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F/FRED-Asia Progress Report
September 1988

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

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I. INTRODUCTION

This report reviews the activities of the Forestry/Fuelwood Research and Development Services in Asia (F/FRED) Project from the start of contract through September 1988, focusing on progress since September 1987. For more detailed accounts of activities in the first two years of the project, please refer to the F/FRED-Asia Progress Report of September 1987. The interim progress report issued in May 1988 contains detailed accounts of project activity in the social sciences and the first series of National MPTS Organizing Meetings.

The F/FRED Project can be viewed as a cornerstone for the integrated program for natural resources presented by the U.S. Agency for International Development's Administrator in June 1988. A regional project involving the Bureau for Science and Technology's Offices of Rural and Institutional Development and Forestry, Environment, and Natural Resources, and the Bureau for Asia and Near East, F/FRED is addressing research needs in three of the agency's four programmatic thrusts for conserving tropical forests and biological diversity in developing countries. By enhancing Asian research in forestry, agriculture, and applied social sciences as each relates to small farmers' use of fast-growing multipurpose tree species, the project promotes improved management of forest resources, rehabilitation of degraded lands, and more intensive tree crop management (agroforestry).

This report presents project activities in network development, research planning and support, and training at the national, regional, and global levels. A matrix showing major activities under these headings appears on Page 6.

Workplans for the major project components appear in appendices 4 and 5.

II. SUMMARY

In its third year, the Forestry/Fuelwood Research and Development (F/FRED) Project has continued to gain momentum in expanding its network development, training, and research planning and support activities. The F/FRED Research Network became more fully associated with the common interest of its members when its governing committee elected to change the network's name to the MPTS Research Network. The network now consists of 20 member institutions in India, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Republic of China, Singapore, and Thailand. F/FRED has expanded its activity in India, Papua New Guinea, and Bangladesh considerably, with several Memoranda of Understanding (MOUs) now being approved.

With the 1987 Network field trials in the humid and sub-humid zone established, three more sets of network trials were designed in the past year for planting in 1989. Network trials for the arid and semi-arid sub-zones were designed by researchers from four countries, with the trials to be conducted on 27 sites. With the Australian Commonwealth Scientific and Industrial Research Organization (CSIRO), F/FRED has prepared for international provenance trials of Acacia auriculiformis. Recognizing the potential of tissue culture as a form of vegetative propagation, F/FRED has arranged for a set of international trials to compare growth of tissue-cultured plantlets with seedling progeny from the same parent stock of five priority species.

In addition to the specific research objectives of each experiment, network field trials provide a focus for network development and improvement of research methodologies.

The Information and Decision Support System (IADSS), a software package for researchers and managers, is being developed by the project's office with the University of Hawaii to support network research. The Global Research Unit in Hawaii distributed the experiment database to institutions conducting the 1987 network trials, and trained the technicians responsible for data collection in the use of the system. The experiment database is now being used to compare management treatments and their interactions with selected MPTS in the trials begun in 1987.

In addition to the experiment database, the system now contains the MPTS specialist database, an abstracts database of recent MPTS literature citations with abstracts, and a data analysis package with proven ability in intra- and inter-site analyses. As a result of scientists' response during the training course on the system, F/FRED developed and issued a generalized version of the experiment database for use on other forestry experiments. In developing IADSS, the Global Research Unit has continued to collaborate with the Tropical Agronomic Center for Research and Education (CATIE) in Latin America, CSIRO in Australia, and the International Council for Research in Agroforestry (ICRAF) in Africa. Subject to funding restrictions, the opportunity also

exists to collaborate with two A.I.D. projects -- the International Benchmark Site Network for Agrotechnology Transfer (IBSNAT) and the Nitrogen Fixing Tree and Legume (NiFTAL) Project.

F/FRED coordinates with other donors with the view that these links avoid unnecessary duplication of effort and bring about synergism. In November 1987, the project joined with the Canadian International Development Research Centre (IDRC) and the U.N. Food and Agriculture Organization (FAO) to host an international workshop on "Multipurpose Tree Species for Small Farm Use." Papers presented promising species, farming systems, and other aspects of research and small farm use of priority species and were discussed.

Another workshop focused on the major project goal of integrating applied social science and biological research on MPTS. "Standard Methods for Social Science Research on Farm and Village Forestry," also co-sponsored with other donors, brought social scientists working on natural resource issues together with foresters to address region-wide problems, and to make their research more useful to biological scientists and project managers. The workshop resulted in a plan for region-wide collaboration in a network study on farm and village forestry practices using standard methods and a minimum data set.

Theme workshops such as these, and the meetings for developing a regional research program for control of the leucaena psyllid infestation, provide forums for scientists to exchange information and ideas, and contribute toward the development of a regional research program.

F/FRED is also working to promote better communication among foresters, agriculturalists and applied social scientists within countries in Asia. National MPTS Organizing Meetings were held in eight countries in the past year to facilitate this communication, develop national research agendas, and select representatives to the MPTS Research Network's Research Committee. The revised committee structure, approved by the Steering Committee in April, guarantees an interdisciplinary perspective for planning network activities.

F/FRED was designed with the recognition that in addition to better communication and cooperation, research enhancement requires material and other support. In the past year, the project has pursued its role as organizer of the regional plan for control of the leucaena psyllid by funding over \$200,000 of psyllid control research. In addition to the program, begun in 1987, of small grants designated by the Coordinating Unit in Bangkok, the project now supports a program of small research grants to foster independent MPTS-related research. F/FRED also provided weather measuring equipment and microcomputers to institutions involved in network field trials.

Five applied social science case studies initiated in 1987 are being received in draft form by the Coordinating Unit. These studies, conducted in Indonesia, Malaysia, Philippines, and Thailand, represent an initial attempt to address farmers' uses and preferences for trees, and analyze major socioeconomic and cultural factors affecting these preferences.

The project is setting directions for Asian research with its plan to investigate farmers' preferences for tree characteristics. This information will be a valuable contribution of social scientists to the work of tree breeders. The project is preparing to approach the link between research and extension by developing an approach to on-farm network trials.

Responding to the shortage of quality germplasm, F/FRED has funded seed collections of priority species, including an extensive collection of Acacia auriculiformis with CSIRO, a collection of promising psyllid-resistant varieties of Leucaena by the Nitrogen Fixing Tree Association (NFTA), and other provenance collections.

F/FRED's program for training Asian scientists in improved MPTS research consists of both short- and long-term training. Last year F/FRED co-sponsored short courses on production and use of nitrogen-fixing trees, upland development, tropical forest ecology and management, forestry research management, and agroforestry problem-solving. The project funded the development of two courses, held in June at the University of the Philippines at Los Banos, designed to improve understanding and communications between foresters and social scientists.

Twinning arrangements between network institutions in Asia for the short-term exchange of scientists also improve network linkages. The Research Committee drafted a plan for F/FRED support of such arrangements at its meeting in April. In June, the project pledged to support a memorandum of understanding between the deans of forestry at the University Pertanian Malaysia and Kasetsart University. This MOU, calling for collaboration between the two universities on a symposium, trainings, and faculty exchange, marks another area where F/FRED is serving as a catalyst for network activities.

F/FRED is also facilitating collaboration between Asian and U.S. schools of forestry. The first group of participants from three Indian institutions completed seven months at Auburn University to develop better ways of growing trees on poor soils. The deans of two of the Indian universities involved took part in a study tour of U.S. forestry research institutions in April. The Auburn subcontract contains plans for a second training group, a technical assistance visit to India by a team of U.S. experts on wood biomass research in October 1988, procurement of laboratory equipment, and workshops in India on nursery technology.

The F/FRED fellowship program has been developed to strengthen Asian MPTS research capabilities, as well as forge further links

between Asian and U.S. universities. Following an intensive selection process, six graduate students from throughout Asia are beginning studies at Michigan State University in September 1988. Three will study subjects in the biological sciences relating to MPTS, and three will study social and economic subjects concerning farm forestry.

F/FRED publications, provision of core libraries, and other information activities improve the flow of information among researchers internationally. The project's publications include papers, reports, training manuals, videos, a volume of state-of-the-art papers on predictive modeling of MPTS, and workshop proceedings. The project newsletter, Farm Forestry News, is distributed in 70 countries. Three brochures present project activities to a broad audience. Workshops on proposal preparation and information management for MPTS have been planned. The Coordinating Unit in Bangkok will soon provide a literature search service to provide network members with citations relevant to their fields of inquiry.

The MPTS Research Network in Asia has both broadened and deepened its activity in its third year, using different mechanisms toward the same goal: collaborative scientific research that contributes to informed decisions by national policymakers on the one hand, and, on the other, addresses small farmers' needs for fuelwood, fodder, and other tree products.

