organisation' has constantly been used for two reasons:

- to enhance women's decision making capability, not just for the control of money alone,

- because the *wavli* program is for temporary projects only (e.g. water-melons), and there seems no initiative to apply it to permanent projects like bamboo.

Women's confidence and self-esteem has certainly been already enhanced by the project, and is certain to be enhanced still further, when the new technologies are developed and introduced. Women are certainly more appreciated in the community now. Men on the other hand have not yet been encouraged to question their assumptions, but this is a much larger task, will take a long time.

7.5.5 Inside - Outside Dichotomy

Rural Maharashtra seems to retain strong inside - outside dichotomies (i.e. private vs. public sphere), especially in government departments like Sericulture, and in Federations like the Dairy Federation. It is important that BAIF guards against this dichotomy influencing development strategies of BAIF staff, and takes measures to counter this dichotomy. One fears (perhaps unnecessarily) another dichotomy: that women are being addressed by health and education issues and strategies, and men by land and production based strategies.

An example of the private/public sphere dichotomy is that every single person or group we talked to during this visit said that women do 60 to 70 percent (sometimes 80 percent) of dairying operations. Yet according to 1989-90 statistics, of the members of Dairy Cooperative Societies in Maharashtra 5.6 percent are women. And there was not a single woman member in any of the Dairy Cooperative Societies visited. What is the process causing this anomaly? This needs to be studied.

Here BAIF is not using its influence to induce change! Based on such a study, and as a leading cattle development organisation in Maharashtra, BAIF can easily promote women's (joint) membership in all Dairy Cooperative Societies.

7.5.6 Self - Reliance

Self-reliance may be difficult in certain projects. There will be a continuing dependence on BAIF, for example in the supply of buffalo semen, mushroom spawn and silkworm eggs, as well as in the marketing of many produce. There also seem to be a number of subsidies in

some projects, which are not necessary if the project is actually sound. But given all this, BAIF works wonderfully!

7.6 ANALYSIS AND COMMENTS

7.6.1 BAIF's Policy on Women

It has been difficult for an evaluator to properly establish just what BAIF's policy on women is. Is it to see and design projects for women as economic producers in key sectors of the economy? Is it to see and design projects for women as wives and mothers? Why is BAIF wanting to integrate women into development? National welfare reasons? Productivity reasons? Family welfare reasons? Result oriented reasons? Human rights arguments? Greater need? These questions need to be addressed and articulated, and the answers presented in a comprehensive policy document.

7.6.2 Sectoral Studies

In India, it is estimated that 75 million women are engaged in dairying, some 800,000 in sericulture, 2 million women in khadi and village industries, 3 million in handlooms etc. So as the unit of analysis and intervention, to be applied in projects to support the livelihoods of poor women, the sector is the key.

Mainstream development programs, which co-exist with anti- poverty programs, are all along sector lines. Critical activities of the economy are assigned to Ministries, and there are specialised Ministries or Departments for support and development of specific sectors, and these have significant budget appropriations. However there are also unspecialised Ministries involved in anti-poverty programs, such as the IRDP, assigned to Rural Development Department, and the women's programmes under the Human Resources Development Ministry.

Most women we saw on our visit to BAIF were working in several production sectors - agriculture (including vegetable cultivation, horticulture, sugarcane production, jowar cultivation), sericulture, and dairying. However women are likely to be left out of these mainstream sectoral plans and programs, because Government planners (mostly men) do not view women as producers in these major sectors of the economy.

Therefore BAIF needs to build on its experience, and develop sectoral case-studies with sector-specific analyses. Some examples are women in dairying, or women in sericulture. The study on the *wavli* program is an excellent example.

Such a sectoral approach could benefit the women's program of BAIF, as it will link women to sector-specific Ministries, and will present a case for women as economic agents, and legitimate clients for mainstream programs and policies of the Government. It will also enable, through developing pilot interventions, to meet the needs of specific sectoral women's groups, and will, by organising women around problems in each sector, promote empowerment and economic goals. Finally, if various systems of production and distribution in each sector are documented for women's and men's roles, it would assist sectoral Ministries to apply a gender perspective to their planning.

7.6.3 Pilot Action Projects

The projects which BAIF is implementing now could serve a wider purpose. They should be used as pilot action projects, which can be copied by other organizations, and implemented over a much wider geographical area. Such pilot projects for women in the critical sectors of the economy will have the explicit objective of mainstreaming women into the major sectoral plans and programs of Government. The pilot projects will be documented through a series of case studies. Then, dialogues with Ministries will follow, and the pilot projects can form a strong platform to alter Government macro-policy, and for seeking broader legal, social and political gains for disadvantaged women.

7.6.4 Capability Development for Gender Issues

In order to carry out the recommended studies, there needs to be a concerted effort to enable BAIF staffs at all levels. At the top-level, the preparation of the women's policy document will be an important initial task. At the same time a senior staff member should attend the three-month course "Women, men and Development" at the IDS of the University of Sussex.

For the middle level, BAIF needs to develop gender sensitivity training programs for its staff, and organize field visits to key women's development organisations in the country. And in the new BAIF documentation centre, a collection of important documents pertaining to women's policy development needs to be put together.

At the field staff level, BAIF needs to organize study tours to women's organisations in the country related to their sectors, followed by sector specific workshops.

7.6.5 IDRC Research Projects

It is obvious that the IDRC Research Projects should be located within the framework of the women's policy document, and linked to each component. During the evaluation it has been found that these linkages are not adequately understood, and to overcome this handicap, a workshop needs to be held for each Research Project.

Future research projects then should begin with these types of workshops. To facilitate this, a specific WID advisory team should be formed, consisting of technically trained women, women social scientists, and women field staff (like the Balwadi-cum-field guides). This advisory team is to work with all BAIF projects, in order to provide the necessary women-in-development and gender analysis inputs.

7.6.6 Influencing Detrimental Policies for Women-in-Dairying

BAIF has potential to influence policy in favour of women. As a large cattle development organisation, it is in a unique position to study the dairying operations by rural women, and the barriers to rural women's participation in producer organisations, such as Dairy Cooperative Societies.

As it is, there is a Government Resolution (GR) that 30 per cent of Directors of every cooperative have to be female. BAIF can lobby with the Government to enforce this rule for Dairy Cooperative Societies, if the study shows that this GR is not implemented.

In the villages, BAIF can act as an effective agent of change. For example, IRDP loans for animals don't need security. Land can be held in joint names, and both husband and wife can be regarded as joint heads of the household. The Panchayat Bhavan can be given to exclusive women's meetings, if need be.

7.6.7 Terminology

The reflection of an organization sensitive and progressive in the area of women is by its terminology. This may not be important in itself, but for newcomers it immediately will give a message. Do not use the term "head of the household", and eliminate expressions such as 'mankind', 'manpower', etc. When talking about 'husband', the words *yajman* and *malik* should be avoided, and more neutral term found.

If BAIF in its mandate stresses that the family is the unit, then the obvious consequence is that men and women need to be considered equal. Then the term "head of the household", when applied to men is misleading. Government may use the term "Head of the household" generally for men (or the husband), but BAIF needs to be an example, and consider both husband and wife as heads of their households." This change will have some immediate practical expression, as cards for AI are now in men's names only , and should be changed to the joint names of husband and wife.

7.6.8 Social issues

Again and again in the course of the evaluation, serious social issues were raised as the main problems of women. Social issues have an important role, because BAIF's emphasis on the generation of income is of no use, if its earnings are dissipated because of social problems. For the program to reach its goal of improving the quality of life, it is essential to go beyond simple gainful self-employment. The project has to generate a clear understanding of the negative and destructive "customs" or "habits" prevalent in the villages. BAIF, in order to be true to its mandate, needs to fully address the problems caused by customs such as polygamy, dowry and bride-price, and especially alcohol addiction, and to design appropriate interventions to overcome them.

7.6.9 Energy

Women cook, women collect cow dung, and women make cow dung cakes. Women bring fuelwood from a long distance, which is adversely affecting the environment. Therefore energy should be perceived as a women's issue, and some well designed energy systems should be developed by BAIF specifically for women. Possible interventions would be

improved, locale-specific *chulhas*; biogas for small numbers of cattle; fuelwood plantations etc.

7.7 RECOMMENDATIONS

1. BAIF should prepare a document on women's policy, which will lay out the framework within which BAIF's entire women's development program will be situated.

2. BAIF must carefully design its projects bearing in mind women's workload, women's capabilities and training needs, women's access to income, women's access to decision-making, producer organisations, etc. As a basis for such a project design, it is desirable that BAIF carry out sectoral studies.

3. With the experience gained in involving women specifically in livelihood and income- generating activities, BAIF should set up pilot action projects in different sectors to act as demonstrations for their wider application by Government, para-statal and non-Government bodies.

4. BAIF should invest in providing the necessary capabilities for women-in-development and gender analysis to all levels of BAIF staff. Research, documentation and implementation skills consonant with women-in-development and a gender sensitive approach needs to be systematically built up for all levels of staff, for both women and men.

5. BAIF should initiate a series of workshops bringing together scientists, extension staff, field staff and grassroots women, in order to generate a better understanding of the specific social and economic environment, in which the project will be implemented.

