

PD-ABC-514

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evaluation missing

XD-ABC-514-A

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A.I.D. EVALUATION SUMMARY - PART I

1. BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS.
2. USE LETTER QUALITY TYPE, NOT "DOT MATRIX" TYPE.

IDENTIFICATION DATA

A. Reporting A.I.D. Unit: Mission or AID/W Office <u>S&T/FENR</u> (ES# _____)		B. Was Evaluation Scheduled In Current FY Annual Evaluation Plan? Yes <input checked="" type="checkbox"/> Skipped <input type="checkbox"/> Ad Hoc, <input type="checkbox"/> Evaluation Plan Submission Date: FY <u>87</u>	C. Evaluation Timing Interim <input checked="" type="checkbox"/> Final <input type="checkbox"/> Ex Post <input type="checkbox"/> Other <input type="checkbox"/>
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D. Activity or Activities Evaluated (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report.)					
Project No.	Project /Program Title	First PROAG or Equivalent (FY)	Most Recent PACD (Mo/Yr)	Planned LOP Cost (000)	Amount Obligated to Date (000)
936-5547	Forestry/Fuelwood Research and Development	1985	1990	39,800	6,900

ACTIONS

E. Action Decisions Approved By Mission or AID/W Office Director		Name of Officer Responsible for Action	Date Action to be Completed
Action(s) Required			
1. Prepare PIO/T obligating funds through FY 1990, end of Phase I		Morrison	1/89
2. Prepare long-range Strategic Action Plan as key planning document for Phase II of project.		Morrison	12/89
3. Incorporate appropriate evaluation recommendations into Phase II of project		Morrison	8/90

(Attach extra sheet if necessary)

APPROVALS

F. Date Of Mission Or AID/W Office Review Of Evaluation: (Month) June (Day) _____ (Year) 1988

G. Approvals of Evaluation Summary And Action Decisions:				
	Project/Program Officer	Representative of Borrower/Grantee	Evaluation Officer	Mission or AID/W Office Director
Name: (Typed)	<u>S&T/FENR</u> Ian Morrison		<u>Frank Alejandro</u> Frank Alejandro	<u>S&T/FENR</u> Twig Johnson
Signature	<i>[Signature]</i>		<i>[Signature]</i>	<i>[Signature]</i>
Date	<u>6-2-89</u>		<u>4-4-91</u>	<u>4/2/91</u>

ABSTRACT

H. Evaluation Abstract (Do not exceed the space provided)

This project aims to enhance forestry/fuelwood research and development primarily through support of LDC scientists and institutions on the assessment, improvement and management of Multi-purpose Tree Species (MPTS). The project is being implemented by Winrock, International. This mid-term evaluation was conducted by a Tropical Research and Development team on the basis of review of project documents and site visits to Pakistan, Nepal, Singapore, Malaysia, Bangkok, and the Philippines. The purpose of the evaluation was to assess the management, accomplishments and impact of the project and make recommendations, accordingly. Major findings and conclusions are:

- The Contractor's performance is generally adequate and in some aspects, excellent. Progress to date indicates that the contract requirements will be met;
- The goal and purpose statements of the project are adequately stated and appropriate to the identified needs;
- Purpose A should be understood to apply to institutional level research and not to national level or sector level research considerations as it currently suggests; Purpose C could be made clearer if "better use" were deleted; and
- All assumptions hold true at this time and are increasingly relevant to F/Fred. While funds are adequate, they are less than an optimum level for F/Fred.

Some of the lessons learned were: (1) A Project of this nature should address social science issues at the design stage; and, (2) A formal, strategic long-range plan should have been developed prior to the implementation of this project, providing the implementors with a broader perspective for measuring the projects progress and accomplishments;

RECOMMENDATIONS: Because of the project's importance to the Agency, it was recommended that the Agency continue to fund the project, incorporating the principal recommendations into Phase II of the project. (See List of Recommendations on page 5)

COSTS

I. Evaluation Costs

1. Evaluation Team		Contract Number OR TDY Person Days	Contract Cost OR TDY Cost (U.S. \$)	Source of Funds
Name	Affiliation			
Samuel H. Butterfield, Team Leader		IQC #PDC-5517-		
Francis Ng, Senior Asian Forest Researcher		I-00-7137-00	\$149,948	S&T/FENR
Charles Hatch, Forest Research Manager				936-5547
Andrew Manzardo, Applied Social Scientist		D.O. #11		
Donald Osburn, Agricultural Research Specialist				
John Palmer, Database Management Specialist				
through a contract with				
Tropical Research and Development, Inc.				
519 N.W. 60th Street, Suite D				
Gainesville, FL 32607				
2. Mission/Office Professional Staff Person-Days (Estimate) <u>5</u>		3. Borrower/Grantee Professional Staff Person-Days (Estimate) <u>5</u>		

b

A.I.D. EVALUATION SUMMARY - PART II

SUMMARY

J. Summary of Evaluation Findings, Conclusions and Recommendations (Try not to exceed the three (3) pages provided; Address the following items:

- Purpose of evaluation and methodology used
- Purpose of activity(ies) evaluated
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office:

Date This Summary Prepared:

Title And Date Of Full Evaluation Report:

PURPOSE

The purpose of the evaluation was to assess the management, accomplishments and impacts of the project and to make recommendations for modifications of emphasis and directions,

METHODOLOGY

This evaluation was conducted by a six-person multi-disciplinary team assembled by Tropical Research and Development, Inc. It was carried out in accordance with the evaluation scope-or-work and direction from the project managers (S&T and A/NE). The evaluation consisted of a review of project documents and visits to in Arlington, VA., Bangkok, Thailand, Nepal, Pakistan, Malaysia, Singapore and the Philippines.

The evaluation team was mandated to provide evaluation information on the following:

- A. Are the goals and purposes of the project adequately stated, and appropriate to the needs?
- B. The project paper sets out the basic assumptions for developing this project. Do they still hold true? Are they even more relevant now and will they increase in relevancy as time passes?

Other principal issues considered during the evaluation were: (1) Assessment of contractor performance; (2) Adequacy of project management; (3) Adequacy of Socio-Economic Components; (4) Achievement of project outputs; (5) Development of relationships with U.S., Asian and global research communities; and (6) Recommendations for future project development.

PROJECT PURPOSE

The purpose of the project is to enhance forestry/fuelwood research capabilities through:

- A. Improved formulation, planning and management of forestry/fuelwood and agroforestry research;

B. Support and development of networks scientists and institutions in LDC countries focussed on the assessment, improvement and management of multi-purpose tree species (MPTS); and

C. Enabling LDCs to address their critical forestry/fuelwood needs through better use of forestry and agriculture related information.

FINDINGS AND CONCLUSIONS

The Evaluation Team was impressed by the degree of collaboration with other donors in MPTS activities supported by F/FRED. Also, most, U.S.A.I.D.'s interviewed ranked F/Fred high among A.I.D.'s centrally funded projects. Major findings and conclusions were:

- The project addresses one of the most pervasive world-wide resource need, namely, improved multo-purpose, fast-growing trees, which are used by small farmers. No major revision or goal or purposes should be made;
- Most F/FRED-financed activities have the support of Asian researchers;
- The Contractor needs to develop a long-term Strategic Action Plan addressing both the current increased workload and the needs associated with Phase II;
- More social sciences (Anthropology, Sociology and Economics) in the networks;
- The Global Research Unit is not providing enough hands-on assistance to cooperators in Asia. The Contractor should consider having a full-time GRU presence in CU Bangkok;
- The absence of agreed benchmarks and indicators of progress is unfortunate. A study is needed to identify benchmarks and valid indicators;
- As F/FRED approaches Phase II, A.I.D. and the Contractor should begin dialogue regarding arrangements leading to a sustainable Asian MPTS Research Network after F/FRED completion in 1995.

ACCOMPLISHMENTS

- One of the project's major accomplishments has been the contribution to the the building of relevant, sustainable Multi-Purpose Tree Species Networks which is unique in Asia. One is the networks' zonal orientation across similar environmental gradients in contrast to the typical single species orientation for study. More significant is the idea of linking social scientists and biophysical scientists in a common research Network aimed at making MPTS research increasingly relevant to

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the interest of small farmers.

PRINCIPAL RECOMMENDATIONS:

Additional Funding - A.I.D. should try to provide sufficient funds for F/FRED to sustain the project momentum in the last year of Phase I; Phase II financing for F/FRED should be included in A.I.D.'s financial plans through FY 1995;

Additional field staff: As soon as contractually possible, the Contractor should add staff to the field Coordinating Unit in Bangkok. The new staff should permit (1) one full-time coordinator for each of the two functioning MPTS Research Units; (2) A link between GRU and network cooperators on IADSS; and, (3) One manager of the needed economic research component of F/FRED (Asian specialists, as well as U.S. specialists, should be considered.)

Long Range Planning: The Contractor should (1) prepare a prioritized Strategic Action Plan for Phase II which should be tied to project objectives and program budget; (2) prepare subordinate long-term plans for training, publications, economics, social science, and computerized database development.

Flexible Response: A.I.D. should include an appropriate Phase II planning, budget and approval document language and funds to maintain F/FRED's valuable flexible response capacity.

Social Science: CU's forest economist should devote whatever time is needed to bring economic and economists into the main stream of the MPTS research activity:

MPTS Data Management System: The Contractor should continue support for development of IADSS as a system for Asia and for a global audience;

Location of Contractor personnel: In planning for Phase II, A.I.D. should give special attention to the pros and cons of having contract personnel relating primarily to Asia working in Asia.

Indicators of Progress: A study should be undertaken to identify valid benchmarks and indicators of progress.

MPTS Network Sustainability: F/FRED should begin a dialogue with Asian MPTS Research Network leaders about what sustainability-promoting steps to take when to take them.

LESSONS LEARNED

1. In projects of this nature, a special effort needs to be made to include social science issues in design and implementation at all levels.

2. Irrespective of the complexity and unknowns in an innovative project such as this, there needs to be at least a draft strategic action plan and one that will be flexible enough to advance project goals at the same time recognizing the need to adhere as closely as possible to a formal strategic action plan.
3. Where new technologies are tested and implemented, there must be an economic analysis component to judge whether the results can be implemented on a field scale that measures cooperative advantage of the newly arrived technologies.
4. More attention needs to be paid to the development of the data and information system to make it more responsive to research results in regions other than Asia.
5. Over the period of Phase II, recruiting for key personnel should be conducted on a global basis rather than recruiting U.S. Ex-Pats.
6. Long range planning must be a prominent feature of Phase II of the project.

NEXT STEPS

During their review of the draft evaluation report, A.I.D. officers asked the evaluation Team to recommend next steps for A.I.D. to take in considering the Team's report and the future of F/FRED. In addition to A.I.D.'s standard review process, the Team suggests the following:

- Begin collaborative preparation of a long-range Strategic Action Plan covering the remainder of Phase I and all of Phase II;
- Concurrently with and as an input to the strategic Action Plan - (1) Begin a dialog between Asian MPTS research leaders, A.I.D. and Winrock International on steps to be taken during Phase II of F/FRED; (2) Review current Phase I program budget for use on unfunded needs of Phase I; (3) Employ consultant to prepare a list of valid indicators of project progress; (4) Identify which recommendations can be implemented within current or planned allocations and proceed to implement them. Begin implementing other recommendations as funds permit.

esfred

ATTACHMENTS

K. Attachments (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier; attach studies, surveys, etc., from "on-going" evaluation, if relevant to the evaluation report.)

Evaluation Report

COMMENTS

L. Comments By Mission, AID/W Office and Borrower/Grantee On Full Report

The Office of Forestry, Environment and Natural Resources appreciates the time and efforts of the evaluation team in carrying out this evaluation. The report is fair and accurate. The recommendations will be incorporated into Phase I and II as appropriate.

TCN/SF

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DEPT:556
MAIL 41:TCN370 AR SU KATZ ASIA TRIP REPORT SEPT 24, 1990
MESSAGE NO: NET 2136
DATE : Oct. 3, 1990
TO : Ken MacDicken
FROM : Tom Niblock
CC : Steve Katz, Lisa McClay
SUBJECT : Katz Asia Trip Report Sept. 24, 1990
REFERENCE : Arl 2276

1. Based upon conversation with Steve Katz, Lisa McClay, and Tim Cox of AID you should in the future charge twenty-six cents per mile for private use of official vehicle or such other amount as USAID Thailand has established for similar purpose. The twenty-six cents is derived from the USG allowance for reimbursement for official use of private vehicle.
2. As for the three "observations" contained in Steve Katz's Asia Trip Report, please be guided as follows:
 - a. Budget line item 3.2 provides for purchase/replacement of vehicles in Phase II. Please advise when new or replacement vehicles are needed.
 - b. The consensus here is to continue the present arrangement with respect to Travel Claims.
 - c. As for the NS chron file sent to us monthly it is definitely read and found useful by me and a few others. I regularly pick up on items missed in the otherwise good system of communications.
3. Your report on the AID audit as well as Steve Katz's report are most gratifying. Cox confirmed your impression to me today that the auditors were favorably impressed by what they had seen of F/FRED in the field and its management. Special congratulations to you, Khun Vilai and all others responsible.
4. Cox has asked me to query you on a few "minor particulars" they need to fill in gaps in their report:
 - Please identify the four successful trials in the Arid and Semi-arid region.
 - identify where the F/FRED vehicles are kept overnite and weekends.

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5. Cox suggested that a report listing non-expendable equipment be included as part of the Phase I close-out procedures. I told him we would do this but would exclude equipment passed over to cooperators. Please send a current Phase I list.

Regards,

.s

h

FRED-ABC-514-A
70498 ATTACHMENT C.

A.I.D.
I.Q.C. No. PDC-5517-I-00-7137-00

Forestry/Fuelwood Research & Development (F/FRED) Project

Evaluation Report

December 1988

Submitted to the:
United States Agency for International Development

Evaluation carried out by:

Samuel H. Butterfield, Team Leader
Francis Ng, Senior Asian Forest Researcher
Charles Hatch, Forest Research Manager
Andrew Manzardo, Applied Social Scientist
Donald Osburn, Agricultural Research Specialist
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1.0 BACKGROUND

1.1 Acknowledgements

The Team would like to acknowledge the help of many people for their support during the course of this evaluation. We would particularly like to thank the innumerable Asian scientists and administrators who took time from their very busy schedules to provide us with information and insights about Forestry/Fuelwood Research and Development Project (F/FRED). We are appreciative of the time and energy of Winrock International's personnel in the U.S. and in Bangkok who spent many hours with us discussing issues related to the project. We also thank the staff members of Agency for International Development (A.I.D.) in Washington and at the different United States Agencies for International Development (U.S.A.I.D.s) in Asia who provided us with useful information throughout the evaluation process.

1.2 Project Description

Project Title: Forestry/Fuelwood Research and Development

Project Number: PDC-5517-I-00-7137-00

Location: Global Project. Most implementing activity associated with Asia.

Time Frame:

1. Ten-year global project. Duration approved by A.I.D. Administrator. Project to be undertaken in two five-year phases, 1985-1990 and 1990-1995.
2. Asia Near East Bureau participation approved for Phase I.

Project Authorization:

S&T/FENR	\$ 30,000,000
S&T/RD	2,800,000
Bureaus/U.S.A.I.D.s	7,000,000
Total	\$39,800,000

Mode of Implementation:

1985 A.I.D. contract with Winrock International. Covers Phase I only. Total amount is \$8,947,985. Obligations through Fiscal Year (FY) 1988 are \$6,900,000.

Project Officers:

S&T/FENR	Ian Morison
S&T/RD	John Grayzel
ANE/TR/ENR	Robert Ichord

1.3 Structure of the Report

This report presents an array of findings, conclusions, and recommendations on all of the topics presented in the Scope of Work for this Evaluation (See Appendix 1).

The report is divided into the following sections:

- 1.0 Background (including acknowledgements, a brief description of the project, and an executive summary)**
- 2.0 Comments on the Significance of Forestry/Fuelwood Research and Development Project (F/FRED)**
- 3.0 Assessments of**
 - 3.1 Project Goals, Purposes, and Assumptions**
 - 3.2 Contractor Performance**
 - 3.3 Overall Project Management**
 - 3.4 Project Sustainability**
- 4.0 Looking Ahead (a summary of major points and suggested next steps)**
- 5.0 Appendices (with additional details that might be of use in understanding this Evaluation Report)**

1.4 Executive Summary

1.4.1 Introduction

The Forestry/Fuelwood Research and Development Project (F/FRED) is a ten-year project begun in 1985. Its purpose is to enhance forestry/fuelwood research and research capabilities primarily through support and development of networks of Less-developed Country (LDC) scientists and institutions focused on the assessment, improvement and management of Multi-purpose Tree Species (MPTS). Research is focused on MPTS use by small farmers.

Phase I of F/FRED (1985-1990) is implemented through an \$8.9 million, five-year contract with Winrock International. Project activity has taken place primarily in Asia and the United States. Winrock International has project offices in Arlington, Virginia, Maui, Hawaii and Bangkok, Thailand.

The Agency for International Development (A.I.D.) project management system calls for an assessment such as this around the end of most projects' third year. The six-person multi-disciplinary team assembled by Tropical Research and Development, Inc. of Gainesville, Florida, spent five weeks during September and October 1988 learning about and assessing the F/FRED project in the U.S., Thailand, Nepal, Pakistan, Malaysia, Singapore and the Philippines.

1.4.2 The Significance of F/FRED

The depletion of forest resources accessible to rural populations and the need to increase tree plantings is well-documented. The basic research focus of F/FRED on improving multi-purpose, fast-growing trees for use by small farmers addresses one of the late 20th century's most pervasive world-wide resource development problems.

Long experience in international agricultural research demonstrates that networks of scientists and scientific institutions can speed the production and spread of development benefits from research. Building such research networks for MPTS improvement is F/FRED's main purpose. A humid/sub-humid zone network is functioning and an arid/semi-arid zone network is getting underway. The humid zone network is carrying out Asia's major multi-country integrated MPTS trials.

An important feature of F/FRED-supported forestry research is the linking biophysical scientists and social scientists in a common network. Joint meetings have occurred; both types of scientists are involved in F/FRED-supported work; and the Asian MPTS Committee has members from both broad disciplines.

F/FRED is developing a long-desired generalized data management system for MPTS. When perfected, this computer software system, known as the Information and Decision Support System (IADSS), could have global utility.

The Evaluation Team was impressed by the degree of collaboration with other donors in MPTS activities supported by F/FRED. Also, most United States Agency for International Development (U.S.A.I.D.) mission officers interviewed by the evaluation team ranked F/FRED high among A.I.D.'s centrally-funded projects. It is encouraging that these missions' portfolios include projects, such as upland agriculture development, which will enhance LDC capacity to use MPTS research output.

The Evaluation Team found the Contractor's performance to be generally adequate and, in some aspects, excellent. Progress to date indicates that the contract's requirements will be met.

The Evaluation Team's overall conclusion is that A.I.D. can correctly consider F/FRED to be one of its important, innovative projects. Adequate long-term financial support for this research-focused, 10-year project should be seen by A.I.D. as a desirable development investment.

Recommendation:

A.I.D. should provide the funds needed to carry F/FRED through Fiscal Year (FY) 1990 (the end of Phase I) without loss of momentum and full funding to move it effectively through Phase II (FY 1991-1995).

1.4.3 Phase I Funding

Currently planned Phase I funding (\$8.9 million) appears adequate to meet the requirements of F/FRED's implementing contract. However, the current level of funding is inadequate for optimum project progress.

Recommendation:

A.I.D. should try to provide additional funds in FY 1989 or FY 1990 to sustain the momentum of F/FRED.

1.4.4 Project Needs and Problems

Like most "third-year evaluation" reports, this document identifies a number of emerging needs and problems which are becoming apparent as activities get well underway and tough implementation problems. The Evaluation Team's findings, conclusions and recommendations regarding these matters are all made within a framework of strong support for F/FRED accompanied by a desire to increase the project's likelihood of achieving its worthy purposes. Many recommendations require funds which do not appear to be available within current Phase I allocations. Consideration of major needs and problems follows.

1.4.5 Long Range Planning

The project contract calls for a "strategic time-phased schedule for accomplishment of the (F/FRED) activities." A draft plan was prepared but a final plan was never completed. A.I.D.'s project officers and Winrock International found that the annual work plan, the program budget and the contract's requirements provide all the plans that are needed for project management. The Evaluation Team would have benefitted from a long-range action plan, and some Asian researchers were surprised at the absence of a five-year plan.

Whatever conclusion one draws regarding work plans for Phase I, management's basic constraints as well as unfunded opportunities have now substantially increased. Phase II planning is expected to begin this fiscal year. Choices will have to be made about the level of support for various Phase II activities and, probably, about what can and cannot be usefully included. A long-range strategic action plan is needed as an aid to management. It can be revised as needed.

Recommendation:

A.I.D. should prepare a long-range strategic action plan as a key planning document for Phase II. The plan should be tied to project objectives. It should include a program budget and show priorities of each major activity. Priority identification is a crucial early step. Subordinate plans are needed, especially for training, publications, economics, social science and database management.

1.4.6 Flexible Response

F/FRED's ability to respond to serious new problems (e.g., the psyllid infestation) and unexpected opportunities (e.g., national interdisciplinary organizing meetings) that are relevant to project purpose was a helpful project characteristic during its first three years. Asian research administrators and U.S.A.I.D. mission officers commented favorably about F/FRED's flexibility.

Recommendation:

A.I.D. should include in Phase II documents specific language and, perhaps, an earmarked fund to maintain F/FRED's flexible response capacity.

1.4.7 Network Development

The four professional staff members of the Contractor's field Coordinating Unit (CU) spend approximately one-third of their time away from Bangkok. It appears that team members have, understandably, concentrated on the initiation and organization of meetings and workshops and spent less time spent working with research administrators

and scientists on operational network needs. The Evaluation Team observed or heard about many operational problems.

Most international forestry research networks have one full-time coordinator who spends a substantial proportion of the year "circuit riding" from cooperator to cooperator and corresponding directly with them in between visits.

The Evaluation Team concludes that MPTS Networks need substantial informal technical and administrative facilitation to become strong and accomplish their objectives.

Recommendation:

The Contractor should arrange for one full-time coordinator for each of the two zonal MPTS research networks.

1.4.8 Social Science Needs

Important links have been established between socio-economic researchers and biophysical forestry researchers. Asian foresters' interest in including social sciences in forestry curricula is growing, and the Yale University sub-contract activity is partly responsible. So far, however, collaboration has resulted in a fair, but largely separate, distribution of fellowships and research grants between biophysical and socio-economic researchers. Integration is needed. For example, target MPTS have been selected and trials begun without consideration of social science input on what species and tree products farmers want in widely varying cultural and ecological settings.

Recommendations:

The Contractor should:

- * Include inputs from social scientists in planning the next round of field trials,
- * Give some priority in future grants to interdisciplinary MPTS research involving both biological and socio-economic scientists, and
- * Make contact with groups now engaged in interdisciplinary research on Asia's renewable resources; this could prove to be an excellent training opportunity for F/FRED cooperators.

1.4.9 Economic Analysis

Economic analysis has been neglected in F/FRED's implementation. MPTS modeling will be defective if the Contractor does not include primary economic information in the database.

Recommendation:

The Contractor should bring economics into the main stream of F/FRED-supported research activity. To begin, the Contractor should prepare a work plan for the design and testing of methodology for economic contributions to MPTS analysis.

1.4.10 Village Forestry Minimum Dataset (VF/MDS)

The project is trying to develop a Village Forestry Minimum Dataset (VF/MDS) as the major social science input to a comprehensive set MPTS databases (IADSS). The design of VF/MDS was incomplete as of October 1988 due to administrative and methodological problems. It appears to be too soon for a useful VF/MDS to be produced because the needed correlations between social and biological systems have yet to be developed. Local socio-economic research and analyses of on-the-shelf data appear to be necessary next steps toward identification of such correlations.

Recommendations:

The Contractor should:

- * For now, simplify VF/MDS and conduct VF/MDS village surveys primarily as training and testing activities,
- * Undertake analyses of on-the-shelf data, and
- * Increase the numbers of small grants for local research aimed at identifying correlations between biological and social systems. Interdisciplinary research should be encouraged.

1.4.11 Biophysical Databases

The Contractor's Global Research Unit (GRU) has made considerable progress in the development of IADSS. The system presents the user with an attractive and consistent interface combined with simplicity of use. The Contractor has the responsibility to develop IADSS into a globally useful system. To fulfill this responsibility, the GRU is in contact with other forestry database developers.

The Contractor plans supplementary databases (DBs) which will provide a summary of information by individual MPTS and a summary of plot data over time. These products could have utility and influence on a global scale.

In contrast, IADSS' bibliographic database and its Statistical Analysis/Graphics Module (F/MOD) seem unnecessary since accessible substitutes exist.

Recommendations:

The Contractor should:

- * Continue developing IADSS for both Asia and a global audience, in association with developers of major related DBs.
- * Obtain access to other bibliographic DBs and statistical analysis/graphics packages.

1.4.12 Training

Field visits revealed that training has been insufficient for Asian research staff involved in actual use of IADSS. IADSS Manuals are generally good but need to be raised to the standards of commercial manuals. The role of the GRU in relation to network cooperators is unclear. The GRU's location and limited forestry experience hampers interaction with the cooperators.

Recommendation:

To ensure more beneficial contact with and training of network cooperators and other users of IADSS, the Contractor should either:

- * Provide an expert GRU presence with the Contractor's Coordinating Unit (CU) in Bangkok or
- * Move the GRU to Asia

1.4.13 Computer Hardware

A number of computer hardware deficiencies have surfaced. Funds for 12 micro-computers are included in Phase I but each cooperating institution needs a computer dedicated to IADSS, if the institution is to be an effective contributor. Additional data storage capacity is needed for each computer. Power supply uncertainties need to be addressed.

Recommendation:

A.I.D. should include funds in Phase II for needed hardware.

1.4.14 Data Sharing

Documents reveal a variety of views among project participants regarding proprietary rights to data. It is a culturally sensitive matter. The problem is not yet significant, but it is likely to become so.

Recommendation:

The Contractor should prepare an issues paper on data-sharing for consideration by the MPTS Research Committee and A.I.D.

1.4.15 Baseline Survey and Indicators of Progress

No baseline survey has been undertaken to develop agreed benchmarks and indicators of progress. Therefore, a useful management tool is unavailable.

Recommendation:

Identification of valid indicators and ways of obtaining data concerning them should be worked on in conjunction with Phase II planning.

1.4.16 Contractor's Staff Levels and Location

F/FRED's progress is accompanied by an unavoidably expanding workload for Contractor staff, especially for the Asia-based Coordinating Unit. The CU staff cannot, at its current strength of four officers plus supporting staff, do all the functions expected of it and do them all well. Of particular concern is the need for considerably more staff attention to network facilitation, to economic analysis and to on-the-spot training of IADSS cooperators. Additional tasks can be expected before the end of Phase I in 1990. Present funding and workmonth ceilings preclude needed strengthening of CU.

During Phase II, location of most Contractor staff in Asia would promote network development and long-term sustainability. This needs to be considered during 1989 planning for Phase II of F/FRED.

Recommendation:

A.I.D. should:

- * Amend contract to permit staff increases for the Contractor's Bangkok-based Coordinating Unit.
- * Plan Phase II on the assumption that most Contractor staff concerned primarily with the Asian MPTS Research Network will be located in Asia.

1.4.17 Sustainable MPTS Networks

Most network participants and A.I.D. regard the long-term sustainability of the MPTS Research Network as a priority. Such institutional development takes years of work. It is facilitated if all major participants in the process agree on the objectives and on the main steps. Dialog is essential to sincere agreement. Therefore, representatives of all parties need to participate in activities such as the long-term plan preparation.

Recommendations:

The Contractor should:

- * Discuss with the MPTS Network Steering Committee the desirability of beginning a dialog on feasible steps to be taken by all parties to help ensure a sustainable Asian MPTS Research Network after the termination of F/FRED.
- * If the Steering Committee responds affirmatively, prepare and monitor a plan for taking feasible steps which will promote sustainability. The plan should be reviewed regularly by the main parties involved.

1.4.18 Priorities

The priority ranking among our principal recommendations is set out below. The Team sets these out on the assumption (and with the clear recommendation) that the project will be continued through at least its 10-year approved time frame. Readers should bear in mind that the evaluation report contains many additional recommendations which need to be considered. These include recommendations on other subjects as well as subsidiary recommendations to the eight or so principal recommendations.

<u>Priority</u>	<u>Recommendation</u>
1	Preparation of a long-range strategic action plan and subordinate plans
2	Additional Phase I funding and adequate Phase II funding
3	Additional staff for CU
4	Dialog on network sustainability
5	Change and increase in socio-economic emphases
6	MPTS data management adjustments, including data sharing
7	Identification of valid indicators of progress

- 8 Location of Contractor personnel in Phase II
- 9 Continued flexible response capacity should explicitly be built into Phase II

1.4.19 Next Steps

Recommended next steps for A.I.D. to take in considering the team's report and the future of F/FRED are:

- 1. Begin collaborative preparation of a long-range Strategic Action Plan covering the remainder of Phase I and all of Phase II.**
- 2. Concurrently with and as an input to the Strategic Action Plan:**
 - a. Begin a dialog on sustainability.**
 - b. Review Phase I program budget allocations.**
 - c. Prepare a list of valid indicators of progress.**
 - d. Prepare subsidiary long-term plans for training, publications, economics, social science and database management.**
 - e. Identify which recommendations in this report can be implemented within current or planned allocations and proceed to implement them. Begin implementing other recommendations of this report as funds permit.**

2.0 COMMENTS ON THE SIGNIFICANCE OF F/FRED

Most of this evaluation report presents findings, conclusions and recommendations regarding aspects of F/FRED on a specific item-by-item basis. Such a presentation permits careful consideration by the reader of each of the report's many points, but it does not encourage consideration of the overall significance of the project. The team is concerned, therefore, that the item-by-item review be made in the light of the overall significance of F/FRED and the evaluation team's general conclusions regarding this interesting project.

At the outset, we want to state our overall conclusion that A.I.D. can correctly consider F/FRED to be one of its important, innovative projects. Adequate long-term financial support for this 10-year, research-focused (1985-1995) project should be seen by A.I.D. as a desirable development investment.

The "Green Revolution" gives ample proof of the enormous benefits that can flow from relatively modest but long term investments in research focused on key problems. The basic research focus of F/FRED on improving multi-purpose, fast growing trees for use by small farmers addresses one of the late 20th Century's most pervasive world-wide resource development needs. Few apparent successes exist and one of the most promising tree species now used in Asia (Leucaena) is suffering disastrous damage from the psyllid, a natural enemy which has spread to Asia from Central America. An important aspect of F/FRED's response to the psyllid problem is the strengthened communication links between research scientists in various centers and countries who are trying different approaches to the problem.

F/FRED's widely appreciated response to this unanticipated infestation exemplifies one of the valuable hall-marks of the project which needs to be retained, namely, flexibility to respond to important new problems and opportunities that are relevant to the project's purposes. U.S.A.I.D. Mission officers commented particularly on this helpful characteristic of F/FRED. A.I.D.'s tight budget and standard preference for firm detailed plans usually preclude this sort of flexibility, despite it being particularly critical for innovative projects. The Evaluation Team commends the Agency for approving a focused but flexible project.

Building effective national and international networks of MPTS researchers is the main purpose of F/FRED. Experience in international agricultural research demonstrates that such networks of scientists and scientific institutions can speed the production and spread of development benefits from research. In line with this sort of experience, F/FRED helped establish and now supports Asia's major multi-country integrated MPTS trials. One senior Asian forestry research officer wrote that while "the formation of an international community of interest in MPTS research is already underway in various forms through various mechanisms apart from F/FRED, the F/FRED approach is the most comprehensive and interactive among countries, institutions and scientists." Another experienced Asian researcher commented to the team that regional networking among forest scientists in Europe has become a matter of course, thanks to International Union

of Forest Research Organizations (IUFRO), with considerable benefits to European forestry. F/FRED has begun, he said, to make this possible for Asia.

U.S.A.I.D. Mission staff gave F/FRED high marks among centrally funded projects. Despite the A.I.D. country missions' tradition of skepticism and even opposition toward central projects in general, most U.S.A.I.D. staff with whom the Evaluation Team spoke found the contractor's personnel helpful and the aims of the project important. This point should be considered in light of the virtual rejection of the F/FRED project and general low priority accorded MPTS development activities by A.I.D.'s Agricultural Development Officers in Asia when the project was being planned. While favorable views were heard especially among younger officers, one of F/FRED's strongest mission-based supporters was a seasoned senior agricultural development officer. It seems reasonable to believe that the dialog in A.I.D. since the early 1980s about F/FRED and the concepts involved in the project were among several factors that contributed to the current interest among mission staff to include forestry in their mission portfolios, usually (and wisely) integrated with other rural development activities, especially agriculture.

Whatever their degree of support for F/FRED, U.S.A.I.D. Missions in Asia are supporting country-specific activities, such as agroforestry, social forestry and watershed management, which will enhance LDC capacity to use the research output as it becomes available from MPTS Networks supported by F/FRED and others.

F/FRED is making several contributions to the building of relevant, sustainable MPTS Networks which appear to the Evaluation Team to be unique in Asia. One is the networks' zonal orientation across similar environmental gradients in contrast to the typical single species orientation for study. More significant is the idea of linking social scientists and biophysical scientists in a common research Network aimed at making MPTS research increasingly relevant to the interests of small farmers. Both types of scientists are involved in F/FRED-supported work. A number among each type expressed to the Evaluation Team interest in being in touch with the other type as well as a sense that such contacts are important. Partly to promote contacts, National Organizing Meetings (NOMs) have occurred, with F/FRED support, in some countries and are expected to become more-or-less annual opportunities for biophysical and social scientists to consider MPTS research problems, plans and results. F/FRED's experience will yield important information on how and how not to go about such interdisciplinary work in other research projects taking place in Asia and elsewhere.