	Country	Regional	Global
Network Development	<ol style="list-style-type: none"> 1) MOUs, LOAs 2) National MPTS Organizing Meetings to bring together agricultural, forest, and social scientists 3) Coordinating Unit country visits 	<ol style="list-style-type: none"> 1) MPTS Research Network Meetings 2) Research & Steering Committee mtgs. 3) Coordination with Regional Donors, USAID Monitors 4) Theme Workshops, Meetings 5) Field Trials Tour 	<ol style="list-style-type: none"> 1) Distribution of Proceedings, Newsletter, Network Brochures 2) Linkages, Coordination Meetings with Other Donors, International Centers (CATIE, CSIRO, ICRAF, ICRISAT)
Research Support	<ol style="list-style-type: none"> 1) Network trials--provision of seed, instructions, equipment 2) Small research grants 3) Psyllid Research Grants 4) Germplasm collection 5) Social science case studies 6) Provision of computers 7) Core libraries and related support 8) Soil characterizations 9) USAID-requested Technical Assistance 	<ol style="list-style-type: none"> 1) Standardization of Network trial methodology 2) International experiments in 2 environmental zones 3) International tissue culture trials 4) International provenance trials 5) Regional research meetings (psyllid research, social science research) 6) Support f/ Regional Psyllid Coordinator and Deputy Coordinator 7) Support for Collaborative Social Science Network Study 8) Germplasm collections 9) Network Studies for Research Series 	<ol style="list-style-type: none"> 1) Development of Experiment Database, other IADSS components, manuals 2) Workshops, state-of-the-art papers on MPTS predictive modeling 3) Integrated socioeconomic and agroforestry studies 4) Improved on-farm research methods 5) Distribution of Research, Technical series, special reports
Training	<ol style="list-style-type: none"> 1) Standard Methodology and Data Entry and Analysis Courses 2) India-Auburn Biomass program 3) USAID-requested Consultants (e.g., Nepal, Burma trainings) 4) F/FRED courses addressing country training needs 	<ol style="list-style-type: none"> 1) F/FRED regional short courses 2) Co-sponsored short courses 3) Sponsorship of participant travel to other courses 4) Twinning between Asian institutions 5) IADSS Trainings 	<ol style="list-style-type: none"> 1) Curriculum development workshop with Asian schools of forestry 2) Maintenance of short-term training inventory database 3) Publication of agroforestry handbooks

Figure 1. Matrix showing F/FRED activities

III. NETWORK DEVELOPMENT

A principal goal of the F/FRED project is the establishment of a network of scientists for the exchange of information and enhanced research on multipurpose tree species (MPTS) to address the needs of small-scale Asian farmers for fuelwood, fodder, and other tree products. The project also is designed to coordinate with other donor agencies and international research organizations working in agroforestry and social forestry research.

Based on the recommendations of the 1984 International Union of Forestry Research Organizations (IUFRO) Conference held in Sri Lanka, F/FRED focuses its research support efforts on eight priority tree species, according to environmental zone:

Humid and Sub-Humid Tropics

- o Acacia mangium
- o A. auriculiformis
- o Melia azedarach
- o Leucaena spp.

Arid and Semi-arid Tropics

- o Dalbergia sissoo
- o Eucalyptus camaldulensis
- o Acacia nilotica
- o Azadirachta indica

Participants in the design of network experiments for the arid and semi-arid zone added two species to this list, Prosopis juliflora and P. cineraria.

The F/FRED Research Network formally began with the Forestry Networks workshop held in September 1986 in Bangkok, Thailand. Scientists at that meeting adopted an organizational framework that extends membership and/or observer status to organizations working in the biophysical and social sciences related to forestry and agricultural research. A Steering Committee acts as the governing body of the network, guided by a Research Committee.

At the meeting of these committees held in Kuching, Malaysia, in April 1988, the network's name was changed from the F/FRED Research Network to the MPTS Research Network. This is viewed as a sign that network members now feel a sense of ownership, that the network is theirs to use and develop, and not an external apparatus unilaterally dictated by a donor agency.

Membership in the MPTS Research Network takes place through the Memorandum of Understanding (MOU), which provides the basis and respective obligations for cooperation between member institutions and the F/FRED project. Specifically, the MOU provides guidelines for information database development, germplasm management,

research improvement through workshops, training, and coordination of programs with other organizations involved in MPTS research.

At present, 15 institutions in India, Malaysia, Nepal, Pakistan, Papua New Guinea, Philippines, Taiwan, and Thailand have signed MOUs to become members of the MPTS Research Network. Others with Bangladesh and India are pending formal approval.

Another basis for involvement in the network is the Letter of Agreement (LOA), which recognizes the mutual interest of an institution and the F/FRED project in research and management of MPTS without the formal obligations of the MOU. To date, seven institutions have signed LOAs with F/FRED.

1. Governing Framework

Revisions to the structure of the Steering and Research Committees were approved by the Steering Committee at a meeting in Kuching, Malaysia in April, 1988. Briefly, the revisions make the network structure more responsive to member research organizations in participating countries by allowing for selection of Research Committee representatives at each country's National Organizing Meeting. The new structure also ensures a more integrated interdisciplinary network perspective for determining network activities by ensuring that one-third of the Research Committee members are social scientists. Membership of the two committees overlaps for efficient and effective interface between them. For details of the new committee structures, see the revised network framework (Appendix 2).

2. National MPTS Organizing Meetings

According to the revised network framework, National MPTS Organizing Meetings are to be held annually in each of the participating countries. The purposes of these meetings are to (1) provide a forum for the exchange of information and views on F/FRED-related research, (2) monitor on-going network-related experiments, (3) select a country representative(s) to serve on the Research Committee, and (4) develop a national MPTS research agenda for the selected representative(s) to present to the Research Committee.

The meetings are open to all scientists and researchers in each country who are interested in MPTS-related research. Organizers make efforts to ensure participation by foresters, agriculturalists, and applied social scientists.

The Research Committee members of each country are currently organizing the second round of National Organizing Meetings. A listing of the organizers and tentative dates appears in Table 1.

Table 1. Tentative schedule for the second series of National Organizing Meetings.

<u>Country</u>	<u>Date</u>	<u>Number of Representatives to be selected</u>
Bangladesh	To be determined	2
India	July, 1988	2
Indonesia	January, 1989	2
Malaysia	February, 1989	1
Nepal	April, 1989	1
Pakistan	November, 1988	1
Philippines	October, 1988	1
Sri Lanka	To be determined	2
Taiwan	February, 1989	2
Thailand	December, 1988	1

3. Country Visits

A major network development activity is on-site needs assessment and discussions with potential network members to familiarize them with the MPTS Research Network. Visits by the Coordinating Unit staff to countries in the region help to determine appropriate project activities for enhancing institutional MPTS research programs. These visits have established important contacts with both USAID mission staff and the scientific communities in these countries, and have resulted in the expansion of the network through new MOUs and LOAs. Table 2 lists country visits made during the reporting period.

4. Network Field Trials Tour

The F/FRED Coordinating Unit has arranged for network members participating in the network field trial experiments established in 1987 in the humid and sub-humid zone to tour the other experiment sites. Scheduled to take place October 16-29, 1988, the tour aims to accomplish two major objectives:

1. Review progress and problems with the network experiments in five of the participating countries.
2. Conduct a travelling seminar to include the following topics:
 - o guidelines of nursery techniques
 - o development of standardized MPTS research measurements
 - o modification of the 1987 network trials minimum data set
 - o data analysis and management for the experiments
 - o designs for future network experiments
 - o means of making research more accessible to small farmers
 - o extension of duration of network field trials
 - o possibility of future field tours

Table 2. Coordinating Unit Country Visits, September 1987 - September 1988.

<u>Country visited</u>	<u>Dates</u>	<u>Traveler(s)</u>
1987		
Burma	September 21 - 26	CU team
Philippines	Sept. 30 - Oct. 2	Medema
Philippines	October 5 - 8	MacDicken
Pakistan	October 12 - 16	Medema
Pakistan	November 16 - 19	CU team
Kenya (ICRAF)	November 19 - 25	MacDicken
Sri Lanka	November 22 - 25	Mehl, Medema
Indonesia	December 2 - 5	Mehl
Manila	December 6 - 10	MacDicken
Malaysia	December 10 - 16	Medema
1988		
Nepal, India	January 14 - 25	Mehl
Philippines	Jan. 27 - Feb. 4	MacDicken
Singapore	February 9 - 11	MacDicken, Niblock
Pakistan	February 21 - 26	Medema
Philippines	Feb. 22 - Mar. 3	MacDicken
Nepal	March 16 - 26	CU team
Malaysia	April 4 - 8	CU team
Nepal	April 25 - 29	Mehl, Medema
Peoples Republic of China	May 10 - 20	MacDicken (IDRC funded)
India	July 2 - 15	MacDicken, Medema
Bangladesh	August 7 - 12	MacDicken, Mehl
Pakistan	Aug. 28 - Sept. 8	Medema
Malaysia, Philippines	Sept. 1 - 11	Lantican

5. Theme Workshops

Workshops on specific issues of MPTS research provide a focus for network development and information exchange. In addition to offering a forum for strengthening ties among researchers, these workshops contribute to the development of a regional research approach. Several of the National MPTS Organizing Meetings discussed in item 2 developed round particular issues of concern to researchers, and provide an illustration. Others are explained below.