6. BAIF should initiate a study focusing on areas of influence on policy changes in favour of women in the dairying sector. Based on the findings of this study, BAIF should be involved in influencing policy in this area, promoting the membership of women.

7. BAIF's use of terminology should be more in tune with its egalitarian attitudes towards women. These mor gender neutral terms could be set in the new BAIF policy document.

8. BAIF should initiate sensitive locale-specific studies on social issues like polygamy, dowry, bride-price etc., as well as the specific curse of alcohol addiction. The studies should be taken back to the community, and with their help interventions developed through a participatory methodology.

9. A new project on energy use should be included in the new research program, and should be designed in consultation with women's groups at the village level.

APPENDICES

APPENDIX A

LIST OF PEOPLE MET

Person	Title	Address
Adhikari, Mr. P.C.	Program Coord. Communic.	BAIF Pune
Ambekar, Mr. S.R.	CBR Agric. Field Coor.	BAIF Uruli Kanchan
Baxi, Mr. P.U.	Project Coord. Micorrh.	BAIF Wagholi
Beaussart, Ms. M.	Project Officer	AFNS, IDRC Ottawa
Bhide, Dr. A.R.	Regional Program Coord.	BAIF Karal
Bhide, Mr. K.N.	Program Coordinator	Kadus Agro-Forestry
Bhosrekar, Dr.	Project Coord. Buffalo	BAIF Uruli Kanchan
Chirmulay, Dr.	CBR Program Coord. (Health)	BAIF Vansda
Desai, Dr. Manibhai	President	BAIF Foundation
Deshpande, Dr. A.M.	Area Program Officer	BAIF Masur
Dhar, Mrs. T.	Program Officer Public.	BAIF Pune
Giroux, Ms. H.	Senior Dev. Officer	CIDA Ottawa
Ghorpade, Mrs. A.	Head Social Science Cell	BAIF Vansda
Harris, Mr. V.J.	Program Coord. Computer	BAIF Pune
Hawara, Mr. A.	Treasurer	IDRC Ottawa
Hegde, Dr. N.G.	Vice President	BAIF Uruli Kanchan
Hodgar, Mr. S.T.	Managing Director	Sangamner Sugar Coop

Hoffman, Mr. P.	Can. High Comm.	Delhi
Johnston, Dr. David	Agriculture Specialist	CIDA, Ottawa
Joshi, Dr. A.L.	Project Leader Byprod.	BAIF Uruli Kanchan
Joshi, Mr. D.N.	Chief Engineer	Bhandardara TRP
Kamte, Mr. I.A.	Project Coord. Seric.	BAIF Uruli Kanchan
Kanekar, Mr. S.C.	CBR Project Coor.	BAIF Akole
Karandikar, Mr. A.	PPS Project Leader	BAIF Vansda
Kelkar, Dr. P.N.	CBR Field Coordin.	BAIF Akole
Kelkar, Mr. V.	Bamboo Proj. Coor.	BAIF Uruli Kanchan
Khadilkar, Dr. S.B.	CBR Field Coordin.	BAIF Uruli Kanchan
Kokate, Mr. K.M.	Mulberry Res. Seric.	BAIF Uruli Kanchan
Mane, Mr. R.S.	Grainage Res. Seric.	BAIF Uruli Kanchan
Mangurkar, Dr. B.R.	Head Research Program	BAIF Uruli Kanchan
Naik, Mr. P.D.	Joint Prog. Coordin.	BAIF Vansda
Nisal, Dr. R.V.	Res. Medical Doctor	BAIF Uruli Kanchan
Pande, Dr. A.B.	CBR Program Coord.	BAIF Uruli Kanchan
Pande, Mr. V.J.	Reg. Office Director	IDRC Delhi
Panse, Mr. A.A.	Program Coord. Politech	Uruli Kanchan
Patil, Mr. B.K.	Block Program Officer	Bhandardara TRP

Patil, Dr. S.G.	Research Progr. Coord.	BAIF Sangamner
Pimpalsakar, Ms. M.	Leader Mushroom Proj.	BAIF Wagholi
Phadnis, Dr. Y.P.	Program Coord. Dairy	BAIF Uruli Kanchan
Purohit, Dr. J.R.	Buffalo Proj. Scient.	BAIF Uruli Kanchan
Rao, Dr. V.P.	Research Officer Mycorrh.	BAIF Wagholi
Salunke, Dr. C.M.	Block Program Officer	BAIF Rethre
Saha, Ms. S.	Librarian	BAIF Pune
Shelke, Mr. P.N.	Chairman	Akole Dairy Coop
Singh, Dr. S.N.	Res. Manager Mycorrh.	BAIF Wagholi
Smutylo, Mr. T.	Sr. Program Officer	OPE, IDRC Ottawa
Sohani, Mr. G.G.	Research Program Head	BAIF Pune
Thorat, Mr B. (Jun.)	Chairman	Sangamner Dairy Coop
Thorat, Mr B. (Sen.)	Chairman	Sangamner Sugar Coop
Wankhede, Mr. S.K.	Program Dev. Officer	Kadus Agro-Forestry
Weber, Mr. E.	Associate Director	AFNS, IDRC Ottawa
Whyte, Dr. Ann	Director	SS, IDRC, Ottawa

APPENDIX B

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APPENDIX C

ITINERARY

Date	Activity
Oct 21	Interviews and file review in Ottawa
Oct 22	Interviews and file review in Ottawa
Oct 23	Interviews and file review in Ottawa
Oct 24	Interviews and file review in Ottawa
Oct 25	Interviews and file review in Ottawa
Oct 26	
Oct 27	
Oct 28	Development of evaluation methodology
Oct 29	Development of evaluation methodology
Oct 30	Draft workplan
Oct 31	Draft workplan
Nov 01	Draft workplan and submit to IDRC and CIDA
Nov 02	
Nov 03	
Nov 04	File review
Nov 05	File review
Nov 06	Travel to India
Nov 07	Travel to India
Nov 08	Meetings with CIDA
Nov 09	Meetings with CIDA
Nov 10	Team Reception
Nov 11	Briefings in New Delhi with CHC & IDRC officials
Nov 12	Travel to Vapi

Nov 13	Vapi - Vandsa, Visit to Tribal Rehabilitation Project
Nov 14	Vansda - Sanmer, Visit to Dairy Cattle Development Project
Nov 15	Visit to Akole Tribal Rehabilitation Project, Bhandhara - Kadus, Visit to Agroforestry Project, Kadus - Pune
Nov 16	Visit to Urulikanchan - Ashram School, CRS
Nov 17	Visit to BAIF Laboratories, Visit to BIRC, Meeting with BAIF Project Leaders
Nov 18	1. Team Meeting 2. Organization of interviews 3. Interviews 4. Review of files
Nov 19	1. Interviews 2. Review of files
Nov 20	As above
Nov 21	As above
Nov 22	As above
Nov 23	As above and team meeting
Nov 24	Report preparation
Nov 25	1. Interviews 2. File review at BAIF HQ
Nov 26	As above
Nov 27	Prepare draft findings and recommendations, debriefing of BAIF
Nov 28	Prepare draft findings and recommendations, team meeting, debriefing of BAIF
Nov 29	Debriefing of CHC, IDRC and BAIF in New Delhi and Canadian team members return to Canada
Nov 30	Travel to Canada

Dec 01	Travel to Canada
Dec 02	Report preparation
Dec 03	As above
Dec 04	As above
Dec 05	As above
Dec 06	As above
Dec 07	
Dec 08	
Dec 09	As above
Dec 10	As above
Dec 11	As above
Dec 12	As above
Dec 13	Debriefing CIDA and IDRC, Ottawa and report preparation
Dec 14	
Dec 15	
Dec 16	Report preparation
Dec 17	As above
Dec 18	As above
Dec 19	As above
Dec 20	Deliver draft report to IDRC and CIDA

APPENDIX D

TERMS OF REFERENCE

18 July 1991

TERMS OF REFERENCE

Fourth Year Evaluation of the IDRC/CIDA Co-Financed BAIF Research Foundation - Rural Research Project

1. BACKGROUND:

The BAIF Development Research Foundation is a large, non-governmental rural developmental agency in India, which utilizes applied research and agricultural technologies and transfers them to poor rural communities. Based on an approach inspired by the teachings of Gandhi, the organization was founded in 1967. It has grown steadily over the years, operating four major programs: cattle development; animal health; socio-economic rehabilitation for tribals; and afforestation and wasteland development.

The programs operate out of about 400 local centres in six states. BAIF is well known in India both in the NGO community and to national and state governments. It has been successful in administering development programs in marginal regions, providing training in rural-based occupations, operating a large scale artificial insemination network and in producing and marketing large volumes of veterinary pharmaceuticals.

Support from CIDA/IDRC for this project was predicated primarily on the capacity BAIF has shown to deliver large scale programs to socially and economically disadvantaged communities. The intention was to strengthen that capacity, to help give BAIF's programs greater possibility of impact and sustainability.

The objectives of the project are to assist BAIF in increasing the geographical scale and technical diversity of its programs, to improve its capacity for designing and managing development programs, to enable BAIF to develop the capacity to monitor the social and economic effects of its programs and to introduce delivery systems which will make its programs more effective and sustainable.