In another activity which could be significant beyond Asia, F/FRED is developing a long-desired generalized data management system for MPTS. When perfected, this computer software system (IADSS) could become widely used.

The Evaluation Team was impressed by the degree of collaboration with other donors in MPTS activities supported by F/FRED. For example, a Food and Agricultural Organization of the United Nations (FAO/UN) official sits on F/FRED's advisory Steering Committee. Other examples are the psyllid project and seed collection activities which are supported jointly with other donors in addition to the Asian research institutes. While tight budgets

of most donors encourage such collaboration, respect and confidence among the donor representatives are essential for it to occur as it has.

In light of these findings and conclusions, as well as other conclusions in this report, the Evaluation Team recommends, as noted above, that A.I.D. provide the funds needed to carry on this important project without a lag through Phase I (ending in 1990) and, at the appropriate time, provide funding needed to move it effectively through Phase II (covering 1991-95).

The Evaluation Team deals with all of these matters plus many others in the balance of the evaluation report. This mid-term evaluation, as is expected of such "3rd year evaluations," identifies a number of emerging needs and deficiencies which are becoming apparent as activities get well underway and tough implementation problems are addressed. Necessarily, most of the report is concerned with findings, conclusions and recommendations about those matters. The team stresses that the findings, conclusions and recommendations are all set down within a framework of strong support for F/FRED accompanied by a desire to increase the project's likelihood of achieving its worthy purposes and contributing to its important goal.

The Evaluation Team offers the observation that if a project has few or only minor problems in implementation, it probably is not making much of an innovational contribution to development. Safe projects usually are not significant projects. No one has claimed that F/FRED is a safe project, so it is particularly to the credit of Asians and Americans involved that as of September 1988 (end of year Three of Phase I) progress toward outputs and objectives has been generally good. The contractor's annual report for year three provides extensive information on progress. This evaluation report also reports on progress.

3.0 ASSESSMENTS

This section of the evaluation report has four major sub-divisions with findings, conclusions, and recommendations in each:

- 3.1 Assessment of the Project's Goals, Purposes, and Assumptions**
- 3.2 Assessment of the Contractor's Performance**
- 3.3 Assessment of Overall Project Management**
- 3.4 Project Sustainability**

3.1 Assessment of the Project's Goals, Purposes and Assumptions

This brief section assesses F/FRED's Goal, Purposes and Assumptions as per the requirements of the Evaluation Team's Scope of Work. The section begins with a listing of the project's goals, purposes, and assumptions and then outlines the Team's findings, conclusions, and recommendations about them.

3.1.1 F/FRED Project Goal

To meet basic needs of developing countries for fuelwood and other tree products, for improved land, water and human resource management, and for increased employment and income.

3.1.2 F/FRED Project Purpose

To enhance forestry/fuelwood research and research capabilities through:

- A. Improved formulation, planning and management of forestry/fuelwood and agroforestry research.**
- B. Support and development of networks of scientists and institutions in LDCs focused on the assessment, improvement and management of multi-purpose tree species (MPTS), and**
- C. Enabling LDCs to address their critical forestry/fuelwood needs through better use of forestry and agriculture related research information.**

The F/FRED project paper (PP) identifies purpose B as the most important purpose of the three.

3.1.3 F/FRED Project Assumptions

The basic assumption is that A.I.D. can and should play an increased role in promoting improved forestry/fuelwood research, management, policies and capabilities.

A critical assumption is that the sustained availability of....trees can be improved through strengthening forestry research and forestry research institutions in the LDCs.

Three important assumptions are that:

- * Adequate funding will be available
- * Suitable contractors can be located and
- * Research networks to mobilize LDC personnel and institutions are currently available or can be developed

Findings:

1. The Evaluation Team agrees that MPTS research can make a sustainable contribution to meeting small farmer needs for fuel, fodder and other materials.
2. The Team found that the Contractor has been able to adequately meet only one-half of Purpose A. It has been able to address usefully MPTS research planning and management. However, it has not been able to provide an avenue for dialog or assistance to LDC forestry sector research planning. FAO and others are performing that function.
3. The Project Paper states the main purpose of F/FRED in Purpose B, and all the actors in F/FRED understand the language of this purpose in a consistent way. The Team found that all participants seem to agree that it is an ambitious but achievable purpose for the project. The Team found that the F/FRED contract emphasizes work toward this Purpose B.
4. The Team found that the language for Purpose C unclear; it seems to include provision for better information as well as for some impact on "better use" of that information. A.I.D./W project managers have assured the Team that the intent of Purpose C is to provide better information only and that they expect better use of that information to result from other projects in each country which assist development of extension services. The Team would like to note that the PP seems to say that research on effective ways of providing information for small farmers is within the scope of F/FRED.

5. The Team makes the following observations about F/FRED assumptions:

- * A.I.D. can play an important role in MPTS research as shown by the interest that F/FRED has generated among Asian institutions. Some of the newer U.S.A.I.D. Mission-supported projects in Asia also demonstrate that A.I.D. can help address MPTS management, policies and capabilities. This finding addresses the "basic" assumption.
- * Many development specialists hold that the classic combination of research, extension and training are at the heart of effective programs of technology improvement. They also generally accept that sustained availability of any important resource is associated among many other things with better use of that resource, and that better use implies an improved technology. This addresses the "critical" assumption.
- * Regarding the three "important" assumptions, the Team makes the following observations:
 - 1) Funding has been less than planned in the PP due to the contractual problems with Mission "buy-ins". However, funds appear adequate to meet the essential requirements of the implementing contract. Funds, however, are not adequate to maximize project impact during the last two years of Phase I.
 - 2) A suitable Contractor was located.
 - 3) The Contractor is working with Asian cooperators to develop MPTS Research Networks.

Conclusions:

1. The goal and all purposes are "appropriate to the need."
2. The goal and purpose statements are adequately stated.
3. Purpose A should be understood to apply to institutional level research and not to national level or sector level research considerations as it currently suggests.
4. Purpose C could be made clearer if "better use" were deleted.

5. All assumptions hold true at this time and are increasingly relevant to F/FRED. While funds are adequate, they are less than an optimum level for F/FRED.

Recommendations:

1. A.I.D. should clarify purpose statements A and C when the PP is amended.
2. As discussed in other sections, A.I.D. should increase the funds available for the end of Phase I.

3.2 Assessment of Contractor Performance

This section includes the following major sub-sections, following the order in which the subjects are treated in the contract between A.I.D. and Winrock International:

3.2.1 Research Policy, Planning and Management

3.2.2 Network Development and Research Support

3.2.3 Global Research Support

The report only discusses subjects in the contract which have proved to be significant.

3.2.1 Research Policy, Planning and Management

This contract component has four sub units, discussed below:

3.2.1.1 Country specific forestry research sector assessments and plans

3.2.1.2 Institutional specific guidelines and plans for research and management

3.2.1.3 Regional research planning, evaluation and related training, and

3.2.1.4 Information management systems

3.2.1.1 Country Specific Forestry Research Sector Assessments and Plans

Findings:

1. The Contractor has wisely refrained from giving much technical assistance to formulate and design national research policies, plans and sector assessments.

Countries have not sought such assistance from F/FRED. Other technical cooperation agencies (notably FAO) are active in providing such help to Asian countries. Asian planners informed the Evaluation Team that F/FRED does not provide enough financial help to have a seat at the sector planning table in any country.

2. However, the Contractor has assisted India, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, Taiwan and Thailand in establishing National Organizing Meetings (NOMs). These meetings serve as a forum for agencies and organizations with forestry and agriculture responsibilities to explore policy changes and research needed to conduct MPTS biological, social and economic research programs. Asians interviewed by the Team applaud these NOMs.

Conclusion:

1. At the country level, the Contractor can play an important role in facilitating meetings, such as NOMs, which bring personnel from forestry, agriculture and social science agencies and organizations together to consider research findings, identify problems and explore opportunities to undertake effective MPTS research. F/FRED realistically cannot expect to provide significant assistance for national forestry research policy and planning issues or sector assessments in Asia.

Recommendation:

1. The Contractor should continue to use F/FRED resources primarily to facilitate effective organization of interdisciplinary meetings between personnel in forestry, agriculture and social science entities and promote consideration of MPTS research policy, problems and opportunities in the Asia region.

3.2.1.2 Institutional Specific Guidelines and Plans for Research and Management

Findings:

1. The Evaluation Team found general agreement and much evidence that management of research projects (planning, implementing and evaluating) was an area in which technical assistance and training were needed. The Forestry Research Institute of Malaysia (FRIM) has begun to address the need to a significant degree, through provision of a research management training course, which may be the first of a series. F/FRED supported this effort.
2. The Contractor has identified primary institutional network points, and has signed Memoranda of Understanding (MOU) and Letters of Agreement (LOA), with more than 20 Asian institutions, most of which are the major implementing organizations for zonal network trials. Some MOU/LOA institutions have formed internal research

committees to set research priorities, to assist scientists in acquiring research support, and to administer research programs.

Conclusion:

1. Research management and MPTS promoting institutional guidelines are two general needs which F/FRED can help satisfy.

Recommendation:

1. The Contractor should continue to provide support for this important area of work.

3.2.1.3 Regional Research Planning, Evaluation and Related Training

Findings:

1. In July 1986, Winrock International conducted an important institutional evaluation of forestry/fuelwood programs and projects throughout Asia. A document titled "Multipurpose Tree Species Networks for the F/FRED project" resulted from that evaluation and provided the rationale for the project's current zonal networks.
2. The Contractor has conducted successful planning conferences to initiate humid and sub-humid tropics and arid and semi-arid tropics networks. The Contractor needs to support at least one additional planning conference to initiate a mountain network. The Contractor also has sponsored a planning conference to initiate social science research on farm and village forestry in Kathmandu during April 1988. The Contractor's guidance on social scientist network activities stemming from this planning session has been unclear.
3. Local meetings to guide and monitor the implementation of activities defined in these regional planning conferences vary between countries. Local activities have the most structure in the older humid and sub-humid tropics network but no plans appear to exist to bring lessons learned in that network to the attention of the newer arid and semi-arid network. One example is the need for coordinators to work with those who actually execute the field work.

Note: Training matters are dealt with on p. 36 of this section.

Conclusions:

1. Winrock's 1986 evaluation of Asian institutions provided an effective foundation for the development of F/FRED's biophysical segment of the MPTS Networks. A similar evaluative survey prior to the initiation of the social science network activity might have been extremely useful. The biological-focused evaluation has played

an important role in setting the agendas of zonal network planning meetings at the regional and local level. A social science evaluation might have served the same role.

2. The Contractor should bring the lessons learned in the planning and implementation of the initial zonal network to the attention of MOU/LOA institutions.

Recommendation:

1. The Contractor should identify lessons learned in the planning and implementation of the networks and share them with MOU/LOA institutions and interested donors.

3.2.2 Network Development and Research Support

Findings:

The Evaluation Team observed a number of changes in this component of the project:

1. One change relates to the perception of the project. Initially, A.I.D. called F/FRED a forestry/fuelwood networking project and placed little emphasis on agroforestry. A.I.D. and others now refer to and view F/FRED as a multi-purpose tree research networking project which focuses on the needs of farmers and rural land owners. All cooperators consider fuelwood simply as one of several products that may be obtained from a multi-purpose tree. This change of perception and definition influences research programs and priorities.
2. A second and related change relates to the shift in focus of the networks from a single species orientation to a zonal orientation across similar environmental gradients. Rather than implementing the 10 species networks identified during the 1984 International Union of Forestry Research Organizations (IUFRO) meeting in Sri Lanka, F/FRED and its cooperators have organized the networks by zones, including the wet and moist tropics, arid and semi-arid and mountain environmental types identified at that same meeting. MacDicken and others (1986) describe the rationale for this organizational structure.
3. A third change is in the way the land and forest management network is to be linked to the zonal networks. Originally, project designers envisioned a regional social science program that would focus on systems for managing land, trees and other local common property resources. The Contractor abandoned that approach in 1986 and since then has searched for ways in which the activities of the land and forest management network might be directly integrated into the institutions and farmer-focused programs of the zonal networks. The Contractor has continued to focus on land and forest management issues that it had identified

and has expanded this to include activities focusing on the integration of social sciences into Asian forestry curricula.

Note: In preparing the following sub-sections, the Team chose to proceed item by item through the paragraphs of the Contract, thereby covering the following:

- 3.2.2.1** MPTS Research Network
- 3.2.2.2** Considerations of network feasibility
- 3.2.2.3** Specific MPTS Network Implementing Activities
- 3.2.2.4** Facilitating the Networks

3.2.2.1 The MPTS Research Network

3.2.2.1.1 MPTS Research Network Species Assessment

Findings:

- 1.** The Contractor and Asian cooperators designed the humid and sub-humid zone network trials in 1986 and implemented them in 1987. Researchers in five countries began the experiments on 15 sites. The degree to which standard methodology was followed varied by cooperator. The researchers will use the data from these experiments to evaluate two genotype x environmental interactions for Acacia auriculiformis, Acacia mangium, Leucaena leucocephala and Leucaena diversifolia. Experiment design includes pollarding, pruning and no cutting.
- 2.** Currently these network trials are the major integrated regional MPTS trials in Asia. This appears to be possible largely because of the willingness of prominent Asian research managers to reach a consensus on how the trials are to be done and the ability of the Contractor to bring the managers together.
- 3.** The physical appearance of these field network trials is highly variable. Scientists administering some trials have substantial experience conducting field forestry species selection and management trials as well as experience analyzing data from such trials. Others have little experience. Also, the amount of initial and continued training and supervision that field technicians receive differs significantly among installations. This results in major differences in the quality of the trials in terms of maintenance, data measurement and data recording. Differences in these factors will influence the interpretation of overall network trial results.

4. The Evaluation Team found the level of detail associated directly with F/FRED network trials equalled or exceeded that associated with independent trials which have been installed by the cooperators in the past. Expanded training programs for both scientists and technicians would improve the quality of the information flowing from these experiments. F/FRED has scheduled a Fall 1988 tour of field trial locations for scientists involved with the humid and sub-humid network. The opportunity for these individuals to observe their counterparts' trials and to discuss maintenance, measurement, data recording and data analysis problems has a great potential to significantly improve the quality of information flowing from this network.
5. Late in 1987, F/FRED began planning for similar trials in the arid and semi-arid zone using Acacia nilotica, Dalbergia sissoo, Eucalyptus camaldulensis and, if wanted, a locally preferred species. Locally selected species to date include Prosopis cineraria, Prosopis juliflora and Azadirachta indica. The Contractor is currently preparing a manual for the trials. The experiments may be established in mid-1989 which means that nearly two years will have passed between the initiation of the activity and the establishment of experiment trials in the arid and semi-arid zone. This can be compared to slightly more than a year in the humid and sub-humid zone.
6. Participants at the IUFRO conference in Sri Lanka selected species with limited concern for farmer preference. Since the arid and semi arid network trials allow for the selection of one of the species by each network cooperator, the approach of this network enhances the opportunity to incorporate species preferred by local farmers. This should strengthen biological and social science research opportunities.
7. Many of the organizations which the Team visited had established a variety of species and spacing experiments in the past. These provide a potential source of data which could be used to augment the assessment of species performance in the network trials.
8. Winrock has recently signed a subcontract with Plantek International to work, in part, with institutions in four countries to evaluate the performance of seedlings compared to plantlets produced by tissue culture. Because of its proprietary nature, collaboration between Plantek International and MOU/LOA institutions in-micropropagation technologies will be difficult. Note: The Plantek work is discussed in the Biotechnology section below.

Conclusions:

1. Humid and sub-humid zone network trials have been successfully established. The Team, at this point, emphasizes the importance of a comprehensive field manual and training of scientists managing the network trials. Interaction among network

scientists should begin prior to the planting of the seedlings in the nursery and should continue throughout the life of the experiment. The Contractor could emphasize networking at the time trials are established, during the period of first year measurements and at the time initial farm management treatments are begun. The site visits planned for participants in the humid and sub-humid zone trials during the second year is an excellent idea.

2. To assist in the flow of information between network trials and to ensure adequate standards for the data collected, the zonal network coordinator needs to visit each network site at least annually. This visit should occur during a period when measurements are being recorded or management activities are being implemented. As network trials are installed in other zones, this critical component will consume an increasing portion of the coordinator's time.
3. Network trials are an effective mechanism for focusing networking training and research activities. A number of institutions in the arid and semi-arid zone will be younger and less mature scientific organizations than their counterparts in the humid and sub-humid zone. Therefore, to facilitate training and research activities, the Contractor should initiate the arid and semi-arid experimental trials at the earliest possible date.
4. To accelerate information flow to the end-user, the networks should devote some effort to the selective recovery of archived data and old research plot data and to their assimilation into the current information flow.
5. Networks should make use of IADSS and other systems to identify critical gaps in information. They should then design new trials to fill those gaps.

Recommendations:

1. The Contractor should schedule site visits for the participants managing arid and semi-arid network trials during the second year of the experiment.
2. The Contractor should schedule site visits for participants managing network trials during the year major farm management treatments are first initiated.
3. The Contractor should use the newsletter to communicate information on network trial management and measurement activities.
4. The Contractor should use the small grants program to capture and analyze information on other field trials, both current and past, and to establish trials to fill knowledge gaps.

3.2.2.1.2 Species Improvement

Findings:

1. F/FRED, in collaboration with Commonwealth Scientific and Industrial Research Organization (CSIRO), supported a seed collection expedition for Acacia auriculiformis which resulted in a range wide provenance collection of this species. This collection provides the basis for tree improvement programs. F/FRED plans a similar expedition for Acacia mangium in late 1988.
2. No firm plans are evident to involve social scientists in planning the tree species improvement trials.
3. F/FRED has also supported the collection of Melia azedarach and Azadirachta indica seed and the production of psyllid resistant accessions or hybrids of Leucaena spp.
4. As pointed out in the 1988 F/FRED Asia Progress Report, limited potential exists to use tissue culture as a tool to genetically improve MPTS in the near term.

Conclusions:

1. Only limited Asian supplies of indigenous MPTS germplasm of known origin exist. Seed collection expeditions are a critical first step in the development and formulation of a tree improvement program. In addition, germplasm of known origin is a critical element in the species assessment trials. The Team commends F/FRED's initiative to assist cooperators and donors in the identification and collection of MPTS germplasm.
2. Social science researchers could play a significant role helping tree geneticists identify tree characteristics which are preferred by farmers. These preferred traits could then be included as goals in tree species improvement programs.

Recommendations:

1. F/FRED should continue to support seed collection expeditions for indigenous Asian MPTS.
2. The Contractor should use the small grants program to focus both biological and social science research on the tree improvement opportunities of MPTS.

3.2.2.1.3 Field Trial Management

Findings:

1. The experiments' regimes associated with the humid and sub-humid zone network trials include pollarding, and pruning, and no cutting. Researchers plan a similar range of treatments for the arid and semi-arid trials.
2. Numerous potential management regimes associated with trees in a farmer's cropping system. They vary spatially and temporally. The information that will be generated through the network trials is extremely limited and will do little to drive the information requirements of a technology transfer system.

Conclusions:

1. The design of the network trials may provide information on the suitability of selected species across a range of sites. The usefulness for generating species management data for farming systems is limited, but they are an important preliminary step. The Contractor might use the information that they generate in training programs focused at the design, implementation, management, and analysis of biomass trials.
2. The Contractor might use "on-farm" research trials to provide information for evaluating critical management treatments both biologically and economically. In addition, "on-farm" trials might help accelerate cooperation between agriculture and forest scientists.

Recommendations:

1. The Contractor should support additional research on the existing network species. This research should concentrate on expanding the information base about alternative management systems. Extension programs can use information of this sort to develop biological and economic production functions for a range of feasible farming systems.
2. The Contractor should use network species trials to focus training activities in research methods and to stimulate communication between network participants.

3.2.2.2 Considerations of Network Feasibility

The contract required the Contractor to "evaluate each of the [10] species networks identified at the [1984] IUFRO meeting in Sri Lanka for their feasibility to succeed as a network.... Based on this evaluation, A.I.D./W will provide the Contractor with

recommendations for implementation of from one to three species networks." (p. 11 of contract)

Findings:

1. The F/FRED project paper proposed that Nitrogen-Fixing Tree Association (NFTA) and the University of Hawaii conduct a survey at the outset of the project while the Contractor was organizing to implement the work on selected species. Eventually, Winrock International formed a four-person team whose report substituted for that proposed in the PP. The Contractor's team was to:
 - 1) Review U.S.A.I.D. Mission energy, forestry and agriculture projects in Asia
 - 2) Evaluate potential network installations and their on going MPTS research programs
 - 3) Assess the level of participation by institutions and individuals in MPTS Networks
 - 4) Develop recommendations for the establishment or enhancement of one to three MPTS Networks, and
 - 5) Determine the extent to which social factors could be included in MPTS Network programs.
 - 6) The Contractor's team submitted its report to Winrock International in mid-1986.
2. The report (MacDicken, et al., 1986) provided the basis for implementing F/FRED in Asia and for the decision to organize the networks along humid tropics, arid and semi-arid and mountain environmental zones rather than along the individual species structure contemplated during the 1984 IUFRO meeting in Sri Lanka and in the F/FRED project paper.
3. Although the team had approximately equal representation of biological and social scientists, the report concentrated on issues associated with the formation of multi-purpose species networks. Social science considerations included attention to cultural, economic and political factors associated with the development and implementation of a biological science-based forestry network in Asia. The "Social Considerations" section of the report noted that if the research was to be of value to small farmers that it should address the forestry needs of swidden agriculture and the selection of species for which farmer demand existed.

Conclusions:

1. The "MacDicken Report," as it is known, is a valuable survey. It makes many useful observations and should be one reference point for development of project benchmarks.
2. The zonal basis for network organization provides a useful ecosystem orientation for MPTS research. Although the members of the Winrock team concentrated mostly on the biological and institutional issues associated with the MPTS Networks as they considered network structures, organization and implementation, they made important socio-economic suggestions as well.
3. Unfortunately, A.I.D. and the Contractor seem not to have given much weight to socio-economic considerations involving small farmers in the final species selection for network attention.

Recommendation:

1. The Contractor should plan the next round of field trials so that the basic decisions will reflect consideration of input from social scientists.

3.2.2.2.1 Linkage Facilitation

In the "network development" section, the contract says that the "Contractor will facilitate linkages...." between LDC and donor institutions, between forestry, agricultural and socio-economic institutions (in Asia), between forestry institutions and policy makers and between A.I.D. and other donors.

Findings:

1. To date the F/FRED Project has concentrated on linkages between MOU/LOA institutions and between individual scientists working on MPTS problems. Forestry institutions dominate the MOU/LOA institutions. Agriculture makes up about 25 percent of the total.

Institutions with predominately social science faculties have not currently signed MOU/LOA's. Thus, linkages feature forestry-forestry and forestry-agriculture associations. The MPTS Network trials provide the common thread between these institutions. That network and its associated activities are the vehicle which draws scientists together.

2. Through a subcontract, Winrock has linked Auburn University with three Indian institutions. A second subcontract between F/FRED and Michigan State University will result in individual linkages between Asians on Ph.D. fellowship programs and

that institution. As discussed in the sub-section on "training" below, the Team did not find Asian institution building to be a major criterion in the Ph.D. candidate selection process.

3. A recent subcontract with Yale University to strengthen social science instruction in forestry curriculum provides an opportunity to link a U.S. forestry program and several Asian forestry programs. This association would directly incorporate biological and social science linkages. However, the subcontract would need to be revised to effectively accomplish linkages.
4. Linkages between F/FRED network participants and other donor programs varies by country. In Nepal, F/FRED has been woven effectively into a variety of donor's forestry programs. F/FRED has involved CSIRO and the Association of South East Asian Nations (ASEAN) Canada Tree Seed Centre in germplasm collection activities. The Leucaena-psyllid control activity involves linkages between several Asian countries and Asian Development Bank (ADB) and International Development and Research Centre (IDRC). F/FRED-supported linkages between Asian institutions and IUFRO activities are increasing. The Vice President of IUFRO is also the chairman of the F/FRED steering committee. FAO's regional forestry program advisor is also a member of the that committee.

Conclusions:

1. F/FRED has effectively established a wide range of linkages between Asian institutions, between Asian and U.S. institutions and between Asian and other donor programs.
2. Social sciences largely remain outside these linkages. If social sciences are to be effectively brought into the F/FRED networks, F/FRED will need to include social science institutions in addition to social scientists in forestry research institutions.

Recommendations:

1. The Contractor formally should bring institutions with predominantly social science functions into the F/FRED network through the use of MOU/LOA's.
2. Winrock should modify the Yale University sub-contract so that it facilitates linkages between both Yale and Asian institutions and between Asian institutions with forestry education programs.

3.2.2.3 Specific MPTS Network Implementing Activities

The contract identifies four areas of activity to be undertaken in facilitating network development. These are:

- 3.2.2.3.1 Network meetings and site visits
- 3.2.2.3.2 Newsletters and publications
- 3.2.2.3.3 Training
- 3.2.2.3.4 Special research support

3.2.2.3.1 Network Meetings and Site Visits

Findings:

1. F/FRED has held six major network and theme meetings as of September 1988. The Contractor has concentrated on developing and implementing network activities (e.g., the April 1988 leadership meetings in Malaysia) and on MPTS research (e.g., Pakistan workshop in November 1987 on MPTS Research for Small Farm Use in the Arid and Semi-arid Tropics). The Contractor followed up these network meetings with one or more small working group meetings. Theme meetings frequently included tours of MPTS trials.
2. Except for a meeting in Kathmandu in April 1988, most of the meetings dealt with biological research and networking matters.

The Kathmandu meeting has been F/FRED's most significant effort to link social scientists into the process. About 70 anthropologists, economists, sociologists and foresters (mostly Asian) attended. Social scientists in the region indicated that the meeting was a helpful beginning for a network.

3. Just as the Evaluation Team completed its field visits, the Contractor began a potentially important traveling seminar of advisors and network cooperators, programmed to visit the humid zone field trials. The Team expects that as the field trial experiments mature and increase in number, more site visits should be expected. Similar visits for participants in the arid and semi-arid trials should occur during the next three years.

Conclusions:

1. Theme meetings and NOM's provide network scientists with useful fora for presenting annual results from the small grants program and other research activities.

2. As the zonal networks mature, the Contractor can be expected to schedule an increasing number of formal and informal meetings and site visits to resolve network trial problems, train new scientists joining the network, and to deal with an increasing array of F/FRED network opportunities.
3. F/FRED needs to develop imaginative and flexible mechanisms for rapidly getting information exchanged between network members both within and between countries. Meetings and site visits are just two ways of accomplishing this task.

Recommendations:

1. The Contractor should have at least one theme meeting annually. A theme selected should encourage reporting on both biological and social science research findings.
2. The Contractor should schedule annual site visits for the scientists responsible for the field trials in each of the networks and should organize more formal and informal meetings on social science issues for both social and biological scientists. Agendas for these meetings should include research methods, collaboration with biological research programs, data analysis and the like.

3.2.2.3.2 Newsletters and Publications

The exchange of information between participants is an important aspect of a network. In this relatively early stage in the development of the first network (humid and sub-humid zone), the information available for exchange can be divided into five categories (Also see Appendix 5):

- * Instructional (operations manuals and training video)
- * Background material and synthesized information (e.g., basic library set on MPTS; state of the art volume on modeling; report on status of MPTS in Thailand; report on trials in the Philippines; report on seed collection of Acacia auriculiformis from natural populations; a forthcoming four-volume handbook on agroforestry research and social forestry in Asia)
- * Meeting reports (e.g., proceedings of National Organizing Meetings; regional workshops on networks and trees on small farms; 1988 meeting of the Steering and Research Committees)
- * Research proposals (e.g., 1986 MPTS network suggestions; regional psyllid research program; tissue culture; improved exudate production)
- * General and popularized information e.g., (Farm Forestry News; brochures).

The Contractor also has produced progress reports at intervals of approximately six months. The most recent, published in September 1988, serves to some extent as a cumulative report on the project since early 1987.

This impressive quantity of information is published from two offices, one in Arlington and one in Bangkok.

Findings:

1. Scientists have positively responded to F/FRED's MPTS Research, Technical and Proceedings series and deem the series useful. The Team is not clear about the basis for the division of publications into a Research series and a Technical series. This could cause difficulties when Asian librarians classify and shelve these materials.
2. Most F/FRED assisted countries have only limited access to published information at large, especially to periodicals. Partly for this reason, the literature survey often as the weakest part of research proposals. The books on MPTS made available to MOU/LOA institutions by F/FRED should help to correct this situation.
3. Some MOU/LOA institution libraries had not received the reference set as of early October 1988. Some of the institutions indicated that delivery can be facilitated if the packages are marked "GIFT".
4. The Contractor plans to implement many of the recommendations of F/FRED's library consultant to help improve access to information in Asian libraries of interest to the MPTS Research Network. Thus, MOU/LOA institutions should be able to make more effective use of the \$400 annual grant to libraries for reference materials of their own choice.
5. The Contractor distributes the newsletter widely. Some of its readers enjoy receiving it and find that its technical content has been increasing, while others report that they find the content in other newsletters (e.g., NFTA) more informative. Furthermore, the newsletter usually arrives after many of the deadline dates that are noted in the newsletter.
6. The Contractor's Bangkok offices at Kasetsart University seem to be the hub of F/FRED activity in Asia. Asian researchers are frequent visitors.
7. The annual work plans did not reveal any particular policy regarding publications.

Conclusions:

1. The Contractor has produced an impressive quantity of useful documents.
2. The newsletter could be better used as a tool to strengthen the network between MPTS researchers if its content were to feature information concerning the implementation, management and evaluation of network trials. This would require a continuous flow of information to the newsletter editor and its more frequent production and prompt distribution. If it is used to exchange information between MPTS researchers, six issues a year would be preferred to four.
3. The CU's technical networking activities would be strengthened if it were responsible for the selection of the newsletter's content. F/FRED sponsored workshops and training opportunities should be scheduled and advertised in the newsletter several months in advance.
4. Locating the newsletter editor in the CU's crossroads office in Bangkok, rather than in Arlington, would seem likely to facilitate the inclusion of more timely, useful technical information in this promising publication. The Contractor could promote sustainability if individuals corresponding with the Farm Forestry News editor wrote to an Asian address. For this reason, among others, moving most of the F/FRED publication functions to Asia would seem sensible.
5. F/FRED could encourage use of the \$400 annual library grant by identifying arrangements that will allow librarians in each of the MOU/LOA institutions to easily obtain reference materials under this scheme.
6. The Contractor needs to develop an F/FRED publications policy to guide the contract over the years ahead. For example, the policy could encourage the publication of MPTS proceedings by MOU/LOA institutions, with F/FRED technical and financial assistance when needed. Such an approach might contribute to MPTS Network sustainability.

Recommendations:

1. The Contractor should move the Farm Forestry News to Bangkok.
2. The Contractor should consider the pros and cons of moving F/FRED's publication function to Asia.
3. The Contractor should correspond more with institution librarians to provide details on the date of shipment and expected arrival date to help insure delivery of the materials.
4. The Contractor should prepare an F/FRED publications policy.

3.2.2.3.3 Training

Findings:

1. Winrock targeted its short-term training to the needs of the project. The number of training courses conducted or scheduled to date approximates the requirements under the contract. However, the network institutions and individuals contacted by the Evaluation Team identified training opportunities most often as the way they would modify F/FRED activities and resources. In many cases, because of institutional constraints such as an MOU/LOA institution's inability to directly accept F/FRED financial grants, network members have a greater opportunity to participate in training than any other F/FRED activity.
2. The Evaluation Team found that training in socio-economic matters has been particularly insufficient. Many network social scientists interviewed desire workshops and short courses focusing on "rapid rural appraisal", participatory planning and data analysis methods. In many of the MOU/LOA institutions, scientists have limited MPTS research experience. For the project to succeed over the long-term, this cadre of individuals needs to have opportunities to build their technical skills.
3. The F/FRED project paper and the Contractor's initial implementation plan underestimated the importance of and need for training. The recent addition of a training officer to the CU is an appropriate response by the Contractor to this deficiency.
4. The Contractor's recruitment of a senior Asian educator as F/FRED Training Officer provides an opportunity to develop and implement a comprehensive, long-term training strategy and an implementing plan. The Contractor has begun to consider and develop such a plan.
5. The Contractor and participating universities have structured the Ph.D. fellowship program so that the fellows conduct their research in Asia. Thesis committees located in Asia could greatly increase the successful execution and timely completion of the Ph.D. programs.
6. Neither the F/FRED project paper nor the Winrock contract contain guidance on selecting Ph.D. candidates from cooperating research institutions.

Conclusions:

1. The Contractor's training activities have been appropriately targeted and seemingly in full compliance with the contract.

2. Initial F/FRED short-term training targets were conservative.
3. The MPTS Research Network would benefit from a comprehensive long-term MPTS training strategy and plan that would lead to increased resources, with priority given to short-term training. In view of the Contractor's effective links with other donor organizations and the wide contacts of Steering Committee and Research Committee members, preparation of a strategy and plan might be carried out in such a way that other donors would contribute to its preparation and implementation. It would need to represent the MPTS Research Network's training goals, rather than those of the U.S. government, other donors or the Contractor. Should this occur, both sustainability and output objectives would be furthered.
4. Because of the small number of participants and the open selection criteria, Ph.D. training will have limited direct benefit to the F/FRED project. The potential of long-term training to strengthen the F/FRED network would be increased if Ph.D. fellowships were restricted to MOU/LOA institutions. In the absence of that criterion, the network benefit from this activity may be only indirect.