MPTS for Small Farm Use

The F/FRED Coordinating Unit organized a workshop on "Multipurpose Tree Species for Small Farm Use," held in Pattaya, Thailand, November 1-5, 1987. F/FRED co-sponsored the workshop with the International Development Research Centre (IDRC) and the FAO. Thirty-seven scientists invited from 13 countries presented papers

or poster sessions. Eight more served as session chairmen and participants. The six topics covered by the paper sessions were:

- o Small Farm Uses of Multipurpose Species
- o The Role of Eucalyptus on Small Farms: Boom or Bust?
- o Nitrogen Fixing Trees as MPTS for Small Farm Use
- o Fruit Trees and Other Woody Perennials
- o Socioeconomic Considerations for MPTS Research
- o Research Strategies for Filling Information Gaps

The poster session included topics from all categories.

F/FRED provided transportation and per diem for 21 participants. The International Development Research Centre (IDRC) of Canada supported 10 participants, including 3 from the People's Republic of China. The FAO sponsored several participants who took part in a FAO/NFTA training course the week before.

Most participants submitted their papers for review and revision before the workshop. An editor from NFTA hired by F/FRED worked with the authors at the workshop to improve their presentations. After a final review of the edited papers by the authors and sponsors, the workshop proceedings have been published by F/FRED-Arlington.

Participants and sponsors agreed that the workshop yielded quality presentations and fruitful discussions. Many participants have since become more active in the MPTS Research Network, assuming leading roles in organizing network activities in their countries. The cooperation between F/FRED, IDRC, and FAO developed in organizing this workshop has led to further collaborative efforts among these organizations, including F/FRED co-sponsorship with IDRC of a workshop on social science research methods, F/FRED support for an FAO workshop on forestry extension, and plans for the three organizations to co-sponsor another major theme meeting in 1989.

Meetings for Regional Research on Leucaena Psyllid Control

A pest known as the leucaena psyllid (*Heteropsylla cubana*) has infested stands of Leucaena leucocephala throughout Southeast Asia and is spreading west to South Asia. A meeting of national coordinators for leucaena psyllid research took place in Bangkok, Thailand, April 23-25, 1988 to develop a regional plan for pest management research on the Leucaena psyllid problem. This meeting represents further follow-up on the development of an overall regional psyllid control plan, an effort initiated and supported largely through F/FRED efforts and funding. A larger meeting to review progress in implementing the psyllid research plan is scheduled to take place in January, 1989.

Standardized Methods for Socioeconomic Research on Farm and Village Forestry

F/FRED, IDRC, the International Centre for Integrated Mountain Development (ICIMOD) and the Institute of Agriculture and Animal Sciences (IAAS) of Nepal co-sponsored a workshop in Kathmandu, Nepal, April 21-25, 1988 on "Standardized Methods for Socioeconomic Research on Farm and Village Forestry." Nearly 60 social scientists, foresters and agricultural scientists met to discuss the need and directions for regional, coordinated socioeconomic research on the use of trees by small-scale farmers and other rural poor. (See "Standardized Methods" in section IV.5 for details of this workshop.)

Orienting MPTS Research to Small Farm Needs

F/FRED has begun making plans for another major theme workshop, tentatively scheduled for June 1989 in Indonesia, to be co-sponsored by F/FRED, FAO, and IDRC. The workshop will be on "Strategies and Methods for Orienting MPTS Research to Small-Scale Farm Use." Sessions are planned on the following topics:

- o Defining end uses of MPTS on small-scale farms
- o Evaluating the demand for MPTS from small-scale farms
- o Orienting MPTS research to small farm needs
- o Determining extension/implementation needs

About 30 papers and posters will be presented. Participants will be invited on the basis of abstracts and paper outlines received by the workshop organizers by January 1989.

F/FRED will provide travel and per diem for 20 participants and provide support to cover the costs of organizing and conducting the workshop. Other participants will be supported by co-sponsors or meet their own expenses.

The Coordinating Unit staff is now negotiating with the Agency for Forestry Research and Development and the Forestry Research and Development Center of the Government of Indonesia to help organize the workshop. A call for papers will be distributed and final plans for the workshop set once permission to hold the workshop is received from the Government of Indonesia.

Research on Fast-Growing Trees

F/FRED plans to co-sponsor a seminar on "Research on Fast-Growing Trees" with the International Foundation for Science (IFS). The seminar is tentatively scheduled to take place in Sri Lanka in October 1989. Seminar participants will be selected from among MPTS Research Network institutions and IFS-supported researchers in Asia.

Small Working Group Meetings

F/FRED can support small working group meetings as the need arises to discuss and develop programs on topics relevant to the MPTS Research Network. The first of these was held July 19-22, 1988 to develop a proposal and workplan for a regional socioeconomic research project, with a minimum farm and village data base as a major tool for research and analysis.

6. Coordination with Other Donor Agencies

The Coordinating Unit has been directly involved with other donor agencies or projects in the following activities:

- o Assistance to the bilateral USAID-funded Forestry Planning and Development (FPD) project in Pakistan. Coordinating Unit staff assisted FPD project in making arrangements for a field trip for Pakistani foresters to visit forestry research facilities in Thailand and the Philippines.
- o Close cooperation with IDRC and the FAO Regional Office for Asia in organizing the workshop on MPTS for Small Farm Use detailed above.
- o Coordination with the Asian Development Bank and IDRC on the funding of *leucaena psyllid* research.
- o Cooperation with CSIRO and ACIAR on seed collections and provenance evaluation for two Australian Acacia species.
- o Joint planning with FAO and IDRC on an upcoming theme workshop on orienting MPTS research to small farm needs, and with the International Foundation for Science on a workshop to be held in October, 1989.

Global coordination has taken place with related international research organizations such as the international Council for Research on Agroforestry (ICRAF) and the Center for Tropical Agronomy Research and Education (CATIE) (see section V.11). The F/FRED Project Management Office also coordinates with other donor agencies, such as the National Academy of Sciences, the Aga Khan Foundation, the Japanese International Cooperative Agency (JICA) and World Resources Institute, through their participation in monthly project review meetings, internships, and "brown bag" lunch presentations.

IV. REGIONAL RESEARCH PLANNING AND SUPPORT

The MPTS Research Network and the work of the F/FRED Global Research Unit on Maui aim to enhance national, regional, and global research on MPTS. To a great extent F/FRED supports research that has the added effect of contributing to network development, through activities like multilocation network field trials and collaborative socioeconomic research.

The following examples illustrate the types of network research that have taken place:

- o A series of network experiments for the humid/sub-humid zone and arid/semi-arid zone networks.
- o A small grants program developed in cooperation with the MPTS Research Committee. Priority areas of research have been identified by the Committee and proposals solicited and reviewed through a procedure defined by the Research Committee and F/FRED staff.
- o The project also has made a limited number of research grants to address specific problems relating to network research priorities. F/FRED funded, for example, an insect pest survey at one of the network trials sites.
- o A series of socioeconomic network studies will be funded to implement the socioeconomic minimum data set. These studies will use the common methodologies developed through a series of meetings in the past year.

1. Regional Coordination of Pest Management Research for Leucaena Psyllid Control

Beginning in October, 1987 the regional coordinator of the psyllid control plan drafted a proposal to obtain funding contributions from donors such as ADB, IDRC and USAID. IDRC is providing funds to national programs in Indonesia and the Philippines. ADB may make funds available to the CIBC in the United Kingdom for exploration in Central America and the Caribbean.

F/FRED made an important decision in early 1988 to fund up to \$250,000 for regional psyllid research. Country-specific proposals, based on the regional psyllid research plan, have been submitted, reviewed by outside experts, revised, and incorporated into subcontract documents for review and approval by national institutions.

One meeting of the national research coordinators and the psyllid advisory team was held at the National Biological Control Research Center (NBCRC) in Bangkok, April 23-25, 1988. Representatives attended from the Philippines, Thailand, Taiwan, Indonesia, the United States, and Great Britain. The coordinators made plans to

hold a psyllid research meeting in Bogor, Indonesia in January, 1989. Progress and problems with the implementation of the regional plan were discussed, and steps taken to finalize proposals for submission to F/FRED. F/FRED ensured coordination with IDRC and CIBC by arranging for nearly all of the major institutions in the region interested in psyllid research to have representatives attend the meeting.

F/FRED currently provides the following support for psyllid research activities:

- o support for the Regional Psyllid Research Coordinators, Drs. I.N. Oka and Banpot Napompeth, including regional travel funds and a modest honorarium
- o assistance in obtaining psyllid research funds from other donors. The ADB remains interested in funding additional psyllid research. The project is working with ADB to facilitate a short-term study of the socioeconomic impacts of the leucaena psyllid.
- o provision of limited research funds as a "stop-gap" measure to increase psyllid research prior to the availability of major funding from other donors
- o subcontracts with national psyllid research programs in Thailand, Indonesia, Philippines, Malaysia, and the Republic of China. These subcontracts will total approximately US\$200,000.

2. Support for the 1987 Humid and Sub-humid Zone Network Trials

Network members designed a network experiment using the humid and sub-humid zone F/FRED priority species in December, 1986. These experiments have begun in 15 sites in five countries. The coordinating unit will help follow up these trials and provide training and support where necessary. Second year funding of these experiments began in May, 1987 following the submission of annual reports from cooperators.