In addition, by participating in BAIF's efforts to integrate research directly with the implementation of rural development programs, IDRC hopes to gain knowledge and

experience that would permit it to apply research more effectively in its programs in other parts of the world.

The specific outputs expected from the project are: the foundation of an Information Resource Centre to service BAIF's programs; the development and delivery of technologies through innovative management practices and the use of community based research programs; and the establishment of mechanisms to monitor and evaluate the effects of BAIF's programs on the standards of living and income earning capabilities of families in the target communities.

2. RATIONALE FOR EVALUATION:

In accordance with the conditions of the agreement between CIDA, IDRC and BAIF, as stated in the management plan, an independent evaluation of the activities financed under their agreement shall be carried out during the fourth year of the project. The evaluation process is an integral part of the undertaking, acting both as support to the delivery and management of BAIF's projects, and as a feedback and monitoring mechanism for IDRC and CIDA. From BAIF's point of view, the evaluation will build on and extend its own program monitoring and evaluating activities, drawing on research and other available data, and providing guidance in documenting and refining its programs. For CIDA and IDRC, the evaluation will indicate what effects their support has had on BAIF, if and how its delivery could be improved and the probable benefits of further phases of funding. The evaluation should be based on project objectives, and on the issues stated in the Logical Framework Analysis (LFA), as contained in the Management Plan. The evaluation will validate the LFA in light of changes which may have taken place since it was written.

The evaluation will be undertaken by a team of four independent evaluators and the process itself will reflect the collegial relations among the three organizations. CIDA, IDRC and BAIF will consult jointly to select an evaluation team with the range of skills best suited to the primary issues to be addressed in the evaluation.

These terms of reference have been developed by CIDA in collaboration with IDRC and BAIF to ensure the evaluation requirements of all parties are addressed and to provide the basis for agreement, among the three organizations, as to the evaluation parameters, the rationale for the evaluation, the issues to be addressed, its scope and methodology. It is intended that this document will enable the evaluation team to develop

a detailed evaluation design and workplan, to conduct the evaluation and to produce an evaluation report responding to the information needs of its three clients.

3. SCOPE OF THE EVALUATION:

The overall goal of the project is to **strengthen BAIF's capacity**, to improve the standard of living and quality of life of rural communities focusing on scheduled tribes, scheduled castes, women and other underprivileged groups. It seeks to do this by **reinforcing BAIF's programme for development research thereby strengthening its field programmes for integrated rural development**. The LFA defines the project's outputs, purpose and goal, as well as the indicators and criteria for assessing whether these have been attained. For IDRC and CIDA, the issues to be addressed in this evaluation can be grouped under three main headings: operational effectiveness and efficiency; strategic effectiveness; and developmental effects of the programs.

3.1 **Operational Effectiveness and Efficiency, dealing with the technical fulfilment of the objectives of the individual projects and the overall management of support to BAIF**: the research achievements of the projects to date, with reference to the specific projects outlined in the Plan of Operations and the yearly work programs; the management of the projects by BAIF both from the technical as well as administrative viewpoints; the efficiency of the funding approval mechanisms; adequacy of the technical support and training provided; and the efficiency and effectiveness of interaction between BAIF and IDRC for project purposes.

3.2 **Strategic Effectiveness; relating to institution building and exploring the role of research in development programs**: the effects on BAIF's capacity to do development research, formulate interventions and deliver its programs; the effects on BAIF's monitoring and evaluation of the social and economic effects of its programs; the services provided by the Information Resource Centre to BAIF's programs; the degree of integration of the research projects into the development programs; the institutional factors affecting the level of success of BAIF's development programs.

3.3 **Developmental Effects, relating to the actual effects of the program on the lives and wellbeing of the target groups**: the appropriateness of the research projects to produce results applicable to rural people's needs in developing their agricultural productivity; the likelihood that the research projects will result in a real income increase for the target populations of BAIF's programs, once the research results are integrated into field programs; how the target populations perceive, influence and receive the field programs, the developmental research projects and the output of these projects; the effects the project has and can have on the women and children among the target population.

4. SCOPE OF WORK:

In carrying out the evaluation, the team members will perform the following functions and such others as are considered necessary by the team, in the effective discharge of its responsibilities:

4.1 Become familiar with the project by reviewing appropriate documentation concerning the project in Ottawa and in India.

4.2 Hold discussions with the CIDA/IDRC project staff, in order to be briefed on project activities to date.

4.3 Prior to departure from Canada, the team will prepare a detailed evaluation workplan for discussion with and approval by the CIDA/IDRC staff responsible.

4.4 Hold discussions in India with officials of the Canadian High Commission, IDRC and any other appropriate officials in order to have an appreciation of:

- the status of the NGO sector in India;
- the need for applied research to solve developmental problems in rural India;
- the status of BAIF in the NGO community in India; and

- the scale of operation of BAIF, its capability to conduct the research and its linkages with government agencies (ministries, ICAR, etc.).

4.5 Communicate with CIDA and IDRC program staff in other parts of the world as necessary to obtain required information.

4.6 Visit BAIF's facilities in India to obtain information from documentary sources (files, databases, libraries, etc.), and from discussions with BAIF personnel (management, researchers, support and field staff, etc.).

4.7 Visit BAIF's field sites as required to obtain information from sources outside of BAIF, such as other NGOs, community leaders and workers, program participants and non-participants.

4.8 Design and carry out field surveys and interviews as required among the intended beneficiaries of BAIF's programs in sample areas of operation.

4.9 Analyze and write up their findings.

4.10 Formulate conclusions and recommendations directed at IDRC, CIDA and BAIF relative to the evaluation issues.

5. THE EVALUATION TEAM:

To address the above issues, the evaluation team will be composed of individuals with relevant skills and experience. It should include people with a good understanding of research and rural development in general, and with specific expertise in most of the following areas, technological information management, integrated rural development, agricultural economics, public health and rural sociology. Experience with agroforestry research and animal husbandry research would also be assets to the team. In order to provide a technical assessment of a sample of the projects, the team should have access to the services of a biological scientist with experience in development-related research. It may be extremely difficult to constitute an evaluation team of four persons with all the expertise outlined above. Therefore, short term consultancies may be used, if necessary, to fill gaps on the evaluation team with respect to some areas of expertise.

The Team Leader is responsible for ensuring that the activities under the **Scope of Work** section are carried out by the team. In addition it is his/her responsibility to **perform the following functions and others as considered necessary**:

- ensure that evaluation design, planning and implementation pertaining to the terms of reference are complete;

- ensure that appropriate administrative requirements, meetings and travel, are undertaken to fully meet the needs of the team;

- ensure that technical assessments of sample projects are carried out.

- consolidate the reports of the evaluation team members and consultants into the draft report for presentation to CIDA and IDRC, ensuring that the findings, conclusions and recommendations address the issues outlined in the terms of reference. Revise the draft report as required; and

- present and discuss the draft report at a meeting of the BAIF/IDRC Liaison Committee if required.

Under the direction of the Team Leader, the team members are responsible for assisting in report preparation and in making assessments and recommendations pertaining to the evaluation issues set out in these terms of reference. Each of the team members will have specific responsibilities related to their specialised areas of expertise wherein they will address the relevant issues. The primary areas of expertise required for the evaluation and the responsibilities entailed in each are outlined below. These could be shared and re-distributed depending on the final composition of the team.

5.1 Agricultural Economist:

Operational Effectiveness and Efficiency

5.1.1 Review and assess the management and administration of the project on the part of IDRC and BAIF.

5.1.2 Review and assess the mechanisms for ongoing monitoring of the project on the part of IDRC and BAIF.

5.1.3 Review and assess the technical, financial and administrative services used to implement the project.

5.1.4 Review and assess the funding approval mechanisms, the financial and administrative reporting mechanisms as well as the work and budget planning processes of the project.

5.1.5 Review and assess the level of interaction of BAIF and IDRC on the project and make recommendations as to how the efficiency and effectiveness of this interaction could be improved.

Strategic Effectiveness

5.1.6 Review and assess the effects on BAIF's capacity to do development research, formulate interventions and deliver its programs;

5.1.7 Review and assess the factors affecting the level of success of BAIF's development programs.

Developmental Impacts and Effects

5.1.8 Review and assess the income increases and economic impact on the target populations of the results, both actual and potential, of the research projects;

5.1.9 Review and assess the appropriateness of the research projects to produce results applicable to rural people's needs in developing agricultural productivity.

5.2 Agricultural Extension Specialist:

Operational Effectiveness and Efficiency

5.2.1 Assist in the technical and administrative assessment of BAIF's research projects and in the assessment of the efficiency and effectiveness of the delivery and support to BAIF by IDRC.

Strategic Effectiveness

5.2.2 Review and assess the process by which BAIF extends research results to the target populations.

5.2.3 Review and assess the effect on BAIF's extension activities of the Information Resource Centre.

5.2.4 Review and assess the attitudes of the BAIF extension staff as to the benefits derived from the results of the research projects.