Recommendations:

1. The Contractor should prepare a comprehensive long-term training strategy and plan. This activity should result in an MPTS Research Network training plan, approved by the Steering and Research Committees and of interest to other donors.
2. The Contractor should allocate additional F/FRED resources to short-term training, even in the absence of a long-range plan.
3. To help ensure that appropriate people receive short-term training during Phases I and II, the Contractor should:
 - * Narrowly define training scopes of work and select non-glamorous but adequate training sites and
 - * Repeat training courses at relatively short intervals until the training opportunities have addressed all levels of staff for which the training was designed.
4. The Contractor should restrict any future Ph.D. fellowships to participants from cooperating institutions.
5. The Contractor should utilize Ph.D. thesis advisors located in Asia.

3.2.2.3.4 Special Research Support

Findings:

1. F/FRED has provided research support for: pest management research for *Leucaena-psyllid* control; the collection of *Melia azedarach* and *Azadirachta indica* seed; the micropropagation of selected MPTS; and, most recently, 22 projects selected through a competitive grants program for network participants.
2. The regional research plan for *Leucaena-psyllid* control is an excellent example of a regional research program that Asians formulated and implemented through the MPTS Network in response to a regional concern. It involves scientists from several institutions. Several donors are now exploring ways they might support this critically needed research.
3. The Steering and Research Committees and the Contractor approved research areas for the small grants program. These areas reflect the network's priority research needs. They provide the committees and the Contractor with a management tool to guide one segment of the network's research program and to promote collaboration between network institutions and scientists. Asian scientists view the small grants program positively. The program provides substantial access to research capability for minimal investment, and it directly strengthens the F/FRED networks. Unfortunately, the Contractor has not worked out effective mechanisms to transfer funds from the CU to MOU/LOA institutions and scientists in many cases.
4. The wording in selected MOU's has resulted in institutions expecting that they would receive a PC computer. However, to date, the Contractor has distributed PC computers only to selected MOU institutions in southeast Asia. From the budget, it does not appear that the Contractor plans to distribute additional PC computers to the remaining MOU institutions.

Conclusions:

1. F/FRED has demonstrated its ability to identify, formulate and support critically needed MPTS pest management research and germplasm collection activities. The *Leucaena-psyllid* control research program has attracted international attention in Asia and beyond.
2. Disbursement of small grant funds will likely be slow until mechanisms are established with all MOU/LOA institutions that allow for the smooth transfer of funds from the CU.
3. CU personnel probably will continue to be confronted with PC computer requests by MOU institutions.

Recommendations:

1. CU personnel should explore with U.S.A.I.D. Mission monitors and MOU/LOA personnel mechanisms that allow funds to be transferred to the institutions.
2. The Contractor should continue the small competitive grants program on an annual basis.
3. Include in Phase II funds for one dedicated micro-computer per cooperating institution.

3.2.2.4 Socio-economic Considerations

3.2.2.4.1 Introduction

This section addresses the socio-economic aspects of F/FRED, in particular the linkage between socio-economic and biophysical sciences and the adequacy of socio-economic activities. The topics cover:

3.2.2.4.2 Obligations of the Contractor

3.2.2.4.3 Linkages between the socio-economic and biophysical sciences

3.2.2.4.4 Research and training

3.2.2.4.5 Database

3.2.2.4.6 Economic analysis

3.2.2.4.7 Yale University subcontract

3.2.2.4.8 Gender issues and

3.2.2.4.9 The Contractor's capacity

3.2.2.4.2 Obligations of the Contractor

Throughout Article III - Statement of Work (pp 7 - 15) of the A.I.D.- Winrock International contract are found requirements for "collaborative research programs" and "strong integration of biophysical and socio-economic factors" in most aspects of project

implementation. The principal focus for this collaboration and integration is improved use of MPTS by small farmers.

In addition, the contract states (p. 13): "This project includes a component to jointly develop a well-reasoned research program in the social, economic, and environmental aspects of land and forest resource management in Asia..... It will establish a regional program focusing on systems for managing land, trees, and other local common-property resources and will consist of the following main activities:

- a. Research awards to Asian scientists and managers for field research and policy analysis
- b. Short-term training in Asian institutions for prospective scientists and managers
- c. Limited graduate training in U.S. programs
- d. Workshops, seminars, and publications to support information exchange, research planning, and methodology development; and
- e. Technical assistance to network scientists and institutions in research design, implementation, and evaluation."

3.2.2.4.3 Linkages Between the Socio-economic and Biophysical Sciences

Findings:

1. F/FRED has developed a number of linking mechanisms which are fundamental, innovative and of high potential. They include:
 - * A single Asian MPTS Research Network, combining the initially separate socio-economic and biophysical forestry research networks
 - * An MPTS Research Committee and an MPTS Research Network Steering Committee made up primarily of Asian experts from biophysical and socio-economic disciplines
 - * National Organizing Committees for MPTS research, made up of specialists from socio-cultural, economic and biological sciences

2. In the ground-breaking work of fostering useful ties between these normally separate research fields, many problems will have to be addressed repeatedly over the years. These include:
- * Institutional Traditions. Although F/FRED activities have awakened some interest in the social sciences, (e.g., FRIM's decision to add a social scientist to its staff, partly, it appears, as a result of MPTS Research Network activities), linkages in Asian institutions between the socio-economic and biophysical sciences within forestry and agricultural research institutes continue to appear limited at best. A number of these forestry and agricultural research institutes already have in-house social scientists, but in those institutes visited by the Evaluation Team, the social scientists usually held junior status. Perhaps, partly for this reason, they remain isolated from their biophysical research colleagues.
 - * Grant Criteria. The MPTS research grant decision process of F/FRED tends to have reinforced this compartmentalization by not stimulating interdisciplinary research proposals.
 - * Follow-up. Although two major workshops (one in Karachi in November 1987 and one in Kathmandu in April 1988) promoted interaction between the socio-economic and biophysical sciences, the Contractor has done little to date to follow up on them (aside from a database sub-group discussed later).
 - * Collaboration. The visible impact of interdisciplinary links is, so far, primarily distributional. That is, collaboration has resulted in a fair, but largely separate, distribution of fellowships and research grants to biophysical and socio-economic researchers. The Evaluation Team was surprised that joint, local level multidisciplinary research has not emerged as a potential research strategy for F/FRED. Models exist in Asia, notably the Himalayan work of the Centre Nationale de la Recherche Scientifique (CNRS).
3. F/FRED has provided the bases for improved linkage in the future in several ways. These include:
- * Creation of joint senior committees and national organizing meetings, noted above

- * Training activities such as the Ph.D. fellowship program, which provides study for a joint-degree covering both biophysical and social aspects of forestry, and paired training programs which have been given at University of the Philippines at Los Banos (UPLB), one in forestry for social scientists, the other in social science for foresters.
 - * The Yale University activities in curriculum development seem to be increasing interest in social science within some forest education/research institutions, even though the centerpiece workshop has not yet occurred.
4. Winrock and A.I.D. have pinned many hopes for linkage on a synthesizing database. The Information and Decision Support System (IADSS) database work is treated in-depth in section III.3. and Appendix 1 and is discussed below under "MPTS Database(VF/MDS)" and in Appendix 2 Problems in fostering linkage through VF/MDS include:
- * The social science component and the biophysical component of IADSS are out of phase. Work on socio-economic considerations of project implementation began after certain basic MPTS biological research decisions were made and action begun.
- In the project's second year, network participants selected tree species for trials and data collection in the Humid and Semi-Humid Zone before any social science interaction with farmers could be begun or even be designed. Initial field trials on those species are underway. The decision and action were taken even though the 1986 MacDicken Report's section on social aspects identified the often different species interests of farmers and foresters. Similarly, IADSS has been developed primarily as a biological storage system for which socio-economic input is not essential.
- * Nobody in the project seems clear as to how the social science elements ought to fit into the IADSS. Finding a fit is not easy, since the accumulation of socio-economic data across the region is fraught with methodological problems (discussed below).
 - * The cost of a valid survey to help provide region-wide socio-economic data to link with biophysical data in IADSS appears to exceed the limited resources available for it within this phase of F/FRED.

Conclusions:

1. Important links have been established between socio-economic researchers and biological forestry researchers. Asian researchers' interest in such links appears strong.
2. The amalgamation of the three networks envisioned in the project paper into a single MPTS Network has made it necessary for social scientists who want to participate in F/FRED networks to work in an environment largely defined by biophysical scientists. It seems particularly important, therefore, that the decision process on major research issues be planned to strengthen links between socio-economic and biological scientists.
3. Cross-disciplinary links would be more productive if inputs from socio-economic research were made an integral part of the decision process for improvement and management of those species already selected and for the selection of one primarily local MPTS to be included in the next round of biological field trials.
4. Research grant allocation is still being looked upon in terms of proportional assignments, not in terms of joint activities. While independent research needs to continue to be supported, work by multidisciplinary research teams needs to be fostered by F/FRED as well.

Recommendations:

1. Start now to plan the next round of species field trials so that the basic decisions will reflect consideration of recommendations from socio-economic scientists as well as those of biological scientists.
2. Reserve funds for special grants to individuals or organizations to help carry out approved interdisciplinary MPTS research involving biological and socio-economic scientists.
3. Establish working arrangements with CNRS Research Team number 299 ("Milleaux, Societe et Culture en Himalaya") and others working with interdisciplinary research methodologies, to serve as models for these interdisciplinary approaches. In due course, develop and run workshops in these methodologies.

Note: The French Centre Nationale de la Recherche Scientifique (CNRS), has worked in this way for years. Under the CNRS system, foresters, animal husbandry specialists, geographers, geologists, social scientists and other team members work together to look at specific areas as systems. A systems approach provides for the potential prediction of the effects of proposed interventions. Potential strategies for local problems can then be proposed with increased confidence.

The essence of the CNRS system is to propose the solutions after the team has studied the area, not to go into an area with the potential solution already in mind.

4. The Coordinating Unit must make a greater effort to involve scientists on the staffs of organizations outside traditional forestry research institutions and to encourage the participation of members of Asian social science and economic research organizations in resource management research.

3.2.2.4.4 Research and Training

Findings:

1. The socio-economic research program (aside from the IADSS database) has only recently gotten underway. F/FRED-financed research to date in the social sciences consists of five completed low-cost case studies, six recently approved small grants, and two co-financed studies and expected research by three Ph.D. candidates.

The Contractor intended for the five case studies to supplement the biophysical data being gathered for IADSS from the Humid and Sub-Humid Network trials. The Coordinating Unit awarded grants in the form of task orders to scientists in Thailand, Malaysia, Indonesia and the Philippines. The reports from these studies were available in a preliminary form in September. The Evaluation Team was unable to determine, either from Contractor staff or the case study research teams, exactly what the relationship was between the case study work and the data collection for the global minimum data set. The team also found that selection criteria and procedures for obtaining case study funding was not clear to interested researchers.

2. The recently approved small grants funded studies on:
 - * The impact of social forestry programs on small farmers
 - * The effects of tree tenure regulation on villagers' selections of tree species
 - * Yield and financial analysis of a particular tree species
 - * Farmer responses to the planting of particular species and
 - * Field level farmer practices

The selection of studies covers a broad range of possible topics in all of F/FRED's disciplinary areas. Likewise, the selection shows sensitivity to small farmer

concerns. (Unfortunately, the Evaluation Team did not have time to arrange meetings with any of the researchers since their grants had just been announced at the time of the team's visit.)

3. F/FRED's research opportunities have generated considerable interest among Asian social scientists. Many more scientists applied than were given final grants.
4. Social science topics also have been addressed in the published proceedings of the Karachi and Kathmandu meetings noted in the discussion on linkages. And, the case studies and small grant studies will be published.
5. F/FRED is co-sponsoring two research projects, one in India (on comparative aspects of social forestry programs sponsored by the government and those sponsored by NGOs) and one in Bangladesh (on homestead forestry). Co-sponsors are FAO and an Indian Non-Governmental Organization (NGO). Preliminary indications are that this is a useful way to promote sustainable networking across the region as well as useful-research.
6. F/FRED still has to evaluate the first round of its research grants in order to decide on its strategy for subsequent rounds of grant-giving.
7. Social scientists interviewed suggested they would like more training to learn more about techniques of "direct or participant observation" and "rapid rural appraisal" to enhance their research skills. These techniques have been developed over many years, but often are not adequately presented to researchers trained in Asian universities.
8. The Evaluation Team also noted that the recent applications for small grants showed a need for improved research and related skills in such activities as data analysis, hypothesis testing, and technical writing. The case studies reviewed by the Evaluation Team also showed a need for further development of data analysis skills. All of these skills are needed before the quality of social science research can be expected to show significant improvement.
9. Similarly, growing demand exists for training in "participatory planning" where social science approaches are linked with biophysical skills. One example where F/FRED has met part of this demand is in Nepal where the project sponsored training in the utilization of remote sensing for village level land use planning.
10. The Evaluation Team found that the Contractor has begun to prepare, in Bangkok, a long-range training plan for short-term and degree training.
11. Training for social scientists under the project has taken various forms. The Contractor is financing Ph.D. training for three social scientists at Michigan State University. Also, with F/FRED support (as mentioned previously), the University

of the Philippines at Los Baños has conducted one short course in forestry for social scientists and a complementary course in social science methodology for foresters. Plans exist for additional coursework to be conducted at UPLB in technical writing, the use of micro-computers, research problem identification and proposal writing, but it is not clear whether the participants will include social scientists.

Conclusions:

1. Implementation of the social science research program of F/FRED has gotten underway slowly.
2. The recently approved low-cost grants will finance studies on important topics.
3. The recent grants show that the processes for application and selection have improved over those for the initial case study grants.
4. The small grants program is of considerable interest to Asian social scientists.
5. The small grants activity provides an opportunity to carry out the basic exploratory research in the region which is necessary before any larger synthesizing activity can produce useful results.
6. The small grant activity can be a very economical way to bring social scientists into resource management research, and it should prove to be a valuable mechanism for the participation of social scientists in the MPTS Research Networks. The Contractor specifically should encourage the development of criteria which reward interdisciplinary approaches as an important incentive to promote desired links between disciplines.
7. The Contractor should continue its practice of co-sponsoring of research activities. They seem to be beneficial to the social science networking process.
8. To this point, the Contractor has supported very little training to improve the ability of social scientists to better deliver quality social science research in forestry.
9. A long-range workplan for training appears to be in preparation. The Evaluation Team applauds the effort and assumes the plan will be worked out in consultation with the Steering Committee and the Research Committee.

Recommendations:

1. F/FRED should shift the bulk of socio-economic research attention to small grants primarily focusing on local comparative research. The effort should be aimed at producing data from which significant generalizations eventually can be drawn.

2. To clarify direction and guide future work, the Contractor should prepare a prioritized social science research plan. The plan should be prepared by the Coordinating Unit, in consultation with working committees of network social scientists and the Global Research Unit. The plan should outline inputs, their dates and the responsibility of each group. The plan should be reviewed by the Research Committee.
3. The Contractor should provide more training in the area of research methodology, particularly in methodological areas not familiar to all researchers. Training should be in-country, to help insure that those actually carrying out research are trained. Local trainers should be utilized. Wherever possible, training should directly focus attention on research efforts that are underway.
4. The anthropologist, economist and training officer in the Bangkok Coordinating Unit should prepare an assessment of socio-economic training needs of cooperating institutions to support MPTS research activities aimed at small farmers. A long-range, prioritized workplan and budget to accomplish the training should accompany the assessment.

3.2.2.4.5 Database

Note: The following provides findings, conclusions, and recommendations about the MPTS Database that are treated in greater detail in Appendix 2.

Findings:

1. F/FRED is developing a database for social and economic studies based on the IADSS 1.1 and on the Village Forestry Minimum Dataset (VF/MDS) to:
 - * Provide basic social and economic information on existing tree/farm and village forest land use practices
 - * To provide basic information on the role of trees, their products, and uses
 - * To classify farm and village forest systems
 - * To determine the needs and uses of tree products by farms size; and
 - * To analyze the effects of social and economic factors on farm and village forestry use practices at the community regional and national levels

2. VF/MDS is being designed by the F/FRED Coordinating Unit in Bangkok in consultation with social scientists in Asia and the Global Research Unit in Hawaii. The global system is seen by many in the project as a primary focus under F/FRED for the linkage between biological and social sciences within a single network.
3. The design of VF/MDS was incomplete as of early October 1988. Although a draft listing of proposed data points and software sample input screens exist, the system has not been developed much beyond that.
4. VF/MDS has been the outgrowth of three technical meetings held between October 1987 and July 1988. The Contractor has produced no final version of VF/MDS data set, questionnaire and research manual of data management software to date. The social scientists working with the Contractor's Coordinating Unit see themselves only as an advisory committee. F/FRED has developed no working agreements made with them for future inputs into VF/MDS. Although the Coordinating Unit has scheduled work on this Minimum Data Set to be completed by December 1988, along with a training program for early 1989, the Evaluation Team is not sure how the schedule can be met. By early October 1988, the Coordinating Unit also had established no formal linkages with the institutes now carrying out species trials to carry out the VF/MDS survey.
5. Neither the Coordinating Unit nor the Global Research Unit has given sufficient attention to the problem of processing the bulk of data generated by a survey as large as the current version of VF/MDS. It is 36 pages in length, and some of the inputs would require several repetitions of the same page to complete an interview.
6. The Contractor originally budgeted \$95,000 for the survey, but the Coordinating Unit reported to the Evaluation Team in September 1988 that the sum had been reduced to \$60,000. Consequently, the Contractor reduced the size of the original proposal which was to sample 200 in each of 30 villages in four countries.
7. Methodological weaknesses make it likely that even a successfully administered survey of this kind would not be fruitful now. It is still too early in the project for a useful synthesis. A productive linkage between the social and biological sciences at this generalized level of analysis will have to wait for more in-depth research at the local level.
8. The length of the proposed questionnaire points to the lack of a synthesizing element. This creates the necessity to cast a wide net in search of "critical factors." An unfocused approach results in just this sort of huge questionnaire and concomitant problems in subsequent analysis.

9. A number of other methodological points are likely to limit the usefulness of the survey as well. The limited number of village sites within each country and the fact that many Asian countries are both ethnically and ecologically heterogeneous raise important questions about the degree to which each survey would be representative of any national situation.
10. Additionally, combining several superficially similar social phenomena under the same questionnaire category may create "false equivalences" in cross cultural categorization. Careful analysis may later show the phenomena to be quite different from each other and the categorization may turn out to actually hide more than it reveals. The Contractor would be on much safer ground looking at social phenomena within their own local context until the phenomena are more thoroughly understood.
11. Much of the data sought in these questionnaires is notoriously difficult to collect. Data on tenure, livestock, income and leadership are not readily collected by some of the direct techniques proposed in the questionnaire. Using indirect techniques requires more training and practice and may take time to teach the low-level institute and field staff likely to participate in data collection than has been programmed for the social science research program of F/FRED.
12. In constructing its database, F/FRED has made little use of the anthropological, sociological and economic data that has already been collected on the region over the last quarter century. Much of this material is still relevant today. It would be easier and less expensive for the Contractor to hire a graduate student to search existing collections, even those only in the Washington area than for F/FRED to undertake a large, regional study without knowing what exists. This sort of library search is considered to be a good research technique to begin any field research effort and is particularly important from the point of view of increasing the number of data sources. As proposed, the F/FRED VF/MDS has too few sample villages to be of much value. Collecting data from secondary sources could greatly increase the number of data sites in the region. The Contractor could access the Human Relations Area Files to collect data (this was recommended in the Project Paper of F/FRED but has not been acted upon). In this way, a great deal of data can be amassed without major difficulty or expense.

Conclusions:

1. A research program of the size proposed for VF/MDS would take an enormous amount of time to manage. The data collection and processing needs for such a survey will be very large. Neither the Coordinating Unit nor the Global Research Unit appears to have outlined a workplan for this effort.
2. Although the challenge is not insurmountable, the limited staff of the Coordinating Unit undoubtedly cannot oversee such an enormous task without losing coverage

of the quality and breadth of their other tasks. Local institutions can be expected to handle questionnaire verification, translation, printing of questionnaires, enumerator training, questionnaire administration and initial tabulation: Even so, F/FRED's work in trainer training, administration, quality control, problem solving, accounting and final data processing and analysis alone would be enormous. Neither the Coordinating Unit nor the GRU has yet developed a fixed plan of action for an activity of this size that is scheduled to begin in early 1989; and neither unit has a clear understanding of the magnitude of the effort they are developing.

3. The work on the VF/MDS actually has stalled. The Team identified several factors which have led to this state of affairs.
 - * One of the most critical factors appears to be lack of clear communication between the various actors caused, in part, by the physical distance separating them.
 - * The Contractor has not clearly defined what role VF/MDS can play in the decision-support structure of the IADSS. This is not totally surprising, since social science disciplines have only recently turned their attention to resource management issues. Social phenomena are complex and few tested correlations exist between social and biological systems. Many experts believe that conclusions about clear causal relationships are years away.
 - * Methodological weaknesses make it likely that even a successfully administered survey would not be fruitful now.
4. The Evaluation Team finds it difficult to understand why the Contractor has not conducted an analytical search of the socio-economic data already existing on Asia as one early input to relevant data collection.

Recommendations:

1. For now, the VF/MDS should be greatly simplified to cover, perhaps, one of the many specific problem areas identified for possible study, such as resource management practices, agricultural practices, land tenure or legal structures. The Research Committee of F/FRED should be consulted on the final selection of this topic. The activity should be seen primarily as a training and testing activity which will strengthen the network and produce some substantively useful results. It should not be seen as a singular or significant contribution to an overall synthesis. In carrying out the activity, a questionnaire should be prepared which is fairly short and relatively easy to administer. The questionnaire should be produced and assessed in consultation with expected network participants as well as GRU. The procedural purpose should be to bring regional social scientists together to carry

out a single region-wide research activity. Results should be reviewed for guidance on a prospective VF/MDS.

2. The Contractor should arrange for a survey(s) of on-the-shelf data and for integration of these data into work on VF/MDS and other active MPTS data-files. The Contractor should also prepare standard publications to share the results across the region.
3. Once the surveys (and all the small grant research recommended elsewhere) have been completed, the Contractor should work with Asian social scientists to test techniques to compare data and extrapolate information collected into a database.

3.2.2.4.6 Economic Analysis

The F/FRED project paper (pp 33-38 and pp 43-51) highlights the importance and role of economic analyses in the project. A.I.D.'s contract with Winrock International explicitly and implicitly refers to economic analyses, within main work requirements of the Contractor.

Part of A.I.D.'s Asia/Near East Bureau funding for F/FRED has covered the costs of a forest economist to provide, among other things:

- * Technical assistance and oversight on economic analyses, and
- * To ensure that economic issues associated with assessing the factors influencing the adoption of MPTS among farmers and other related economic considerations were adequately addressed

The contract is with Viking Systems International, Inc. Viking and Winrock International appear to have a written agreement as well. Apparently pursuant to these agreements, the Forest Economist functions as an integral part of Winrock's field Coordinating Unit in Bangkok.

To help the reader consider the findings, conclusions and recommendations regarding economic analysis, the Evaluation Team offers an explanation of a technique called "whole farm analysis." This is an analytical approach which may contribute to the F/FRED program.

The basic concept of "whole farm analysis" is that every farmer has command over a set of resources including land, labor, capital, and management abilities. The farm system provides significantly to the family livelihood. In order to understand the role of trees on this farm, researchers must address:

- 1) The economic benefits that can accrue to the small farmer from incorporating or increasing trees in his/her farm system (or on lands held in common), and
- 2) The economic constraints and the costs that a farmer faces in incorporating these trees.

Farmers deal with various economic considerations other than cash outlays and incomings. Therefore, researchers must evaluate the costs and benefits of trees as perceived by the farmer, even though in the case of the subsistence farmer there may be no or limited monetary transactions. Researchers must also account for economic activity in such a system and the implicit transaction costs in order to comprehend the interactions among production and consumption activities on a farm. Such knowledge provides researchers with the basis for determining the costs and contributions that forestry activities can make to farm systems.

Additionally researchers must give attention to broader social costs and benefits in addition to private costs and benefits. Here, distributional and equity issues are of primary importance in evaluating the benefits of proposed interventions by non-farm entities.

Some researchers contend that for tree species to be adopted, they must supplement or complement farm enterprises in order to fit within the system (i.e., the farmer must believe that value of output from the other system components does not decrease when trees are introduced or when their numbers are increased). Researchers need information on current MPTS production levels and usage in order to provide valuable feed-back to growth-yield modeling efforts on current tree attributes desired by farmers.

Findings:

1. The Evaluation Team finds that the socio-economic activities of F/FRED in general and the economic analysis facet in particular lacks conceptual focus. Project resources (primarily the time of the forest economist) allocated to address the economic issues of the project were diverted to other high priority activities, most specifically regional and country-specific networking activities.
2. The Team also finds that, with respect to the status and effectiveness of economic analysis activities of F/FRED, only very limited Coordinating Unit staff time and resources have been devoted to identification of economic issues and the subsequent formulation of a plan of action to conduct appropriate analyses which would determine the costs and benefits that could accrue to farmers adapting MPTS to their system(s). ("Whole farm analysis" discussed above was suggested to CU by the Team.)

3. More specifically, the Team found that the five funded country socio-economic case studies did not adequately address the collection of relevant economic data necessary for subsequent economic analysis. The studies also did not collect cost and return information (input-output). The Coordinating Unit informed the Evaluation Team that CU had concluded that such information was too difficult to obtain at this time. Yet, the Evaluation Team saw three surveys, in the Philippines, not done as part of F/FRED, which had apparently collected cost and return information from farmers.
4. F/FRED-funded research has not used the whole farm system as a basic unit of inquiry in any of the country case studies. The current draft of the minimum data set for the VF/MDS does not provide adequate information to identify and evaluate the performance and enterprise inter-relationships of the total farm system.
5. F/FRED currently has no plans to initiate investigations of end-product use from forest enterprises in general and products from MPTS in particular, even while all countries the team visited placed high priority on existing and potential marketing channels.

Conclusions:

1. The diversion of the forest economist's time away from the economic analyses area has had a detrimental impact on the socio-economic aspects of the project.
2. It is unfortunate that the expertise of other economists has not been brought to bear on this area of inquiry in the project. The Contractor could have made funds available to do so. Such expertise could have:
 - * Highlighted the importance and contribution that economics can contribute to project implementation and success
 - * Provided conceptual underpinnings to effectively communicate the data input requirements to the socio-economic minimum data set necessary for economic analyses
 - * Begun collaborative efforts to formulate research agenda to address regional and country specific factors hypothesized to effect (both positively and negatively) the adoption of MPTS technologies.
3. The usefulness of multidisciplinary modeling is in jeopardy if F/FRED does not include certain primary economic information in the database. This modeling effort needs data on a number of key variables, including: markets, market accessibility, land tenure, household income, size of farm, labor availability by

gender, enterprise mix (such as use of livestock), population density and age, and intensity of land use.

4. The socio-economic work to identify farmers whose systems utilize MPTS could start as soon as possible. This effort would begin to describe MPTS role and uses (includes price and quantity information) and inter-relationships between tree production and other enterprises. Selected whole farm modeling could provide insight into price-yield relationships (sensitivity analysis) required for farmer adoption.

Recommendations:

1. The Coordinating Unit's Forest Economist (or a consultant under his guidance) should devote whatever time is needed (clearly, much more than now) to bring economics and economists into the mainstream of the MPTS research activity.
2. As a first order of business, the Contractor should prepare a workplan that guides the design and testing of methodology for economic contributions to the socio-economic data sets intended to link with biological research. The plan should provide for studies of marketing, land tenure, household income, farm size, enterprise mix, gender labor inputs and the like. The Research Committee should review the workplan, and the Contractor should work with Asian economists to implement the approved workplan as soon as funds permit.

3.2.2.4.7 The Yale University Contract

Findings:

1. Winrock International has sub-contracted with Yale University to conduct a major regional workshop in support of the integration of the social sciences in the university forestry programs. The activity, as presented in Yale's scope of work, involves ascertaining the level of interest of department administrators and faculties in these curriculum development activities, the systematic identification of constraints and opportunities to the integration, work with Asian advisors to organize and implement a curriculum development workshop targeted to faculty and administrators and finally a report to Winrock and U.S.A.I.D. Subsequent plans for the workshop indicate that outputs will include model curricula, research formats and social science bibliographies. The activity is intended to strengthen the new FAO forestry education network in the Asia-Pacific region. Funding for the activity is \$250,000.
2. The Evaluation Team noted that, in several institutions visited, anticipation of the workshop was already quite high. The Pakistan Forest Institute, for example, is already making revisions in part of its curriculum in anticipation of the workshop.

Discussions with the faculty of the Institute of Forestry in Nepal were also quite positive; apparently, first, because of what they feel to be a rising demand on the part of students for a humanistic approach to forestry issues, and, second, because they are anticipating a long-term bilateral curriculum development activity through U.S.A.I.D./Nepal.

3. The strategy of the Yale team appears to emphasize finding ways to interest forestry institutions in changing their curricula to give their students social science skills which will be of value to them in working in forestry occupations. Judging from the visits of the Evaluation Team, the current state of interest shown by these institutions is already quite high. If the strategy is as we understand it, an opportunity to accelerate desirable change may be missed.

Note: Subsequent to the evaluation team's field visits, we have been told that Yale's project personnel may be revising plans in light of the unexpectedly positive responses of Asian educators, among other things.

Conclusions:

1. The Yale contract is aimed at an important regional curriculum change. Although the Evaluation Team does not question the appropriateness of promoting the idea of curricula aimed at producing foresters trained with skills in human areas, the Team does ask whether it wouldn't be more productive, given the existing institutional interest which has become apparent, to get on with the development of the curriculum itself. It would seem that a lower profile, higher impact and, possibly, more cost/effective approach would be to work with institutes that have already shown enthusiasm for this approach in developing model curricula that could be considered by other institutes in the region. It would seem quite possible to do this in such a way as to fully support the FAO's new forestry education network.
2. A contract amendment to permit Yale to work with these institutions seems worth considering.

Recommendation:

1. If feasible at this stage of sub-project implementation, consider revising Yale University's contract so that the sub-Contractor can work with one or more already interested Asian academic/research institutions (e.g., Pakistan Forestry Institute) to actually help revise a curriculum.

3.2.2.4.8 Gender Issues

Findings:

1. F/FRED has not carried out work in the social sciences on gender issues, with the exception of identification of gender data in labor allocation aspects of the VF/MDS. F/FRED's lack of research into gender issues appears to be attributable to the small number of studies carried out so far under the project umbrella. Studies on tree ownership and women's role in marketing tree products come immediately to mind as possible topics.

Conclusions:

1. The Contractor could shift resources from the large-scale data gathering for the VF/MDS to additional small grants to fund several studies on gender issues as part of an expanded small grant research program.

Recommendation:

1. The Contractor should provide small grants for studies on gender issues affecting use of MPTS as soon as funds permit.

3.2.2.4.9 Capacity of the Contractor

Findings:

1. The Contractor has a staff which seems technically adequate for socio-economic tasks of the project. However, the staff economist in Bangkok does not seem to be assigned much if any economic analysis work, either to do directly or to manage. The Contractor has recently acquired a senior Asian forestry educator as its Training Officer. In addition, consultants are available for all areas covered by the Contractor, although their use has declined in recent months.

Conclusions:

1. If social science research priorities in the F/FRED are revised as proposed by the Evaluation Team, the current staff is adequate to handle to bulk of the day to day work of managing social science research, per se. However, as discussed in the Network Development and Research Support Section of this report, the Contractor, through its Bangkok staff or consultants, could give network development considerably more attention. The same is true for economic analysis. Choices have to be made. The field staff in Bangkok cannot, at its current strength, do all the functions expected of it and do them all well.

2. In addition to U.S. specialists, personnel of Asian countries should, for reasons of institutional development and cost, receive careful consideration as candidates to strengthen CU on either full-time or intermittent bases.

Recommendation:

1. Add staff to CU to permit adequate attention to economic research. (See section IV A. for a consolidated recommendation on CU staffing.)

3.2.2.5 Facilitating the Networks

Findings:

1. The CU currently consists of Kenneth MacDicken (Species Network Advisor and Team Leader), Charles Mehl (Land and Forest Management Network Advisor), Celso Lantican (Training Officer), and Lee Medema, (Forest Economist). The forest economist is an employee of Viking Corporation and works as an integral part of Winrock's CU by agreement between the two firms. The training officer joined the team in mid-1988. The other members of the present team began in early 1987.
2. As we have noted elsewhere, U.S.A.I.D. Mission personnel spoke favorably of the team and the progress they have made during the past two years. The CU provides excellent external coordination with other donors. The Unit has effectively promoted much important work in network development. Examples are the interdisciplinary National Organizing Meetings and the October 1988 traveling seminar on humid zone field trials.
3. The Evaluation Team found the Coordinating Unit to be the hub of MPTS Network development. As country interest and network activities expand, the CU workload has become cumulatively heavier. Among other things, the administration management load of the CU in the Bangkok offices has increased.
4. Presently the CU team spends approximately one-third of its time in the field. The Team found that CU members have concentrated on the initiation and organization of meetings and workshops and have spent relatively little time spent working with research administrators and scientists on operational network needs. As a result, internal network coordination is becoming a problem. The Team notes the following observed or reported operational problems:
 - * Uncertainty about what is expected of social scientists and what is possible for social scientists

- * Irritation among some Asian cooperators regarding small grants decisions
 - * Absence of in-country communication among network members
 - * Inability to use F/FRED-provided computers
 - * Lack of needed awareness of MOU/LOAs within institutions which have signed them
 - * Quality-reducing inadequacies in trial plots' installation and maintenance plus lack of comprehension by cooperators of what inadequacies exist.
 - * Non-receipt of expected publications
 - * Frictions with long-established research authorities who felt they were being, and should not be, by-passed
 - * Inability of cooperators to understand IADSS instructions and guidance
 - * Long delays in receipt of funds, stemming primarily from several countries' internal financial transfer systems but also from some Contractor delays
 - * The arid zone network's relatively slow pace in initiating network field trials
5. The Team has observed that most international forestry research networks have one full-time coordinator who spends a substantial proportion of the year "circuit riding" from cooperator to cooperator and corresponding directly with them in between visits.
 6. The PP and 1985 contract expected that the Contractor would provide a full-time coordinator for biological science networks. The Contractor understandably made a decision to have that coordinator be team leader of the increasingly busy Coordinating Unit in Bangkok.
 7. The Contractor has yet to begin work in earnest on the third network, for the mountain zone; this is according to plan. The International Center for Integrated Mountain Development (ICIMOD), located in Nepal, appears to be positioned to facilitate development of the third network.