Cooperators have reported that 13 experiments have been successfully established one year after planting. Pakistani cooperators failed to establish an experiment (note: none were funded by F/FRED). The Nueva Ecija site in the Philippines was burned, and is being monitored for regrowth. One of the TISTR sites in Thailand (on a very sandy site) had very poor survival through a serious drought in late 1987. Not all cooperators have followed strictly the standard methodology agreed to when the experiment was designed. In most cases, however, nearly all of the required practices have been used.

The use of common germplasm and design at all of the sites has been an excellent beginning for this program of network research.

The extent of researcher cooperation in these trials has no precedent in Asian forestry research. The goal of network building is being achieved, along with the evaluation of genotype x environment interaction for each of the three species. The use of small farm management practices as treatment factors has stimulated a great deal of interest in this topic, and should provide useful data for management of the priority species over a wide variety of sites.

3. Establishment of Network Trials in the Arid and Semi-arid Zone

F/FRED has extended the MPTS Research Network to a second environmental zone by launching activity in the arid and semi-arid tropics. A major activity will be the establishment of a network experiment with the priority species for that zone. Network development has included a series of meetings of potential cooperators to design and plan the network experiments.

The first workshop for work in the Arid and Semi-arid Zone took place in Karachi, Pakistan in November, 1987. This meeting introduced the F/FRED Project to potential network members, presented on-going MPTS and social science research in the arid and semi-arid tropics for discussion, and made plans for future network research activities.

A second meeting was held in Kathmandu, Nepal in March, 1988. This meeting clarified the objectives for the network trials, and determined appropriate germplasm sources, experiment designs, and treatment factors for the trials, as well as a minimum data set. The meeting resulted in a list of 18 individuals and institutions committed to conducting the trials on up to 29 sites.

The Coordinating Unit staff is currently obtaining the necessary germplasm, finalizing the user's guide and training program for implementing the trials, and obtaining the necessary government clearances for participants to undertake the trials. Budgets for conducting the trials have been solicited from participants.

The successful aspects of this undertaking resemble those of the 1987 trials in terms of the value of the data base generated using common germplasm and experimental design. The selection and use of consultants proved to be a problem, however, hampering efforts to further integrate the social sciences into the trials design, and delaying the completion of the experimental design user's guide and germplasm collections.

4. Germplasm Collections

Recognizing the shortage of quality MPTS germplasm, F/FRED has supported:

- o a seed collection expedition for Acacia auriculiformis, conducted by the CSIRO Division of Forest Research. These collections provided the first range-wide provenance collection of A. auriculiformis for future tree improvement programs. CSIRO co-sponsored the collection.
- o limited seed production of psyllid-resistant accessions or hybrids of *Leucaena* spp. A grant was provided to NFTA to set up a modest seed production system with F/FRED cooperators in Asia to produce research quantities of promising varieties and hybrids.
- o collections of *Melia* and *Azadirachta* seed in late 1987. F/FRED supported Dr. Suree Bhumibhamon of Kasetsart University in this collection.
- o seed collection of the priority species for the arid and semi-arid zone network trials.
- o provenance collections of Acacia nilotica, Dalbergia sissoo, Prosopis cineraria, and P. juliflora. These collections are scheduled to begin in January, 1989 in cooperation with the ASEAN-Canada Tree Seed Centre and national institutions in India, Pakistan, Nepal, and Bangladesh.
- o a seed collection expedition for Acacia mangium, planned to begin in September, 1988. CSIRO's Division of Forest Research will conduct this expedition in the same manner as it did the A. auriculiformis collection.

5. Socioeconomic Research

Case Studies in Association with the 1987 Network Trials

In the last half of 1987, the F/FRED Project initiated five case studies in four countries in conjunction with the 1987 Network Species Trials. Researchers in Indonesia, Malaysia, the Philippines, and Thailand have conducted a study on small-scale farmers' access to, production, management, and use of trees in communities near the 1987 network trial sites. The network trial cooperators will receive the information from these studies to help them breed for tree characteristics appropriate to farmers' actual uses of trees and systems of tree management.

Submission of first drafts of these studies to the Coordinating Unit, originally scheduled for spring 1988, has been delayed. The draft of the study in Thailand was submitted in late August. The Indonesia study will require revision. Drafts of the Philippine and Malaysian studies and the revised draft of the Indonesian study are now due by no later than mid-October 1988 for presentation on the field tour of the network trial sites.

The fifth study, conducted in Thailand, is to identify major social and economic factors affecting the use of trees by poor villagers in three regions of the country where network trials are conducted. Later introduction of improved species should take into account these considerations. The draft report, first expected in May 1988, is now due in mid-September.

Due to these delays, the Coordinating Unit decided not to repeat similar case studies with the Arid and Semi-Arid Zone Network Trials. Pather, social science researchers in those areas will explore similar issues with colleagues throughout the region in two studies. A regional study of MPTS tree-breeding objectives and the collaborative social science network study are described later in this section.

Standardized Methods

Nearly 60 social scientists and foresters attended an international workshop on Standardized Methods for Social and Economic Research for Farm and Village Forestry in Kathmandu, Nepal, in April 1988. They met to discuss research issues of common interest and to determine how to conduct collaborative, comparative research on important topics. F/FRED co-sponsored the workshop with IDRC and the Integrated Centre for Integrated Mountain Development (ICIMOD). The Institute for Agriculture and Animal Sciences (IAAS) hosted the workshop.

Researchers also discussed the definition and design of a minimum socioeconomic data set for studying selected issues affecting farm and village forestry. The data set is being developed as a component of IADSS. As with other components of the system, the farm and village forestry database will be able to be used independently or linked with other experiment databases and decision support programs. This will allow for discrete analyses of the socioeconomic research as well as integrated analysis of MPTS for small farm use.

Workshop participants agreed on a short-list of major issues of immediate importance to MPTS researchers and project planners and managers. Of these, two topics emerged as most valuable and interesting for research and project implementation.

The two priority research topics are:

1. Existing and potential tree/farm forestry/land utilization systems. Foresters at the workshop helped draft the preliminary design for this study. F/FRED is developing its regional social science network study from the recommendations and preliminary design of this topic.
2. Markets, labor and unemployment issues. This research would determine the market potential for particular end-uses of selected MPTS and the impact of their increased production on the employment of small farmers and other rural poor. F/FRED

has given high priority to small grants research proposals on these issues.

The other priority social and economic research topics agreed upon were:

3. People's participation in farm/village forestry
4. Property and tenurial arrangements affecting tree production and use
5. Labor, gender, and age issues in farm/village forestry
6. Population dynamics affecting tree and forest use
7. Landlessness, social stratification, and class issues affecting access to, production and use of trees
8. Farm forestry program/project evaluation; forestry extension

Small grants research proposals on these subjects have received priority consideration.

A summary report of the meeting is being prepared for publication.

Three key participants from the Kathmandu workshop met with Charles Mehl, F/FRED Land and Forest Management Network Specialist, in Bangkok July 19-22, 1988 for a follow-up meeting to design the collaborative social science network study based on the workshop's first priority topic. The working group developed a description of common methods and a detailed farm and village forestry minimum data set to be used in the research. A description of the network study and schedule for its implementation are given below.

Collaborative Social Science Network Study

A planning meeting for standardized regional research and the development of a socioeconomic database was held in Hawaii in October, 1987. Four scientists from Asia and Latin America began designing a research program and a minimum data set for discussion at the Nepal workshop. The principal categories and many of the variables first identified at the planning meeting later formed the basis for the farm and village forestry minimum data set, which will be a major tool for research and analysis in the regional social science network study.

The social science network study is designed to analyze the effects of selected social and economic factors on village and farm forestry practices. F/FRED plans to support up to 15 cooperators in this study, national level analysis of the villages in 3 of the countries, and a regional analysis of all the communities studied. Other donors have been approached to co-sponsor the research. The results of the study are intended to make research design (for both biological and social scientists) more responsive to the information needs of project planners and implementors for social forestry.

The farm and village forestry minimum data set consists of seven general categories of variables. The first two are background information:

1. General Data (population, occupation, livestock)
2. Agro-ecological Data (weather, soil conditions, topography, and land-use patterns)

The next four are the social and economic factors which will be analyzed for their effects on how farmers, particularly small-scale farmers, use tree products:

3. Types of Government Intervention (e.g., extension services, forestry stations, credit facilities, price supports)
4. Village Leadership and Organizations (types of leaders and their effectiveness, types of organizations involved with agriculture and forestry and their effectiveness)
5. Land Use, Tenurial and Property Issues (land size, land tenure, tree tenure, common property arrangements for tree and forest use)
6. Socioeconomic Stratification (by education, occupation, income level and data from land size and tenure)

The final category is the "dependent variable," with information on

7. Farm and Village Forestry Use Practices (types of forest and tree products used, source of these products, season of use, age and sex category of those harvesting products, species used, parts of the trees used, and preferred species)

A training course for the study cooperators will ensure consistency in their research methods and comparability of the data collected. The workshop will be conducted by scientists involved in the design of the network study and data set.