5.2.5 Assist the information specialist in the review and assessment of the following: the role played by the Information Resource Centre in meeting the needs and requests of the extension program staff and the research program staff; the degree of impact of the Information Resource Centre on the operation and development of the research and extension program; and the level of acceptance and use of the Information Resource Centre by extension staff.

Developmental Impacts and Effects

5.2.6 Review and assess the actual or potential impact of the project on the productivity of the target farmers.

5.2.7 Assist the Agricultural Economist in the review and assessment of the economic impact on the target farmers of the results, both actual and potential of the research projects.

5.2.8 Assist the Women in Development specialist in the review and assessment of the degree to which women are involved in the extension activities conducted by BAIF, both in terms of specific activities for women and general activities of the extension program.

5.2.9 Review and assess the level of acceptance of the research results by the target populations, both extension workers and farmers.

5.2.10 Review and assess the degree of integration of the research results into the established food and income producing activities of the farmers.

5.2.11 Review and assess the degree to which the research results are consistent with the needs of the target population and with protecting the environment.

5.2.12 Review and assess the level of interaction of the BAIF extension system with other agricultural extension services working in the same geographic areas. Are the available services of other agencies being taken advantage of, being reinforced, or are they being duplicated by BAIF?

5.3 Women In Development Specialist:

Operational Effectiveness and Efficiency

5.3.1 Assist in the technical and administrative assessment of BAIF's research projects and in the assessment of the efficiency and effectiveness of the delivery of support to BAIF by IDRC.

Strategic Effectiveness

5.3.2 Review and assess the degree of involvement by women in the definition of the research projects selected for inclusion in the project; assess how the questions concerning women's involvement/benefit were formulated.

5.3.3 Review and assess the effect the research project results will have on the daily life of the women in the target population of the BAIF extension program.

5.3.4 Review and assess who gathered data from women and how BAIF/IDRC ensured that the data analysis was checked with grass-roots participants for feedback and accuracy. Describe and assess the mechanisms established to give the "ordinary" woman a voice in program planning, delivery and evaluation.

5.3.5 Review and assess the degree to which the research projects produced or will produce results which are consistent with the needs of the women in the target population. Assess the link between grass roots problem definition and the new technology introduced (i.e., was technology the answer or did women need other support systems?).

5.3.6 Review and assess the kinds of mechanisms set up to feed the analyzed data about women back into project design.

Developmental Impacts and Effects

5.3.7 Assist the Agricultural Economist to review and assess the economic impact on the women in the target population of the results or potential results of the research projects.

5.3.8 Assess whether projects raised women's income and productivity and determine who received the profits (women, husbands or children).

5.3.9 Review and assess the degree to which the women among the target population influence and/or take the decision on the adoption and incorporation of the new technologies or practices resulting from the research projects. Assess the effects of the project components on women's role models and self-esteem.

5.3.10 Review and assess the degree to which new technologies increased or decreased women's workloads.

5.3.11 Review and assess the degree to which women are involved in the extension activities conducted by BAIF, both in terms of specific activities for women and general activities of the extension program.

5.3.12 Review and assess the extent to which women were empowered through receiving information, finding a collective voice, having their status raised by being more appreciated in the household/community.

5.3.13 Review and assess the degree to which men were encouraged through project activities to question their assumptions about themselves and the role of women and children in the community.

5.4 Information Specialist:

Operational Effectiveness and Efficiency

5.4.1 Assist in the technical and administrative assessment of BAIF's research projects and in the assessment of the efficiency and effectiveness of the delivery and support to BAIF by IDRC.

Strategic Effectiveness

5.4.2 Review and assess the Information Resource Centre of BAIF as to its functioning, resource material and output of information.

5.4.3 Review and assess the role played by the Information Resource Centre in meeting the needs and requests of the extension field staff and the research staff.

5.4.4 Review and assess the Information Resource Centre as to its meeting BAIF's program management needs.

5.4.5 Review and assess the level of acceptance and use of the Information Resource Centre by: field staff, scientific and research staff, scientists and organizations outside of BAIF, farmers and other members of the target groups.

5.4.6 Review and assess the degree of impact of the Information Resource Centre on the operation and development of the research and program delivery activities.

5.4.7 Document BAIF's linkages with NGOs and other organizations in the use of scientific information and the delivery of development programs.

6. EVALUATION METHODOLOGY:

The evaluation should involve the systematic gathering of reliable, objectively verifiable and credible evidence on the issues to be addressed. The Logical Framework Analysis and the Evaluation Training Workshop Reference Document provide suggested methods and indicators. The evaluation design, methodology and procedures to be used for data collection must be clearly specified and documented in sufficient detail to enable subsequent replication and verification of the results, if required. The design, methodology and procedures should be developed and presented as part of an evaluation workplan which will be subject to approval by the Project Team Leader and CIDA/IDRC Project Team, before the actual field work begins. Precautions must be taken to ensure that the results and conclusions reached are supported and substantiated by the evidence collected and presented.

7. EVALUATION WORKPLAN

A detailed evaluation workplan, including an evaluation design, is to be developed and presented to the CIDA/IDRC Project Team before any field work begins. The plan should include the following elements:

7.1 identification of the indicators to be used to address the issues identified under the **Scope of the Evaluation** section.

7.2 explanation of the specific tasks to be performed and the evaluation approach to be used (nature of information to be collected, sampling procedure, and the methods of data and information collection and analyses);

7.3 the instruments to be used for data collection;

7.4 description of the nature of quality control procedures to be implemented during the course of the evaluation;

7.5 team member responsible for each task;

7.6 timetable indicating the date by which each task is to be completed.

8. OUTPUT:

The Evaluation Report is to be submitted to CIDA/IDRC in ten copies, in draft form for review and comment before being finalized by the Team Leader for approval.

The Evaluation Report should include at least the following sections:

- Executive Summary
- Table of Contents
- Introduction
- Purpose of Evaluation
- Evaluation Scope and Methodology
- Project and Institutional Profiles
- Findings Conclusions
- Recommendations on:
  - Future funding by IDRC and CIDA (programs areas, scale, direction, etc.)
  - BAIF's monitoring and evaluation activities
  - BAIF/IDRC relationship
  - Strengthening BAIF's development research capacity
  - Enhancing the effectiveness of BAIF's field programs
  - Integrating research with development activities
  - Increasing the effects of BAIF's activities on the lives of the target populations
- Appendices
  - Bibliography
  - List of information sources
  - People interviewed

APPENDIX E

WORKPLAN

WORKPLAN FOR THE FOURTH YEAR EVALUATION

OF THE

IDRC/CIDA CO-FINANCED

BAIF RESEARCH FOUNDATION - RURAL RESEARCH PROJECT

PROJECT NO. 468/15018

FOR

CIDA, IDRC & BAIF

November 1991

WORKPLAN

1. PROJECT OVERVIEW

1.1 Background

The BAIF Development Research Foundation is a large, non-governmental rural developmental agency in India. It generates applied research and agricultural technologies and transfers them to poor rural communities.

The organization was founded in 1967. It has grown steadily over the years, and now operates four major programs:

1. cattle development;
2. animal health;
3. socio-economic rehabilitation for tribal people; and
4. afforestation and wasteland development.

The programs operate out of about 400 local centres in six states. BAIF is well known in India both in the NGO community and to national and state governments. It has been successful in administering development programs in marginal regions, providing training in rural-based occupations, operating a large scale artificial insemination network and in producing and marketing large volumes of veterinary pharmaceuticals.

1.2 Project Goal

According to the LFA, the project goal of the CIDA/IDRC project is to:

> Assist BAIF to improve the standard of living and the quality of life of rural communities focusing on scheduled tribes, scheduled castes, women and other underprivileged groups.

1.3 Project Purpose

According to the LFA, the project purpose is:

1. to reinforce BAIF's programme for development research;

2. to strengthen BAIF's field programmes for integrated rural development.

According to IDRC's project summary, the project objectives are to increase BAIF's capacity:

1. to increase the geographical scale of BAIF's operations;

2. to increase the technological diversity of BAIF's programs;

3. to implement information systems for improving program planning, design, delivery and management;

4. to monitor social and economic effects of BAIF's programs; and

5. to consolidate and sustain BAIF program benefits.

1.4 Inputs

CIDA, IDRC and BAIF will contribute the following amounts of money over the five-year life of the project.

CIDA	$4,063,900
IDRC	$1,855,000
BAIF	$1,160,000

IDRC will also incur certain costs in addition to those noted above. These additional costs include:

- the technical field coordinator;

- IDRC professional staff time for the IDRC/BAIF Liaison Committee;

- IDRC professional staff time for program and project consultations and monitoring;

- IDRC professional staff time for the Interdivisional Directors Committee;

- IDRC professional staff time for technical and financial administration of the project; and

- IDRC staff travel costs and per diem to visit BAIF.

The CIDA/IDRC budget for the project is summarized in Table 1.

TABLE 1

BUDGET SUMMARY

Item	CIDA Contribution	IDRC Contribution	Total Budget
BAIF Administered Funds			
Development Research Activities	$1,459,700	$785,900	$2,245,600
Infrastructure	589,600	317,400	907,000
Capital Equipment	900,200	484,600	1,384,800
IDRC Administered Funds			
Technical Assistance	227,100	122,300	349,400
Capital Equipment	199,700	90,300	290,000
Inflation	457,600	0	457,600
Contingency	230,000	54,500	284,500
Total	$4,063,900	$1,855,000	$5,918,900

1.5 Outputs

According to the LFA, the outputs of the project are the:

1. establishment of the BAIF Institute of Development Research;

2. development of advanced technologies and innovative management practices through community-based research; and

3. development of systems for delivery of advanced technologies and related rural development initiatives to the target groups.