8. Most of the institutions that would participate in a mountain network are already MOU/LOA institutions.

Conclusions:

1. The Contractor has effectively established the networks but needs to provide them with substantial technical and administrative nurturing if they are to become strong and accomplish their objectives. Debilitating operational problems are becoming apparent. The fact that some of these problems are predictable and unavoidable, for example, irritation regarding small grant decisions, does not reduce the need to deal with them.
2. CU personnel are not spending an adequate amount of time in the field facilitating the operation of the F/FRED networks. With the advent of the arid and semi-arid network, the demands on their time will expand significantly.
3. The Evaluation Team highly approves of the traveling seminar of the Contractor staff and MPTS cooperators who visited a number of humid zone sites during October-November 1988. Undoubtedly, that seminar and future ones like it will be helpful in dealing with substantive and procedural problems of research network development. The Team, however, does not believe that such seminars substitute for regular "circuit riding" and letter writing by a full-time network coordinator.
4. Given the current heavy workload, work on the desirable third (Mountain Zone) network does not seem feasible for the Contractor unless a subcontract approach is taken. ICIMOD-F/FRED collaboration could speed the implementation of a mountain zone network and further increase MPTS Research Network ties with multi-donor organizations. In that event, work on the third network may not stretch Contractor staff significantly. Contracting with ICIMOD for a substantial role in mountain zone network development could speed the implementation of network activities because of ICIMOD's useful experience in the mountain zone and its developed ties with programs throughout the region, including China.

Recommendations:

1. The Contractor should arrange for one full-time coordinator for each of the present two MPTS research networks. For the next several years, each coordinator should spend more than 1/3 of his/her time away from Bangkok promoting organizational development and helping deal with operational problems.
2. In providing additional operational, advisory or consulting talent to help implement F/FRED, the Contractor should look to Asian countries as well as to the U.S. for qualified and acceptable personnel.

3. The Contractor should explore with ICIMOD the possibility of implementing a mountain zone network in collaboration with that international institution in Nepal.

3.2.3 Global Research

3.2.3.1 Introduction

The difficulty of locating and retrieving reliable data from trials of tropical plantation species is very well known. Within the last decade, the development of increasingly cheap but powerful micro-computers has provided hardware of previously unavailable capability for handling all kinds of data in large quantities .

The development of suitable software to make use of these machines, and the changes in attitudes needed to realize the potential gains from data-sharing, are more difficult problems to surmount but are highly relevant to F/FRED.

F/FRED's software is called the Information and Decision Support System (IADSS). IADSS is the overall database system of F/FRED. It is being developed by a team assembled by the University of Hawaii under a sub-contract with Winrock International. The team is called the Global Research Unit (GRU). It is located on the island of Maui.

This section deals with the biophysical databases (DBs), including the links between them, and reference DBs (MPTS specialists and MPTS abstracts). (See Appendix 4 and Appendix 11)

The bulk of the discussion on the socio-economic farm and village forestry DB is found in the review of socio-economic research in Socio-economic Considerations.

3.2.3.2 Scope of the Databases

The Contractor through its sub-contract initially introduced IADSS as an experiment database of limited scope, restricted to handling a closely circumscribed data set from the 1987 humid zone network trials. The Global Research Unit (GRU) prescribed a rigid protocol for these trials which has facilitated the development of the first version of IADSS (1.0). Before the end of its second year, the GRU introduced a more flexible edition (1.1) which is now capable of accepting a wider range of data from both formal experiments and observational plots.

The current edition (1.1) appears to the user as a series of over 30 on-screen forms to capture most aspects of field experiments and samples for biomass determinations. The captured data can be searched, added to, modified or deleted. Data entry of mensurational details can be tree-by-tree or plot-by-plot. The experiment database

includes biophysical data, such as site geography, soils, climate, daily weather and previous land use.

The GRU is developing a module for statistical analysis and graphic display, called F/MOD, which has been distributed to all cooperators.

The GRU has developed a reference DB of MPTS specialists, as part of the IADSS work. The sub-Contractor has distributed questionnaires through the Farm Forestry newsletter and about 250 cooperators have completed forms and returned them to Maui. The Contractor has distributed at least one edition of this reference DB on specialists to network cooperators.

The GRU has also developed a reference DB for bibliographic citations and abstracts. An individual cooperator can enter his/her own citations and abstracts, adding them to those which have been downloaded by the GRU from the relevant mainframe DBs in the Lockheed DIALOGUE system. The GRU has developed an interface between the DIALOGUE format and its own DB. At present, the GRU is downloading bibliographic material for the priority species in the humid zone network from Commonwealth Agricultural Bureau International (CABI) and Agricola files from 1983 onwards. The GRU has abstracted about 600 citations, but they have delivered only the first set of about 100 abstracts to network cooperators. The GRU is not able to deliver copies of original documents identified through the DB.

Independently, the CU has acquired bibliographic Database Management Systems (DBMS) called "micro-ISIS" and has tried hard but thus far unsuccessfully to obtain the 12,000+ citation International Council for Research in Agroforestry (ICRAF) bibliography on agroforestry. The CU hopes to be able to perform searches for cooperators on demand but will not be able to deliver copies of original documents. The widely used "micro-ISIS" format is not compatible with the DB developed by the GRU.

The Contractor is developing the VF/MDS (see Appendix 3). The Contractor intends to store and organize the data from the forthcoming sociological survey of 200 households in 30 sample villages stratified through the F/FRED region. Biophysical data from these surveys will be stored in the same files as those used for the experiment database. This is the most concrete manifestation of combined socio-economic and biological research networking in F/FRED to date. The seven on-screen forms of the questionnaire actually involve 68 or more pages, and require data at one or more geographical levels: national, district, village, household. The various forms store data on a range of topics including: agro-ecology, government intervention, social organization and socio-economic stratification, land use and tenure, and the household use of forest products.

Additional databases whose development has been planned include:

1. A summary of information by individual MPTS. This species DB would be the prime source of information for the preparation of monographs and

extension literature. The Oxford Forestry Institute (OFI) "INSPIRE" DB and program and the ICRAF-German Agency for Technical Cooperation (GTZ) MPTS DB both supply useful pointers on material for inclusion and approaches to avoid. The GRU is familiar with both systems.

2. A soil DB, based on that established and maintained by the Soil Conservation Service of the USDA at Lincoln, Nebraska. This will provide tropics-wide data in a form familiar to devotees of the U.S. Soil Taxonomy. It may include translation to/from other of tropical soils classification systems.
- 3&4. DBs for long-term climatic averages and daily weather. The Evaluation Team is not sure how these would differ from the files included in the experiment DB.
5. A plot summary DB, in which the mensurational data could be averaged or totalled per plot over time. These are stored with the most essential biophysical data for the modeling of growth and yield. The GRU is negotiating with the developers of "MIRA" at Centro Agronomico Tropical de Investigacion y Ensenanza (CATIE) and "TREDAT" at CSIRO in order to obtain a measure of agreement. The GRU may open discussions later with the managers of other summary DBs, including the coordinators of international provenance and progeny trials and NFTA.

3.2.3.3 Biophysical Databases

3.2.3.3.1 Overall Assessment

Findings:

1. The GRU has made considerable progress in the development of what could be a very widely used and long-anticipated generalized data management system for MPTS. To the user, IADSS presents an attractive and consistent interface combined with simplicity of use (except for F/MOD). IADSS incorporates a number of subtle features to ensure this simplicity and to catch some of the common errors of data entry.
2. IADSS in F/FRED, MIRA in CATIE (Costa Rica), TREDAT in CSIRO (Australia) and OXFORDGEN at OFI (UK), all have the potential to develop into globally useful DBs for MPTS. However, only the GRU has been charged with creating a global system. F/FRED management has not indicated whether the higher priority is to develop a system to handle F/FRED's very limited network trials or to create a globally useful system. In practice, the GRU has pragmatically decided to start with the F/FRED controlled network trials and is gradually generalizing the system as

resources permit. Their approach is quite reasonable, and they have made considerable progress.

3. The development of the IADSS DBs with a uniform and attractive user interface should increase acceptance and use by cooperators, even though the system runs slowly. The frequent opening and closing of files in the DBs causes the slow speed of operation. The GRU incorporated this deliberate safeguard against loss of data because of the unreliable supply of electricity in some of the countries of the region.
4. The GRU has relaxed the limits on type and quantity of data with successive versions of IADSS. Unfortunately the manual does not indicate what these limits are, and those few foresters who have tried seriously to use IADSS have been inconvenienced by the lack of such information.
5. The Evaluation Team found a frustrating undeclared limit on the number of plots per experiment. Only one pedon description per site is inadequate for large forestry experiments which may spread over several soil types. Additionally, the team found an inadequate provision for "missing data" and assessments in sub-samples of trees in a plot.
6. The experiment DB of IADSS does not allow for data on stem sections, for volume calculations. Since volume measurements are of major interest to the Australians, F/FRED's agreement to cooperate with CSIRO on an international trial of some 30 provenances of Acacia auriculiformis should induce a rethinking of this part of the database by the GRU.
7. The GRU has still not accepted the need to incorporate all the variables recommended by IUFRO (Burley, Andrew and Templeman 1973) and by FAO (Sommer and Dow 1978). The recommendations made in these two papers were based on much more extensive experience of handling and trying to interpret multi-site poly-specific data than the GRU can hope to accumulate. Both the MIRA and TREDAT DBs incorporate some globally-useful variables at present omitted from IADSS.
8. The GRU should also give more thought to the inclusion of variables (e.g., a farmer's own characterization of the soil on an experimental site) which might help agro-ecological mapping. The results from any one trial are quite location-specific, while the generalized models of Growth & Yield (G & Y) should be location-free. The application of the model for planning purposes needs map information. This is true whether the scale of the application is that of an individual farm or a whole country. The GRU should be aware of work undertaken by Consultative Group for International Agricultural Research (CGIAR) centers, such as Centro Internacional de Agricultura Tropical (CIAT).

9. One of the most attractive features to the user of IADSS is the consistent presentation of data-entry and summary screens, together with the on-screen menus. However, the GRU basically has not provided a mechanism for checking data for type, validity and biological consistency over time. The GRU system will accept completely absurd entries in most fields. Checking could be on-line, during data entry, or off-line after the completion of a plot or treatment.
10. IADSS' form N deals with tree measurements or plot summaries at a given time. The GRU has not yet provided for the forester's conventional display of measurements of any one variable per tree over time.
11. Two of the most important outputs from F/FRED are planned DBs providing a summary of information by individual MPTS and a summary of plot data over time (numbers 1 and 5 as listed above under Scope of Databases) since they could have utility and influence on a truly global scale.
12. The IADSS bibliographic DB is redundant inasmuch as the same or similar reference tool is available from other suppliers.

The following response by the Contractor to this funding is included below. The Evaluation Team Specialist is away from Headquarters on assignment and could not comment prior to the deadline for submission.

Winrock International:

Finding #12 (also, Overall Conclusion #3 on page 65, and Recommendation #2 on page 66) overlooks the fact that the IADSS abstracts database is distinct in at least three ways from other bibliographic databases: 1) it focuses on priority network species, thus reducing the time and storage space required; 2) the participants can easily add bibliographic information of their own selection; and 3) the IADSS database is readily available to all network members -- no other bibliographic database actually is.

Overall conclusions:

1. The principal conclusions of the Evaluation Team are that IADSS:
 - * Is important

- * Is developing mainly in the right direction and
 - * Deserves continued multi-year support
2. In addition to its value for Asian researchers, IADSS can be valuable for a global audience. That thrust should be made in association with other major developers of DBs.
 3. Work being devoted to develop an IADSS bibliographic DB appears redundant and therefore unnecessary.
 4. As is to be expected at this stage of an innovative effort, "teething" problems and some more serious problems need to be addressed on a continuing basis. Based on brief visits in September and October 1988 to Hawaii, Thailand, Malaysia and the Philippines, the Team identified a number of other IADSS implementation problems that appear to exist. Each is dealt with separately in the sub-sections below. The problem areas are:
 - 3.2.3.3.2 Training and manuals
 - 3.2.3.3.3 Network support
 - 3.2.3.3.4 Interactive analysis sub-system (F/MOD)
 - 3.2.3.3.5 Data sharing
 - 3.2.3.3.6 Computer hardware

Overall Recommendations:

1. A.I.D. should continue supporting development of IADSS for Asia and a global audience, in association with the other major developers of DBs.
2. Development of an IADSS bibliographic DB should be halted. However, work to secure access for cooperators to existing bibliographic DBs should continue.

3.2.3.3.2 Training and Instruction Manuals

Findings:

1. Training associated with IADSS has consisted of discussions with cooperators at network planning meetings and one to three visits to cooperators by GRU systems programmers to install IADSS and provide initial assistance.

2. Practical channels for communication within F/FRED are not in evidence. As a general rule, the possibility of daily contacts (when needed) between DB developers and prospective users is considered desirable. In the absence of practical channels for daily contact when needed, instruction manuals become extremely important. Demonstration data sets also can help new users and contributors.
3. Instructional manuals issued by F/FRED should be of high quality, especially free from error and of direct utility to the junior or inexperienced staff who are actually undertaking the F/FRED-assisted work in the field.
 - * The Team found that Manual No. 1 on the second version of IADSS rates highly, and the GRU has taken note of its imperfections for correction in the next edition.
 - * The Team found that Manual No. 2 on the establishment and management of the 1987 humid zone network trials is mainly good but notes that it has a number of serious errors and obscurities. The Evaluation Team is not sure how many cooperators had communicated their problems in writing to CU or GRU. Quite possibly cultural reasons inhibited written complaints. The Team found that the GRU has had only infrequent face-to-face discussion with cooperators. Manual No. 2 has caused confusion and has reduced the willingness of potential users to try to master the system.

Conclusions:

1. Training has been insufficient for the research staff actually involved in the use of IADSS.
2. More explicit users manuals are needed.

Recommendations:

1. The GRU should devote more effort to training. This should include:
 - * The improvement of their manuals to the standards of commercial packages
 - * The preparation of fully-functioning demonstration data sets (one of which should be for a tropical timber species) and
 - * The preparation of tutorial(s)

2. The GRU must supplement office work with visits to train and encourage the actual users of IADSS on the micro-computers which they use in their own institutions.

3.2.3.3.3 Network Support by GRU

Findings:

1. Differences of opinion exist among cooperators as to the services which the GRU can and will supply. Various logistical problems have affected the users' views of IADSS and the GRU. These include:
 - * Delayed delivery of F/FRED-funded computers
 - * Lack of an F/MOD manual and problems with driving F/MOD
 - * Version 1.1 of IADSS was distributed by the CU on poor quality diskettes. Those cooperators who had entered data had to revert to version 1.0, which contained no form X and an early edition of F/MOD.

To compensate for these defects, the GRU has itself undertaken the intra- and inter-site analyses of the first tree measurements. The GRU sent these analyses to cooperators recently as paper copies, together with the F/MOD instructions used to produce them as a demonstration. This may have led at least one network participant to believe that the GRU will undertake all the manipulation and intra-site as well as inter-site analyses. It is actually the intention of the GRU to pass on the responsibility for across-sites analyses to an as-yet unidentified network leader, as the Asians move towards sustaining the MPTS Research Network activities.

2. The roles of the GRU in relation to network cooperators are unclear. No explicit planning exists for the kind and level of effort to be devoted by the GRU specifically to meeting Asian requirements as compared to the generalization of IADSS into a globally-useful system. This lack of clarity may be one reason for the apparent friction with the developers of other forestry DBs in other regions.
3. The completion dates indicated in the current workplan for most GRU activities appear to be over-optimistic, compared with past progress.
4. In addition to the matter of unclear roles, the Evaluation Team found that the composition of the GRU staff and its geographical location have impeded its communication with network cooperators and potential global users of IADSS. In this regard:

- * The GRU is composed of one agricultural statistician with networking experience as, until recently, part-time team leader; three (recently increased from two) full-time systems programmers; and a modeler.
 - * The GRU has only had limited direct contacts with tropical foresters, during semi-formal meetings with MIRA developers approximately twice a year and more recently with CSIRO, occasionally with ICRAF, and, as noted previously, with the F/FRED cooperators at the network planning meetings. GRU systems programmers have visited cooperating institutions briefly between one and three times, to install the IADSS and to provide initial assistance. The GRU has had no daily contacts with potential users which are normally thought to be necessary to clarify user needs.
 - * The GRU office on Maui is not conveniently located even for the systems programmers themselves. E-mail contact with the Winrock offices serves to clarify administrative matters but does nothing for the technicalities of the project. However, the University of Hawaii is reluctant to set up an out-of-state operation in Asia.
5. Differences of opinion exist as to the responsiveness of the GRU to problems encountered by cooperators. One cooperator commented on timely responses but no resolution of problems. The GRU itself has noted that communications should be improved.

Conclusions:

1. The responsiveness of the GRU to problems found by the cooperators will determine largely the acceptance and use of IADSS. In this regard, the GRU's intention to issue technical trouble-shooting bulletins is commendable.
2. The location of the GRU is undesirable in terms of its work in Asia. Establishment of all or part of GRU closer to the network cooperators could facilitate inter-communication, speedier resolution of problems and better understanding of the points of view of both foresters and socio-economic specialists.
3. The de facto priority given to the creation of a usable system for Asia should not obscure the requirements for global systems. More explicit long-term planning should clarify the pace at which the GRU brings modules into a usable state for Asia and to do what needs to be done in a timely fashion to make them globally useful. The GRU could use greater clarity in planning and scheduling to diminish the problems of dealing with the developers of similar DBs in other regions.

Recommendations:

1. The exact responsibilities of the GRU in relation to network cooperators and other users of IADSS should be clarified and made known widely.
2. The Contractor and sub-Contractor should provide a full-time, technically expert GRU presence with the CU in Bangkok to ensure more frequent and more prolonged contact with network cooperators and other users of IADSS. A.I.D. should consider the pros and cons of transferring the GRU to Bangkok or elsewhere in Asia.
3. The GRU should continue its ongoing series of meetings with developers of other tropical forestry DBs, especially MIRA and TREDAT.

3.2.3.3.4 F/MOD

Findings:

1. Like MIRA at CATIE, the developers of IADSS decided to provide as much as possible to the user within the environment of a single package. The idea presumably was to reduce costs to the cooperators of purchasing additional commercial systems for graphics and statistical analysis. In principle, since the user does not have to learn to use a variety of systems devised with different interfaces, this should ease the problems of adopting the system. In practice, however, the inclusion of a module for statistical analysis (F/MOD), which most users have found impossible to drive, has limited the utility of IADSS. The GRU has not developed an operating manual for the module even though a draft was made available to the Evaluation Team. Additionally, the module's commands are non-intuitive.
2. The development of F/MOD is through a sub-sub-contract which is not referred to in the University of Hawaii sub-contract. This apparently informal and personal arrangement undoubtedly causes difficulties for the Contractor in scheduling and quality control of the product. The immediate solution appears to be that adopted by Forestry Research and Information Centre (FRIC) in Nepal, namely, simply export the IADSS files to commercial and reasonably error-free packages for statistical analysis, graphics and report-generation, and leave IADSS in its proper role as a well-organized electronic filing cabinet.

The recent willingness of the GRU to work towards provision of interfaces to commercial packages, rather than continue with in-house development of systems which try to duplicate those packages, shows a realistic attitude. However, the commercial houses drive such a hard bargain that the number of interfaces which

are transparent to the user will be limited by the sheer cost. The GRU may be better advised to concentrate on a very efficient selective bulk loader/unloader from/to ASCII files.

3. In brief, GRU's interactive analysis sub-system (F/MOD) does not function. The GRU has not succeeded in developing a statistical analysis module so far and it has had detrimental results in distributing it in its effectively unusable form. The GRU could improve the versatility of IADSS and its rate of adoption with fully documented and exemplified interfaces between IADSS and commercial packages for statistical analyses, graphics and reporting. Computer literacy cannot be assumed. Therefore, tutorials and demonstration packages need to be introduced through training courses.

The following response by the Contractor to this funding is included below. The Evaluation Team Specialist is away from Headquarters on assignment and could not comment prior to the deadline for submission.

Winrock International:

Page 70 and Recommendation #1 on Page 71. The statement that F/MOD does not function is not true: F/MOD does carry out a regularly expanding group of analyses, conveniently and rapidly, and retrieves information directly from files in the experiment database. Furthermore, it is a customized application of a commercial statistical package, STAN.

Conclusions:

1. The Team is aware of differences of opinion about the nature of the interactive analysis system which the sub-Contractor is using. The Team must emphasize its perspective that work on interfaces between the DBs and commercial packages or graphic and statistical analysis is preferable to the development of in-house systems.

Recommendation:

1. The GRU should set aside its work on F/MOD in favor of negotiating the terms for the building of interfaces between the DBs and a limited range of commercial packages for graphics and statistical analysis.

3.2.3.3.5 Data Sharing

Findings:

1. Various project-related documents, including the main A.I.D. contract with Winrock, the sub-contract with the University of Hawaii, Personal Service Agreements (PSAs) issued by the CU from Bangkok, and the proceedings of the Research Committee meeting at Kuching in April 1988 express a variety of views on proprietary rights to data. So far, researchers have stored few data in IADSS, and no one has tested the issue of rights to those data.

Conclusions:

1. Data sharing is a critical issue. It is a culturally sensitive matter. If IADSS is to become a globally-useful system, agreements must provide for a variety of levels of sharing. It may be appropriate for the CU to issue a PSA for the preparation of an options paper, to be presented at the next meeting of the Research Committee. An issues paper might include a review of data-sharing arrangements which are common in the CGIAR system. Examples of sharing drawn from the many successful forestry networks in North America do not seem to stimulate cooperative interest in tropical countries. Asian institutions and nations are not enthusiastic about sharing data. Some of the views are simply impracticable and suggest that the matter needs to be thoroughly reconsidered.

Recommendation:

1. An issues paper should be prepared on data-sharing for consideration of the Research Committee.

3.2.3.3.6 Computer Hardware

Findings:

1. Funding has been allocated to supply 12 micro-computer systems. The Contractor has delivered six so far and has scheduled one for delivery in October 1988. Some institutions, such as FRIM in Malaysia, have indicated that they have machines available for IADSS, although not for dedicated use.
2. Local agents contracted by F/FRED have delivered at least three defective micro-computer systems.
3. The kinds of enhancements which the GRU has planned for IADSS, plus relatively minor amendments to cope with foresters' needs, should make IADSS an exceptionally useful tool for the maximum use of accumulated research data.

4. A cooperator who has to book time on one of several possible machines cannot possibly establish and manage efficiently a set of DBs which occupies megabytes of space.

In such cases, there is no encouragement for using IADSS to recover and manage long-stored data from various kinds of plantation experiments and yield plots.

5. IADSS is too large and too useful to be moved peripatetically among machines in an institution. It needs to be mounted on a single and preferably dedicated micro-computer, equipped with protection against fluctuations in the power supply.
6. The GRU has given insufficient attention to the sheer space which data from even one network, let alone a set of global DBs, occupies. The selected DBMS (dBASE III Plus) has the unfortunate feature of reserving space to the rectangular limits of the longest record in a table; other DBMS such as REFLEX and KNOWLEDGEMAN/2 truncate empty or partly-filled records. Reckoning on dBASE III Plus files occupying about three times as much space as a crude ASCII file, the proposed farm and village forestry DB with 200 households x 30 villages x up to 900 variables alone could occupy 15 MBytes. That is, half the capacity of the hard disk in the micro-computers supplied by F/FRED could be occupied by just one of the DBs. In practice, the Quicksilver-compiled IADSS uses less space, but the principle of the objection remains.

Two solutions to the data storage problem are:

- * To use a different DBMS and
- * To adopt a different storage system

The first would cause a substantial delay in getting the system operational again, and possibly lose the attractive screen features supplied with the Quicksilver compiler which are undoubtedly a major factor in gaining user acceptance. The second solution, a storage system with interchangeable magtapes or high-capacity cartridges using Bernoulli technology, is much simpler. The Bernoulli technology is the storage system adopted from the outset by MiRA and could therefore facilitate interchange of data on MPTS in use in Central America.

Conclusions:

1. The safeguards incorporated into the software against data loss through power failure need to be paralleled by hardware protection.
2. Institutions using IADSS efficiently need a dedicated micro-computer.

3. IADSS will rapidly exceed the storage capacity of the modest (30 MBytes) hard disks supplied by F/FRED.

Recommendations:

1. F/FRED should budget for one dedicated micro-computer system per cooperating institution and should negotiate new agreements to ensure that IADSS is the priority use of these machines.
2. F/FRED should fund uninterruptible power supplies (UPS) and associated voltage regulators for each network participant who does not already have this protection.
3. IADSS should be reworked so that individual DBs can be stored on one or more individual removable storage devices.

3.2.3.4 Biotechnology

Findings:

1. Biotechnology studies had been intended, in the early planning, to have formed a major thrust of F/FRED. In practice, the Contractor confined biotechnology studies mainly to the sub-contract with the Singapore-based, high technology company Plantek International. The Evaluation Team did not devote much attention to this side of F/FRED, since there is little to see so far.
2. The Plantek contract seems to have developed as a result of a feasibility study on tissue culture for MPTS, which was published as F/FRED Research Series Paper No.1 in 1987. Some of the authors of this study were on the Plantek staff.
3. The Plantek laboratory appears to be well-equipped for its work on agricultural and horticultural crops which have passed through millennia of selection and improvement. The technical director of Plantek appeared to be relatively unfamiliar with the problems of the vegetative improvement of effectively wild trees. He was much more concerned with the development of laboratory techniques, which would be given as a package without field evaluation and potential modification by cooperators.
4. The Evaluation Team found that at least some of the cooperators are unhappy with the terms for dealing with Plantek, in that they have to develop the techniques for the initiation of tissue culture, at their own expense, while Plantek uses its expertise and F/FRED funds to multiply this material in bulk.

5. Some of the proposals for small research grants dealt with biotechnology, including the development of simple field-usable techniques for vegetative propagation of MPTS and work on Rhizobium.
6. The Contractor has supported other work on biotechnology which has included the preparation of two more reports. One explored the potential for improved exudate production from priority MPTS; the other was a study on the socio-economic impact of biotechnology on small farmers in Asia. The Evaluation Team has seen neither report.
7. Reliable methods for vegetative propagation of MPTS are important. Asian foresters believe that some of the priority MPTS are "shy seeders", and F/FRED has spent a good deal of money on germplasm collection compared with the quantity of seed actually used. The ability to propagate vegetatively from provenances which are expensive to collect and from elite phenotypes is technically important and financially desirable. However, relatively simple techniques, such as those developed by the West African Tree Improvement Project in the early 1970s or by the Department of Medicinal Plants in Nepal seem quite workable and might be considered by F/FRED.

Conclusions:

1. The F/FRED work on biotechnology, apart from some of the small research grant studies, is remote from the main thrust of F/FRED activities and the ability of the network cooperators.
2. Work on relatively simple biotechnology ought to contribute usefully to F/FRED objectives.

Recommendations:

1. The biotechnology research of F/FRED should be devoted to the development of field-usable techniques of vegetative propagation.
2. The emphasis on high technology should be diminished and the real value of the Plantek contract reviewed in relation to the utility of the expected output.
3. Work on Rhizobium and mycorrhiza should be supported through small research grants, in institutions which are already involved productively in these fields.

3.3 Overall Project Management

This section covers the following topics:

3.3.1 Strategic Action Plans

3.3.2 Project funding

3.3.3 "Buy ins"

3.3.4 Baseline survey, and

3.3.5 A.I.D.'s management role

3.3.1 Strategic Action Plan

Findings:

- 1. The contract calls, apparently as an early order of business, for the development of a "strategic time phased schedule for accomplishment of the activities" of the project. It further states that "the initial plan and schedule should be developed in the Contractor's proposal to A.I.D. The final plan will be developed in consultation with A.I.D./W. Missions and host countries. Specific activities will be described each year in the Annual Workplan."**
- 2. So far as the team can determine, the Contractor never developed the "final plan". The Contractor and A.I.D. apparently set aside the initial plan early in the project's life and have not used it as a point of reference during consideration of and decisions about subsequent, significant program adjustments. The Contractor has prepared annual workplans which have served as one point of reference, apparently, during consideration of these program adjustments.**
- 3. A.I.D.'s project manager and the Contractor have found that the annual workplan, activity task orders, the recently-developed program budget and the contract requirements provide all the plans needed for management of the project. They believe that they have managed the project in such a way as to be constructively opportunistic. They would be concerned about lessening flexibility by structuring too much in a long-term plan.**
- 4. Throughout the evaluation period, the Evaluation Team members felt the need for an agreed-upon long-term prioritized plan of action which could be tied to a set of strategic objectives as well as to a program budget. Such a plan could have been used as a framework for discussing and analyzing F/FRED activities, progress and options ahead.**
- 5. A prioritized, budget-linked plan of action can be a useful aid to management in considering trade-offs that might be involved in absorbing new activities. Because the Team learned that contract funds are now tight and that over \$1 million worth**

of unanticipated activities were absorbed within the project's \$8.9 million total, the Team asked what activities had been "squeezed" to make room for the additional activities and personnel. The Team particularly wondered whether the trade-offs between planned and unanticipated activities had been considered when decisions were made. A.I.D. and Winrock assured the Team that nothing had been "squeezed" and that no adverse trade-offs resulted which might have been revealed by reference to a long-term plan and budget. A.I.D. and Winrock told the Team that this conclusion was sound for following reasons:

- * The PP and Contract specified broad areas of effort and identified financial magnitudes anticipated for the work in each area. Illustrative elements to be funded within each area were tentative in terms of whether and when. The Contractor's initial long-term workplan and the project's overall financial allocation(s) were not generally sub-allocated to firmly planned activities.
- * Because of the innovative, ground-breaking nature of many proposed activities and the evolving situation of Asian MPTS interests and opportunities, A.I.D. and the Contractor considered new and unexpected opportunities (e.g., psyllid research, social science curriculum and others) in the light of whether or not they fit within F/FRED's purposes and the Contractor's responsibilities, plus, of course, their intrinsic value.
- * Such "add on" activities helped to flesh out the sub-elements within several major project/contract areas of responsibility.
- * Nothing has had to be squeezed to accommodate them.

One project officer noted that in 1988/89 (and for the future) the project managers have a better basis for comparative resource allocation than earlier, when fewer implementable alternatives were available.

6. With regard to personnel workload management, an annual plan apparently proved useful to project managers. A multi-year plan to keep an eye on long-term priorities as a guide to personnel activities seemed to them unneeded, presumably for the reasons given above.
7. During the evaluation team's visits to Asian countries, several project cooperators and other Asian researchers noted their surprise at the absence of a five-year strategic action plan for F/FRED. They indicated that it would help them to see their work and the guidance they received in perspective as part of a larger and longer process. Most of these commentators stated they were used to working within an articulated five-year workplan and budget.

Conclusions:

1. Whatever conclusion one draws regarding a long-term action plan's utility during Phase I of F/FRED, basic management constraints have now substantially increased, and planning for Phase II should include a prioritized action plan tied to project objectives and a program budget and covering all of Phase II. Among other things, the Contractor should identify "critical paths" (e.g., activities to promote interdisciplinary research involving biophysical and social scientists) and provide the funding and human resources priorities required.
2. Such a plan would provide broad guidelines and would need to be supplemented by annual plans along the lines of the present ones but with a greater sense of what the highest priorities are.
3. A long-range strategic action plan is a guide, not a strait jacket. It can be changed at any time but it should not be disregarded when choices have to be made. That is one of the times when it is of crucial importance.

Recommendation:

1. As a key planning document for Phase II, the Contractor should prepare a prioritized six-year strategic action plan covering 1990-1995 and tied to project objectives as well as a program budget.

3.3.2 Project Funding

Findings:

1. A.I.D. told the team that, during the first two years of F/FRED implementation, the "pipeline" of unused funds in the project was a matter of concern to A.I.D.'s program and financial analysts. Presumably, doubts existed as to whether the \$8.9 million earmarked for the project could be effectively used. (Appendix 7)
2. A.I.D. also told the team that, as of October 1988 (the first month of the fourth contract year), the full \$8.9 million made available for the Winrock International contract was firmly earmarked. (Appendix 6)
3. The Contractor has assured the Evaluation Team that funds available are adequate to ensure that contractual obligations will be met, at the very least.
4. The team has not had time to look into these assertions. Based on what we have observed and discussed, however, we take them to be correct.

5. Everyone connected with the project is aware of unmet project needs that could be addressed now if funds were available. The Contractor has compiled a list of such activities which could use a total of \$1.5 million during Phase I. (Appendix 7)
6. The Contractor has concluded that without an infusion of funds before the end of Phase I, network activities in the last year of Phase I will be sharply limited. The Contractor has proposed that this eventuality be avoided by providing about \$1.5 million additional for FY 1990. The Contractor suggests that one device for doing this is to move Phase II forward by a few months, into FY 1990. (Appendix 7)

Conclusions:

1. Project funding appears adequate to meet the requirements outlined in the contract. However, the current level of funding is inadequate to maximize project impact unless internal savings can be found. F/FRED is an important project and that Phase II should be financed. The pace of activity in year five (the last year of Phase I) should not falter.