Each cooperator will study two proximate villages over one year (January-December 1989). Most of the information will be gathered from interviews with members of 50 households in each village, observation of villagers' use of trees and forests, and discussions with key informants. Each cooperator will prepare a descriptive report of the communities studied. They will use the data collected for the minimum data set for their analysis. They also will report on aspects of land and forest use not covered in the data set, but which are important for understanding the organization and function of each community.

Data collected by the researchers will be compiled and analyzed at the national and regional levels. In return for submitting their data and analyses, each cooperator will receive the data

from all the other sites for their use. National level analyses will be supported by F/FRED in the three countries with the most network cooperators. Regional level analysis also will be conducted with F/FRED support.

Other Support

F/FRED provided support for several other socioeconomic studies during the past year. Two were arranged through independent grants by the Coordinating Unit to explore topics of critical importance to MPTS researchers:

1. A study of the Homestead Forests in Bangladesh, co-funded by the FAO Wood Energy Project
2. A study of the Effects of Government and Non-Government Afforestation Programs on Small-Scale Farmers in India

Two were part of the series of feasibility studies on biotechnology for MPTS funded by F/FRED:

1. Potential Impact of Biotechnology Research for Multi-purpose Tree Species
2. Potential Access of Small-Scale Farmers to Biotechnologies for Multipurpose Tree Species

Other proposals on priority topics will be funded starting September 1988 under the small grants program.

6. Biotechnology Research

F/FRED has been involved in assessing the potential of biotechnology for small farm MPTS production. Tissue culture and the use of mycorrhizae and rhizobium strains are several areas of promising biotechnology that have been identified.

A feasibility study on tissue culture for MPTS was completed for F/FRED by Dr. Paiboolya Gavinlertvatana, Dr. A. C. Matheson and Mdm. Eng Peng Sim, all of Plantek International. The main findings of this study are briefly summarized below.

- o Literature review on tissue culture of F/FRED priority species revealed that tissue culture protocols have been developed for Leucaena leucocephala, Acacia mangium, and Eucalyptus camaldulensis. Tissue culture protocols of the other F/FRED priority species have been partially developed, except for Acacia nilotica.
- o A number of laboratories in the region are working on tissue culture of one or more MPTS, including network members at PLANTEK International (pte) Ltd., Singapore, University Pertanian Malaysia, the Thailand Royal Forest

Department, The Philippine Forest Research Institute, and the University of the Philippines at Los Banos.

- o Tissue culture programs developed in these various laboratories generally lack specific goals or objectives are generally not clearly identified.
- o Tissue culture for micropropagation has been found technically feasible for application for F/FRED priority species, and valuable for supplementing seed production when good quality seed is costly or in short supply. However, the economics against time must be carefully evaluated for each species.
- o Tissue culture is a viable tool to counter existing problems, e.g., screening for psyllid resistance in *Leucaena*, improved yield of acacias and eucalypts, selection for heart-rot resistance in *Acacia mangium*.
- o Including tissue culture in a breeding program of F/FRED priority species will accelerate the program and provide adequate experimental materials for field trials (progeny trials).
- o While tissue culture shows promise for F/FRED priority species, there is an urgent need for field assessments of tissue culture plantlets.

On the basis of these findings, Plantek International recommended the inclusion of tissue culture micropropagation and improvement in the F/FRED program. They also suggested the establishment of a tissue culture network for forest species in the region. On the basis of these findings, F/FRED signed a subcontract with Plantek to work with national institutions in four countries to develop scale-up procedures for MPTS tissue culture and to compare seedlings with plantlets produced by tissue culture.

Another study has examined the potential impact of biotechnology on MPTS research. The more important points brought out include the following:

- o Tissue culture would not be appropriate to participatory agroforestry reforestation, as it militates for centralized production of seedlings and specialization in particular types of trees.
- o Tissue culture for genetic improvement of MPTS will have limited near-term potential. The results from this kind of research effort are expected to come out only after substantial time lags. Thus, for any given set of actual current constraints, it will be better to utilize traditional testing and screening of various trees, with biotechnology useful in selection and micropropagation.

- o The use of inoculants such as mycorrhiza and rhizobium may represent a more acceptable technology for small farmers than fertilizer use. Discussions with Thai researchers indicate that it would be unrealistic to expect farmers to apply fertilizer to trees, even at establishment. Most subsistence farmers avoid monetary outlays like those represented by expensive inorganic fertilizers.

7. Research Grants

The F/FRED contract states that the project will make small research grants to support network research and supplement other donor support. In addition to grants associated with the network field trials, F/FRED administers the Small Research Grants program, Coordinating Unit-Designated Grants, and other grants for research in social sciences and *Leucaena psyllid* control. To date, F/FRED has made 30 grants, totalling over \$US 140,000.

Small Research Grants

At its April meeting in Malaysia, the Research Committee approved the small research grants program proposed by the F/FRED Coordinating Unit. Grants of up to US\$6,000 each are being provided through a competitive application process. The grants will enhance MPTS-related research by providing seed money for new research and matching funds to explore new issues in existing research.

The MPTS Research Committee tasked the Coordinating Unit to call for proposals, screen incoming proposals, distribute them to external reviewers, and make final selection. The committee drafted guidelines for selecting and reviewing the proposals, which were approved by the Steering Committee as described in the "Report of the MPTS Research Network Steering and Research Committee Meetings."

The grants will be distributed over the greatest number of countries in the three environmental zones (including the Mountain Zone), with a balance between biological and social science grantees.

The F/FRED Coordinating Unit issued a call for proposals to all Steering and Research Committee members, participating network institutions, USAID F/FRED monitors, and many active network members in late April. Applications were due by July, 1988. By mid-July, the Coordinating Unit had received 102 applications from researchers in 8 countries: 43 from the Philippines, 27 from Indonesia, 14 from Thailand, 11 from Nepal, and the rest from Bangladesh, India, Pakistan, and Sri Lanka.

Eighty-two proposals passed the initial screening and were sent for external review to 32 experts in relevant fields. Each proposal was sent for review to four experts, in the expectation

that at least two or three would return with recommendations by the end of August. The Coordinating Unit and representatives from the Steering and Research Committees are making the final selection of research grantees based on the recommendations of the external reviewers, and will award the grants in September.

Coordinating Unit-Designated Grants

The Coordinating Unit provided several small grants to encourage network development and to investigate critical topics not covered in the network trials or the regional socioeconomic research. In 1987, F/FRED agreed to co-sponsor with FAO a study on Homestead Forests in Bangladesh. A survey of insect pests of MPTS was conducted in early 1988. The Coordinating Unit arranged for another study on the Effects of Social Forestry Programs on Small Farmers in India in August, 1988.

8. Coordinated Research Support with Other Donors

F/FRED plans cooperative experiments with 10 institutions for international provenance trials on Acacia auriculiformis. At least three of these will be funded by the Australian Centre for International Agricultural Research (ACIAR). In addition, F/FRED has coordinated its support for Leucaena psyllid research with IDRC, which has provided psyllid research grants to the Philippines and Indonesia. Discussions with IDRC and Ford Foundation representatives have sought to arrange support for the Socioeconomic Network Study.

In November 1987, the Network Team Leader, with representatives from the other two F/FRED offices, visited ICRAF in Nairobi, Kenya to explore opportunities for collaboration in research design, database management system design, training, and communications. Results from this visit include the participation of ICRAF specialists in two F/FRED workshops on experiment design. See sections V.11, IX.3, and IX.4 for details on further collaboration with ICRAF.

V. GLOBAL RESEARCH -- The Information and Decision Support System (IADSS)

The F/FRED Global Research Unit is developing the Information and Decision Support System (IADSS), an integrated microcomputer software package as a tool to support network research. Located with the University of Hawaii on Maui, the Global Research Unit has worked with project staff and cooperators in Asia on experiment design of network trials, and has worked to coordinate with other international research organizations on database management systems design. This section focuses on the Unit's outputs in 11 categories under the the headings of network development, research support, training, and publications.

IADSS contains: 1) primary databases for organizing, storing and retrieving research information and data, 2) research support databases for storing abstracts of bibliographic references on priority species and a directory of MPTS specialists worldwide, and 3) decision support programs for data analyses and summaries, and for evaluation of land and management options.

IADSS aims to provide network cooperators with ready access and use of a decentralized system at their facility, without prerequisites of previous training in computers or database management. User-friendly computer screens are self-explanatory with options to add, search, modify, delete, and print common to all databases in the system. A detailed Users Manual explains use of the experiment, abstracts, and MPTS specialist databases. The cooperators' field staff who collect the data enter measurements directly into the system. This permits immediate screening of the data for reliability. The system's flexibility allows a personalization of the databases according to the user's specific needs.