According to the evaluation TORs, the specific outputs expected from the project are:

1. the foundation of an Information Resource Centre to service BAIF's programs;

2. the development and delivery of technologies through innovative management practices and the use of community based research programs; and

3. the establishment of mechanisms to monitor and evaluate the effects of BAIF's programs on the standards of living and income earning capabilities of families in the target communities.

In addition, by participating in BAIF's efforts to integrate research directly with the implementation of rural development programs, IDRC hopes to gain knowledge and experience that would permit it to apply research more effectively in its programs in other parts of the world.

It should be recognized that this project is an umbrella project with twelve distinct projects under the overall project. Part of the evaluation will review the efficiency, effectiveness, and impact of the umbrella project. The other part of the evaluation will review the efficiency, effectiveness and impact of the twelve individual projects. The LFA provides a summary of the goal, objectives, inputs and outputs of the umbrella project but is largely silent on the goals, objectives, inputs and outputs of the individual projects. It is impossible to evaluate the efficiency, effectiveness and impact of these twelve projects until the goal, purpose and objectives of each one is determined and recorded. This will be an important first step in in this evaluation.

1.6 Sources of Information

The following sources of information were used in preparing this workplan:

1. the evaluation terms of reference;

2. interviews with personnel in CIDA, IDRC and BAIF; and

3. documents prepared by BAIF, IDRC and CIDA contained in IDRC and CIDA files.

2. EVALUATION MANDATE

2.1 Rationale for Evaluation

Under the agreements between CIDA, IDRC and BAIF, an independent evaluation of the activities financed under these agreements will be carried out during the fourth year of the project. For BAIF, the evaluation will build on and extend its own program monitoring and evaluating activities, drawing on research and other available data, and providing guidance in documenting and refining its programs. For CIDA and IDRC, the evaluation will indicate what effects their support has had on BAIF, if and how the delivery of the support could be improved, and the anticipated benefits of further phases of funding.

2.2 Scope of the Evaluation

As stated above in Section 1.2, the overall goal of the project is to strengthen BAIF's capacity to improve the standard of living and quality of life of rural communities focusing on scheduled tribes, scheduled castes, women and other underprivileged groups. It seeks to do this by reinforcing BAIF's programme for development research thereby strengthening its field programmes for integrated rural development.

The team member with primary and secondary responsibility for each section is indicated in parentheses. The key is as follows:

JB Dr. James Bucknall, Economist and Management Specialist, Team Leader

MZ Mr. Marcel Zollinger, Agricultural and Rural Development Specialist

VS Mrs. Viji Srinivasan, Women in Development Specialist

IS Information Specialist

RT Dr. Ram Takwale, Senior Advisor & Training Specialist

CS Dr. Chinta Mani Singh, Veterinary and Animal Science Specialist

The issues to be addressed in this evaluation can be grouped under three main headings:

operational effectiveness and efficiency;

strategic effectiveness; and

developmental impacts of the programs.

2.2.1 Operational Effectiveness and Efficiency

Operational effectiveness and efficiency deals with the technical fulfilment of the objectives of the individual projects and the overall management of support to BAIF. General issues that will be addressed include: the research achievements of the individual projects to date; the management of the projects by BAIF; the efficiency of the funding approval mechanisms; the adequacy of the technical support and training provided; and the efficiency and effectiveness of interaction between BAIF and IDRC for project purposes.

Specific operational effectiveness and efficiency issues that will be addressed include:

1. the research and development achievements to date of the 12 projects (MZ, IS-JB for the Information Resource Centre);

2. the technical support provided by IDRC to implement the projects (MZ);

3. the management of the overall project by IDRC, BAIF, and CIDA (JB);

4. the administrative services used to implement the project by IDRC, BAIF and CIDA (JB);

5. the mechanisms for ongoing monitoring and evaluation of the project on the part of IDRC, BAIF and CIDA (JB);

6. the development and approval of the annual workplan and budget by BAIF, IDRC and CIDA (JB);

7. the funding approval mechanism used by BAIF, IDRC and CIDA (JB);

8. the financial and management reporting mechanisms of the project (JB);

9. the effectiveness of interaction between BAIF, IDRC and CIDA (JB); and

10. the effectiveness of the training provided by BAIF and by IDRC (RT-JB).

2.2.2 Strategic Effectiveness

Strategic effectiveness relates to institution building in BAIF and the role of the twelve individual projects in development. General issues that will be addressed include: the impact of the project on BAIF's capacity to do development research, formulate interventions and deliver its programs; the impact of the project on BAIF's monitoring and evaluation of the social and economic effects of its programs; the impact of the services provided by the Information Resource Centre on BAIF's programs; the degree of integration of the research projects into the development programs; the institutional factors affecting the level of success of BAIF's development programs. Specific issues that will be addressed include:

1. the impact of the project on BAIF's capacity to do development research, formulate interventions and deliver its programs (JB);

2. the impact of the project on BAIF's capacity to monitor and evaluate the social and economic impact of its programs (JB);

3. the institutional factors affecting the level of success of BAIF's development programs (JB);

4. the process by which BAIF extends research results to the target populations (MZ);

5. the degree of involvement by women in the definition of research projects selected for inclusion in the project (VS-MZ);

6. the effect that the research project results will have on the daily life of the women in the target population of the BAIF extension program (VS-MZ);

7. the process for gathering data from women (VS-MZ);

8. the degree to which the research projects produce results which are consistent with the needs of women (VS-MZ);

9. the mechanisms set up to feed the analyzed data about women into project design (VS-MZ);

10. the functioning, resource material and output of information of the Information Resource Centre of BAIF (IS-JB);

11. the role played by the Information Resource Centre in meeting the needs and requests of the extension field staff and the research staff (IS-JB);

12. the role played by the Information Resource Centre in meeting BAIF's program management needs (IS-JB);

13. the level of acceptance and use of the Information Resource Centre by:

    - field staff
    - scientific and research staff
    - scientists and organizations outside of BAIF
    - farmers

- other members of the target groups (IS -JB)

14. the impact of the IRC on the operation and development of the research and program activities (IS-JB); and

15. BAIF's linkages with NGOs and other organizations in the use of scientific information and the delivery of development programs (IS-JB).

2.2.3 Developmental Impacts

The development impacts relate to the actual effects of the project on the lives and wellbeing of the target groups. General issues that will be addressed include: the appropriateness of the research projects to produce results applicable to rural people's needs in developing their agricultural productivity; the likelihood that the research projects will result in a real income increase for the target populations of BAIF's programs, once the research results are integrated into field programs; how the target populations perceive, influence and receive the field programs, the developmental research projects and the output of these projects; the effects the project has and can have on the women and children among the target population. Specific issues that will be addressed include:

1. the economic impact of the results of the research projects on the target populations (JB & MZ);

2. the appropriateness of the research projects in increasing agricultural productivity (MZ);

3. the level of acceptance of the research results by extension workers and farmers (MZ);

4. the degree of integration of the research results into the established food and income producing activities of the farmers (MZ);

5. the degree to which the research results are consistent with the needs of the target population and with protecting the environment (MZ);

6. the level of interaction between the BAIF extension system with other extension systems in the area (MZ);

7. whether projects raised women's income and who benefited from any increased income (VS-MZ);

8. the degree of women's involvement in decision making regarding adoption of new technology (VS-MZ);

9. the degree to which new technologies increased women's workloads (VS-MZ);

10. the degree to which women are involved in the extension activities conducted by BAIF (VS-MZ);

11. the extent to which women were empowered (VS-MZ); and

12. the degree to which men were encouraged through project activities to question their assumptions about themselves and the role of women and children in the community (VS-MZ).

3. EVALUATION METHODOLOGY

3.1 Evaluation Task Allocation

The overall evaluation team will be divided into two groups. One group will consist of Mr. Zollinger, Mrs. Viji Srinivasan, and Dr. Chinta Mani Singh. Mr. Zollinger and Mrs. Srinivasan will work closely together, particularly on the impact evaluation in the villages. Dr. Singh will independently assess the two projects concerned with Artificial Insemination and Byproduct Feeding Systems, but will brief Mr. Zollinger and James Bucknall on his findings, conclusions and recommendations. The second group will consist of Dr. James Bucknall, Dr. Ram Takwale, and the Information Specialist.

3.2 Evaluation Approach

The evaluation process at BAIF is planned to be carried out in three distinct phases, and in each phase the evaluation methodology and instruments need to be appropriate to the specific activities.

Phase I

During the first week of the evaluation, the itinerary, prepared and organized by BAIF management, indicates a full program of visiting numerous projects and activities. The main evaluation objective during this phase is to gain a clear overview of BAIF as a whole, and of the IDRC funded projects in particular. This will be achieved through comprehensive visits, demonstrations and informal discussions with the various project leaders and their staff. An informal, open-ended question format will be used by all team members during the first phase. Every effort will be made to ask questions relating to the specific TORs of the full-time members of the evaluation team during this phase. In addition, information will be sought on each of the twelve projects. Answers will be sought to the following questions:

What is the long-term research goal, purpose and objective of the project?