Recommendations:

1. A.I.D. should seriously consider providing additional funds in FY 1989 or 1990 as needed to sustain the momentum of F/FRED.
2. Prior to consideration of additional Phase I funds, the current program budget should be scrutinized for possible savings, especially in administration and sub-contract costs.
3. A.I.D.'s financial planning through FY 1995 should include sufficient funds through central and regional budgets to provide A.I.D.'s proper share of support for activities necessary to F/FRED's successful completion.
4. If new funds become available, the Contractor should be prepared for an early increase in staff or consultants for its Bangkok Coordinating Unit.

3.3.3 The "Buy-In" Problem

The A.I.D. Winrock contract did not authorize increases in total contractual funding to cover costs of special support by F/FRED for relevant activity of particular interest to one or another U.S.A.I.D. Mission. That sort of support and financial transfer from U.S.A.I.D. Mission funds had been approved by A.I.D. in the F/FRED Project Paper. The field mission link to F/FRED is referred to as a "buy-in."

The A.I.D. and Winrock project managers absorbed the substantial costs of one long-planned "buy-in" from the U.S.A.I.D. Mission to India. No other "buy-ins" have been arranged.

Apparently the needed authority was omitted from the contract by error. Project Management efforts to have the contract amended have failed on legal grounds.

Findings:

1. At least two U.S.A.I.D. missions are interested in a "buy-in" with F/FRED. Some Asian researchers expressed concern that buy-ins might put a peculiarly U.S. stamp on F/FRED network development and for that reason may work at cross purposes to F/FRED efforts to promote the emergence of the MPTS Research Network as an Asian institution.
2. Concerns were also voiced that managing buy-ins might distract the Contractor from attention to higher priority activities of F/FRED. A.I.D. project managers seem now to be thinking of providing additional contract staff to manage buy-ins in Phase II.
3. The workload of the CU is already too heavy to try to impose more work from "buy-ins."

Conclusions:

1. The "buy-in" concept is an interesting way to increase productive links between a central project and country projects. It is likely to be cost-effective for A.I.D.
2. Plans for including "buy-in" authority in the Phase II contract should be reviewed with the MPTS Steering Committee:
 - * Identify areas in which buy-ins would promote the MPTS Network objectives and
 - * Make buy-ins available to other donors or Asian institutions.
3. Additional staff will be needed to manage buy-ins. Authority should be included in the contract to expand person-months ceiling of the Contractor as needed.

Recommendations:

A.I.D. should:

1. Include "buy-in" authority in the Phase II contract for F/FRED.

2. Ensure that costs of "buy-ins" include an appropriate amount for F/FRED management expenses.
3. Limit "buy-ins" to areas of clear utility to the MPTS Research Network. A "buy-in" should not change the order of priorities.
4. Make buy-in opportunities available to other donors and Asian institutions.
5. Seek advice from the MPTS Research Network Steering Committee before proceeding.

3.3.4 Baseline Survey

Findings:

1. The F/FRED Project Paper called for a baseline survey to be carried out by the Contractor during the first year of the project. The A.I.D.-Winrock contract makes no mention of such a survey. No baseline survey has been undertaken.
2. A.I.D.'s project management appears to be uninterested in a baseline survey, at least at this time.
3. Discussions during field visits and in Arlington revealed few "indicators" that would not be challenged by the Contractor regarding validity.
4. Quantitative indicators were dismissed as not revealing much about project impact on research or researchers. Qualitative indicators were said to be difficult and time consuming to obtain and, therefore, low priority.
5. The absence of agreed indicators and some measurement of them via a baseline survey made the Evaluation Team's work more difficult and less efficient.
6. Consistent with the above, the Evaluation Team has been unable to devote sufficient time to this subject to provide a set of indicators with which it is satisfied.

Conclusions:

1. Agreed indicators and a baseline survey to assess them are one of the basic management tools for any project. We see no compelling reason why F/FRED should be an exception.
2. The next Evaluation Team (at the end of Phase I) will be able to do a better job if a baseline survey exists.

3. Developing an agreed-upon set of indicators and methods for measuring them will be difficult. Most indicators selected ought to be useful for the MPTS Network after F/FRED is completed. A main point to bear in mind is that what is being sought are indicators trends of desirable change rather than conclusive proof of desirable change. Furthermore, what is important is the cumulative significance of the agreed-upon indicators
4. It would probably be most cost-effective if an Asian institution or scholar undertook the task as part of the development of a long-term strategic action plan.

Recommendations:

1. A.I.D. should arrange for development of a set of useful indicators for use by Asian MPTS Research Network managers and external donors.
2. The benchmark indicators should be identified primarily in light of F/FRED's network development of objectives. Identification of the indicators and ways of obtaining data concerning them should be worked on in conjunction with preparation of plans for Phase II. Asian MPTS research leaders, A.I.D. and the Contractor should be consulted in preparing the recommendations for benchmark indicators.

3.3.5 A.I.D.'S Management Role

Findings

1. Within A.I.D. a senior forest research officer in S&T/FENR serves as overall F/FRED project manager. He spends approximately 80% of his time on F/FRED matters. A.I.D.'s F/FRED Oversight Committee is made up of the overall project manager, a senior technical advisor from S&T/RD and a senior technical officer from ANE.
2. A.I.D.'s management role must be seen in light of:

the Contractor's internal management, which closely integrates the two field units in Maui, Hawaii, and Bangkok, Thailand, in easy, frequent and almost instantaneous electronic communication (via E-mail and telephone) with Winrock International's project headquarters in Arlington, Virginia. The project director is in Arlington. The project director is able to have up-to-the-minute knowledge of all aspects of the project. Delegations of responsibility to the field units do not seem to diminish this flow of communications;

- the record for excellence of the Contractor's project director during his long service with A.I.D. in Asia;
 - the generally favorable reputation, in development circles, of Winrock and several related groups which were consolidated into Winrock International in the mid-1980s;
 - the Contractor's project record of tight, efficient input management and
 - the close proximity of A.I.D./W's project manager's office to the contractor's offices.
3. A.I.D.'s F/FRED Oversight Committee members and the contractor's project director are in frequent contact and hold joint monthly progress meetings.
 4. The Contractor's project director sees the Arlington office as being, in effect, an extension of A.I.D., performing functions which would have been performed by A.I.D. in earlier decades when the agency had more personnel.
 5. In general, the A.I.D.'s overall project manager signs approval of activity/budget planning documents such as Task Orders (which numbered fifty-three as of September 1988). To the best of our knowledge, no written guidance regarding direction, emphasis or particular activities of contract implementation has been given to the Contractor by project officers.
 6. All three members of A.I.D.'s Oversight Committee stated that the communication with the Contractor was unusually frequent and thorough. They considered this to be a good feature of the project.

Conclusions

1. A.I.D.'s project officers seem to have confidence in the capacity of the Contractor to implement the project efficiently and to understand A.I.D.'s interests. Their role seems to be largely reactive, which is sensible regarding day-to-day management matters.
2. The close working relations between Agency and Contractor have had predictable benefits in expeditious decision-making and implementation of this evolving project with its unexpected opportunities during its first years.
3. One risk with such close working arrangements is some loss of objectivity by A.I.D. project managers. In this regard, A.I.D.'s instructions to project managers appear to expect that contacts will be frequent but that objectivity needed for assessment and forward planning will be maintained as a matter of course. Unrealistically, the possibility of role conflict is not considered.

4. In planning for Phase II, in which the project's course and program options are likely to be clearer than in Phase I, it would be appropriate for A.I.D. to consider whether a more arms-length relation would serve the agency's interest in maintaining an effective overview and evaluative capacity.

Recommendation:

1. A.I.D. should decide which of the potentially conflicting roles it wants the F/FRED project managers to emphasize during Phase II.

3.4 Sustainability

One basic objective of F/FRED, is to support the development of an Asian MPTS Research Network which will endure and function usefully after the F/FRED project is completed in 1995. The scope of work for this evaluation asked the Evaluation Team to address this issue of long-term "sustainability." The team considers the issue important.

A note is needed on the institutional development goal. What is to be sustained? The Evaluation Team and most persons with whom the matter was discussed saw the institutional goal as being a network of interactive researchers and research centers exchanging information, identifying research needs and common approaches, and discussing research findings. Regular international meetings would be expected to occur under the sponsorship of Asian MPTS Research Network. The Asian MPTS Research Network would include, but be substantially more than, an international group of researchers sharing a common set of intellectual concerns.

The F/FRED project paper (p. 22) states that "...the expectation is for some regional organizations to have developed the institutional capability to effectively conduct training courses and special studies as well as to assume a lead role in networking activities" by the end of the project in 1995.

Successful research networks are said by experts to be characterized by the following:

- * A clearly defined problem and resultant research agenda
- * The problem is common to many countries.
- * Strong self-interest exists in each participant.
- * Participants must be willing to commit resources.
- * Outside funding is made available to facilitate the birth and early functioning of the network.

- * Participating research staff should have sufficient training and expertise to make a contribution.
- * The network is guided by strong and efficient leaders who have the confidence of participants (Plucknett and Smith, 1984).
- * Participants share the results of national research activities related to the network.
- * Participants seek mechanisms for the extension of technological findings to the ultimate user. (Burley, 1987)

Development of strong and self-sustaining institutions takes years, sometimes many years. The process is facilitated if all major participants agree on the objectives and on the main steps as they become apparent. Dialog among the major participants on the objectives and on a step-by-step approach is essential to sincere, meaningful agreement.

Findings:

1. The Asian MPTS Research Network has, or can be expected to have, each of the characteristics listed above.
2. One additional element identified by most F/FRED commentators is the need to have a well-functioning secretariat for the Asian MPTS Research Network after F/FRED terminates in order to ensure the sustainability of the Network in Asia.
3. The question of how to promote the long-term sustainability of the F/FRED supported Asian MPTS Research Network is a concern of MPTS research leaders in Asia. However, the Evaluation Team did not find unanimity of views on what practical steps to take or on what degree of sustainability the MPTS Research Network ought to have when F/FRED ends in 1995.
4. Without specific reference to F/FRED, IUFRO, various Third World forestry research centers, and some donor organizations have before them a proposal to expand IUFRO'S Special Program for Developing Countries (SPDC) into an International Consultative Organization on Forestry Research (INCOFORE). Some Asian forestry research leaders are encouraging this type of organizational evolution.
5. One senior Asian forestry research officer suggested that A.I.D. ought to think about whether F/FRED is to continue as an A.I.D. project for Asians or whether it will evolve into an Asian MPTS Research Network supported by A.I.D. and other donors as well as by the Asian research institutions involved.

6. The Contractor has made important initial steps toward ensuring the sustainability of the Network after the project ends. These include:
- * Removing the A.I.D. project name (F/FRED) from the network's name
 - * Establishing an advisory Steering Committee and Research Committee, each composed of able leaders and voting members from Asia
 - * Sponsoring annual National Organizing Meetings (NOMs) which bring together researchers in forestry, agriculture and social sciences to consider, among other things, MPTS research output and plans
 - * Training participating research staff
 - * "Twinning" Asian teaching/research institutions with each other
 - * Encouraging network collaboration with several non-U.S. donor organizations

Conclusions:

1. Sustainability of the MPTS Research Network is a very important matter. Dialog on how to achieve it should get underway soon. Initial institution-building steps undertaken as part of F/FRED's implementation are the beginning of a good foundation for a sustainable Asian MPTS Research Network.
2. Dialog on sustainability could, over time, consider many matters, including some of the following:
 - * Contributions to sustainability which need to be made by all parties, most especially by the Asian Forestry Research institutions and associated socio-economic institutions
 - * The location of the network's publications and data management functions now provided by F/FRED
 - * Time requirements for members of the Steering Committee and the Research Committee, if committee roles change
 - * Ways in which the Steering Committee and Research Committee roles might usefully evolve

4.0 LOOKING AHEAD

This concluding section of the F/FRED "third year" evaluation report includes:

- 4.1 Review of Conclusions and Recommendations,
- 4.2 Priorities Among Principal Recommendations and
- 4.3 Next Steps

4.1 A Review of Conclusions and Recommendations

The evaluation team's principal conclusions are:

1. F/FRED is one of A.I.D.'s important, innovative and promising projects.
2. F/FRED's goal, purposes and activities address one of the late 20th Century's most pervasive world-wide resource needs, namely, improved multi-purpose, fast growing trees which are used by small farmers. No major revision of goal or purposes should be made.
3. Most F/FRED-financed activities have the support of Asian researchers as well as the support of officers of U.S.A.I.D. Missions and other donor organizations in Asia.
4. F/FRED's capacity for flexible response to take advantage of new opportunities is one of its special strengths.
5. Adequate long-term financial support for this research enhancing project is a wise development investment.
6. The Evaluation Team found the Contractor's performance to be generally adequate and in some aspects excellent. Progress to date indicates that the contract's requirements will be met. As with most, if not all, innovative development projects, needs and deficiencies are becoming apparent as F/FRED-supported activities get well underway and tough implementation problems are addressed. Chief among these matters are:
 - * The necessarily increasing workload of the project, which appears to be stretching the Contractor's Bangkok Coordinating Unit staff too far. The Evaluation Team is particularly concerned about the need for considerably more staff attention to network facilitation, to research management on MPTS economic questions and to on-the-spot training of

IADSS cooperators. More detailed discussions of these matters are in specific sections of the report. The prospect of substantially increased MPTS Network activity in India and the addition of a Mountain Zone Network add to the Evaluation Team's concern.

- * The Contractor needs to develop a long-term Strategic Action Plan addressing both the current increased workload and the needs associated with Phase II. Such a plan would provide broad guidelines on priorities for funding and personnel work assignments to meet the project's objectives. Such a plan could serve as a helpful framework within which to prepare and analyze the Contractor's annual plans and could be equally valuable as a framework for considering whether or not to seize promising new opportunities.
- * The Contractor should develop subordinate long-term plans showing priorities and costs for project training, publications, economics and social science, and computerized database development.
- * The Contractor should treat such plans as aids to management, not as strait-jackets on management. As the project evolves, the Contractor may need to revise them .
- * Flexibility has been one of F/FRED's widely appreciated assets. In that regard, A.I.D. and the Contractor may find it useful to earmark a sum of money in Phase II to be a carefully managed "flexible response fund."
- * The Contractor needs to more effectively involve the social sciences (anthropology, sociology and economics) in the networks.
- * The Contractor also needs to pay much more attention to the economic aspect of MPTS activities. The team suggests "whole farm analysis" as a methodology for the Contractor to consider.
- * The Team recognizes that anthropology and sociology have only recently turned to natural resource issues as a focus and so F/FRED needs to do considerable groundwork before trying to draw any significant generalizations. For this reason the Evaluation Team concludes that MPTS research in anthropology and sociology should be increased and that

more emphasis should be placed on localized research (including library research) to produce data from which useful generalizations about farm use of MPTS can be drawn. The Contractor should revise the objectives and simplify the difficult and relatively costly village household survey (VF/MDS). The survey is premature as it is presently conceived.

- * The Team concludes that the Contractor should consider suggestions from social scientists on the main decisions on biophysical MPTS research design. The Contractor might help link biophysical and social scientists by giving priority consideration in awarding small research grants to multi-disciplinary research proposals involving both areas.
- * The Evaluation Team sees training in research methodology and development of social science inputs to standard forestry curricula as promising activities.
- * The Evaluation Team would encourage the GRU to focus F/FRED's potentially important computerized IADSS on its comparative advantage which is the production of a generalized data management system for MPTS. Reliance should be placed on other information systems where they have a comparative advantage (e.g., bibliographic DBs).
- * The Team found that the Global Research Unit (GRU) is not providing enough hands-on assistance to cooperators in Asia. The Contractor should consider having a full-time GRU presence in CU in Bangkok. The Team would recommend that the option of moving part or all of the GRU to Asia is worth considering during Phase II planning.
- * The Evaluation Team is concerned about the need for additional funding during FY 1989 or FY 1990 in order for F/FRED to maintain project momentum. The Team agrees that if the Contractor's analysis is correct, the last (5th) year of Phase I will be a time of declining momentum due to budget limitations. Further, many of the Contractor's identified needs and the Evaluation Team's recommendations cannot be dealt with in Phase I within the limits of current funding and work-month levels. F/FRED will not fail if additional funds are not forthcoming, but it will not progress as it should. Examples of valuable activities that should be supported if the network participants want them include: a second round of forestry field trials within the Humid Zone Network, additional staff in

Bangkok, starting work on the third network (Mountain Zone Network) and interdisciplinary National Organization Meetings in 1990.

- * The Evaluation Team notes the desirability of having as many as possible of the Contractor's of F/FRED's personnel whose work relates primarily to Asia working out of the Bangkok office or elsewhere in Asia. Consideration of more Asian specialists to strengthen CU is encouraged.

Despite the speed of E-mail, all of the Contractor's personnel would be more understanding and responsive day-to-day contributors to F/FRED's Asian activities if they had daily contact with the Asian reality and face-to-face contact with Asian researchers. From the standpoint of promoting sustainability, the Contractor's support center for Asian MPTS Research Network should be seen as working in an Asian environment to the greatest extent possible. The Team does not know whether costs would be lower after such a shift of staff, but we have concluded that cost effectiveness would be greater.

The Evaluation Team recognizes that some problems must be weighed before coming to a conclusion on location of the Contractor's staff. One that the Team particularly notes is the possible reluctance of Kasetsart University Forestry Faculty (KUFF) or the Government of Thailand (GOT) to provide any significant increase in space or other support for a regional project such as F/FRED. GOT apparently is not too supportive of regional projects being headquartered in Bangkok. Also, KUFF has some concerns about space needs. Also, apparently, the Faculty feels that despite being F/FRED's host, the institution has not received, appropriate benefits from the collaborative effort. Of course, other places in Asia exist where some support functions might be located. With E-mail facilities, the Contractor does not need all of its management and support activities in the same Asian country, as the current project set-up demonstrates.

7. The absence of agreed benchmarks and indicators of progress is unfortunate. A study is needed to identify benchmarks and valid indicators.
8. As F/FRED approaches Phase II, A.I.D. and the Contractor should begin dialog regarding agreements and arrangements leading to a sustainable Asian MPTS Research Network after F/FRED's completion in 1995. The Contractor has taken

several important steps in this direction already, which are noted in another section of this report.

Please note that the Team has included many other more specific conclusions in other sections of the report.

Principal Recommendations:

The Team has outlined below its principal recommendations which correspond to the overall conclusions listed above. The Team presents these recommendations as a separate group here because of our assumption that some readers will find such a grouping helpful in getting a sense of the overall thrust of the recommendations.

1. Additional funds:

A.I.D. should try to provide sufficient additional funds for F/FRED in FY 1989 or FY 1990 to sustain the project momentum in the last year of Phase I.

Phase II financing for F/FRED should be included in A.I.D.'s financial plans through FY 1995.

2. Additional field staff:

As soon as contractually possible, the Contractor should add staff to the field Coordinating Unit in Bangkok. The new staff should permit:

- * One full-time coordinator for each of the two functioning MPTS Research Networks
- * A link between GRU and network cooperators on IADSS
- * One manager of the needed economic research component of F/FRED.

Asian specialists, as well as U.S specialists, should be considered.

3. Long range planning:

As a key planning document for Phase II, the Contractor should prepare a prioritized Strategic Action Plan for Phase II which should be tied to project objectives and a program budget.

The Contractor should also prepare subordinate long-term plans for training, publications, economics, social science, and computerized database development.

4. Flexible response:

A.I.D. should include in appropriate Phase II planning, budget and approval documents language and funds to maintain F/FRED's valuable flexible response capacity.

5. Social science:

CU's forest economist (or a Contractor under his guidance) should devote whatever time is needed to bring economics and economists into the main stream of the MPTS research activity.

The Contractor should increase MPTS research in social science with emphasis on local research studies (including library research). The Contractor should also increase training in social science research methodology.

The Contractor should simplify the planned village household survey and emphasize its training value. At this time, the Contractor should not accord high priority to continued work on VF/MDS.

6. MPTS data management system:

The Contractor should continue support for development of IADSS as a system for Asia and for a global audience.

The GRU should halt development of any supporting DBs for which accessible and acceptable alternatives exist.

The GRU should increase local training for IADSS cooperators in the MPTS Research Network.

7. Location of Contractor personnel:

In planning for Phase II, A.I.D. should give careful attention to the pros and cons of having contract personnel relating primarily to Asia working in Asia.

8. Indicators of progress:

A study should be undertaken to identify valid benchmarks and indicators of progress.

9. MPTS Network sustainability:

F/FRED should begin a dialog with Asian MPTS Research Network leaders about what sustainability-promoting steps to take and when to take them.

Because of funding limitations and contract limits on additional person-months of work, a number of the recommendations of the Evaluation Team cannot be implemented immediately. However, they can be considered now and seriously addressed during preparation of plans for Phase II of F/FRED. Also, a review of the latest budget may reveal possibilities for shifting funds.

4.2 Priorities Among Principal Recommendations

During A.I.D.'s review of the Evaluation Team's draft report, several A.I.D. officers asked that the Team add an analysis of priorities among the activities now financed by F/FRED. This request appeared to stem from current and anticipated financial constraints within which A.I.D. would have to consider F/FRED's needs, including recommendations in this Evaluation Report. The team reminded the A.I.D. officers that funds and time shortages had precluded investigation of several sub-contracts and Contractor staff functions as well as activities and attitudes in several countries important to the project. Such investigations would be necessary for valid conclusions to be reached on project priorities. A.I.D. did not request an analysis of priorities within a condition of budget constraints in the team's scope of work. However, the team agreed to provide A.I.D. with a priority ranking of the report's principal recommendations. That priority ranking appears below. Readers should bear in mind that the Evaluation Report contains a great many additional recommendations which need to be considered. These include recommendations on other subjects as well as subsidiary recommendations to the eight or so principal recommendations.

<u>Priority</u>	<u>Recommendations</u>
1	Preparation of a long-range strategic action plan and subordinate plans
2	Additional Phase I funding and adequate Phase II funding
3	Additional staff for CU
4	Dialog on network sustainability
5	Change and increase in socio-economic emphases
6	MPTS data management adjustments
7	Determine indicators of progress
8	Location of Contractor personnel in Phase II
9	Flexible response capacity in Phase II

4.3 Next Steps

During their review of the draft evaluation report, A.I.D. officers asked the Evaluation Team to recommend the next steps for A.I.D. to take in considering the Team's report and the future of F/FRED. This section responds to that request.

A.I.D. has a long-standing procedure for reviewing and reporting on external evaluation reports such as this one. The team assumes that A.I.D. will follow those the standard procedures.

As is normally the case, the Contractor appears to be making a commendably early, constructive response to some of the Team's oral and written observations, even before the Evaluation Report is completed.

In addition to A.I.D.'s standard review process, the Team suggests the following:

1. Begin collaborative preparation of a long-range Strategic Action Plan covering the remainder of Phase I and all of Phase II. The key focus of the plan should be the effective development of a sustainable multidisciplinary Asian MPTS Research Network and subsidiary networks, having a special interest in improving MPTS for use by small farmers. A second important focus should be the development of a globally useful MPTS data management system. The Strategic Action Plan should give priorities for the main activities and include a program budget.
2. Concurrently with and as an input to the Strategic Action Plan:
 - a. Begin a dialog between Asian MPTS research leaders, A.I.D. and Winrock International on steps to be taken during Phase II of F/FRED, by all parties involved, in order to help insure a sustainable Asian MPTS Research Network after the termination of F/FRED in 1995.
 - b. Review current Phase I program budget allocations, especially for administration and sub-contracts, to see whether funds can be squeezed out for use on unfunded needs of Phase I.
 - c. Employ a consultant to prepare a list of valid indicators of progress for the Asian MPTS Research Network and a plan for obtaining associated data.
 - d. Prepare subsidiary long-term plans for training, publications, economics, social science and database management.
 - e. Identify which recommendations in this report can be implemented within current or planned allocations and proceed to implement them. Begin implementing other recommendations of this report as funds permit.

5.0 APPENDICES

Appendix 1 Scope of Work

Location of Scope of Work Topics

The following table notes where principal topics required in the scope or work are located in this Evaluation Report.

<u>Principal Topics</u>	<u>Location</u>
1. Project Goals and Purposes	3.1 Assessment of the Project's Goals, Purposes and Assumptions
2. Contractor Performance	3.2 Assessment of Contractor Perform- ance Appendix 3 The Sociological Aspects of the MPTS Database Appendix 4 Databases Appendix 5 Information Generation and Dissemination Appendix 6 Comments on F/FRED Manuals
3. Project Management	3.3 Overall Project Management
4. Socio-Economic Component	3.2.2.4 Socio- economic Considerations Appendix 3 The Sociological Aspects of the MPTS Database
5. Project Outputs	2.0 Comments on the Significance of F/FRED; 3.0 Assessments Appendix 4 Databases Appendix 5 Information Generation and Dissemination Appendix 6 Comments on F/FRED Manuals
6. Relationships with U.S., Asian and Global Research Communities	2.0 Significance of F/FRED; 3.2 Assessment of Contractor Performance: 3.2.2 Network Development &

Research Support,
3.2.2.1.2 Species Improvement
3.2.2.2.1 Linkage Facilitation
3.2.3 Global Research
3.2.2.4 Socio-economic Con-
siderations

7. Recommendations for
Future Project Development

4.0 Recommendations for
the Future
Appendix 7 F/FRED Program Budget
Appendix 11 Consolidated List of
Recommendations

Introduction

The purpose of this mid-term evaluation of the F/FRED Project is to assess the management, accomplishments and impacts of the project and to make recommendations for modification of emphasis and direction if they are determined to be necessary.

Principal Topics of the Evaluation

The Evaluation Team shall consider the following seven topics:

1. Evaluation of Project Goals and Purposes
2. Assessment of Contractor Performance
3. Adequacy of Project Management
4. Adequacy of Socio-Economic Component
5. Achievement of Project Outputs
6. Development of Relationships with U.S., Asian and global research communities.
7. Recommendations for future project development

Evaluation of Project's, Goals and Purposes

1. Project Goal

The project goal is to meet basic needs of developing countries for fuelwood and other tree products, for improved land, water and human resource management, and for increased employment and income.

2. Project Purpose

The purpose is to enhance forestry/fuelwood research capabilities through:

- A. Improved formulation, planning and management of forestry/fuelwood and agroforestry research

- B. Support and development of networks of scientists and institutions in LDC countries focused on the assessment, improvement and management of multi-purpose tree species (MPTS), and
 - C. Enabling LDCs to address their critical forestry/fuelwood needs through better use of forestry and agriculture related research information
3. The Evaluation Team shall examine the project's success in addressing the goals, purposes and activities to effect them, in light of the following questions:
- A. Are the goals and purposes of the project adequately stated, and appropriate to the needs?
 - B. The project paper sets out the basic assumptions for developing this project. Do they still hold true? Are they even more relevant now and will they increase in relevancy as time passes?

Assessment of Contractor Performance

To achieve the goals, purposes and anticipated outcomes of the project, the Contractor is responsible for implementing three major activities vis-a-vis multi-purpose tree species (MPTS) research and related activities:

1. Research policy, planning and management
2. Network development and research support, and
3. Global research support (information integration from regional research networks and other data sources and technology transfer)

The Evaluation Team shall assess Winrock's International's performance against specific Contractor responsibilities as stated in Article III.2 of the September 1985 contract.

1. Their understanding and meeting the contract and supporting documentation
2. Professional personnel
3. The use of short-term consultants
4. Contractor/Sub-Contractor relations
5. Their rendering requested technical assistance
6. Relevancy of training provided to strengthen key institutions

7. Relevancy of research programs

The role and effectiveness of the Bangkok field team (coordinating unit) will also be assessed.

Adequacy of Project Management

The team shall assess project management by A.I.D./Washington, and by the Contractor (Winrock) in its Arlington office and in the Asia-based Coordinating Unit office. They will consider, in their deliberations:

1. Clarity and constancy of directions, directives and guidance from the A.I.D. Project Officer to the Contractor (Winrock International)
2. Coordination between the Project Officer (S&T/FENR) and co-managers in the ANE Bureau and S&T/RD (communications, partnership in decision making etc), including general monitoring and guidance (scheduling, obligations, pipelines, etc.)
3. Function of host country implementation and structure of organizational stability
4. Adequacy of regional and host country implementation structures, organizational stability
5. Changes needed, if any, to help ensure better overall project management

Adequacy of Socio-economic Activities

The Evaluation Team shall assess or otherwise focus on the following topics in regard to the social sciences:

1. The socioeconomic aspects of the project and, in particular, the question of sociological and biological science linkages, with particular attention to:
 - A. The obligations of the Contractor in the area of the linkage between social and biological sciences, including farm labor and gender issues
 - B. The capacity of the Contractor to fulfill the obligations of the contract in regard to social science activity
 - C. The activities to date of the project to fulfill the social science obligations of the contract, their likelihood of fulfilling the obligations of the contract and the spirit of the project, their impact on the project at large, and their

products (publications, reports, training sessions, workshops and conferences, improved inputs to farmers, engagement of sociological cooperators, formation of socioeconomic research networks, etc.)

2. The social scientist on the Evaluation Team shall take the lead in preparing a list of recommendations based on the team's assessment of social science and socio-biological linkages in the project.
3. The social scientist on the Evaluation Team will pay special attention to the social science/social forestry curriculum activity (sub-contract), its design, implementation, and known and potential impacts.
4. The social scientist and the biometrician on the Evaluation Team will, in addition to other prescribed responsibilities, visit the global database activity sub-Contractor in Hawaii. They will assess the capability of the project and progress of the project to develop both a biological and sociological database management capacity and minimum data sets for use by F/FRED cooperators and cooperating institutions.

Achievement of Project Outcomes

The project is to achieve the following results. It is expected that progress toward achieving them is well underway in the project. The evaluation shall consider progress in achieving these goals and make recommendations towards the future:

1. Increased LDC government commitment to research on multi-purpose tree species
2. Expanded number of multi-purpose tree species available for use in social or rural forestry programs
3. Improved seed supplies of selected multi-purpose tree species
4. Strengthened capacity of Asian countries to address the social and economic issues in rural tree crop production and management
5. Improved techniques for managing fast growing multi-purpose trees
6. Formation of an international community of interest in multi-purpose tree species research and establishment of several viable research networks with wide spread donor support
7. The PP additionally calls for reports, meetings, newsletters, the informal and formal exchange of research data, and development of a global network database for biological and sociological sciences. The Evaluation Team shall take special cognizance of the information generated by the project, Its impact on end-users

(Asian research cooperators, both biological and socio-economic), and on cooperating Asian research institutions. The questions of generation and dissemination shall be addressed as follows:

A. Information Generation

- i. The relevancy of information generated by the project to the outstanding major natural resources problems in Asia
- ii. The relevancy of information to the stated purpose and goal of the project
- iii. The quality and usefulness of the information
- iv. How the nature of the information can be enhanced and improved

B. Information Dissemination

- i. How the information has been disseminated in Asia
- ii. Status and effectiveness of the common database
- iii. Adequacy of information dissemination techniques to stimulate target end-user needs and interest
- iv. Whether the information dissemination has fostered increased sharing among end-users
- v. How the information is being used
- vi. How information dissemination can be improved

Assessment of External Relationships and Coordination

The Evaluation Team shall assess the coordinative relationship developed by F/FRED with host country governments, U.S.A.I.D. Missions, other donor organizations, the U.S. research community, LDC research communities and related global organizations. In so doing, it shall address the following issues:

1. The extent of interest and support for the F/FRED project within host country governments and institutions, U.S.A.I.D. missions, and other donor agencies and organizations

- A. How is the project doing now in interacting with missions, governments, and donors in these areas?
 - B. How can the project be carried out to best impact the portfolios of U.S.A.I.D. missions so that:
 - i. More forestry and related research is included in mission portfolios
 - ii. Results of F/FRED research are reflected in mission-supported activities
 - iii. Missions provide support for training related to project objectives and outputs
 - iv. Missions provide support for in-country activities
2. The degree of coordination of the F/FRED project with other regional forestry donors and activities.

Specific questions to address:

- A. What linkages are being developed with ICRAF, CATIE, the IARCs and similar organizations?
 - B. Have these linkages been well structured for maximum possible collaboration and mutually supportive efforts which strengthen both the F/FRED activity as well the collaborators' efforts and impacts?
 - C. Are there adequate linkages with other donors to stimulate similar support on their part for F/FRED-type efforts and activities? Are we having any impact on other donors' efforts and activities?
3. The degree of coordination and linkage with U.S. institutions and between U.S. and LDC institutions.

Specific questions to address:

- A. Is maximum use being made of the potential of biotechnology in the research supported by the project, and are adequate links being developed with leading U.S. institutions in this area?
- B. Are adequate links between LDC institutions and U.S. organizations being developed with a view of having these links continue beyond the end of support provided by the project? Is the project serving to help strengthen the U.S. side of those linkages as well as the LDC side?

- C. Is integration between agricultural and forestry research workers improving? What can be done to strengthen this relationship?

Recommendations for Future Project Development

1. Recommend future directions for the F/FRED project, consistent with project objectives, with indicators of how they may be pursued.
2. Consider the appropriateness of the planned S&T and ANE Bureau's funding levels for the project.

Specific questions to address:

- A. Examine the issue of mission 'buy-ins'. How has the project and the missions adapted to the lack of authority for 'buy-ins'?
 - B. Are changes in the contract recommended to accommodate and facilitate 'buy-ins'?
3. Make recommendations: a) for adjustment in the immediate future and b) assuming that the project may be continued for the full ten years, with particular attention to its regional venue, research networking responsibilities and activities, and its coordination with other donors.
 4. Develop a plan for measuring F/FRED accomplishments over time, including general indicators that should be examined in the next formal evaluation.
 5. Make recommendations for F/FRED actions that will lead toward sustainability of the networks after project completion.