1. The Experiment Database

The experiment database is the prime residence for experiment minimum data sets collected by the MPTS Research Network. Version 1.0 was distributed to humid zone network cooperators during the in-country trainings that began in November 1987 (see section 8 below). Cooperators at the trainings requested enhancements, including on-line help windows and forms for recording additional tree measurements. With the subsequent generalization of the experiment database, scientists can use the database and decision support programs for non-F/FRED experiments. Version 1.1 and the accompanying Users Manual were distributed in June 1988. Further recommendations were incorporated in an updated version 1.1 and installed at the institutions involved in the humid zone experiments in August 1988. This version includes options for printing all experiment database forms in an enhanced hard-copy format. The user can print selected forms to compile experiment reports. Outputs from

the data analysis package also can be edited, printed, and included in experiment reports.

2. Data Analysis

The experiment database is linked to a graphics and data analysis package called F/FRED Models (F/MOD). Database files on treatment and experimental design, and user-selected tree measurement data are joined within IADSS and automatically fed into F/MOD for an intrasite analysis. Data from several sites can be combined for an intersite analysis for evaluating the importance of a site by treatment (for example, an environment-by-genotype interaction).

One of the advantages of the decentralized IADSS is that each cooperator has the capability to view and analyze experimental data immediately after data collection. The ability to perform analyses on-site without the frustrations formerly encountered forming the analysis data set and using outside computing facilities is a substantial benefit to researchers.

F/MOD can be used within the experiment database, or independently by entering data directly within F/MOD or by reading an analysis data set file from a word processor.

1987 humid zone trial experimenters are currently testing a draft of the F/MOD Users Manual. The version distributed to humid zone cooperators in August 1988 includes graphics enhancements and greater ease of use.

3. The MPTS Specialist Database

The MPTS specialist database contains the names, addresses, and expertise of individuals active in MPTS management, research, and training worldwide. Individuals are added to the database when forms are received by the Global Research Unit as a result of periodic application mailings in the F/FRED newsletter, Farm Forestry News.

The Global Research staff distributed Version 1.0 of the specialist database at the November-January training courses held at network institutions. Version 1.1 was distributed in June 1988.

The specialist database has been enhanced for quicker searches in July 1988 and is presently being distributed with 250 records. Assistance in using the specialist database is included in the Users Manual.

4. The Abstracts Database

This reference database, containing MPTS literature references, was originally intended to provide only literature citations. F/FRED found, though, that accompanying abstracts are very valuable to network members in determining which journal articles or studies to obtain. The bibliography database was therefore redesigned in October 1987 as an abstracts database with the primary functions of storage and retrieval of journal abstracts, and for personalized research support by a single user.

The initial abstracts were obtained from CAB ABSTRACTS through the DIALOG service. Citations loaded were restricted to those on species used in the 1987 humid and sub-humid environment zone trials. The search yielded 670 records.

The abstracts database was tested and integrated into the decision support system. Version 1.0 with a few selected entries was used during the November - January 1988 short courses for training. Documentation was included in the Users Manual.

Version 1.1 was distributed in June 1988 with 108 selected abstracts. The database was then enhanced for faster retrieval time and distributed to humid and sub-humid zone cooperators in August 1988 with 650 abstracts.

5. Summary Database Development

In coordination with CATIE and CSIRO, F/FRED is developing a database for including summarized experimental information for existing research either within or outside the MPTS Research Network. With pre-established parameters regarding the quality of data to be included, the summary database allows network members to benefit from other agroforestry research projects worldwide without a loss of data quality control.

Design of the summary database was suspended until July 1988 for additional development of the CATIE experiment database. A joint F/FRED-CATIE design team, with cooperation from the CSIRO developers of the TREDAT summary database, explored end uses to determine minimum data sets and database structure in July and August 1988. The summary database is now scheduled to be integrated with a graphics package, evaluated, and interfaced with the other IADSS components by April 1989. F/FRED plans to distribute the initial version, with documentation, to network members in June 1989.

6. Soils Database Development

In cooperation with the International Benchmark Site Network for Agrotechnology Transfer (IBSNAT) Project of the University of Hawaii, the minimum data set and the database structure design of

a soils database were completed on schedule in July 1988. Approximately 400 tropical soils records with site and profile are presently stored in the database. Further modifications and development will await the design of the summary database.

7. MPTS Predictive Modeling

Cooperators have several reasons for desiring predictive modeling capability within IADSS. Modeling productivity over time and across sites provides a framework for integrating and synthesizing MPTS knowledge. Scientists use growth and yield models to match species requirements with site characteristics, to quantify trade-offs between management systems, and to transfer improved technologies to specific locations. Prediction of wood and foliage biomass is a major use of models. When models are useful for prediction, they are valuable for economic analysis and decision-making.

F/FRED's environment network trials are designed to quantitatively compare species and their interactions with managements across sites within a defined range of environments. Tree and site data from these trials will be a valuable resource for the estimation of environment models for site-specific predictions.

For the present, the software for estimating F/FRED's environment models will be F/MOD.

A parallel approach for providing a framework for integrating and synthesizing our knowledge of MPTS systems is simulation modeling. This modeling effort by the Maui Unit integrates feedbacks from species, managements and environments in a sequence of biologically realistic functions to produce a predictive model for matching species and sites for optimal total production and desired biomass allocation.

The Maui Unit has developed and implemented a stand-level tree growth model. A preliminary model verification exercise generated hypotheses on the effects of management and water stress on calibration of the model parameters.

Calibration Trials

Two experiments, designed to compare the effects of tree-spacing and cutting managements with three humid zone species, were planted on Maui in May 1988 as scheduled. The results of these experiments will be used to calibrate the simulation model and incorporate differential effects in the model due to management. Tree measurements began in August 1988.

8. IADSS Trainings

In conjunction with the Arlington and Bangkok offices of F/FRED, the Global Research Unit planned and conducted a series of four-day short courses in the six countries participating in the 1987 humid zone trials.

Kirtland Barker of the Project Management Office joined the Maui staff from August to October 1987 for joint planning and design of the short course. The course was designed to present the standardized methodology for the 1987 network trials during the first two days, and the use of IADSS for entry and analysis of the minimum data set. Drafts manuals on standardized methodology for the 1987 humid zone trials and use of IADSS were prepared.

The first course was held in Bangkok for three Thai institutions, with Arlington and Maui staff members as instructors. Trainers followed up by visiting Thai institutions to install IADSS and receive course feedback. Participants included trial cooperators and field technicians.

The course presentation was modified and given in the Philippines, Indonesia, Malaysia, Taiwan, and Pakistan during December and January 1988. Final versions of the two manuals were printed and distributed from Bangkok by the Coordinating Unit.

Further on-site trainings conducted by Maui staff in August 1988 included interviews with users to evaluate the system's acceptance and performance. The Global Research Unit is currently analyzing the questionnaire results.

Other Trainings

Feedback from the short course participants and Asian cooperators, in addition to an evaluation by F/FRED staff, resulted in version 1.1 of IADSS followed by additional enhancements of 1.1 in July 1988. During August 1988, Maui staff members visited 10 Asian institutions for joint interaction with computing counterparts at each institution. The new system was installed, previously entered data transferred, problems addressed, and on-the-job training given on using the new version of F/MOD, the integrated graphics and analysis research support program.

9. IADSS Publications

In June 1988, the IADSS Users Manual (Manual No. 1 of the F/FRED MPTS Network Research Series) was distributed. This 140-page document explains the installation and use of IADSS with emphasis on the common data entry, verification and retrieval options available in the experiment, MPTS specialist, and abstracts databases.

To accompany a brochure describing the F/FRED research network field trials, an IADSS brochure was prepared at the Project Management Office for distribution in September 1988. Targeted for a wide audience and timed for the general release of version 1.1, the brochure describes the IADSS development, databases and decision support programs, and system requirements.

A draft F/MOD manual has been prepared for use in the August 1988 on-the-job training.

In July 1988, F/FRED published Volume 1 of the project's Technical Series, entitled Modeling Growth and Yield of Multipurpose Tree Species, containing five papers on aspects of modeling short-rotation trees (see section IX.3).

10. Regional Network Experiment Design

The F/FRED approach to network experiments follows environmental zones. The organization meeting of the semi-arid and arid zones was held in Karachi in November 1987. During this meeting the importance of a minimum data set using standardized methodology was presented. Also stressed was the value of reliable extrapolations, based on intersite analyses and predictive modeling, for adaptation and management of species.

The Karachi meeting was followed in March 1988 by a Kathmandu workshop planning group of those interested in conducting the trials. Participants discussed the trial objectives, determined the experimental design (including the species and management treatments), and tentatively decided on the minimum data set and standardized measurement methodology.

In October 1987, the Global Research Unit hosted a small group of Asian and Latin American social scientists, with the project's Land and Forest Management specialist, to plan for the organization meeting of the socioeconomic research network held in Kathmandu in April 1988. Interaction between the two groups led to a skeleton formulation of a village and farm forestry database and its relation to other databases within IADSS.

Based on follow-up sessions with the Bangkok staff in March, April, and August 1988, database development on the village and farm forestry to house information on social and economic factors affecting MPTS adoption and production has begun and an operable version is scheduled to be completed in December 1988.

11. Global Database Management Coordination

F/FRED continued its lead role in coordinating MPTS database development, and also database and data exchange, with other

agroforestry research projects worldwide. A series of meetings were held with CATIE, CSIRO, and ICRAF, outlined below.