What is the long-term development goal, purpose and objective of the project

What are the desired outputs of the project?

What are the desired effects of the project?

What are the desired impacts of the project?

What progress has been made in terms of inputs, outputs, effects and impacts?

What progress is expected by the end of the project in terms of inputs, outputs, effects and impacts?

Phase II

The evaluation team has requested that the second week be left open for the design of their own appropriate itinerary. This is the period where the principal data collection will take place. All members of the evaluation team will place great emphasis on the use of objectively viable indicators to support findings, conclusions and recommendations, although

the exact nature of these indicators will, of course, largely remain unknown until the goals and objectives have been confirmed. It is difficult to measure efficency, effectiveness and impact until one has a clear idea of the goal, purpose and objectives of the projects. The evaluation tasks here will have to be divided into three distinct activities:

1. Revisiting the project leaders of the research projects as necessary, in order to gain a detailed impression on the research results and their applications to the field, through interviews and demonstrations. This may necessitate selected field visits to experimental sites and villages.

2. Visiting the rural communities where the project is active, especially the tribal areas. Here it will be important for the evaluators to make the choice of the communities to visit, which is essential to gain an objective impression. In the communities both the WID and the IRD specialist will carry out a number of guided open interviews, based on interview protocols and interview guides to be designed after a better knowledge of the research projects has been developed. These interviews will be held with all the relevant groups and individuals in the communities. At the same time specific project activities will be inspected.

3. The second team will spend this week mostly at BAIF HQ discussing the Information Resources Centre, training program, and management, administration, monitoring and evaluation issues. The principal sources of information will be interviews, files and the evaluation data collected by the IDRC-supported BAIF internal monitoring and evaluation program. The interviews with BAIF personnel will be open-ended, based on interview protocols and interview guides that will be designed during the first week of the Indian field mission.

The OPE of IDRC has been active throughout the first three years of the project. Members of the Office have visited the project annually, and OPE has funded evaluator-consultants who have visited BAIF on two separate occasions. The primary purpose of all of this monitoring and evaluation activity was to assist BAIF improve its system of internal monitoring and evaluation and to assist BAIF in collecting objectively verifiable indicators. These OVIs, collected as a direct result of IDRC involvement, will be an essential source of information for this evaluation.

Other sources of information will include:

BAIF's socio-economic research studies;

IDRC reviews and monitoring trip reports;

BAIF Central Management Council reviews;

CIDA records;

IDRC records;

BAIF/IDRC annual workplans, budgets and reports; and

BAIF/IDRC semi-annual reports.

Phase III

During the final week the team will concentrate on finalizing the collection of data, which was an ongoing activity during the previous weeks, and to analyze this information. Specific importance will be given to research results and impact measurements, where available, which are expected to represent the main Objectively Verifiable Indicators. Further information will be gained from selected visits to other external funding agencies, and Indian Government funding sources. IDRC Program Officers can not be directly interviewed, and therefore informal questionnaires have been sent to the involved Program Officers in Singapore and Nairobi, and possible follow-up telephone calls are being considered.

3.3 Quality Control

CIDA, IDRC and BAIF have assembled an evaluation team which has impressive academic credentials and over 100 years of relevant professional experience. This alone will go far to ensuring a high quality evaluation. This inherent professionalism will be supplemented by a system of formal and informal team meetings where team members will discuss their research approach, findings, conclusions and recommendations. Formal team meetings are tentatively scheduled for November 11, November 18, November 23 and November 28. Finally, all written work will be reviewed by the Ottawa-based members prior to being submitted to IDRC and CIDA.

4. EVALUATION TEAM

4.1 Team Members

The team will consist of four full-time members and two part-time members. These are:

Dr. James Bucknall, Team Leader	Economist & Management Specialist
Mr. Marcel Zollinger	Agriculture and Rural Development Specialist
Mrs. Viji Srinivasan	Women in Development Specialist
	Information Specialist
Dr. Ram Takwale	Senior Advisor & Training Specialist
Dr. Chinta Mani Singh	Veterinary and Animal Science Specialist

4.2 Effort Analysis

This section shows the estimated number of days required by each of the six evaluators to complete their terms of reference. The number of days are estimated because the team leader does not know the number of days in the contracts of five of the six team members, nor has he seen the TORs of two of the team members. The effort analysis will be reviewed in detail on Monday, November 11 in New Delhi. Table 2 shows the number of days that have been estimated for each activity and each consultant.

TABLE 2

EFFORT ANALYSIS BY ACTIVITY AND CONSULTANT

Activity	Consultant					
	JB	MZ	VS	IS	CS	RT
CIDA & IDRC Interviews	3	3				
File Review	3	3				
Workplan Preparation	6	2				
Travel to India	2	2				
CIDA & IDRC Protocol	3	1	1	1		
Travel to Pune	1	1	1	1		
BAIF Organized Tour	5	5	5	5		
Individual Research	8	8	8	8	3	4
Field Report	1.5	1.5	1.5	1.5	2	1.5
Debriefing-Pune	0.5	0.5	0.5	0.5		0.5
Debriefing-New Delhi	1	1	1	1		1
Travel to Ottawa	2	2				
Draft Report	15	13	5	5		
Review Report	1	1				3
Revise Report						
Total	52	44	23	23	5	10

5.0 SCHEDULES AND MILESTONES

5.1 Schedule

The following schedule was developed to satisfy the needs of IDRC, CIDA and BAIF to have the draft report in time for the January 1992 meeting of the IDRC/BAIF Technical Group. This requires that the draft report must be submitted to CIDA, IDRC and BAIF on December 20, 1991. All other schedule and milestone dates stem directly from this December 20, 1991 deadline.

The evaluation schedule for the two Ottawa-based consultants can be divided into three distinct phases.

Phase 1 Preparation in Canada, October 21 to November 06

Phase 2 Mission in India, November 08 to November 29

Phase 3 Report preparation in Canada, December 02 to December 20

The schedule for the India-based members of the evaluation team will be confirmed on November 11, 1991 in New Delhi.

5.2 Milestones

Table 3 presents the important milestones and deadlines for the project. Any delay in meeting the deadlines for the final reports of the Indian evaluation team members and consultants will result in either a delay in submitting the overall draft report to CIDA and IDRC or the non-inclusion of their work in the overall draft report. All reports must be submitted as hardcopy **and** on a diskette in Wordperfect 4.2, 5.0 or 5.1, but preferably Wordperfect 5.1.

TABLE 3

SCHEDULE OF DELIVERABLES

Date	Deliverable	Prepared By	Delivered To
Nov 04	1. Preparation of Workplan	Dr. James Bucknall	1. CIDA, IDRC, BAIF & Evaluation Team
Nov 28	1. Five-page hardcopy summary of the findings, conclusions and recommendations 2. Final report in hardcopy and on a diskette	1. Full-time members of the evaluation team 2. Part-time consultants to the evaluation team	1. Dr. James Bucknall 2. Dr. James Bucknall
Dec 06	1. Final report in hardcopy and on a diskette	1. Full-time members of the evaluation team	1. Dr. Vijay Pande
Dec 06	1. Courier all final reports and diskettes	1. Dr. Vijay Pande	1. Dr. James Bucknall
Dec 20	1. Draft of final report	1. Dr. James Bucknall	1. CIDA and IDRC
Jan-Feb 1992	1. Final report	1. Dr. James Bucknall	1. CIDA and IDRC

6.0 REPORT OUTLINE

6.1 Introduction

For logistical reasons, the draft final report has to be prepared and assembled in Ottawa by the two Ottawa-based consultants. The work of the part-time Indian consultants will be incorporated in the chapters drafted by James Bucknall and Marcel Zollinger. The reports of the part-time Indian consultants will also be included in the draft final report as separate appendices. The work of the full-time members of the evaluation team will either be included in the draft final report as separate chapters or will be incorporated into the chapters prepared by James Bucknall and Marcel Zollinger. The final reports of the full-time Indian evaluation team members will also be included in the draft final report as separate appendices.

6.2 Report Outline

The following outline has been prepared on the basis that the reports of the Indian full-time team members will be incorporated as chapters in the draft final report as well as separate appendices. This outline is tentative. It will inevitably change as the evaluation team gains new insights.