Evaluation Team Composition

1. U.S.A.I.D.- Experienced Team Leader--from a participating A.I.D. mission or a former senior A.I.D. mission official.
2. Forest Research Specialist--experience in U.S.A.I.D. and Asia; long-term overseas project experience useful.
3. Agriculture Research Specialist--experience in agroforestry or farm forestry and knowledge of Asia useful.

4. Database Management Systems Specialist--experience in natural resources research useful.
5. Applied Social Scientist--international development, quantitative orientation and Asian experience useful.
6. Senior Asian Forest Researcher--knowledge of F/FRED and forestry research issues in Asia.

Evaluation Venue and Itinerary

1. Washington, DC. Entire team travel Sept. 11 starting Sept. 12, 1988. Briefings with A.I.D.'s F/FRED project management team and the F/FRED contract manager (Winrock International). Five days, timed to coincide with the visit of Dr. Salleh Nor, Chairman, F/FRED Project Steering Committee.
2. Maui, Hawaii. Database Management Specialist and Applied Social Scientist, to meet with Global Database development team. Min. 2 days. At the conclusion of the Bangkok draft report period.
3. Bangkok, Thailand. Entire team, briefing with F/FRED Coordinating Unit, meetings with U.S.A.I.D. mission staff, and Thailand country review. Min. six days. (Plus one travel and one rest day).
4. Country Visits. Team in two parts, three to Pakistan and Nepal and three to Malaysia and Philippines. Min. four working days in each country.
5. Bangkok, Thailand. Entire team prepares first draft Evaluation Report. Min. six days, concluded by preliminary debriefing with F/FRED Coordinating Unit Staff.
6. Home Base. Team Leader completes final draft Evaluation Report. Min. seven days. Distributes to team members for review. Full team two days.
7. Washington, DC. Team Leader and two team members debrief A.I.D./W and Winrock. Two days. Date to be arranged.

Notes:

Approximate times in each place do not include travel, local holidays or Sundays. The Evaluation Team is expected to work six days a week.

Evaluation Report appendices may include special topic reports, country visit reports, etc.

To Pakistan & Nepal: Forest Research Manager, Social Scientist and Senior Asian forester; to Malaysia and Philippines: Team Leader, Agricultural Researcher and Database Specialist. (Composition of these groups is subject to change with approval.)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORKProject Title & Number: Forestry/Fuelwood Research and Development (R36-5547)Term of Project:
From FY 85 to FY 94
Total U.S. Funding \$40 MM
Date Proposed

NAIHAATM SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS																									
<p>Program or Sector Goal: The broader objective to which this project contributes</p> <p>The project goal is to meet basic needs of developing countries for fuelwood and other tree products, for improved land, water and human resource management, and for increasing employment and income.</p>	<p>Measures of Goal Achievement:</p> <ul style="list-style-type: none"> - Increased good and services from the forest - Improved forest and natural resource management - Direct benefits to locals - Improved levels of living 	<ul style="list-style-type: none"> - Status of world forests (FAO, UNEP) - Forest products utilization patterns in LDCs (FAO country reports) - Forestry research institutions upgrade and research being conducted - On-site inspections by project staff - Project principles in use a decade or more after project initiation - AID project evaluations - Reports from LDC governments, missions and contractors 	<p>Assumptions for achieving goal targets:</p> <ul style="list-style-type: none"> - Rational policies on forestry, fuelwood and natural resource management exist - Tech transfer and extension efforts translate research into field effectively so that farmer can benefit from research 																									
<p>Project Purpose:</p> <p>The purpose is to build LDC capacity to develop and use forestry and agriculture-related research information to address fuelwood and other critical development needs.</p>	<p>Condition that will indicate purpose has been achieved: End of project status.</p> <ul style="list-style-type: none"> - Increased LDC government commitment to research fuelwood; - Expanded the number of multi-purpose fuelwood tree species available; - Developed increased seed supplies of selected multi-purpose fuelwood tree species; - Strengthened the capacity of countries to address the social and economic issues in rural tree crop production and management; - Developed improved techniques for managing fast-growing multi-purpose trees; - Established several viable research networks with wide-spread donor support. 	<ul style="list-style-type: none"> - AID PIR reports - Annual project assessment, monitoring and evaluation reports of project director - Adaptation and applications of research tools and methodologies - Project records - Contractors' workplan and vouchers - Mission consulting requests - Seminars, workshops, etc. 	<p>Assumptions for achieving purpose:</p> <ul style="list-style-type: none"> - Collaborative and complementary funding with Bureaus, Missions and other donors - Host country support of forestry/fuelwood research and development activities 																									
<p>Outputs:</p> <ul style="list-style-type: none"> - Research policy guidelines, DRHS (methods and tools) - Critical socio-economic variables affecting forestry/fuelwood determined and theories revised - Regional forestry/fuelwood networks established - Multi-purpose species selection, improvement and management - National forestry research programs enhanced 	<p>Magnitude of Outputs:</p> <ul style="list-style-type: none"> - Research methods and tools developed for use in regional networks and 125 LDCs - Networks established: 3 - Personnel trained: 100 - Species selected and improved: 10 - National forestry research plans: 8 	<ul style="list-style-type: none"> - Printed studies - AID, PIR and PFAR - Quarterly progress reports of project director 	<p>Assumptions for achieving outputs:</p> <ul style="list-style-type: none"> - Demand for output exists - Contractor able to provide adequate quantity of quality personnel - Linkages formed between LDC forestry institutions and U.S. - Relevant social science knowledge and expertise exists or can be developed 																									
<p>Inputs:</p> <ul style="list-style-type: none"> - AID funding S&T/FENR 30 S&T/RO 3 Bureaus/USAIDs 7 Total 40 - AID/W personnel for project management - Complementary funding of field research costs by USAIDs, LDC, other donors - Funding of complementary regional bureau forestry/fuelwood research projects 	<p>Implementation Target (Type and Quantity)</p> <p>(\$000s) 10 yr. Program</p> <table border="1"> <thead> <tr> <th></th> <th>ASIA</th> <th>LAC</th> <th>AFR</th> <th>LDP</th> </tr> </thead> <tbody> <tr> <td>S&T/FENR</td> <td>10,000</td> <td>6,000</td> <td>6,000</td> <td>30,000</td> </tr> <tr> <td>S&T/RO</td> <td>1,600</td> <td>960</td> <td>960</td> <td>2,800</td> </tr> <tr> <td>Other</td> <td>7,200</td> <td>-</td> <td>-</td> <td>7,200</td> </tr> <tr> <td>TOTAL</td> <td>26,800</td> <td>6,960</td> <td>6,960</td> <td>40,000</td> </tr> </tbody> </table>		ASIA	LAC	AFR	LDP	S&T/FENR	10,000	6,000	6,000	30,000	S&T/RO	1,600	960	960	2,800	Other	7,200	-	-	7,200	TOTAL	26,800	6,960	6,960	40,000	<ul style="list-style-type: none"> - Project Records 	<p>Assumptions for providing inputs:</p> <ul style="list-style-type: none"> - LDCs will provide facilities and personnel AID/W, USAIDs, LDC and other donor funding for research in forthcoming - LDC emphasis on forestry - Agreement on common themes for research is reached.
	ASIA	LAC	AFR	LDP																								
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Appendix 3

The Sociological Aspects of the MPTS Database

Introduction

The MPTS database called IADSS is intended to include biophysical and economic data as well as sociological data. This appendix focuses primarily on the sociological aspects of the MPTS database. It discusses other aspects of social science research when that seems to clarify issues related to database.

History of the VF/MDS

The current state of the VF/MDS has been the outgrowth of three meetings held between October 1987 and July 1988.

The Contractor held its first meeting in Maui in October 1987. The result was a list of data inputs required for the VF/MDS, including:

- * Land and forest laws and regulations
- * Population
- * Literacy
- * Livestock
- * Property rights
- * Infrastructure
- * Area of land use
- * Income
- * Labor patterns
- * Uses and access to trees
- * Indigenous systems of tree management
- * Markets, and
- * Village leadership and cohesion

The Contractor held its second meeting as part of a workshop, on Standardized Methods for Applied Social and Economic Research on Farm and Village Forestry, in Kathmandu in April 1988. Participants were from a number of Asian countries as well as the U.S. At that point the social scientists present did not approve the VF/MDS approach, but recommended that certain specific areas be the focus of local research projects throughout the region. One participating scientist told the Evaluation Team, later, that the consensus at the meeting was that such large-scale research was unnecessary and premature.

At the third meeting, held in July 1988, a group of selected social science researchers working in Asia were brought together in Bangkok. The Evaluation Team is not sure what the basis for the selection of the group was, but with one exception, those attending

were not members of the MOU/LOA institutions. Nearly all of the individuals at the meeting were either foreign consultants (Winrock employees in other projects and an ODA employee) or were members of international organizations. The result of this selection was that a talented set of researchers attended the meeting, but they were largely outside the group that had to carry out the research.

This group produced a more elaborate data set than the one at the Maui meeting in October 1987. The new set called for indicators of:

- * General information (demographic data)
- * Agro-ecological information
- * Information on the degree of government intervention
- * Social organization and village leadership
- * Land use
- * Tenurial and property issues and
- * Social stratification

The dependent variable was farm and village forestry practices.

By October 1988, the CU had made no further progress on the survey. The Evaluation Team saw no final version of the VF/MDS data set, no research manual, no data management software nor any questionnaire written, tested or translated. The Global Research Unit on Maui has completed a set of input screens, but the GRU has yet to develop the more complex analytical tools of the database system. The GRU team attributes this to the fact that the Coordinating Unit has still not indicated what types of analysis it wishes to carry out. The Coordinating Unit says it does not know how to lay out the data for the computer team. The problem is more fundamental, namely, that the basic research strategy is yet to be set out.

According to our interviews with those who attended the Kathmandu and Bangkok meetings, those present perceived themselves not as representatives of a formal working committee but as only an ad hoc advisory committee. The Contractor made no working agreements with members of the group. Although many were willing to participate in F/FRED research, they had not yet accepted the methodology or the stress placed on the VF/MDS. They generally felt that the heavy emphasis placed on regional studies of this sort was premature.

The lack of consensus on VF/MDS also extends to forestry research institutions. So far as the Evaluation Team could determine, the Contractor had made no attempt as of early

October 1988 to discuss this research effort with the institutes now carrying on MPTS field trials. The Contractor has not carefully thought out the relationship of these institutes to the VF/MDS data collection. The Contractor had not shown these institutes any of the current versions of the data set listings. The Evaluation Team interviewed many who expected that the VF/MDS would initially require a short, simple survey which could be carried out by "ranger-level" personnel. In October, the Contractor seemed to anticipate something quite different.

Research Design Problems

The proposed survey is complex and will require a sophisticated methodology for collecting data. The 1987 current draft proposal calls for data collection at the macro-level through secondary sources. It then calls for rapid appraisals of tree and forest use practices, along with observation and key informant interviews. The design included household level surveys in "up to 200 households" to look at land tenure issues and subsequent surveys to take a stratified sub-sample of 50 household issues. The proposed data gathering methods included: interviews, indirect observation, key informant surveys, remote sensing data and photogrammetry,

The Contractor made no provision for training for the survey except to note that it will be done. The Contractor also has not presented training plan and has not prepared for the supervision problems which will most certainly be encountered.

The research budget calls for \$112,000. The Contractor had only set aside \$95,000 for this VF/MDS survey work and budget considerations have caused the Coordinating Unit to reduce this to \$60,000. The Contractor has made no provision to modify the VF/MDS research project in the light of this new budget, except to say that the sample size has to be reduced.

Associated Research

F/FRED-funded researchers have carried out five case studies associated with the set of MPTS Network field trials begun in 1987. The Contractor meant for these to supplement the data to be collected in the VF/MDS and to provide information on access to, and management and use of MPTS. The researchers have completed these studies. While they have obtained a great deal of data, they have done little hypothesis testing and actual data analysis.

The Contractor has awarded six small grants recently which are not explicitly connected with VF/MDS. These grants cover a broad range of socio-economic topics relevant to F/FRED. Additionally, the Contractor has made two grants which provide co-financing of MPTS related research.

Data Processing and Collection

The current version of the VF/MDS data set questionnaire is 68 pages long. Some inputs require additional pages of inputs to cover such items as multiple landholdings and sources of income. Also, many of the data are descriptive and, therefore, not easily processed

Note: Paradoxically many of the sociological data are quantitative, while many of the economic data are descriptive.

A questionnaire of this size would take an enormous amount of time to administer and many of the questions (e.g., income, land tenure and holding size, village leadership and livestock) are notoriously difficult to approach head-on in interviews. It is unrealistic to expect enumerators to be able to collect these data with any accuracy without substantial experience or, at the very least, without much more training than is proposed for them as of October 1988.

The Contractor has not yet identified the institutions that are to carry out this research. The team assumes that Asian institutions in the various countries will be selected and that some of them will be forestry research organizations. If so, the survey designers will have to remember that such organizations have very small social science staffs and very little experience in such complex survey work.

In addition, the Contractor and its cooperators will have to translate questionnaires into several regional languages. Those who have experience in this realize that every translation can slightly shift the meaning of questions. Each translator, in each country, would be shifting the meaning of each question to suit his/her own understanding of the question.

Once researchers have collected data, they will have enormous processing needs for such a survey. Neither the Coordinating Unit nor the Global Research Unit has fully considered the problem of processing the huge bulk of data that would be generated by such a large survey; neither has yet defined the many steps need to be completed nor the ways to complete them.

The Team does not consider the challenge discussed above to be insurmountable; however, they find it very difficult to imagine how the limited staff of F/FRED can oversee such an enormous task and still get other work done. Even with local institutions handling questionnaire verification, translation, printing of questionnaires, enumerator training, questionnaire administration and initial tabulation; F/FRED's work in trainer training, administration, quality control, problem solving, accounting and final data processing and analysis would be enormous. Given that neither the GRU nor the Coordinating Unit has yet developed a fixed plan of action for an activity of this size and

given that activity is scheduled to begin in early 1989, neither unit has an accurate idea of what they are approaching.

As of October 1988, the work on the VF/MDS has stalled. The Team identified several factors that have led to this state of affairs--the lack of communication between the various actors, due in considerable measure to the distances between them, and the lack of a well thought out work plan for this taxing venture.

The Necessity of VF/MDS

Assuming that F/FRED could surmount its administrative difficulties, the Team asks: "would it be worth the effort to proceed at this time with a social science input for the global database?" In response, the Team identified several factors that argue against it.

Social science has only recently turned its attention to resource management issues. Social phenomena are complex and few clearly established and tested correlations exist between social and biological systems. Among those that may exist are those in the area of quantifiable economics which is the weakest part of the existing data-set. The lack of clear correlations explains in part, the general lack of clarity as to what role VF/MDS can reasonably be expected to play in the decision support structure of IADSS.

The Contractor should have an economist review the whole VF/MDS effort to see what, of predictive value can be obtained at this stage of F/FRED from a regional survey. Whatever the outcome of such a review, clear cross-cultural, causal relationships in sociology and anthropology are still in the future.

By preselecting the MPTS species without reference to farmer needs or desires, the biologists have made the social input superfluous to the most basic MPTS research decision in the Humid and Semi-Humid Zone MPTS Network. One of the most effective uses of social surveys is to bring farmers' needs and desires into the planning process. Because all species decisions have been made, the Team would question the value, in terms of cost and effort, of collecting the data in the humid zone countries. On the other hand, the Team acknowledges the value of good social economic data to influence decisions on species improvement and management research.

It is still too early in the project for a general synthesis. A single linkage between the biological and social sciences is an admirable thought in the short run, but that the social sciences are still in too exploratory a phase to be able to determine the effect of human behavior on MPTS. The linkage between the social and biological sciences will have to remain at the level of "areas of common interest" such as a fruitful linkage between social scientists and technicians at the level of developing strategies for action programs.

Community and social forestry represent such a successful linkage. So do similar programs in rural credit, women's credit and water user group formation for irrigation projects. These programs tend to be localized and use the sociologist's skills to help in the perception of local management systems, which, in turn are used to form a basic channel for national programs to operate. Similar combinations of sociological and technical approaches have been used by F/FRED consultants in developing remote sensing as a basis for village level planning in forestry in Nepal. The FAO supported Terai Community Forestry Program in Nepal uses western trained social foresters of the kind that the Yale curriculum development program aims to produce in Asia. The link exists but it cannot be pushed too quickly or too far. To push the link during Phase I of F/FRED from the field, where it has been successful, into the development of a far reaching regional predictive tool is too quick and too far for now.

The length of the survey itself points clearly to a lack of a synthesizing element. This creates a necessity for casting a wide net in search of "critical factors". This unfocused approach generally results in huge data sets and analysis problems.

Lack of funding limits the number of village sites within each country. The Team is aware that many Asian countries are both ethnically and ecologically heterogenous, and would therefore raise the question as to what degree each survey would be representative of a national situation. If each national situation is not well represented, another question about the value the Regional survey arises. This problem would exist even if the number of sites in each country were expanded.

A number of other methodological points can be mentioned as well. Combining several superficially similar social phenomena under the same questionnaire category may create "false equivalences" in cross-cultural categorization. Careful analysis may later show the phenomena to be quite different and the categorization may turn out to hide more than it reveals. The Contractor would be on much safer ground looking at social phenomena within their own context until they are thoroughly understood.

Another problem arises in how cross-cultural information can be used by MPTS policy makers at the present time. While many would find it interesting to see if certain factors such as land tenure or access to resources have an overall effect on MPTS selection or management, most have a more immediate need to develop techniques for local planning use and forest extension.

The Team found that, in constructing its database, F/FRED has made little use of the anthropological, sociological and economic data that have already been collected in the region over the last quarter century. Much of this material is still relevant today. It would be easier and less expensive for the Contractor to hire a graduate student to search existing collections, even those only in the Washington area than for F/FRED to undertake a large regional study without knowing what exists. This sort of library search is considered to be a good research technique to begin any field research effort and is particularly important from the point of view of increasing the number of data sources.

The F/FRED VF/MDS has too few sample villages to be of much value. Collecting data from secondary sources could greatly increase the number of data sites in the region. The Contractor could access the Human Relations Area Files to collect data (this was recommended in the Project Paper of F/FRED but has not been acted upon). In this way a great deal of data can be amassed without major difficulty or expense.

Finally, the Team questions the linkage between the MPTS field trial sites and the VF/MDS. At the sites visited, the Evaluation Team saw that the sites were separated from village life. While biologists need to have control over their trials, the Team found it difficult to define human input into such research. Also, an area which is of biological interest may not be of socio-economic interest. For example, if a biologist selects a site for MPTS trials where fodder, fuel and building materials problems are minor, the selection based on biological parameters alone limits the opportunity to gain insight into how people solve resource management issues, such as those listed above. The Evaluation Team does not feel that these considerations were taken into account when the biologists selected their initial trial sites.

Appendix 4 Databases

Introduction

The difficulty of locating and retrieving reliable data from tropical trials of plantation species is very well known. Within the last decade the development of increasingly cheap but powerful micro-computers has provided a hardware tool of hitherto unavailable capability for handling large quantities of all kinds of data. The development of suitable software to make use of these machines, and the changes in cultural attitudes to realize the potential gains from data-sharing, are more difficult problems to surmount but are highly relevant to the F/FRED project.

The Information and Decision Support System (IADSS) is being developed by a team assembled by the University of Hawaii under a sub-contract with Winrock International. This sub-contract formed part of Winrock's bid for the main contract. F/FRED calls the team the Global Research Unit (GRU). However, the GRU handles only the development of the IADSS and the associated modeling work; it does not deal with or manage other aspects of global research in the Winrock contract such as the biotechnology work.

Cooperation With Other Tropical Tree DBs

The Winrock contract states that "The Contractor will: (1) assist in the continuing development of database activities, such as the multipurpose tree species database being developed by ICRAF, CATIE, etc.;" The sub-contractor made a decision early on to develop a separate set of DBs, rather than to work directly with ICRAF and/or CATIE on the systems under development by those institutions. The basis of this decision for not clear. It could certainly be argued that the resources spent on the independent development of IADSS would have been more effectively used in accelerating the development of MIRA. The brutal realities of dealing with data from field forestry research in Central America would have ensured a more flexible system than IADSS is at present.

The cooperative agreement DHR-5547-A-00-6041-00 signed by U.S.A.I.D. with ICRAF in August 1986 for the AFFRÉNA agroforestry networks in East Africa states that "Linkages formed between the parent project (F/FRED) Database Management System (DBMS) and the ICRAF DBMS will facilitate the exchange of agroforestry information on a worldwide basis" and "ICRAF will utilize its present MPT database for accessing required species information and for storing the additional information generated in the course of research implementation. As a global database is currently being developed under this Cooperative Agreement's parent project (F/FRED), every effort will be made to achieve compatibility of databases (e.g., coordination, standardized descriptors and software interchangeability)". In practice, ICRAF has continued to develop its various unlinked DBs in its own way and for its own purposes. The principal contact in ICRAF with F/FRED is

not connected with work on the AFRENA network, and it has proved difficult for the GRU, and for research foresters elsewhere, to obtain detailed information about AFRENA data management.

Two other ICRAF DBs are relatively more accessible to F/FRED. The main ICRAF bibliography for agroforestry contains over 12,000 citations and at present it is managed by United Nations Education, Scientific and Culture Organization's (UNESCO) micro-ISIS DBMS. The CU has this DBMS and has been negotiating with ICRAF to obtain the DB for F/FRED (see 3.2.3.2). The second DB of interest is a species summary DB. After a recent purge of unreliable records, it contains only about 2000 entries for MPTS, with many species represented by a single entry and only a few species having multiple entries. Nevertheless, it should be a useful starting point for the intended species information DB which is in the GRU's work plan. Some, possibly all, of ICRAF DBs will be transferred to the more powerful MDS III DBMS in the next year or so. However, this is expensive and possibly unnecessarily powerful for F/FRED needs. The GRU does not intend at present to shift from the very widely used dBASE III Plus DBMS, but no major problems are foreseen in exchanging DBs when F/FRED has something to offer.

The expectation in the U.S.A.I.D./ICRAF contract of compatibility with F/FRED through standardized descriptors and software interchangeability is unlikely to be fulfilled and should not be pressed. Regular contacts should be maintained, and an awareness of each other's developments.

Work on the MIRA DB for CATIE started before that on IADSS. MIRA was faced by the need to cope with large numbers of heterogeneous sample plots of MPTS, a very few designed experiments and no region-wide controlled trials. A strong element of project management and monitoring was also required, so MIRA resembles a conventional MIS more than IADSS does.

IADSS in F/FRED, MIRA in CATIE, TREDAT in CSIRO and OXFORDGEN at OFI all have the potential to develop into globally useful DBs for MPTS. However, only the GRU has been charged with creating a global system. F/FRED management has not indicated whether the higher priority is to develop a system to handle F/FRED's very limited network trials or to create a globally useful system. In practice, the GRU has pragmatically decided to start with the F/FRED controlled network trials and is gradually generalizing the system as resources permit. This approach is quite reasonable and progress has been appreciable.

The grandiose titles of "Global Research Unit" and "Interactive Analysis and Decision Support System" are incongruous in relation to the present scope of IADSS and its state of development. The interactive analysis sub-system (F/MOD) does not function. There is no decision support system in any conventional sense, nor is any planned, nor does the sub-contract with the University of Hawaii require its development. The various DBs operational and proposed for IADSS are and will be useful in the same sense that a super-efficient cross-referenced filing cabinet would be useful. IADSS has not been

conceived or developed as a project-supporting MIS in the same way as MIRA at CATIE in Costa Rica. It is unfortunate that the GRU and IADSS were so called, because these titles do not reflect the good work which is being undertaken.

Scope of the Databases

IADSS was introduced initially as an experiment database of limited scope, restricted to handling a closely circumscribed data set from the 1987 humid zone network trials. The rigid protocol prescribed for these trials has facilitated the development of the first version of IADSS (1.0). Before the end of its second year the GRU introduced a more flexible edition (1.1) which is now capable of accepting a wider range of data from both formal experiments and observational plots.

This edition (1.1) appears to the user as a series of over 30 on-screen forms to capture most aspects of field experiments and samples for biomass determinations. The captured data can be searched, added to, modified or deleted. Data entry of mensurational details can be tree-by-tree or plot-by-plot. The experiment database includes biophysical data, such as site geography, soils, climate, daily weather and previous land use.

The farm and village forestry database is under development (see 3.2.2.4.5). Its immediate use is to store and organize the data from the forthcoming sociological survey of 200 households in 30 sample villages stratified through the F/FRED region. The biophysical data will be stored in the same files as those used for the experiment database; this is the most concrete manifestation of combined socio-economic and biological research networking in F/FRED to date. The 7 on-screen forms, actually involving 68 or more pages of questionnaire, capture data at one or more geographical levels: national, district, village, household. The various forms store data on agro-ecology, government intervention, social organization and socio-economic stratification, land use and tenure, and the household use of forest products.

Databases Whose Development Has Been Planned Include:

1. a summary of information by individual MPTS. This species DB would be the prime source of information for the preparation of monographs and extension literature. The OFI "INSPIRE" DB and program and the ICRAF-GTZ MPTS DB both supply useful pointers of material for inclusion and approaches to avoid. The GRU is familiar with both systems.
2. a soil DB, taken from that established and maintained by the Soil Conservation Service of the USDA at Lincoln, Nebraska, will provide tropics-wide data in a form familiar to devotees of the U.S. Soil Taxonomy. It may include translation to/from other classifications of tropical soils.

- 3 & 4. DBs for long-term climatic averages and daily weather. It is not clear how these would differ from the files included in the experiment DB.
5. a plot summary DB, in which the mensurational data averaged or totalled per plot over time are stored with the most essential biophysical data for the modeling of growth and yield. The GRU is negotiating with the developers of MIRA at CATIE and TREDAT at CSIRO in order to obtain a measure of agreement. Discussions with the managers of other summary DBs, principally the coordinators of international provenance and progeny trials, plus NFTA, may be opened later.

DBs 1 and 5 can be regarded as two of the most important outputs from F/FRED, since they could have utility and influence on a truly global scale.

Limitations

The limits on type and quantity of data are being relaxed with successive versions of IADSS. Unfortunately the manual does not indicate what these limits are, and the lack of such information has discomfited those few foresters who have tried seriously to use IADSS. Version 1.1 of the experiment DB provides a form (X) for non-standard assessments, to be described by the user. This permits the storage of data on, for example, agricultural crop yields per plot or fruit harvests per tree. Declared future enhancements include multiple stem measurements per tree (an essential feature for MPTS, one of several stressed by foresters with tropical experience to the GRU in 1986 but not yet incorporated) and increased numbers of trees per plot. There is a frustrating undeclared limit on the number of plots per experiment. Only one pedon description per site is inadequate for large forestry experiments which may spread over several soil types. There is inadequate provision for "missing data" and assessment in sub-samples of trees in a plot.

The experiment DB of IADSS does not allow for data on stem sections, for volume calculations. Since volumes are of major interest to the Australians, F/FRED's agreement to cooperate with CSIRO on an international trial of some 30 provenances of Acacia auriculiformis should induce a re-think by the GRU.

The GRU has still not accepted the need to incorporate all the variables recommended by IUFRO (Burley, Andrew and Templeman 1973) and by FAO (Sommer and Dow 1978). The recommendations made in these two papers were based on much more extensive experience of handling and trying to interpret multi-site poly-specific data than the GRU can hope to accumulate. Both the MIRA and TREDAT DBs, at CATIE and CSIRO respectively, incorporate some globally-useful variables at present omitted from IADSS.

More thought is also needed on the inclusion of variables which might help agro-ecological mapping. The results from any one trial are quite location-specific. The generalized models of G & Y should be location-free, but the application of the model for

planning purposes needs map information. This is true whether the scale of the application is that of an individual farm or a whole country. The GRU should be aware of work undertaken by CGIAR centers, such as CIAT, among others. An example of one or more extra variables is the farmer's own characterization of the soil on an experimental site.

The IADSS user's manual does not describe how plot summaries are calculated. In at least one case, the procedure agreed upon at a meeting of the network cooperators is technically incorrect; survival on a plot at time 't' should be with reference to the number of plants at the time of establishment of the plot, not with reference to the number at the time of the last assessment ('t-1'). This point reveals the need for a more explicit user's manual and the need for real expertise at gatherings of the cooperators; a consensus of inexperienced staff may not be correct.

Discussions about a minimum data set (MDS) to be applied to MPTS trials globally have been held at least twice a year since early 1986. Participants have included the developers of other DBs for tropical plantation trees, such as CATIE, CSIRO and ICRAF. The MDS has also been discussed at the meetings held to plan the networks, and during the training courses at the start of the humid zone network. It might have been hoped that the GRU, lacking experience in tropical forestry, would pay close attention to the presently-omitted variables; perhaps even making a tabular comparison between the environmental variables incorporated into the various existing DBs. This might not be a serious matter if the GRU was not charged with global research. As it does have this responsibility a closer attention to global needs would be desirable. It is probably inevitable that the MDS for a global system will be larger than the MDS for a regional project. No satisfactory G & Y model for tropical MPTS has yet been developed, so no participant in the discussions can lay down the law on the MDS. However, some participants have more experience than others. The Evaluation Team does not wish to labor the point, and does recognize that the GRU has made some small concessions. Continued close contacts between the GRU and other developers of DBs for MPTS should be sustained or enlarged.

One of the most attractive features of IADSS is the consistent presentation of data-entry and summary screens to the user, together with the on-screen menus for their use. However, the checking of data for type, validity and biological consistency over time is almost non-existent. The system will accept completely absurd entries in most fields. Checking could be on-line, during data entry, or off-line after the completion of a plot or treatment.

IADSS' form N deals with tree measurements or plot summaries at a given time. There is no provision yet for the forester's conventional display of measurements of any one variable per tree over time.

There is as yet no provision for the bulk loading or unloading of data; however, this work is planned. It is important for the exchange of information among F/FRED cooperators

and between IADSS and other DBs. The present intention seems to be that the summary DB will be the prime means of interchange. There are likely to be continued disagreements between DB managers as to the minimum data set for any particular objective and many potential users will prefer to have access to the raw data from which they will construct their own summary DBs. It must also be recognized that other MPTS DBs start from different premises (e.g., MIRA) or have different objectives (e.g., ICRAF-GTZ). For example, the Central American foresters could not be induced to establish cooperative designed experiments in the LEÑA and MADELEÑA projects financed by US-AID. The bulk of the 6000+ plots available in Central America for the modeling of G & Y are sample plots established in small demonstration plantations. Modeling in Central America must therefore use somewhat different procedures from those which can be employed by the GRU.

There is no provision in IADSS for the independent specification of data standards. At present it is assumed that the data are collected in accordance with the more or less detailed guides in F/FRED Manual No.2. Global utility and interchange require that each item or set of items is qualified or referenced by a description of the collection method and standards. ICRAF staff have argued that it is also necessary to include an indication of the reliability of the data.

Surprisingly, there is no provision in the experiment DB for data and information on seed management or the nursery phase of MPTS research.

More work is required on crash-proofing IADSS, so that the user is not dropped out of the system with incomprehensible error messages. This work should include tedious but important checks against hitting the wrong keys, and checks on available space for running the system. There are, however, a large number of checks already built into the IADSS to prevent illogical use of the screen forms; for example, the extra variables must be defined to form X before data values can be entered. Some of the existing checks are quite subtle and reflect very well on the capability of the system developers.

Problems

In spite of the progress made by the GRU in the development of IADSS so far, there are a number of persistent problems:

1. The GRU is composed of one agricultural statistician with networking experience as part-time team leader and two (recently increased to three) full-time systems programmers, plus a modeler. Direct contacts with tropical foresters have been limited to approximately twice-yearly semi-formal meetings with MIRA developers and more recently with CSIRO, occasionally with ICRAF, and with the F/FRED cooperators at the network planning meetings; the systems programmers have visited cooperating institutions briefly between one and three times, to install the IADSS and to provide initial assistance. The daily contacts which are normally

thought to be necessary between DB developers and potential users, to clarify user needs, has been absent. The GRU office on Maui is not conveniently located even for the systems programmers themselves. E-mail contact with the Winrock offices serves to clarify administrative matters but does nothing for the technicalities of the project. However, the University of Hawaii is believed to be reluctant to set up an out-of-state operation in Asia.

2. Like MIRA at CATIE, the developers of IADSS decided to provide as much as possible to the user within the environment of a single package. The idea presumably was to reduce costs to the cooperators of purchasing additional commercial systems for graphics and statistical analysis. In principle, it should ease the adoption of the system, since the user does not have to learn to use a variety of systems devised with different interfaces. In practice, the utility of IADSS has been considerably limited by the inclusion of a module for statistical analysis (F/MOD) which most users have found impossible to drive. The module has as yet no operating manual (a draft was delivered at the end of the Evaluation Team's field visit) and the commands are non-intuitive. The development of F/MOD seems to be through a sub-sub-contract which is not referred to in the University of Hawaii sub-contract and which has not been seen by the Evaluation Team. The arrangement seems to be quite informal and personal, which clearly makes for difficulties in scheduling and quality control of the product by Winrock. The immediate solution appears to be that adopted by FRIC in Nepal: simply export the IADSS files to commercial and reasonably error-free packages for statistical analysis, graphics and report-generation, leaving IADSS in its proper role as a well-organized electronic filing cabinet. The recent willingness of the GRU to work towards provision of interfaces to commercial packages, rather than continue with in-house development of systems which try to duplicate those packages, shows a realistic attitude. However, the commercial houses drive such a hard bargain that the number of interfaces which are transparent to the user will be limited by the sheer cost. The GRU may be better advised to concentrate on a very efficient selective bulk loader/unloader from/to ASCII files.
3. Insufficient attention has been given to the sheer space which a global DB occupies. The selected DBMS (dBASE III Plus) has the unfortunate feature of reserving space to the rectangular limits of the longest record in a table; other DBMS such as REFLEX and KNOWLEDGEMAN/2 truncate empty or part-filled records. Reckoning on dBASE III Plus files occupying about three times as much space as a crude ASCII file, the proposed farm and village forestry DB could occupy by itself 200 households x 30 villages x up to 900 variables = 15 MBytes. That is, half the capacity of the hard disk in the micro-computers supplied by F/FRED could be occupied by just one of the DBs. In practice, the Quicksilver-compiled IADSS is believed to be rather less extravagant of space but the principle of the objection remains. Two solutions to this problem are to use a different DBMS and to adopt a different storage system. The first would cause a substantial delay in getting the system operational again, and possibly lose the attractive

screen features supplied with the Quicksilver compiler which are undoubtedly a major factor in gaining user acceptance. The second solution, a storage system with interchangeable magtapes or high-capacity cartridges using Bernoulli technology, is much simpler. It is also the storage system adopted from the outset by MIRA and should therefore facilitate interchange of data on MPTS in use in Central America.