Coordination Meeting with ICRAF

The first F/FRED-ICRAF institution meeting of database, research design and bibliography exchange briefings took place in November in Nairobi, Kenya. ICRAF's literature citation database is operational and available for use by the Bangkok group. The MPTS inventory database, with its broad approach in terms of geography, subject, and species, is not ready for distribution to other projects. The 'datachain' system for field data recording by a logger and software for transfer to commercial packages after data checking will be available soon. Version 1.0 of IADSS was demonstrated and a copy of the system left for additional study by ICRAF.

Coordination with CATIE

In March, 1988, the developers of IADSS and MIRA demonstrated and compared the CATIE and F/FRED experiment databases, and reached a tentative agreement to provide for the joint development of a summary database.

Foster Cady, F/FRED Research and Development Director, presented a paper on IADSS at the June, 1988 workshop held at CATIE to present MIRA. At an extra coordinative session, CSIRO, F/FRED and ICRAF staff discussed CATIE-F/FRED cooperative efforts. It is expected that a CATIE database technician will come to Maui this fall for summary database development. Version 1.1 was distributed to each of the other institutions.

Coordination with CSIRO

Alan Brown, CSIRO, visited the F/FRED-Maui office in August, 1988. Discussions focused on cooperative efforts with F/FRED on (1) integration of a data analysis package within IADSS and (2) summary database planning based on CSIRO's experience with TREDAT, an operational summary database.

VI. TRAINING

Members in the MPTS Research Network perceive training as a very important component of F/FRED, as it improves Asian scientists' abilities to design, establish and manage MPTS research, and may provide the most long-lasting benefits of the project.

F/FRED's training component includes both short- and long-term training of Asian scientists. The important activities related to training that have taken place during the period under review are summarized below.

1. Short-Term Training Plan Review

The plan for short-term training developed by the Network Team Leader in 1987 was reviewed by the Coordinating Unit staff, including newly-hired F/FRED Training Specialist Dr. Celso B. Lantican, in June 1988. The review resulted in a schedule of training courses, and the decision to offer the following courses on a roving basis:

- o Research Problem Identification and Proposal Preparation
- o Technical Writing and Communication Techniques for Forestry Researchers
- o Field and Laboratory Techniques for Agroforestry Crop Protection Studies

These courses are most needed by institutions in several countries in the region; offering courses on a roving basis is an economical solution.

The third course listed is a new addition to the training plan. Scheduled to be held in the Philippines, it responds to existing protection and manpower problems in that country.

2. Short Courses to Meet Training Needs

Data Collection, Entry and Analysis for the 1987 Network Trials

F/FRED's involvement in developing and conducting training courses started in 1987 when the Coordinating Unit, together with the Global Research Unit, arranged to conduct a training course on mensuration, data collection, and analysis for the 1987 network trials (see Section V.8). Kirtland Barker of Winrock International, with the assistance of the Global Research Unit staff, conducted the course in six countries on the schedule shown in Table 3.

Table 3. Schedule of first-round trainings on standardized field methodology and data entry and analysis.

Country	Dates	No. of Participants
Thailand	Nov. 23 - 27, 1987	10
Philippines	Dec. 7 - 10, 1987	15
Indonesia	Dec. 14 - 17, 1987	15
Malaysia	Jan. 4 - 8, 1988	8
Taiwan	Jan. 11 - 15, 1988	9
Pakistan	Jan. 25 - 29, 1988	10
	Total	67

Social Science for Foresters, and Forestry for Social Scientists

In June, 1988, F/FRED sponsored two three-week courses at the Institute of Forest Conservation of the University of the Philippines at Los Banos (UPLB) College of Forestry. Twenty scientists from six countries attended the first course, designed to equip Asian foresters with social science skills directly relevant to community-based forestry.

The objective of the second course provided social scientists with a basic understanding of forestry principles and practices to enhance their competence in social programs involving forestry.

F/FRED sponsored a training course entitled "Problem Solving in Agroforestry Research," which took place in Bangkok with the cooperation of the Faculty of Forestry, Kasetsart University. Attended by 18 participants representing Thai institutions engaged in forestry, agriculture and related studies, the course was designed to:

- 1) provide a framework for identifying problems of planning, decision-making, and cause/effect relationships in research
- 2) develop individual and group skills in using this framework for identifying and solving problems
- 3) apply the framework and skills to agroforestry research problems and to trainees' research management problems

Dr. William R. Bentley conducted the course with the assistance of Winrock and NFTA staff.

The F/FRED training schedule calls for the Coordinating Unit to design and organize five courses over the next two years. These are:

- 1) Design and analysis of experiments for MPTS research
- 2) Microcomputers and their applications in forestry research
- 3) Research problem identification and proposal preparation

- 4) Technical writing and communication techniques for forestry researchers
- 5) Field and laboratory techniques for agroforestry crop protection studies

3. Co-sponsored Training Courses, Seminars and Workshops

F/FRED co-sponsored a training course in forestry research management held in Kuala Lumpur, Malaysia July 19 to August 5, 1988. F/FRED contributed:

- o training for Dr. Harry Cheah, Deputy Director of FRIM, in the U.S. in preparation for his role as course coordinator
- o travel support and consultant fees for Dr. Robert Callahan to serve as the principal resource person
- o sponsorship for 10 participants from MOU institutions

The other co-sponsors of this course were the Forest Research Institute Malaysia (FRIM), National Public Administration Institute of Malaysia (INTAN), and IDRC's Singapore office.

F/FRED has supported the following seminars and workshops:

- 1) Workshop on policy implications of farm and social forestry and other social science research for agricultural development in the Philippines. This was held in December, 1987 with IDRC and Ford Foundation as co-sponsors.
- 2) Seminar on forestry extension in India. This was held in December, 1987 with the FAO's Regional Wood Energy Project as co-sponsor.
- 3) FAO regional expert consultation in planning forestry extension programs, held in Bangkok in March, 1988.
- 4) IUFRO Regional workshop on pests and diseases of forest plantations. Held in Bangkok in June, 1988, this was co-sponsored with IUFRO, the FAO Regional Office for Asia and the Pacific, the Royal Forest Department of Thailand, the Forest Industry Organization of Thailand, and the Thai Plywood Company.

In December, 1988 F/FRED will co-sponsor with India's National Institute of Wastelands and Rural Development (NIWARD) a workshop entitled "Agroforestry in the amelioration of wastelands."

F/FRED will continue to co-sponsor short courses, seminars and workshops related to priority topics of the MPTS Research Network to stimulate exchange of information and ideas, and to strengthen linkages with other donor agencies.

4. Twinning Between Asian Institutions

The concept of twinning Asian MOU institutions as a means toward network strengthening was proposed by Dr. Salleh Mohd. Nor. The first formal twinning arrangement within the F/FRED network was established in June, 1988, when the deans of the faculties of forestry of Kasetsart University, Thailand and University Pertanian Malaysia signed a memorandum of understanding indicating their intention to collaborate on:

- o exchange of faculty for the purpose of MPTS research for periods of 2-6 months each
- o a joint symposium on recent developments in tree plantations of the humid/sub-humid regions of Asia to take place in June, 1989
- o short-term training courses

F/FRED regards establishing strong linkages among Asian institutions through twinning arrangements as an effective way to enhance the manpower capability of MOU/LOA institutions.

5. India Woody Biomass Training

In February 1987 Winrock signed a subcontract with Auburn University's School of Forestry to arrange for Asian specialists studying at three institutions in India to take part in training and study tours at U.S. institutions, with approval from the Government of India (GOI) and support from the USAID mission in Delhi.

Scientists from Maudurai Kamaraj University and Bharathidasan University (MKU/BU) work with colleagues at Auburn to develop plantation stock through selection and improvement of woody biomass, using intensive short-rotation methods in marginal semi-arid lands.

Participants from the Indian National Botanical Research Institute (NBRI) work in an integrated effort to evaluate production and fuelwood properties of tree and shrub species on substandard soil.

The first six trainees completed their seven-month studies and study tours of the U.S. late in 1987. The arrival of the second group of participants, as well as the procurement of laboratory equipment for Indian institutions, has been delayed by difficulties internal to GOI. Nevertheless, a three-week study tour by two Indian deans of forestry to U.S. forestry research institutions took place as planned in April 1988. Also, the technical assistance visit by a team of U.S. biomass specialists has received GOI clearance and is scheduled for October 3-28,

1988. There are also plans for a workshop on nursery production techniques to be conducted in India in 1989.

The goal of these subcontract activities is to develop, through training and technical assistance, a woody biomass program with an understanding of species and techniques to be used, and with a strategy for species improvement and management. The Auburn subcontract, originally intended as a "buy-in" by the USAID mission in India with funds to be added to Winrock's contract, was absorbed under the project. Opportunities for future "buy-ins" will depend on receipt of contract authority by Winrock to administer buy-in funds from USAID mission accounts.

6. Fellowship Program for Ph.D. Study

Following a thorough screening process that involved the evaluation of 110 applicants' academic records, proficiency in English, and other qualifications, F/FRED selected six Ph.D. fellows to study aspects of farm forestry (Table 4).