Executive Summary

1.0 INTRODUCTION
- 1.1 Background
- 1.2 Project Description
- 1.3 Evaluation Methodology
  - 1.3.1 General Approach
  - 1.3.2 Sources of Data
  - 1.3.3 Personnel
  - 1.3.4 Limitations
- 1.4 Organization of Report

2.0 RESEARCH PROJECTS
- 2.1 Introduction and Background
- 2.2 Project Descriptions, Goals, Objectives, Outputs
  - 2.2.1 Frozen Semen for Buffaloes
  - 2.2.2 Economic Feeding Systems for Ruminants
  - 2.2.3 Standardisation of Micro-carrier Culture Technique
  - 2.2.4 Germplasm Collection of Bamboo Species
  - 2.2.5 Production Technology for VA Mycorrhiza Inocula
  - 2.2.6 Mushroom Production Technology
  - 2.2.7 Community Based Research
  - 2.2.8 Post-Production Technologies
  - 2.2.9 Community Based Research (Tribal)
  - 2.2.10 Rural Polytechnic
  - 2.2.11 Standardization of Sericulture Technology
  - 2.2.12 Information Resource Centre
- 2.3 Summary of Project Findings

3.0 PROJECT ANALYSIS AND RECOMMENDATIONS
- 3.1 Introduction
- 3.2 Common Aspects of Project Issues

APPENDIX A - OBJECTIVES/ACTIVITIES OF INDIVIDUAL PROJECTS

	Objectives	Date Started and Duration
ANIMAL PRODUCTION		
1. Upgrading of Frozen Semen Technology for Development of Buffaloes	1. To evolve appropriate technology for deep freezing of buffalo semen for improved conception rate; 2. to compare different procedures of deep freezing and packaging of buffalo semen; 3. to test fertility rate of frozen buffalo semen produced using different procedures; 4. to produce frozen buffalo semen doses adopting the most appropriate technique and to distribute the semen for wider use in the field of upgrading of buffaloes.	April, 1988 Five Years
2. Development of Economic Feeding Systems for Ruminants from Locally Available Agricultural By-products	1. To undertake survey for determining prevailing feeding practices and availability of feed resources; 2. To undertake analysis of samples collected during the survey of different nutrients; 3. To assess the nutritive value of locally available by-products for different classes of cattle; 4. To study the effect of suitable treatment on the improvement of crop residues by invitro and invivo methods; 5. To compare the nutritive value of complete feeds based on treated roughages with those from untreated ones for different classes of cattle; 6. To arrange demonstrations and field trials with the feeds developed.	April, 1988 Five Years

ANIMAL HEALTH		
1. Standardization of Micro-carrier Culture Technique for Improving the Quality and Development of Immunobiologicals Using Marek's Disease as a Model	1. To develop and standardize cell culture technology using new generation roller bottles and micro-carrier cell culture (CYTODEX) system; 2. To adopt a study of growth kinetics of Herpes Virus of Turkey (HVT) onto chicken embryo cells, using cell culture systems; 3. To develop and standardize quality control assay procedures for vaccine production employing improved culture systems; 4. To establish conditions for large scale quality of MD Vaccine Production.	April, 1988 Three Years
AGROFORESTRY & AFFORESTATION		
1. Germplasm Collection and Adaptability Study of Bamboo Shoots	1. Collection of different bamboo species; 2. Establishment of arborata in the states of Maharashtra, Gujarat, and Karnatka; 3. To study the adaptability of different germplasm on eight different locations in the states of Maharashtra, Gujuarat and Karnataka; 4. Promotion of Bamboo cultivation in rural areas.	April, 1990 Three Years
2. Development and Standardization of Production Technology for VA Mycorrhiza Inocula	1. To develop at pilot, mass production of VA endomycorrhiza and its inoculation in forestry species; 2. To study the effectiveness of the inoculum on the host plant; 3. To establish and standardize the methodology for handling the inoculum and its distribution network.	April, 1988 Three Years

3. Development of Mushroom Development Technology	1. To standardize biotechnological methods for mushroom cultivation in tropical conditions; 2. To develop and extend mushroom farming technology at the rural level as an income generating activity; 3. To promote extension and training programs for rural farmers; 4. To standardize delivery methods for spawn material and processed products.	April, 1990 Two Years
COMMUNITY BASED RESEARCH		
1. Community Based Research (Rural)	1. To develop a model for improving the quality of life of the rural community through integrated development in the areas of human health, agriculture, cattle development, training and eduction.	April, 1988 Five Years
2. Community Based Research (Tribal)	1. To assist in livelihood and income generating activities of the tribal community; 2. To undertake studies in community health	April, 1988 Five Years
3. Exploratory Studies and Operational Research on Post Production Technologies	1. Introduce and standardize mango processing activity in Vansda taluka; 2. Standardize the processes for manufacturing traditional mango products on a large scale; 3. Identify relevant handling and processing techniques for the wood available from Wadi projects; 4. Study and improve the existing techniques of handling traditional produce in the areas of paddy and edible oilseeds.	April 1988 Five Years

4. Rural Polytechnic	1. To identify training needs of rural youth and artisans in activities leading to sustainable and gainful self employment; 2. To develop appropriate training courses in relevant areas; 3. To impart training to the beneficiaries in concerned fields; 4. To provide post training guidance and support to the beneficiaries to ensure that the skills attained are used for gainful employment opportunities.	April, 1988 Four Years
SERICULTURE		
1. Development and Standardization of Sericulture Technology	1. To acquire and adopt appropriate technology for production of disease-free-layings of silkworms of different breeds and races; 2. To study and develop methods for transportation and distribution of disease-free-layings from the grainage to the sericulturalists in remote locations; 3. To study the suitability of mulberry varieties for different agro-climatic conditions and develop recommendations for specific field implementation.	April, 1989 Four Years
BAIF INFORMATION RESOURCE CENTRE		

1. Information Resource Centre	1. To document and create databases of BAIF's research and development achievements; 2. To provide information services to BAIF's scientists; 3. To identify the areas for computerization within BAIF and develop applications accordingly; 4. To impart training to BAIF staff about use and capabilities of micro-computers; 5. To develop and procure communication material such as audio-visual and printed aids to facilitate training; 6. To assist in the publication of the Annual Report, books, newsletters and promotional material of BAIF.	April, 1988 Five Years

APPENDIX B

SELECTED BIBLIOGRAPHY

IDRC, Project Summary, February 2, 1991

BAIF, Proposal for Institutional Support to BAIF Institute for Development Research, 1987

BAIF, Annual Report, 1989-90

BAIF, Annual Report, 1990-91

BAIF, IDRC-BIS Programme, Work Plan and Budget Details, 1989/90

BAIF, Performance report of IDRC - BIS Projects, October 1990 - March 1991

CIDA, Management Plan, International Development Research Centre Co-financed Bharatiya Agro-Industries Foundation Rural research Project, India 468/15018

VHB Research & Consulting Inc., BAIF Development Research Foundation Monitoring and Evaluation, September 1989

VHB Research & Consulting Inc., BAIF Development Research Foundation Evaluation Workshop, December 1989

IDRC/CIDA, An Evaluation of CIDA/IDRC Collaboration, 1991

APPENDIX C

LIST OF INTERVIEWEES

Ms. Hélène Giroux,	PTL, CIDA
Dr. Anne Whyte,	Chairperson, IDC, IDRC
Mr. Ed Weber	Asst Director, AFNS, IDRC
Mr. Terry Smutylo	OPE, IDRC
Ms. Mary Beaussart	AFNS, IDRC
Mr. Antoine Hawara	Finance, IDRC
Dr. Manibhai Desai	BAIF
Dr. Vijay Pande	IDRC

APPENDIX D

EVALUATION SCHEDULE

Date	Activity
Oct 21	Interviews and file review in Ottawa
Oct 22	Interviews and file review in Ottawa
Oct 23	Interviews and file review in Ottawa
Oct 24	Interviews and file review in Ottawa
Oct 25	Interviews and file review in Ottawa
Oct 26	
Oct 27	
Oct 28	Development of evaluation methodology
Oct 29	Development of evaluation methodology
Oct 30	Draft workplan
Oct 31	Draft workplan
Nov 01	Draft workplan and submit to IDRC and CIDA
Nov 02	
Nov 03	
Nov 04	File Review
Nov 05	File Review
Nov 06	Travel to India (James Bucknall)
Nov 07	Travel to India (James Bucknall)
Nov 08	Travel to India (Marcel Zollinger), Meetings with CIDA (James Bucknall)
Nov 09	Travel to India (Marcel Zollinger), Meetings with CIDA (James Bucknall)

Nov 10	
Nov 11	Briefings in New Delhi with CHC & IDRC officials
Nov 12	Travel to Vapi
Nov 13	Vapi - Vandsa, Visit to Tribal Rehabilitations Project area
Nov 14	Vansda - Sangmer, Visit to Dairy Cattle Development Project area, Sangmer - Bhandhardhara Dam
Nov 15	Visit to Akole Tribal Rehabilitation Project area, Bhandhara - Kadus, Visit to Agroforestry Project area, Kadus -Puna
Nov 16	Visit to Urulikanchan - Ashram School, CRS
Nov 17	Visit to BAIF Laboratories, Visit to BIRC, Meeting with BAIF Project Leaders
Nov 18	1. Team Meeting 2. Organization of individual field surveys and interviews 3. Individual field surveys and interviews 4. Individual review of documents and interviews at BAIF HQ
Nov 19	1. Individual field surveys and interviews
Nov 20	As above
Nov 21	As above
Nov 22	As above
Nov 23	As above and team meeting
Nov 24	
Nov 25	1. Individual field surveys and interviews 2. Individual review of documents and interviews at BAIF HQ
Nov 26	As above
Nov 27	Prepare draft findings and recommendations
Nov 28	Prepare draft findings and recommendations, team meeting, debriefing of BAIF
Nov 29	Debriefing of CHC and IDRC in New Delhi and Canadian team members return to Canada
Nov 30	Travel to Canada
Dec 01	

Dec 02	Debriefing of CIDA and IDRC in Ottawa
Dec 03	Report preparation
Dec 04	As above
Dec 05	As above
Dec 06	As above
Dec 07	
Dec 08	
Dec 09	As above
Dec 10	As above
Dec 11	As above
Dec 12	As above
Dec 13	As above
Dec 14	
Dec 15	
Dec 16	As above
Dec 17	As above
Dec 18	As above
Dec 19	As above
Dec 20	Deliver draft report to IDRC and CIDA
Jan/Feb	Review and finalize report

APPENDIX F

FINANCIAL TABLES

METHODOLOGY

1. PURPOSE

The purpose of this note is to describe the methodology used to prepare the four appendix tables and the eight report tables.