4. Various project documents (the main U.S.A.I.D. contract with Winrock, the sub-contract with the University of Hawaii, the PSAs issued by the CU from Bangkok and the proceedings of the Research Committee meeting at Kuching in April 1988) express a variety of views on proprietary rights to data. So far the amount of data stored in IADSS has been negligible and a test of the issues of rights has not arisen. Some of the views are simply impracticable and suggest that the matter needs to be thoroughly reconsidered. It may be appropriate for the CU to issue a PSA for the preparation of an options paper, to be presented at the next meeting of the Research Committee, including a review of data-sharing arrangements which are common in the CGIAR system. Examples of sharing drawn from the many successful forestry networks in North America do not seem to stimulate cooperative interest in tropical countries.
5. Among the outputs from global research which are outlined in the Project Paper (page 19) are the "development of research models as a basis for integrating and structuring currently available information; use of research models to evaluate fuelwood/multi-purpose tree species as components of agroforestry . . .". The sub-contract with the University of Hawaii indicates clearly that modeling is a major objective: "this database will provide participants with an analysis of network data on tree performance and benchmark site data for longer term development of computer models" and "a comprehensive database adequate for technology assessments and research modeling". The GRU has taken this to mean that at least some modeling should be undertaken and has indeed contracted a recent Ph.D. to develop a G & Y model based on environmental variables. The Arlington office of Winrock, however, told the Evaluation Team that the contractual responsibility does not include the establishment of trials, only the development of a network. It may be that this discrepancy is more apparent than real, but it would be important to ensure that the modeling effort has sufficient resources to achieve its objective. In this connection, it may be noted that the MAUNET proposal cannot be funded from the present appropriation. This may be because the cost estimated (\$400,000) appears to be excessive compared with the probable activity; indeed, the total cost of the GRU appears to be very high compared with the output. However, the idea of recovering data from the many Leucaena plots and establishing new trials to fill the gaps in the data is surely exactly in line with F/FRED objectives. It could supply a valuable example for the many Asian foresters who are in charge of years of accumulated but unanalyzed data.

6. The training given so far to the cooperators has been inadequate to ensure that IADSS has been used to even its current potential. Most of the cooperators have little or no familiarity with computing, data management or statistical analyses. Funding has been agreed to supply 12 micro-computer systems; 6 have been delivered so far, 1 is scheduled for October 1988. Some institutions, such as FRIM in Malaysia, have indicated that they have machines available for IADSS, although not for dedicated use. At least three of the F/FRED-financed micro-computer systems supplied through local agents have been defective on delivery. This, combined with the difficulty in getting F/MOD to work, has damaged the credibility of the GRU and the acceptance of IADSS as the versatile tool which it undoubtedly could be. Visits of a few days to any one cooperating institution are insufficient for training and trouble-shooting, although understandable in view of the remoteness of the GRU from F/FRED's working area and the lack of full-time network coordinators. The IADSS user's manual, good though it is, seems to have been written in the expectation of greater research experience and computer literacy than is actually the case.
7. It has not been made clear that IADSS needs a dedicated micro-computer in order to be used efficiently. A cooperator who has to book time on one of several possible machines cannot possibly establish and manage efficiently a set of DBs which occupy megabytes of space. In such cases, there is no encouragement for using IADSS to recover and manage long-stored data from various kinds of plantation experiments and yield plots. The kinds of enhancements which have been planned for IADSS, plus relatively minor amendments to cope with foresters' needs, should make IADSS an exceptionally useful tool for the maximum use of accumulated research data. The safeguards incorporated into the software against data loss through power failure need to be paralleled by hardware protection.
8. There are differences of opinion among cooperators as to the services which the GRU can and will supply. There have been various logistic problems which have affected the users' views of IADSS and the GRU:
 - delayed delivery of F/FRED-funded computers;
 - the lack of an F/MOD manual and problems with driving F/MOD;
 - version 1.1 of IADSS was distributed by the CU on poor quality diskettes. Those cooperators who had entered data had to revert to version 1.0, which contained no form X and an early edition of F/MOD.

To compensate for these defects, the GRU has itself undertaken the intra- and inter-site analyses of the first tree measurements. The analyses were sent to cooperators recently as paper copies, together with the F/MOD instructions used to produce them as a demonstration. This may have lead at least one network participant to believe that the GRU will undertake all the manipulation and intra-site as well as inter-site analyses. It is

actually the intention of the GRU to pass on the responsibility for across-sites analyses to an as-yet unidentified network leader, as one of the moves towards Asian sustainability of F/FRED activities.

9. There are differences of opinion as to the responsiveness of the GRU to problems encountered by cooperators. However, the GRU itself has noted that communications should be improved. One cooperator commented on good responses but no resolution of problems.

Findings:

The findings are presented in relation to the 9 problems discussed above.

1. The staff composition of the GRU and its geographical location have impeded communication with network cooperators and potential global users of IADSS.
2. The development of the IADSS DBs with a uniform and attractive user interface should increase acceptance and use by cooperators, even though the system runs slowly. The slow speed of operation is caused by the frequent opening and closing of files in the DBs, a deliberate safeguard against loss of data which was incorporated because of the unreliable supply of electricity in some of the countries of the region. The effort to develop a statistical analysis module has been unsuccessful so far and its distribution in an effectively unusable form has been detrimental. Fully documented and exemplified interfaces between IADSS and commercial packages for statistical analyses, graphics and reporting should improve the versatility of IADSS and its rate of adoption. Tutorials and demonstration packages need to be introduced through training courses; computer literacy cannot be assumed.
3. Not enough attention has been given to the storage requirements of data from even one network, let alone a set of global DBs.
4. The conditions for the sharing of research data is a culturally-sensitive matter which has received insufficient attention. Unless this matter is resolved quickly the problems which have plagued the Central American regional forestry and fuelwood projects will occur in Asia.
5. Most foresters within F/FRED and those outside with experience of managing large sets of G & Y data regard modeling as a focus for effort and an essential step in the development of management regimes; whether these be for small farmers or major industrial companies. The GRU appears to share this view, the Arlington office appears to disagree.

6. Training has been insufficient for data collection, recovery of data filed in cooperating institutions and the operation of IADSS by the people directly responsible (who may not be the officially designated network cooperators).
7. IADSS is too large and too useful to be moved peripatetically between machines in an institution. It needs to be mounted on a single and preferably dedicated micro-computer, equipped with protection against fluctuations in the power supply.
8. The roles of the GRU in relation to network cooperators are unclear. There is no explicit planning of the effort to be devoted to Asia requirements compared with the generalization of IADSS into a globally-useful system. This lack of clarity seems to be one reason for the friction with the developers of forestry DBs in other regions. The current work plan mentions 17 activities, with no indications of priorities. Completion dates proposed for new DBs imply quantum improvements in GRU productivity.
9. The responsiveness of the GRU to problems found by the cooperators will determine largely the acceptance and use of IADSS. The GRU's intention of issuing technical trouble-shooting bulletins is commendable. However, these should not constitute yet another F/FRED series but be incorporated into a more technical Farm Forestry Newsletter.

Conclusions:

The conclusions likewise are listed in the same order as the problems to which they refer. The principal independent conclusion is that IADSS is developing mainly in the right direction and that its utility could be improved by better communications inside and outside F/FRED. The sharing of mud, mosquitos and malaria with network cooperators would probably cement relationships far more effectively than a reliance on E-mail.

- 1,8 9. The location of the GRU is undesirable. Establishment closer to the network & cooperators should facilitate inter-communication, the speedier resolution of problems and a better understanding of the points of view of both foresters and socio-economic specialists. The de facto priority given to the creation of a usable system for Asia should not obscure the requirements for global systems. More explicit long-term planning should clarify the pace at which modules are brought into a usable state for Asia and what needs to be done when to make them globally useful. Greater clarity in planning and scheduling should diminish the problems of dealing with the developers of similar DBs in other regions. The completion dates indicated in the current work plan for most GRU activities appear to be over-optimistic, compared with past progress.
2. Work on interfaces between the DBs and commercial packages is preferable to the development of in-house systems.

- 3 & 7. IADSS will rapidly exceed the storage capacity of the modest (30 MBytes) hard disks supplied by F/FRED. A heavily used system needs power supply protection.
4. Data sharing is a critical issue. If the ambition is to convert IADSS into a globally-useful system the agreements must provide for a variety of levels of sharing.
5. If modeling is not a focus for the GRU's efforts, and if the network trials are not intended as an initial contribution to this end, the Arlington office should explain what is the role of modeling and what are the objectives of the trials.
6. Training has been insufficient for the staff actually involved in the use of IADSS.

Recommendations:

- 1 & 9. The GRU should be merged with the CU in Bangkok and should have more frequent and more prolonged contact with network cooperators and other users of IADSS. The series of meetings with the developers of other tropical forestry DBs, especially MIRA and TREDAT, should be continued.
2. Work on F/MOD should be abandoned and legal advice secured in negotiating the terms for the building of interfaces between the DBs and a limited range of commercial packages for graphics and statistical analysis.
3. IADSS should be reworked so that individual DBs can be stored on one or more individual removable storage devices.
4. An issues paper should be prepared on data-sharing for the next meeting of the Research Committee.
5. The Arlington office of Winrock should confirm the importance of modeling in the work of the GRU. Adequate resources should be channeled to the modeler to permit the gathering of new data and the recovery of old data from the many trials of *Leucaena* spp. in the Hawaiian Islands, for the development of a model as a training tool for F/FRED network cooperators. This does not mean that the MAUNET proposal should be funded to the level which has been requested, but initial work on several management regimes in a single well-characterized environment should be funded to provide a clear demonstration of the value and limitations of G & Y models which are driven by environmental factors.
6. The GRU should devote much greater efforts to training, including the improvement of the manuals to the standards of commercial packages, the preparation of fully-functioning demonstration data sets (one of which should be for a tropical timber species) and the preparation of tutorial(s). The office work must be supplemented

by visits to train and encourage the actual users of IADSS in their own institutions and on the micro-computers which they use.

7. F/FRED should budget for one dedicated micro-computer system per cooperating institution and should negotiate new agreements to give IADSS as the priority use of these machines. F/FRED should fund uninterruptible power supplies (UPS) and associated voltage regulators for each network participant who does not already have this protection.
8. The exact responsibilities of the GRU in relation to network cooperators and other users of IADSS should be clarified and made known widely.

It is only fair to state at the conclusion of this section that the GRU has made considerable progress in the development of what could be a very widely used and long-anticipated generalized data management system for MPTS. To the user, IADSS presents an attractive and consistent interface combined with simplicity of use (except for F/MOD). IADSS incorporates a number of subtle features to ensure this simplicity and to catch some of the common errors of data entry. The GRU deserves continued support to develop the system for a global audience, in association with the other major developers of DBs.

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Introduction

Winrock International has published an impressive quantity of information about F/FRED which demonstrates the wide range of activities that it has undertaken in the first three years. However, it is too early for the Team to assess the impact of much of this publication effort on the quantity or quality of active forestry and socio-economic research on MPTS in the region.

The following sections discuss Information Generation and Dissemination. They use the detailed headings provided by the Scope of Work for the Evaluation..

G7a.i The relevancy of information generated by the project to the outstanding major natural resource problems in Asia.

Neither the Project Paper nor the Winrock contract attempt to define the "outstanding major natural resources problems in Asia". The F/FRED project is one attempt to improve the efficiency and effectiveness of research by regional networking, but it concentrates only on MPTS. The Evaluation Team saw all of Winrock's publications as relevant to some extent to the mitigation of problems in the management of renewable natural resources in Asia.

The Team notes one specific example, i.e., the regional research plan for Leucaena-psyllid control which was prepared in 1987. Four countries prepared national plans since the psyllid defoliators were encountered. Then, representatives from these countries and others across the region developed a regional plan which summarizes the development of a regional research capability as a result of a series of national and regional meetings. The regional planning document clearly indicates the role that F/FRED has been able to play as well as its future role in relation to national efforts around the region. The plan points out the benefits of a regional approach to an economically important pest. This approach spreads the research burden, reduces duplication, promotes the circulation of information, and maximizes the effectiveness of the few trained staff in the region.

Winrock has issued a basic library set to cooperating institutions which contains a great deal of relevant information along with many useful citations to original papers. However, the Evaluation Team could not assess how much of this information had actually been used by network cooperators or their associates.

G7a.ii The relevancy of information to the stated purpose and goals of the project.

The Project Paper and Article II of the Winrock contract state the purpose and goals of the project.

Objective 1 (improved formulation, planning, and management of research)--The Contractor has tackled this mainly through one training course. The Evaluation Team did not have access to the course manual and evaluation of the course.

Objective 2 (support and development of research networks)--The Contractor has published more on this topic than on anything else.

- * Cooperators should consider the two manuals (one on data entry portions of IADSS and on the establishment and early management of the humid zone network) as essential reading. Neither manual is perfect, but both are highly relevant.
- * A companion publication, a summary of the assessments made on an earlier series of MPTS trials funded by U.S.A.I.D./Philippines, should provide a good working example of the use of IADSS data entry. The Evaluation Team, however, did not have a copy of this for their review.
- * The Evaluation Team also did not see the video prepared to assist the establishment of the 1987 network trials. In retrospect, the Team believes that it made a mistake by not taking time to see this video.
- * The Contractor recently published a volume of 5 papers on modelling which provides background information on the overall purpose and context of field forestry. This volume provides both a good overview and a specific example of work in F/FRED which focuses on growth and yield modelling.
- * Other background volumes describe the provenance collection of Acacia auriculiformis seed in 1987 and summarize the status of multipurpose trees in Thailand. Network cooperators should consider both of these volumes as directly relevant and as good examples of useful publications.

Objective 3 (development and promotion of on-farm forestry techniques)--The Contractor is addressing this objective in various ways:

- * The Contractor has supported the assimilation and synthesis of information on indigenous agroforestry techniques in Asia. The Contractor plans to publish a series of four handbooks under F/FRED auspices in India, for regional distribution.

- * Scientists working on the 1987 humid zone and 1989 semi-arid zone network trials will make a minor contribution to farm forestry techniques through publication of the results of their experiments. This will come later rather than sooner and the results will be provided with a mass of other information.
- * The three publications in the F/FRED proceedings series contain a good deal of information which is relevant to the project goal and objectives, although they do it in a more indirect manner than the other publications mentioned above.

G7a.iii The quality and usefulness of the information.

The Team feels that the instructional materials used by F/FRED should be of the very highest quality, free from error and of direct utility to the junior or inexperienced staff who are undertaking most of the F/FRED supported field activities. The Team cannot comment on the video since we did not see it. The Team rates Manual No. 1 on the second version of IADSS highly; the GRU has noted its imperfections and plan for their correction in the next edition. The Team feels that Manual No. 2, on the establishment and management of the 1987 humid zone network trials is basically quite good but notes that it has a number of serious errors and obscurities. (NOTE: The Team is not sure how many cooperators had communicated their problems with any of these publications with the Contractor. They may not raise complaints in writing for cultural reasons, which emphasizes the need for a full-time travelling network coordinator who can more face-to-face discussions with field staff and obtain needed feedback on issues such as these.)

The background publications assume, in general, a degree of interest in research and some basic knowledge of the subjects being discussed. The volumes on networking and modelling both make some effort to place their subjects in an F/FRED context, but neither makes apparent concessions to potentially limited active vocabularies in English of some of the readers. The psyllid regional research plan should be used as a model; it explains its subject simply and directly and it can be understood easily by foresters with a modest command of English.

The Team believes that the Farm Forestry newsletter is unfocused, insufficiently technical, and overlaps with other newsletters.

G7a.iv How the nature of the information can be enhanced and improved.

For the purpose of this section, the Team treats "enhanced" and "improved" as synonyms. The Evaluation Team provides the following guidelines for organization/preparation of manuals, proceedings, newsletter, progress reports, and brochures.

Manuals

The Team believes that field and office manuals must be written with the utmost rigor and with more consideration for the real capacity of the expected users. Those who need manuals most are people who are just starting work in a new field, who may or may not have some background or theoretical knowledge of a subject, and who are generally unfamiliar with the daily routines and skills of the job.

The author(s) need to carefully structure the manual. They should include clearly defined sections, starting with a summary and proceeding through an overview and ending with a brief tutorial, as well as providing references to further reading and associated material. Authors should provide details for each section in the same order that the user will have to follow in the field; this requires that experienced staff who have broad knowledge of every step in the process be authors. Authors should use clear language and avoid qualifying clauses and backtracking to previous sections. Writers of manuals should ensure that they include a description of the place of each manual in the context of other publications and in relation to overall project objectives. Authors should send out a draft of the manual for "testing" by a sample group of those who are expected to use it.

The Evaluation Team understands that this last step was followed by the Contractor in the development of Manual No. 2, (on the establishment of field trials), but the Team observed that the process was less than successful.

The Team further believes that annexes to manuals should address issues of flexibility in operations that might be permitted, (e.g., ways in and conditions under which experimental design or field layout could or should be changed from a prescribed standard; lists of computer error messages with a discussion of how they arise and to recover from them).

The Evaluation Team believes that good examples of forestry and computer manuals exist but that the Contractor has not yet made adequate use of them.

Proceedings

The style and content of proceedings vary with the subject matter of the meeting which they report (e.g., regional meetings sometimes afford a good opportunity for the presentation of comparative data). F/FRED should stress the desirability of papers for proceedings which synthesize on-the-shelf data and/or present new data in forms which can be entered directly into IADSS. The CU should prepare and circulate an illustrative paper in the this way, to serve as a model for presentations.

Meeting organizers should stress the need for papers presented at meetings to provide enough details (e.g., geographical, temporal) so that they can be understood by others outside of their context. The Team believes that a paper which potentially cannot be

understood after five years because it lacks vital details should be revised before it is published. F/FRED should develop guidelines for data presentation or should use those that have been developed by FAO and IUFRO.

The Team found that the proceedings of the first round of National Organizing Meetings (NOMs) serve as examples of the deficiencies noted above.

Farm Forestry Newsletter

The Contractor has published seven numbers of the newsletter, and it is the most widely circulated of the project's numerous publications. In the main part of this Evaluation Report, the Team has made more detailed comments on changes in the nature of the newsletter and on the suggestion that the publications function of the Contractor be moved to Bangkok.

Progress Reports

The Team is not sure how widely the CU's Progress Reports are distributed. The CU obviously devotes a great deal of time and effort to these reports which are a valuable source of information on the project. Their coverage of specific themes, such as the sociological aspect in the May 1988 report, helps to maintain reader interest. However, the Team found it interesting that the Contractor's Progress Reports to date have not noted any problems that have been encountered by this geographically widespread and relatively complex project. The Team believes that an honest description of problems and tentative solutions would be helpful to network cooperators and would make the reports more believable, useful, and productive.

Brochures

The Contractor has produced three attractive, multi-colored brochures. At least one of the brochures costs US \$10,000 (which is equivalent to two small research grants). The Team is not sure what audience was identified for the brochures or why the Contractor thought they were necessary. The Team felt that the IADSS' brochure has some justification since the software system is intended for global application and needs to be advertised globally. The Team believes that cheaper and more effective advertising materials could be produced by the Contractor and basically feels that limited funds should be spent on research grants rather than on brochures.

The Contractor also has produced and distributed and which the Team saw exhibited in the offices of a number of cooperators. The Team believes that these posters are a diversion of resources from the research and development aims of the project.

Other Publications

The Team has made observations about other publications:

- * A few of the publications have used expensive glossy paper. The content of F/FRED publications does not justify this expense nor the use of color.
- * F/FRED should take note of the simple and inexpensive publication methods used by the Danish Forest See Centre for its series of excellent technical papers which are distributed globally.
- * F/FRED should not expand its series of publications. Apart from the newsletter, F/FRED should have only a single series, not one for every field. The Team believes that this would ensure that F/FRED publications are appropriately archived in libraries.
- * The Contractor should encourage its cooperators to publish the results of F/FRED-support research in international journals. This would reduce the editorial burden on the Contractor. It would also ensure more widespread distribution and provide for them to more readily accessed through the principal abstract services. The Contractor should consider providing financial support to scientists who attempt to publish in journals that have page charges.

To conclude this section, the Team would like to commend the Contractor for the general quality and relevance of F/FRED publications. The Team believes that some of the deficiencies are due to the Contractor's inexperienced staff and some are due to the distance between the Contractor's offices in Arlington and Bangkok. The Team would like to reiterate one of the recommendations in the main part of the report--all publications functions should be moved to Asia.

G7b Information dissemination

G7b.i How the information has been disseminated in Asia.

The CU handles most of the dissemination of printed matter in Asia. It uses its own non-databased mailing list. The Arlington office uses a different mailing list. The Contractor has compiled these mailing lists from personal contacts and from correspondence received in response to a standing invitation in the Farm Forestry newsletter. The Arlington list has approximately 2000 names which is about average for a newsletter. The Asia list is more than double the average for newsletters and suggests that coverage is adequate.

The Team found that the distribution of the basic library set has encountered problems in some countries because of errors in addressing the packages. The Team heard of one case where a basic library set was intercepted and removed to a different library. The Team believes that distribution of publications entirely from the CU office would diminish many such problems because of the greater familiarity of personnel in that office with Asian customs and with Customs services.

The Team believes that updates of IADSS should be entirely on good and tested diskettes. The Contractor has distributed the soils DB and the results of the inter- and intra-site analyses from the humid zone network trial on paper instead of diskette.

The Contractor should ensure that the interchange of data between cooperators is simultaneous with the distribution of the analyses. This has not yet happened but it may be due to the gaps noted in data from some of the cooperators. While the Team believes that the lack of distributed data is not serious at present because most of the cooperators lack the ability to handle sets from more than one trial at a time, Team members are confident that the GRU will be working on suitable transfer systems and a fully exemplified manual.

G7b.ii Status and effectiveness of the common database.

The Team has discussed IADSS at length in the main part of this report. Team members feel that the Contractor has made adequate progress in developing software and that emphasis on attractive and consistent presentation of the computer system to the user is excellent. The Team feels that IADSS has the potential to become a major global database for, but not limited to MPTS, but it also notes that this takes time and more direct and frequent contact with users by the Contractor would accelerate this process.

The Contractor has placed no emphasis on the preparation of a demonstration database, so most users who lack experience are unable to appreciate the potential of IADSS. The Contractor should encourage cooperators to use the existing data storage system to move on-the-shelf data from whatever kind of plantation experiment or yield plot they can into the IADSS. The Evaluation Team believes that a travelling network coordinator would be able to explain this point and assist in the greater use of IADSS. The Team fears that without more direct help and encouragement, IADSS will be underused by network cooperators.

G7b.iii Adequacy of information dissemination techniques to stimulate target end-user needs and interest.

The CU perceives that the end-users of F/FRED are the research staff personnel in the region, not the "small farmers of limited resources". The Team is not sure who is meant in the Scope of Work of this evaluation to be the target end-user.

As far as the Evaluation Team could determine, none of the network cooperators works on F/FRED matters full time. Institutions across the region perceive that the financial input from F/FRED into their activities is relatively small. These institutions do not feel that incentives exist for them to pay more attention to F/FRED when only one network trial in a quinquennium is undertaken, and they do not understand the need for complementary trials to fill gaps of information. They also do not appreciate the potential versatility of IADSS, nor the possibilities of integrating socio-economic information from F/FRED activities.

The Team observed that the mutual contribution between F/FRED and most cooperators is still unclear; the goal, purposes, and context of F/FRED are not widely understood; the colored brochures which might have conveyed this information has cleared not succeeded.

G7b.iv Whether the information dissemination has fostered increased sharing among end-users.

The Team believes that it is too early to comment on this question. Team members do believe that the NOMs have brought together research staff personnel who had not previously conferred. The Team once again raises the concern over data sharing which is a particularly sensitive issue to many scientists.

G7b.v How the information is being used.

The Evaluation Team received appreciative comments about the basic library set for MPTS supplied by F/FRED, and about the recent flexibility of choice which has permitted cooperators to enhance the library. Nevertheless, the Team is not sure whether the books were being used or whether they were just being admired. The Team observed that the 100+ proposals received for small research grants showed the lack of reference to library sources to determine gaps in knowledge. The Team found that more senior staff were well aware of this problem and were beginning to take steps to mitigate it. Some institutions welcomed the availability of hard currency through F/FRED for book and journal purchases.

The Team found that some people were using or had read some F/FRED publications. Team members found that the regional plan for psyllid research is clearly a working document.

The Team found that the IADSS experiment DB is relatively recent and that some cooperators have only just received functioning micro-computer systems. The Team feels that it was too early to judge how IADSS is being used and emphasizes the importance of a freely-available dedicated micro more IADSS.

G7b.vi How information dissemination can be improved.

The Team believes that quantitatively the distribution of information is progressing adequately. Glitches in the distribution seem to have occurred when distribution has been from Arlington rather than Bangkok, but this could be repaired by transferring all distribution responsibilities to Asia.

The Team has made suggestions about qualitative improvements above. In addition to the various publications, the Contractor should consider the role of a full-time network coordinator(s) and an Asian-based GRU as means of helping to eliminate other communications gaps which currently exist.

Globally, F/FRED should make more use of international journals to announce the availability of its publications and its activities. F/FRED could also use the very cost-effective IUFRO working party newsletters to help distribute information. At present, F/FRED is seen to be standing apart from the IUFRO networks, which is to their mutual disadvantage and especially to the cooperators who should be encouraged to join appropriate IUFRO working groups.

The Contractor currently uses Manual No. 1 of IADSS with version 1.1 of the IADSS software. The Contractor provides clear instructions for installing IADSS in micro-computers equipped with hard disks and generally clear instructions for the entry of data into the various files of the experiment database. The Contractor also gives directions for using the MPTS specialists and MPTS abstracts databases. The Contractor has not covered other databases in IADSS, which are still under development, nor the F/MOD module for statistical manipulation and analysis of data in this Manual.

The GRU has noted the few mistakes detected in the user's manual and will eliminate them from the next edition. The GRU agreed that the considerable duplication of instructions in the present manual (which were intended to facilitate use by inexperienced operators) is counterproductive. The GRU will replace instructions which are used repeatedly with minor changes in various parts of IADSS with a more complete common section will cross-reference sections on individual forms in the experiment database to the common section. GRU will also include many more examples of procedures and illustrations of the screens as they appear at each stage in the next version of the manual.

The Contractor should prepare a separate manual to accompany a full tutorial on IADSS.

The Contractor is preparing a technical reference manual on IADSS which will provide an overview of the construction of the system and some of the coding in the dBASE III Plus programming language. The Contractor should cover error messages in the technical manual since they are scarcely treated in the user's manual. The present view of F/FRED is that the cost of distributing the IADSS with uncompiled dBASE III Plus to each network cooperator is excessive, compared with the distribution of a compiled (and therefore unmodifiable) version. Present requests for amendments from cooperators should be considered as helpful feedback. However, GRU has received some requests for versions tailored to the specific needs of a particular institution which it is not set up to provide. GRU should consider a compromise which would be to include the full coding of IADSS in the technical manual, with explanations and comments, so that a cooperator who purchases his own copy of dBASE III Plus could enter and modify the code as necessary. The sheer labor of doing so will probably discourage all but the most fanatical of users and should relieve the GRU of activities that could divert it from its primary mandate.

Manual No. 2 concerns the 1987 humid zone network trials. Although the manual is in its third edition, it still includes a number of important points which are obscurely presented. Some of these reflect the unsuitable field methods which have been prescribed for these trials; others involved poor use of language and inadequate editing. The Evaluation Team found that some of the points which puzzled its own members also have confused some network cooperators. The Team noted some unverifiable indications that queries to the CU about these confusing points had not been answered.

The Team can cite an number of examples of problems. For instance, the Team found an inadequate description of the cutting treatments (when and how to apply, frequency of repeat applications) and the consequent confusion with the regular biomass sampling. The Team also found examples of unsuitable practices which include the intention to record a dg per plant instead of diameter of each stem, confusing and arbitrary advice on which stems and branches to include in the calculation of dg, failure to record the number of stems which intersect the breast height plane, and the selection of random plants for biomass sampling instead of plants which approximate the plot mean. The Team emphasizes unfamiliar sampling techniques, such as for litter and post-establishment soil, need to be justified and described with special care. Few cooperators appeared to understand why this extra work was required compared with conventional tropical forestry research.

Manual No. 2 does not sufficiently emphasize the vital importance of keeping a detailed experiment history, in order to help explain variation in results from the network mean. The Evaluation Team found that every network trial differed in greater or lesser degree from the prescriptions in the manual but few cooperators had recorded these variations and none of those interviewed has used form U in IADSS to maintain the record electronically. The IADSS Manual (No. 1) should also emphasize the importance of keeping detailed experimental narrative records.

The Team found some indications that the manuals assumed a level of prior knowledge and experience which was not possessed by many of the actual users. The next editions should be checked to ensure that staff can understand and use them effectively.

Both manuals are essentially practical documents and assume a familiarity and understanding of the overall goal, context and multiple objectives of the network trials. This assumption is unwarranted and should be re-evaluated before future additions of the manuals are published.

The greatest weaknesses of the two manuals are:

1. The Contractor has not sufficiently indicated the degree of permissible variation by users from the main design. For example, most cooperators do not know if greater numbers of plots or trees per plot can be planted and assessed or how to cope with significant variation in soil or topography within an experiment site.
2. The IADSS user's manual does not mention the data storage limitations designed into the experiment database.
3. The Contractor does not provide adequate guidance on recovery from natural disasters. The Contractor makes no suggestions about changes in plot sizes or numbers of replicates in the event of poor plant production in the nursery, or whether age classes of seedlings can be mixed in one plot if the first sowing produced insufficient seedlings. The GRU has not included a list of error numbers

and information on their resolution in its user's manual, although it does recognize that users may encounter system errors and provides a form for the reporting of repeated errors to the GRU.

4. While the Contractor appears to have kept the number of manuals to a minimum (i.e., those that seem to be strictly relevant to the protocol of the 1987 humid zone network), Winrock should make reference to texts which treat field research and data management in a more comprehensive manner in order to enhance the level of knowledge of the cooperators.

F/FRED PHASE IBRIEFING NOTES FOR EVALUATION TEAMF/FRED CONTRACT WITH WINROCK - FUNDING ISSUESPIPELINE

Contract with Winrock	\$ 8.9 mil.
Obligations through 9/30/88	6.9 mil.
Expenditures through 9/30/88	4.3 mil.
Pipeline as of 9/30/88	2.6 mil.

RATE OF EXPENDITURE

FY 86 (\$ 48,000/mo.)	\$.6 mil.
FY 87 (\$146,000/mo.)	1.8 mil.
FY 88 (\$177,000/mo.)	2.1 mil.
FY 89 (\$200,000/mo. - current level)	2.4 mil.
FY 90 (\$167,000/mo.)	<u>2.0 mil.</u>
	\$ 8.9 mil.

F/FRED Activities and Budget Constraints

Purpose: This memo focuses on two related issues regarding the activities and funding for the F/FRED project. It will describe the advance to the second five-year phase of the project and the need to shorten the timeframe for Phase I by some six months in Years Four and Five. This memo also will outline selected attractive opportunities for subprojects that continue to arise within the framework of the F/FRED Project, and proposes future funding for those that offer the project a smooth transition into the second phase of the project. Important to both issues is the decision to begin funding Phase II in FY 90 rather than FY 91, as currently planned.

Background: Presently the program of F/FRED activities is operating at full program level. Plans for trainings and research grants developed earlier in the project have come to fruition with the development of short-courses, movement into the arid and semi-arid zone with network trials, and enactment of subcontracts for a set of multilocation tissue culture trials, Ph.D fellowships, and a curriculum development survey and workshop.

In spite of past concerns over the large pipeline for the project, the fact is that spending activity presently is accelerating at a rate consistent with that of a 10-year project -- as F/FRED is intended -- but surpassing that expected of a five-year project. This means that project activities and new obligations will, funds permitting, continue at a high level in Years Four and Five of Phase I, rather than scaling down toward project termination. As a dynamic project for fostering MPTS research and cooperation in Asia and globally, F/FRED needs to be flexible and support relevant efforts as they develop. Yet facing the prospect of a deceleration curve for the last two years of a five-year project, F/FRED faces an undesirable scaling-back of program activity to conform to the contract amount. Two alternatives present themselves: 1) accelerate the timeframe for moving into Phase II by some six months to preserve the momentum achieved in Phase I, or 2) add funds to the existing contract, through but-ins or other means, to keep activities at an appropriate level for the remaining two years. This would allow the initiation of several subproject opportunities now surfacing that would lead the project into its second phase.

Discussion: F/FRED is now experiencing the snowball effect in the generation of regional MPTS research initiatives. Coordination with other donors has opened opportunities for F/FRED to have a major regional role in developing collaborative research in both the biological and social sciences, to organize regional trainings for enhancing research capability, and to strengthen and create network links beyond the means envisioned in the contract. To date, these additional tasks taken on under the project include leading the effort for developing a plan for the control of the leucaena psyllid and funding related research, absorbing the intended India "buy-in" of nearly \$500,000 for biomass technology training, a workshop activity for integrating the social sciences into Asian forestry curricula, and the sponsorship of a linking staff position at CATIE. With the resulting program commitments, the project would have to move into Phase II in mid-FY 90 or else scale back.

In addition to those additional tasks already on the F/FRED agenda, opportunities continue to arise in which the project could play a leading role in improving MPTS research and the understanding of how farmers can (and already do) use trees in Asia. This is a key step in making forestry research institutions responsive to the problems faced by the rural poor. With the regional linkages already established through the F/FRED network, the proposed activities could take place most effectively under the project. Below are presented only those that, in addition to directly complementing existing F/FRED efforts, would also move the project into its second phase, where on-farm and related research, in conjunction with relevant extension activities, could provide the direct link in the transfer of improved technologies to the resource-poor farmer. (These are listed with other important but unfunded activities on the third page of the attached program budget.)

To take advantage of this evolving role in Asian forestry research, F/FRED will need additional funds, primarily for research planning and support. Over one-fourth of the project funds allocated for research support is committed to supporting the regional psyllid

control plan and related research grants. Given additional funding, F/FRED could maximize progress in other equally critical areas of MPTS research in the same way. These include:

Marketing analysis. Information on the markets for MPTS products is lacking. At the April Kathmandu workshop on standard methods for farm and village forestry research, scientists from around the region included this on their shortlist of critical areas for study. (\$20,000)

On-farm trials. Cooperators at the Karachin initiation of the Arid and Semi-arid network, and participants in the first series of national organizing meetings expressed interest in participation in on-farm MPTS research. A consultant has drafted a plan for integrating social science research with on-farm MPTS trials following a farming systems research approach. With the project's theme workshop early in 1989 dedicated to farmer-driven research, initiation of on-farm trials could provide a bridge into the second phase of the project and a step toward validation and extension of improved technologies. (\$100,000)

Improved weather data recording and analysis capabilities. The present network trials mark improved measurement of weather and soils data in experiments, but many Asian researchers still lack necessary weather station equipment and soil characterization information. The F/FRED network could provide weather stations for use in network trials in the arid as well as humid zone. In conjunction with this, F/FRED research in Hawaii involving two other A.I.D. projects, IBSNAR and NiFTAL, could take advantage of existing weather stations on Maui (MAUINET) to model tree response to two major site variables: temperature and precipitation. (\$460,000)

Initiation of activities in the third environmental zone. With the recent inclusion of ICAR in network activities, F/FRED has connections in the four principal Asian countries of the Mountain Zone to be explored in Phase II. With increased staff (1 additional network specialist for South Asia) and funding for planning activities, initiation of activities specific to this zone could be already underway by the beginning of Phase II. (\$400,000)

Further F/FRED and co-sponsored short course trainings. Like past co-sponsored short-courses and two F/FRED-developed courses (e.g., the courses on social science methods for Foresters and Forestry for Social Scientists given in June at UPLB), these would be determined by network member training needs. Added courses would include Micro-computers in MPTS Research, a workshop on appropriate biotechnology techniques, and further co-sponsored courses. A workshop on MPTS Information Management for librarians and researchers, conducted in coordination with ICRAF staff, has been in the planning stages and could take place in 1989 with appropriate funding. (\$210,000)

Workshop on networking in Latin America. In coordination with CATIE, F/FRED could sponsor and help organize a workshop presenting networking activities and their mechanisms, for the development of a Latin American network of MPTS researchers. (\$45,000)

Expanded role for National MPTS Organizing Meetings as mechanisms for country-specific research support. The NOMs may take on the responsibility for compiling compendia of forestry research institutions and studies in each country. (\$30,000)

Support for a network of biotechnology research initiated under Task Order 52, including two network workshops for the exchange of information of tissue culture techniques and for the arrangement of twinning arrangements among interested institutions.

Recommendations: Based on F/FRED's activity to date and tentative plans for the future, two alternative recommendations are presented here. First, the project should continue to pursue those research goals identified by scientists and farmers in the region and included on the project agenda, such as national organizing meetings. To avoid an undesirable slowdown of activity before moving into the second phase of the project, A.I.D. should provide for the second phase to begin in mid-FY 90.

A second option to take advantage of opportunities for a smooth transition into directly related activities that will be explored further in Phase II would be for A.I.D. to consider making available an additional \$1.47 million to Phase I of the project.

P/VEE Program Budget
(assumes Phase I ends 3/31/80)

Dec. 8, 1988

Budget Item	Am. Billed As of 10/31/88	Budget Amount	
=====			
ADMINISTRATION			
Salaries and Wages	\$783,020	\$1,512,971	includes 1 additional CU staff starting mid-89
Allowances	\$96,025	\$233,617	
Fringe Benefits	\$280,614	\$522,291	
Overhead	\$583,553	\$1,031,424	
Nonexpendable Equipment	\$197,167	\$205,647	
Other Direct Costs	\$253,664	\$354,475	
Total Administration	\$2,194,043	\$3,800,425	
=====			
SUBCONTRACTS			
University of Hawaii	\$556,575	\$1,419,168	
Auburn Biomass Training	\$252,497	\$447,000	
PLANTER Tissue Culture Trials	\$13,736	\$107,000	
Yale Curriculum Workshop	\$6,028	\$247,000	
CATIE Support Positions	\$121,899	\$164,021	
Total Subcontracts	\$951,535	\$2,384,189	
=====			
NETWORK DEVELOPMENT			
I. Committee Administration			
A. All network-related travel thru 4/88	\$475,962	\$475,962	
B. Steering & Research Committee meetings	\$23,000	\$23,000	
C. Future Committee meetings			
1. Philippines (Research Comm.)		\$17,000	
2. Thailand (Steering C.)		\$12,000	
D. Other small meetings		\$4,000	
E. Staff Travel to Meetings, Yrs 4A5		\$12,000	
II. Theme Meetings/Workshops			
A. NPTS for Small Farm Use (TO 26)	\$39,000	\$39,000	
B. Karachi - Arid Zone Est. (TO 40)	\$40,000	\$40,000	
C. Orienting Research to Sm Farms (TO 46)		\$35,000	
D. National Org. Meetings (TO 28)	\$34,703	\$50,000	
E. Forestry Baseline Compendiums (TO 54)		\$10,000	
F. Psyllid Control meeting (1/89)		\$35,000	
III. Field Tours			
A. humid zone field tour	\$15,977	\$40,000	
B. CU Site Visits	included above	\$5,000	
Total Network Development	\$628,642	\$766,000	

Budget Item	Am. Billed As of 10/31/88	Budget Amount
TRAINING		
I. Ph.D. Training @ Michigan State U.		
A. Candidate Selection, WI Costs (YO 41)	\$7,000	\$7,000
B. Study Costs (MSU Subcontract, WI costs)	\$14,767	\$255,366
II. Short-term Training		
A. Earlier co-sponsored courses (YO 34)	\$12,608	\$12,608
B. Short courses		
1. Forestry/Social science courses (UPLR)		
a. Course expenses	\$55,000	\$55,000
b. Participant travel	\$15,950	\$15,950
2. Agrofor. Problem-Solving (YO 43)	\$15,784	\$15,784
3. Forestry Research Management course (VEM)	\$2,000	\$2,000
4. WFIS Research Methods		\$20,000
5. Institutional Training		\$4,000
6. Co-sponsored courses	\$5,266	\$14,000
Total Training	\$132,915	\$451,642
RESEARCH SUPPORT		
I. Research Grants and Study Costs		
A. Leucaena psyllid control		
1. Regional plan support (YO 34)	\$24,265	\$43,763
2. Research grants (YO 34)	\$3,062	\$155,513
B. Cerauphara collections		
1. 1987 trials (YO 27)	\$17,020	\$17,020
2. A. auriculiformis (YO 47)	\$32,250	\$33,000
3. A. marginis (YO 44)	\$14,000	\$25,000
4. Other (YO 44)		\$22,820
C. Network Trials		
1. 1987 trials (YO 39, 27, 36)	\$36,788	\$65,788
2. 1988 trials (YO 36)		
a. K-du design meeting (YO 40)	\$25,000	\$25,000
b. Establishment costs	\$3,000	\$11,000
c. Soil characterizations		\$20,000
d. Manual preparation	\$1,000	\$1,000
3. Auriculiformis provenance trial		\$14,000
D. Auriculiformis cooperative studies	\$10,000	\$14,000
E. Small Research Grants (YO 36)	\$5,000	\$75,000
F. CU-Designated grants (YO 31)	\$12,500	\$12,500
G. Social Science Studies		
1. Thailand (2)	\$5,000	\$5,000
2. Malaysia	\$1,000	\$3,000
3. Philippines	\$3,000	\$3,000
4. Indonesia	\$1,500	\$3,000
5. K-du Workshop (YO 32)	\$50,700	\$50,700
6. Consultant Studies (YO 32)	\$5,352	\$5,352
8. Socio-biotech studies (YO 22)	\$5,120	\$10,000
H. Social Science Network Study (YO 33)	\$1,000	\$10,000
I. Farming System Methodologies	\$5,000	\$5,000
J. Biotech studies (YO 22)		
1. Tissue culture feasibility	\$25,500	\$25,500
2. Bt. Fra. Use of Cross & resins	\$10,000	\$10,000
K. Tree Breeding for Farmer Objectives (YO 45)		\$50,000
Total Research Support	\$302,454	\$658,964

Budget Item	Am. Billed As of 10/31/88	Budget Amount
=====		
USAID SUPPORT / CONSULTANTS	\$163,935	\$183,752
PUBLICATIONS		
1. Newsletter	\$21,474	\$39,000
2. Scientific articles, Proceedings, technical and research series	\$48,917	\$72,000
3. Core libraries, Books (TO 16)	\$34,249	\$56,000
4. Handbooks (TO 15)	\$57,260	\$154,005
5. Brochures (TO 45)	\$20,000	\$20,000
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Total Publications	\$181,900	\$341,005

Total Estimated Costs	\$4,560,824	\$8,947,985
Difference with contract amount		\$0

Contract Costs by Project Component

1. Management/Information/Subcontracts (W1-Atl.)	\$2,032,300	\$3,536,087
2. Global Research (F/FRED-Hawaii)	\$556,575	\$1,419,168
3. Asia Network (F/FRED-Bangkok)	\$1,968,803	\$3,907,960

Important activities not included in the above budget:

Network Development	
WITS Research Workshop (with IFB)	\$20,000
Committee meetings for 1990	\$32,000
National Org. Meetings for 1990	\$30,000
Twining among Asian Institutions (YO 35)	\$30,000
Support for more activity in India, PNG	\$100,000
Mountain Zone Initiation	\$300,000
Research Support	
Marketing Analysis Research	\$20,000
On-farm network trials initiation	\$100,000
Additional Small Grants (YO 36)	\$30,000
Weather measurement f/ field trials	\$60,000
MAUINET trials	\$400,000
Additional Mission Support (FI \$9.90)	\$30,000
Training/Information Exchange	
Other F/FRED short courses	\$120,000
Co-sponsored courses	\$50,000
I/DSS/MIRA Workshop -- Latin America	\$45,000
Translation of WITS papers (YO 37)	\$27,000
Information Management Workshop	\$40,000
Biotechnology Workshop (YO 52)	\$40,000

Total additional activities	\$1,474,000

Brief Notes on F/FRED Program Budget

An additional Coordinating Unit staff position has been included in the estimation of Administration Costs (approximately one person-year); Other Direct Costs is increased to a level consistent with existing expenditures, tapering in Year Five.

Subcontracts. The amounts allocated for the Auburn training has been reduced by the amount of the India workshop on nursery production techniques, due to the Delhi Mission's determination that the workshop should take place during Phase II (later in 1990).

Network development. Not able to be included in this budget are committee meetings and National Organizing Meetings for 1990.

Training. Because in-country expenses for the Ph.D. fellows will not be used before 4/1990, these training costs are assumed for the purposes of this budget to be taken up in Phase II.

Research Support. The Tree Breeding for Farmer Objectives activity is that planned through Task Order 49, involving both social and biophysical scientist input. The "Spent to Date" amounts are estimates due to the nature of reporting costs according to A.I.D. budget categories.

U.S.A.I.D. Support. This allows for several new mission requests for consultant/technical support.

Spending for the past seven months has averaged \$213,500 per month. This budget assumes a rate of \$258,000 per month for the remaining 17 months.

Appendix 8**List of Acronyms**

ADB	Asian Development Bank
A.I.D.	Agency for International Development
ASEAN	Association of South East Asian Nations
CABI	Commonwealth Agricultural Bureaux International
CATIE	Centro Agronomico Tropical de Investigación y Enseñanza
CGIAR	Consultative Group for International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CNRS	Centre Nationale de le Recherche Scientifique
CSIRO	Central Scientific and Industrial Research Organization
CU	Coordinating Unit
DBMS	Database Management System
DBs	Databases
F/FRED	Forestry/Fuelwood Research and Development Project
F/MOD	Module for Statistical Analysis
FAO/UN	Food and Agricultural Organization of the United Nations
FRIC	Forestry Research and Information Centre
FRIM	Forestry Research Institute of Malaysia
FY	Fiscal Year
GOT	Government of Thailand
G & Y	Growth and Yield

GRU	Global Research Unit
GTZ	German Agency for Technical Cooperation
IADSS	Information and Decision Support System
ICIMOD	The International Center for Integrated Mountain Development
ICRAF	International Council for Research in Agroforestry
IDRC	International Development and Research Centre
INCOFORE	International Consultative Organization on Forestry Research
IUFRO	International Union of Forestry Research Organizations
KUFF	Kasetsart University Forestry Faculty
LDC	Less-developed Country
MOU/LOA	Memoranda of Understanding and Letters of Agreement
MPTS	Multi-purpose Tree Species
NFTA	Nitrogen-Fixing Tree Association
NOMs	National Organizing Meetings
OFI	Oxford Forestry Institute
PP	Project Paper
PSA	Personal Service Agreements
SPDC	Special Program for Developing Countries of IUFRO
UNESCO	United Nations Education, Scientific and Culture Organization
UPLB	University of the Philippines at Los Banos
U.S.A.I.D.	United States Agency for International Development
VF/MDS	Village Forestry/Minimum Data Sets

Appendix 9

List of People Contacted

Thailand

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Dr. Niwat Ruangpanit, Associate Dean

Choob Khemnark, Silviculture

Dr. Lert Chuntanaparb, Forest Management

Dr. Utis Kutintara, Forest Biology

Supichaya Bhasaputra, Forest Products

Dr. Chanchai Yarwudhi, Forest Engineering

Dr. Choopol Ngampongsai, Conservation

Dr. Suree Bhumibhamon, Chairman, MPTS Research Committee

Center for Applied Economics Research, Kasetsart University
Bangkok, Thailand

Dr. Yongyuth Chalamwong, Economist

National Research Council of Thailand
Regional Community Forestry Training Center
Bangkok, Thailand

Dr. Somsak Sukwong, Director

FAO Regional Wood Energy Development Programme in Asia
Bangkok, Thailand

Dr. Raj S. Gujral, Sr. Technical Advisor

Dr. Cor P. Veer, Rural Sociologist

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Bangkok, Thailand

Siriphong Pattanavibul, Research Officer

Winai Supatanakul, Researcher

Somsak Chaimongkol, Researcher

Suthijet Chandrasiri, Researcher

Chiang Mai University
Chiang Mai, Thailand

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Dr. Anan Ganjanapan, Anthropologist
Khun Benja, Social Scientist
Three Researchers

Royal Forest Department
Bangkok, Thailand
Vichien Sumantakul, Division of Silviculture

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Bunyarit Puriyakorn, Forest Technical Officer

Chulalongkorn University
Dr. Charit Tingsabadh, Social Research Institute

FAO Regional Office for Asia and the Pacific
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Bangkok, Thailand
Dr. John Cole Cool, Project Manager

Winrock International (Field Coordinating Unit)
Dr. Kenneth MacDicken, Team Leader
Dr. Charles Mehl, Social Scientists
Dr. Lee Medema, Forest Economist
Dr. Celso Lantican, Training Officer

Dr. Jingjai, IDRC (Canada)

Dr. David Thomas, Ford Foundation

Mr. Douglas Boland, CSIRO (Australia)

U.S.A.I.D./Thailand
Douglas Clarke, Agriculture Development Officer
David Delgado
Mike Philly
Will Knowland

U.S.A.I.D./Burma
Douglas Pickett, Agriculture Development Officer

Nepal

Ministry of Forestry and Soil Conservation (MFSC)
B.N. Khunjeli, Secretary
M. Haque, Forestry Advisor
Keshav Kanel, Forest Economist, Master Plan for the
Forestry Sector

Department of Forests, Forest Survey & Research Office, MFSC
Ek Raj Sharma, Chief
Rajendra B. Joshi, Research Officer
Ramesh Shakya, Assistant Research Officer
B.P. Lamichhane, Research Officer

Department of Medicinal Plants, MFSC
Dr. Samar B. Malla, Director General
S.B. Rajbhandary, Scientist

International Centre for Integrated Mountain Development
Dr. K. Colin Rosser, Director
Dr. Mahesh Banskota, Chief Program Coordinator
Dr. K.K. Panday, Mountain Farming Systems
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Dr. T.B.S. Mahat, Forest Management
Dr. K.G. Tejwani, Consultant

Institute of Forestry
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Jyoti Rayamajhi, Assistant Dean, Academics
A.K. Das, Assistant Dean, Administration
Amulya R. Tuladhar, Faculty Member
Min B. Rayachhetry, Faculty Member
Mohan Krishna Balla, Faculty Member
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Institute of Agriculture and Animal Science
Rampur, Nepal
N.P. Joshi, Assistant Dean, Academics
Dr. K.P. Sharma, Assistant Dean, Administration
Dr. T.P. Barakoti, Seed Technologist
F. Thapa, Research Officer
Ganga Prasad Kandel, Research Assistant
Murali Adhikari, Research Assistant

IDRC Farm Forestry Research Project

Hetauda, Nepal

Dr. Pradeep Dixit, Coordinator

Large Farmer involved in the project

Small Farmer involved in the project

Terai Community Forestry Project

Hetauda, Nepal

Patrick Evans, Advisor

Dr. Charlotte Flower, Advisor

Nepal/UK Forestry Research Project

William Finlayson, Acting Team Leader

Dr. Patrick Robinson, Fodder Tree Specialist

Peter E. Neil, Plantation Silviculturist

Argonne National Laboratory/Nepal Coppice Reforestation Project

Bruce M. Young, Environmental Analyst

Kran Kilpatrick, Advisor

Shanti Rai, Social Scientist

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David M. Wilson, Director

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Mr. Cheah Leong Chiew
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Dr. Yap Son Kheong
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Dr. Kamis Awang, Dean
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ASEAN Institute of Forest Management
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Dr. Ricardo Umali, Under Secretary

Philippine Institute of Development Studies
Dr. Marian de los Angeles

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Dr. Reynaldo de la Cruz

Ecosystems Research and Development Bureau
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National Crop Protection Center
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Dr. Lucylen B. Ponce
Mr. Edilberto Nasayao, Head, Dept. of Forestry
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Dr. John Sullivan, Director, FENR, S&T
Dr. Ian Morrison, Project Manager, S&T
Dr. John Grayzel, S&T, RD, RRD
Dr. Robert Ichord, ANE, TR, ENR
Dr. Donald Messerschmidt, USDA, Forestry Support Program
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MacDicken, Kenneth G., Michael R. Dove, James L. Brewbaker and William F. Hyde. 1986. Multipurpose Tree Species Networks for the Forestry/Fuelwood Research and Development Project: Recommendations.

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Appendix 11 Consolidated List of Recommendations

3.1.3 F/FRED Project Assumptions

Recommendations:

1. A.I.D. should clarify purpose statements A and C when the PP is amended.
2. As discussed in other sections, A.I.D. should increase the funds available for the end of Phase I.

3.2.1.1 Country Specific Forestry Research Sector Assessments and Plans

Recommendation:

1. The Contractor should continue to use F/FRED resources primarily to facilitate effective organization of interdisciplinary meetings between personnel in forestry, agriculture and social science entities and promote consideration of MPTS research policy, problems and opportunities in the Asia region.

3.2.1.2 Institutional Specific Guidelines and Plans for Research and Management

Recommendation:

1. The Contractor should continue to provide support for this important area of work.

3.2.1.3 Regional Research Planning, Evaluation and Related Training

Recommendation:

1. The Contractor should identify lessons learned in the planning and implementation of the networks and share them with MOU/LOA institutions and interested donors.

3.2.2.1.1 MPTS Research Network Species Assessment

Recommendations:

1. The Contractor should schedule site visits for the participants managing arid and semi-arid network trials during the second year of the experiment.

2. The Contractor should schedule site visits for participants managing network trials during the year major farm management treatments are first initiated.
3. The Contractor should use the newsletter to communicate information on network trial management and measurement activities.
4. The Contractor should use the small grants program to capture and analyze information on other field trials, both current and past, and to establish trials to fill knowledge gaps.

3.2.2.1.2 Species Improvement

Recommendations:

1. F/FRED should continue to support seed collection expeditions for indigenous Asian MPTS.
2. The Contractor should use the small grants program to focus both biological and social science research on the tree improvement opportunities of MPTS.

3.2.2.1.3 Field Trial Management

Recommendations:

1. The Contractor should support additional research on the existing network species. This research should concentrate on expanding the information base about alternative management systems. Extension programs can use information of this sort to develop biological and economic production functions for a range of feasible farming systems.
2. The Contractor should use network species trials to focus training activities in research methods and to stimulate communication between network participants.

3.2.2.2 Considerations of Network Feasibility

Recommendation:

1. The Contractor should plan the next round of field trials so that the basic decisions will reflect consideration of input from social scientists.

3.2.2.2.1 Linkage Facilitation

Recommendations:

1. The Contractor formally should bring institutions with predominantly social science functions into the F/FRED network through the use of MOU/LOA's.
2. Winrock should modify the Yale University sub-contract so that it facilitates linkages between both Yale and Asian institutions and between Asian institutions with forestry education programs.

3.2.2.3.1 Network Meetings and Site Visits

Recommendations:

1. The Contractor should have at least one theme meeting annually. A theme selected should encourage reporting on both biological and social science research findings.
2. The Contractor should schedule annual site visits for the scientists responsible for the field trials in each of the networks and should organize more formal and informal meetings on social science issues for both social and biological scientists. Agendas for these meetings should include research methods, collaboration with biological research programs, data analysis and the like.

3.2.2.3.2 Newsletters and Publications

Recommendations:

1. The Contractor should move the Farm Forestry News to Bangkok.
2. The Contractor should consider the pros and cons of moving F/FRED's publication function to Asia.
3. The Contractor should correspond more with institution librarians to provide details on the date of shipment and expected arrival date to help insure delivery of the materials.
4. The Contractor should prepare an F/FRED publications policy.

3.2.2.3.3 Training

Recommendations:

1. The Contractor should prepare a comprehensive long-term training strategy and plan. This activity should result in an MPTS Research Network training plan, approved by the Steering and Research Committees and of interest to other donors.
2. The Contractor should allocate additional F/FRED resources to short-term training, even in the absence of a long-range plan.
3. To help ensure that appropriate people receive short-term training during Phases I and II, the Contractor should:
 - * Narrowly define training scopes of work and select non-glamorous but adequate training sites and
 - * Repeat training courses at relatively short intervals until the training opportunities have addressed all levels of staff for which the training was designed.
4. The Contractor should restrict any future Ph.D. fellowships to participants from cooperating institutions.
5. The Contractor should utilize Ph.D. thesis advisors located in Asia.

3.2.2.3.4 Special Research Support

Recommendations:

1. CU personnel should explore with U.S.A.I.D. Mission monitors and MOU/LOA personnel mechanisms that allow funds to be transferred to the institutions.
2. The Contractor should continue the small competitive grants program on an annual basis.
3. Include in Phase II funds for one dedicated micro-computer per cooperating institution.

3.2.2.4.3 Linkages Between the Socio-economic and Biophysical Sciences

Recommendations:

1. Start now to plan the next round of species field trials so that the basic decisions will reflect consideration of recommendations from socio-economic scientists as well as those of biological scientists.
2. Reserve funds for special grants to individuals or organizations to help carry out approved interdisciplinary MPTS research involving biological and socio-economic scientists.
3. Establish working arrangements with CNRS Research Team number 299 ("Milleaux, Societe et Culture en Himalaya") and others working with interdisciplinary research methodologies, to serve as models for these interdisciplinary approaches. In due course, develop and run workshops in these methodologies.

Note: The French Centre Nationale de la Recherche Scientifique (CNRS), has worked in this way for years. Under the CNRS system, foresters, animal husbandry specialists, geographers, geologists, social scientists and other team members work together to look at specific areas as systems. A systems approach provides for the potential prediction of the effects of proposed interventions. Potential strategies for local problems can then be proposed with increased confidence. The essence of the CNRS system is to propose the solutions after the team has studied the area, not to go in to an area with the potential solution already in mind.

4. The Coordinating Unit must make a greater effort to involve scientists on the staffs of organizations outside traditional forestry research institutions and to encourage the participation of members of Asian social science and economic research organizations in resource management research.

3.2.2.4.4 Research and Training

Recommendations:

1. F/FRED should shift the bulk of socio-economic research attention to small grants primarily focusing on local comparative research. The effort should be aimed at producing data from which significant generalizations eventually can be drawn.
2. To clarify direction and guide future work, the Contractor should prepare a prioritized social science research plan. The plan should be prepared by the Coordinating Unit, in consultation with working committees of network social scientists and the Global Research Unit. The plan should outline inputs, their dates

and the responsibility of each group. The plan should be reviewed by the Research Committee.

3. The Contractor should provide more training in the area of research methodology, particularly in methodological areas not familiar to all researchers. Training should be in-country, to help insure that those actually carrying out research are trained. Local trainers should be utilized. Wherever possible, training should directly focus attention on research efforts that are underway.
4. The anthropologist, economist and training officer in the Bangkok Coordinating Unit should prepare an assessment of socio-economic training needs of cooperating institutions to support MPTS research activities aimed at small farmers. A long-range, prioritized workplan and budget to accomplish the training should accompany the assessment.

3.2.2.4.5 Database

Recommendations:

1. For now, the VF/MDS should be greatly simplified to cover, perhaps, one of the many specific problem areas identified for possible study, such as resource management practices, agricultural practices, land tenure or legal structures. The Research Committee of F/FRED should be consulted on the final selection of this topic. The activity should be seen primarily as a training and testing activity which will strengthen the network and produce some substantively useful results. It should not be seen as a singular or significant contribution to an overall synthesis. In carrying out the activity, a questionnaire should be prepared which is fairly short and relatively easy to administer. The questionnaire should be produced and assessed in consultation with expected network participants as well as GRU. The procedural purpose should be to bring regional social scientists together to carry out a single region-wide research activity. Results should be reviewed for guidance on a prospective VF/MDS.
2. The Contractor should arrange for a survey(s) of on-the-shelf data and for integration of these data into work on VF/MDS and other active MPTS data-files. The Contractor should also prepare standard publications to share the results across the region.
3. Once the surveys (and all the small grant research recommended elsewhere) have been completed, the Contractor should work with Asian social scientists to test techniques to compare data and extrapolate information collected into a database.

3.2.2.4.6 Economic Analysis

Recommendations:

1. The Coordinating Unit's Forest Economist (or a consultant under his guidance) should devote whatever time is needed (clearly, much more than now) to bring economics and economists into the mainstream of the MPTS research activity.
2. As a first order of business, the Contractor should prepare a workplan that guides the design and testing of methodology for economic contributions to the socio-economic data sets intended to link with biological research. The plan should provide for studies of marketing, land tenure, household income, farm size, enterprise mix, gender labor inputs and the like. The Research Committee should review the workplan, and the Contractor should work with Asian economists to implement the approved workplan as soon as funds permit.

3.2.2.4.7 The Yale University Contract

Recommendation:

1. If feasible at this stage of sub-project implementation, consider revising Yale University's contract so that the sub-Contractor can work with one or more already interested Asian academic/research institutions (e.g., Pakistan Forestry Institute) to actually help revise a curriculum.

3.2.2.4.8 Gender Issues

Recommendation:

1. The Contractor should provide small grants for studies on gender issues affecting use of MPTS as soon as funds permit.

3.2.2.4.9 Capacity of the Contractor

Recommendation:

1. Add staff to CU to permit adequate attention to economic research. (See section IV A. for a consolidated recommendation on CU staffing.)

3.2.2.5 Facilitating the Networks

Recommendations:

1. The Contractor should arrange for one full-time coordinator for each of the present two MPTS research networks. For the next several years, each coordinator should spend more than 1/3 of his/her time away from Bangkok promoting organizational development and helping deal with operational problems.
2. In providing additional operational, advisory or consulting talent to help implement F/FRED, the Contractor should look to Asian countries as well as to the U.S. for qualified and acceptable personnel.
3. The Contractor should explore with ICIMOD the possibility of implementing a mountain zone network in collaboration with that international institution in Nepal.

3.2.3.3.1 Overall Assessment

Overall Recommendations:

1. A.I.D. should continue supporting development of IADSS for Asia and a global audience, in association with the other major developers of DBs.
2. Development of an IADSS bibliographic DB should be halted. However, work to secure access for cooperators to existing bibliographic DBs should continue.

3.2.3.3.2 Training and Instruction Manuals

Recommendations:

1. The GRU should devote more effort to training. This should include:
 - * The improvement of their manuals to the standards of commercial packages
 - * The preparation of fully-functioning demonstration data sets (one of which should be for a tropical timber species) and
 - * The preparation of tutorial(s)
2. The GRU must supplement office work with visits to train and encourage the actual users of IADSS on the micro-computers which they use in their own institutions.

3.2.3.3.3 Network Support by GRU

Recommendations:

1. The exact responsibilities of the GRU in relation to network cooperators and other users of IADSS should be clarified and made known widely.
2. The Contractor and sub-Contractor should provide a full-time, technically expert GRU presence with the CU in Bangkok to ensure more frequent and more prolonged contact with network cooperators and other users of IADSS. A.I.D. should consider the pros and cons of transferring the GRU to Bangkok or elsewhere in Asia.
3. The GRU should continue its ongoing series of meetings with developers of other tropical forestry DBs, especially MIRA and TREDAT.

3.2.3.3.4 F/MOD

Recommendation:

1. The GRU should set aside its work on F/MOD in favor of negotiating the terms for the building of interfaces between the DBs and a limited range of commercial packages for graphics and statistical analysis.

3.2.3.3.5 Data Sharing

Recommendation:

1. An issues paper should be prepared on data-sharing for consideration of the Research Committee.

3.2.3.3.6 Computer Hardware

Recommendations:

1. F/FRED should budget for one dedicated micro-computer system per cooperating institution and should negotiate new agreements to ensure that IADSS is the priority use of these machines.
2. F/FRED should fund uninterruptible power supplies (UPS) and associated voltage regulators for each network participant who does not already have this protection.

3. IADSS should be reworked so that individual DBs can be stored on one or more individual removable storage devices.

3.2.3.4 Biotechnology

Recommendations:

1. The biotechnology research of F/FRED should be devoted to the development of field-usable techniques of vegetative propagation.
2. The emphasis on high technology should be diminished and the real value of the Plantek contract reviewed in relation to the utility of the expected output.
3. Work on Rhizobium and mycorrhiza should be supported through small research grants, in institutions which are already involved productively in these fields.

3.3.1 Strategic Action Plan

Recommendation:

1. As a key planning document for Phase II, the Contractor should prepare a prioritized six-year strategic action plan covering 1990-1995 and tied to project objectives as well as a program budget.

3.3.2 Project Funding

Recommendations:

1. A.I.D. should seriously consider providing additional funds in FY 1989 or 1990 as needed to sustain the momentum of F/FRED.
2. Prior to consideration of additional Phase I funds, the current program budget should be scrutinized for possible savings, especially in administration and sub-contract costs.
3. A.I.D.'s financial planning through FY 1995 should include sufficient funds through central and regional budgets to provide A.I.D.'s proper share of support for activities necessary to F/FRED's successful completion.
4. If new funds become available, the Contractor should be prepared for an early increase in staff or consultants for its Bangkok Coordinating Unit.

3.3.3 The "Buy-In" Problem

Recommendations:

A.I.D. should:

1. Include "buy-in" authority in the Phase II contract for F/FRED.
2. Ensure that costs of "buy-ins" include an appropriate amount for F/FRED management expenses.
3. Limit "buy-ins" to areas of clear utility to the MPTS Research Network. A "buy-in" should not change the order of priorities.
4. Make buy-in opportunities available to other donors and Asian institutions.
5. Seek advice from the MPTS Research Network Steering Committee before proceeding.

3.3.4 Baseline Survey

Recommendations:

1. A.I.D. should arrange for development of a set of useful indicators for use by Asian MPTS Research Network managers and external donors.
2. The benchmark indicators should be identified primarily in light of F/FRED's network development of objectives. Identification of the indicators and ways of obtaining data concerning them should be worked on in conjunction with preparation of plans for Phase II. Asian MPTS research leaders, A.I.D. and the Contractor should be consulted in preparing the recommendations for benchmark indicators.

3.3.5 A.I.D.'S Management Role

Recommendation:

1. A.I.D. should decide which of the potentially conflicting roles it wants the F/FRED project managers to emphasize during Phase II.

3.4 Sustainability

Recommendations:

1. Discuss with the Steering Committee the desirability of beginning dialog on feasible steps to be taken by all parties to help ensure a sustainable Asian MPTS Research Network after the termination of F/FRED.
2. If the Steering Committee responds affirmatively, prepare and monitor a plan for taking feasible steps which will promote sustainability. The plan should be reviewed regularly by the main parties involved and revised when necessary.