2. APPENDIX

The first three appendix tables are derived from the annual actual expenditures as reported by BAIF to IDRC. The original reports were in Rupees. They were converted to dollars by dividing the Rupee amount by the weighted average exchange rate used by IDRC. The following exchange rates were used:

1988-89	11.597
1989-90	13.523
1990-91	15.055

The fourth table is the sum of the first three tables.

3. MAIN TEXT TABLES

3.1 Table 1

This table was developed from "Centre File: 3-P-87-0161" which was appended to the BAIF/IDRC Memorandum of Grant Conditions. The original budget was in Rupees. This was converted to dollars by dividing by the exchange rate of 10.006.

Two modifications were made to the original budget. First, under BAIF Administered Funds, a line item "Administrative Overhead" has been added. Second, under IDRC Administered Funds, a line item which I call "IDRC Project Monitoring" has been added. Both of these line items have been included in the IDRC financial spreadsheets.

TABLE 1

ACTUAL EXPENDITURES IN DOLLARS, 1988 -1989

BAIF Administered Contribution	IRC	CBR	FST	RPT	MYC	MRK	MUSH	CCF	SERI	PPS	BAMBOO	BMTC	TOTAL
Salaries	$19,137	$63,967	$9,318	$0	$13,389	$0	$0	$6,315	$0	$2,790	$0	$0	$114,916
Research Supplies	$7,354	$42,758	$2,647	$0	$6,832	$0	$0	$660	$0	$431	$0	$0	$60,682
Consultants	$471	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$471
Report Preparation	$1,137	$1,496	$0	$0	$254	$0	$0	$0	$0	$34	$0	$0	$2,922
Training	$965	$8,018	$0	$0	$0	$0	$0	$0	$0	$11	$0	$0	$8,995
Travel	$3,373	$5,319	$0	$0	$858	$0	$0	$326	$0	$818	$0	$0	$10,693
Bools & Periodicals	$11,457	$955	$0	$0	$140	$0	$0	$0	$0	$619	$0	$0	$13,171
Administrative Overhead	$4,389	$12,251	$1,197	$0	$2,147	$0	$0	$730	$0	$470	$0	$0	$21,185
Capital Equipment	$95,175	$47,456	$0	$0	$65,028	$0	$0	$0	$0	$0	$0	$0	$207,659
Infrastructure	$354,836	$31,261	$0	$0	$25,186	$0	$0	$74,496	$0	$0	$0	$0	$485,779
Total	$498,295	$213,481	$13,162	$0	$113,834	$0	$0	$82,527	$0	$5,175	$0	$0	$926,474

TABLE 2

ACTUAL EXPENDITURES IN DOLLARS, 1989 -1990

BAIF Administered Contribution	IRC	CBR	FST	RPT	MYC	MRK	MUSH	CCF	SERI	PPS	BAMBOO	BMTC	TOTAL
Salaries	$24,501	$75,627	$8,738	$12,452	$18,139	$1,278	$0	$9,334	$9,381	$8,224	$0	$0	$167,672
Research Supplies	$10,224	$61,735	$13,616	$222	$9,757	$925	$0	$2,589	$3,803	$17,975	$0	$0	$120,846
Consultants	$1,543	$233	$0	$0	$0	$0	$0	$0	$0	$8	$0	$0	$1,785
Report Preparation	$2,499	$1,482	$2	$0	$468	$0	$0	$0	$0	$227	$0	$0	$4,678
Training	$1,416	$4,699	$0	$0	$0	$0	$0	$0	$0	$432	$0	$0	$6,547
Travel	$3,452	$8,902	$37	$156	$2,498	$74	$0	$652	$661	$3,947	$0	$0	$20,379
Bools & Periodicals	$6,825	$2,596	$869	$1,795	$407	$0	$0	$2,456	$280	$972	$0	$0	$16,199
Administrative Overhead	$5,046	$15,527	$2,326	$1,463	$3,127	$228	$0	$1,503	$1,412	$3,178	$0	$0	$33,811
Capital Equipment	$39,861	$45,383	$0	$3,504	$12,584	$11,688	$0	$32,227	$8,293	$5,501	$0	$0	$159,041
Infrastructure	$12,236	$54,272	$0	$8,788	$47,248	$0	$0	$17,681	$2,613	$16,675	$0	$0	$159,513
Total	$107,603	$270,457	$25,588	$28,379	$94,228	$14,193	$0	$66,441	$26,443	$57,139	$0	$0	$690,470

TABLE 3

ACTUAL EXPENDITURES IN DOLLARS, 1990 -1991

BAIF Administered Contribution	IRC	CBR	FST	RPT	MYC	MRK	MUSH	CCF	SERI	PPS	BAMBOO	BMTC	TOTAL
Salaries	$29,150	$75,468	$9,122	$11,928	$16,179	$402	$832	$15,668	$12,871	$6,624	$34,490	$0	$212,733
Research Supplies	$23,759	$80,880	$7,748	$1,390	$7,035	$2,478	$1,763	$1,027	$22,610	$4,296	$6,991	$0	$159,975
Consultants	$132	$106	$0	$0	$0	$0	$0	$0	$32	$1,472	$0	$0	$1,743
Report Preparation	$2,741	$288	$27	$15	$1,567	$191	$3	$9	$35	$27	$34	$0	$4,936
Training	$1,790	$4,235	$2,586	$1,442	$0	$0	$4	$0	$1,232	$934	$105	$0	$12,329
Travel	$4,320	$10,273	$717	$635	$2,933	$313	$1,410	$585	$2,493	$3,478	$1,353	$0	$28,509
Bools & Periodicals	$6,366	$2,026	$1,194	$366	$542	$364	$14	$76	$392	$968	$71	$0	$12,379
Administrative Overhead	$6,826	$17,328	$2,139	$1,578	$2,826	$375	$403	$1,737	$3,967	$1,780	$4,304	$0	$43,260
Capital Equipment	$39,425	$6,700	$12,731	$0	$2,955	$11,544	$35	$16,048	$6,788	$8,569	$4,607	$0	$109,402
Infrastructure	$8,949	$18,302	$5,539	$588	$2,933	$0	$0	$72	$22,156	$10,980	$0	$0	$69,519
Total	$123,458	$215,604	$41,804	$17,942	$36,969	$15,666	$4,464	$35,223	$72,576	$39,127	$51,954	$0	$654,787

TABLE 4

ACTUAL EXPENDITURES IN DOLLARS, 1988 -1991

BAIF Administered Contribution	IRC	CBR	FST	RPT	MYC	MRK	MUSH	CCF	SERI	PPS	BAMBOO	BMTC	TOTAL
Salaries	$72,788	$215,062	$27,178	$24,380	$47,706	$1,679	$832	$31,317	$22,252	$17,638	$34,490	$0	$495,322
Research Supplies	$41,336	$185,372	$24,011	$1,612	$23,623	$3,402	$1,763	$4,276	$26,413	$22,702	$6,991	$0	$341,504
Consultants	$2,147	$339	$0	$0	$0	$0	$0	$0	$32	$1,481	$0	$0	$3,998
Report Preparation	$6,378	$3,266	$29	$15	$2,289	$191	$3	$9	$35	$288	$34	$0	$12,536
Training	$4,171	$16,953	$2,586	$1,442	$0	$0	$4	$0	$1,232	$1,377	$105	$0	$27,871
Travel	$11,145	$24,493	$754	$791	$6,289	$387	$1,410	$1,563	$3,153	$8,242	$1,353	$0	$59,581
Bools & Periodicals	$24,648	$5,577	$2,063	$2,161	$1,090	$364	$14	$2,532	$672	$2,559	$71	$0	$41,749
Administrative Overhead	$16,261	$45,106	$5,662	$3,040	$8,100	$602	$403	$3,970	$5,379	$5,429	$4,304	$0	$98,256
Capital Equipment	$174,461	$99,539	$12,731	$3,504	$80,567	$23,233	$35	$48,275	$15,081	$14,070	$4,607	$0	$476,102
Infrastructure	$376,021	$103,835	$5,539	$9,376	$75,366	$0	$0	$92,250	$24,769	$27,655	$0	$0	$714,812
Total	$729,356	$699,542	$80,554	$46,321	$245,031	$29,859	$4,464	$184,191	$99,019	$101,440	$51,954	$0	$2,271,731