Table 4. List of F/FRED Ph.D. fellows.

<u>Names</u>	<u>Country</u>	<u>Field of Study</u>
Mr. Ernesto S. Guiang	Philippines	agroforestry and resource management
Ms. Lilian U. Gadrinab	Indonesia	ecology/genetics
Mr. Madhav Karki	Nepal	forest resources management (agroforestry)
Mr. T. M. Kibriaul Khaleque	Bangladesh	applied anthropology
Mr. Vitoon Virayasakultorn	Thailand	development sociology
Mr. Y. M. Wickramasinghe	Sri Lanka	agricultural economics

The fellows start their studies in fall term 1988 at Michigan State University following a special program arranged for them, which includes 18 to 24 months of course work at MSU. After completing their course work requirements and passing a comprehensive examination, the fellows will return to their home countries to conduct research and write a dissertation under the guidance of a local adviser and an adviser at MSU. Each fellow's MSU advisor will visit the fellow at least once during the research period. The students will defend their theses at MSU, with the local adviser acting as a member of the examination committee.

7. Curriculum Development

The F/FRED training component aims to help forestry and agricultural educational institutions in Asia to strengthen their curricula. Through a subcontract with Yale University's Tropical Resources Institute, the project will conduct a workshop in Asia to support the integration of the social sciences in university forestry programs. This workshop has been endorsed by heads of various forestry educational institutions who attended the FAO expert consultation on forestry education June 15-17, 1988 in Bangkok.

On the basis of that reception, Drs. William Burch and Kathy Parker, the workshop's organizers, are convening a meeting of an advisory group September 19-20, 1988 to plan the format and content of the workshop. The advisory group consists of a representative from the FAO Regional Office, the F/FRED Training Officer, and deans of forestry from Indonesia, Thailand, and Nepal.

Pending the deliberations of the advisory group, the planned activity calls for a six-day workshop to take place in Thailand in late November 1988. Academics and field professional staff from throughout the region will discuss their experiences in integrating the social sciences into forestry curricula, formats for subjects to be included in future curricula to better address the needs of Asian forestry, and plans for future activities.

VII. COUNTRY SPECIFIC ACTIVITIES

In conjunction with networking activities, F/FRED works directly to enhance the research capabilities of Asian forestry institutions. In general, this takes place through country visits by Coordinating Unit staff to assess with scientists and USAID project monitors their institutional needs and appropriate F/FRED support (see Table 2).

This section details much of the country-specific activities which have taken place since September, 1987 and outlines plans for the coming year. Budget contributions are estimated for each country in which F/FRED has been active.

1. Bangladesh

Past and On-going F/FRED Activities in Bangladesh

F/FRED activity in Bangladesh during the reporting period has consisted of correspondence with Bangladeshi officials and USAID/Dhaka, and a visit by Charles Mehl and Kenneth MacDicken to Bangladesh in August, 1988. Correspondence has largely related to attempts to sponsor Bangladeshi scientists to attend training courses and workshops. F/FRED has made direct contact with the Bangladesh Agriculture Research Council (BARC), Bangladesh Agriculture Research Institute (BARI), the Bangladesh Forest Research Institute (BFRI), and the Institute of Forestry, Chittagong University (IFCU).

Formal linkage in the form of an MOU between BARC and Winrock International for a range of activities is being pursued by Mr. Chun Lai, Winrock International, Dhaka. This MOU includes F/FRED and has been deemed by BARC to be sufficient to allow more intensive F/FRED involvement with GOB institutions with linkages to BARC. F/FRED also has pursued discussions of an LOA with BARI to facilitate direct support to these institutions.

With the FAO Wood Energy Project, F/FRED has supported a small study (F/FRED contribution US\$1,600) on the use of MPTS on homesteads in Bangladesh. This was successfully conducted by BARI. USAID/Dhaka is supportive of this study, and had hoped to work with BARI through the Homestead Agroforestry Research and Extension project had this project been approved by the Government of Bangladesh.

F/FRED has supported short-term training for several Bangladeshi scientists in the areas of nitrogen-fixing tree research and forestry concepts for social scientists. One of the Ph.D. fellows is married to a Bangladeshi social scientist.

F/FRED Plans for Banqladeshi Participation

The general MOU between Winrock and BARC and the project-specific LOA with BARI will be pursued. The Forest Research Institute has expressed a willingness to assist with provenance collections of Acacia nilotica in mid-1989.

2. Burma

Past and On-going F/FRED Activities in Burma

F/FRED activity in Burma has consisted of a visit by the Coordinating Unit network team to Burma in September 1987 and the provision of a consultant, Mr. Dean Current, to conduct an agroforestry training course at the Agriculture Research Institute in Yezin in August-September, 1988. In June 1988, F/FRED hosted a visit to Thailand by the Director and Deputy General Manager of the Burma Agricultural Production Project.

F/FRED made contacts with the Forest Department in Rangoon, the Forest Research Institute and the Agriculture Research Institute in Yezin, and the Agriculture Corporation. In discussions with F/FRED staff, Burmese authorities showed interest in project activities but noted limitations on involvement with external projects.

F/FRED Plans for Burmese Participation

Current plans for working in Burma call for continued supply of publications and training announcements through Mr. Douglas Pickett, USAID, in the hope that Burmese participation in the MPTS Research Network will be possible at some future date.

3. India

The Coordinating Unit staff made an official visit to India July 2-15, 1988. During this visit they met with Government of India officials at the Indian Council of Agricultural Research (ICAR) and the Ministry of Environment and Forests. Both organizations are planning to sign an MOU with Winrock International on the F/FRED Project.

The Ministry of Environment and Forests, through the Indian Council of Forestry Research and Education, currently has one research institute at Dehra Dun and is planning to develop four more institutes throughout India. ICAR works with approximately 30 research institutions in its jurisdiction.

Past and On-going F/FRED Activities in India

F/FRED has a growing list of activity in India, including:

1. An MOU with the Botany Department at the University of Delhi.
2. An LOA with the National Institute of Wasteland and Rural Development and the Bharatiya Agro-Industries Foundation (BAIF).
3. Sponsorship of Indian scientists in an educational advancement project under the on-going biomass project subcontract to Auburn University.
4. Participation of Indian scientists in MPTS Research Network trials planning meetings held in Karachi (November, 1988) and Kathmandu (March, 1988). At these meetings, participants designed the network field trials for the arid and semi-arid zone. Eight representatives from India indicated an interest in conducting a total of 11 network experiments.
5. A National MPTS Organizing Meeting took place July 4-7, 1988 in Pune. Narayan Hegde, Vice President of BAIF and the ad interim India representative on the F/FRED Research Committee, served as the meeting organizer. This meeting was co-sponsored by the Ford Foundation, FAO, IDRC, the GOI Department of Non-Conventional Energy Sources, the GOI National Wastelands Development Board, and BAIF. Narayan Hegde and R. Deb Roy, Director of the National Centre for Research on Agroforestry, were selected to serve as India's representatives to the MPTS Research Committee.
6. Participation of Indian scientists in the meeting in Kathmandu, April 25-28, 1988 to develop the minimum social science data set.
7. Involvement of an ad interim India representative on the MPTS Network Research Committee and his participation in the Research Committee Meeting in Malaysia in April, 1988.

F/FRED Plans Involving Indian Participation

F/FRED plans call for greater activity in India under several broad categories:

A. MPTS Network

1. Establish arrangements for participants to undertake arid and semi-arid zone network trials.
2. Schedule and support additional National MPTS Organizing Meetings.
3. Pursue MOUs with ICAR and the Ministry of Environment and Forestry, and LOAs with other Indian institutions.

4. Make arrangements to collect seed for the arid and semi-arid zone network trials (Dalbergia sissoo and Prosopis cineraria).

B. Improved Linkages Among Institutions

1. Explore possibility of sending researchers from Indian institutes to institutes in other F/FRED countries for two- to six-month research trainings. Researchers from other countries' institutes would make reciprocal visits to India.
2. Improve communications among forestry, agricultural and socioeconomic research institutions in India through workshops, seminars, and joint research projects.
3. Improve communications among researchers and extension agencies and policymakers through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Co-sponsor Indian scientists to attend an international workshop, "Strategies and Methods for Orienting MPTS Research to Small-Scale Farm Use," in June, 1989 in Indonesia.
2. Provide travel grants for participants to the Sixth Annual Rangeland Congress and the Agroforestry workshop in December 1988.
3. Co-sponsor with the National Institute of Wastelands Development (NIWAD) a workshop entitled "Agroforestry in the Amelioration of Wastelands," to be held in December, 1988.

D. Training

Participant support for Indian scientists in short-term training courses offered in the region.

E. Research Support

1. Provide small research grants through solicited proposals and through the on-going small grants program.
2. Assist with the preparation of research proposals on regional or national issues to be submitted to other donor agencies for funding.

F. Technical Assistance

1. In October, 1988 a team of five scientists from Auburn University will take part in a Technical Assistance visit to Indian institutions as part of the India Biomass Project subcontract to Auburn. Coordinated with USAID, the visit will assist Indian forestry institutions.
2. Assist the USAID mission with its forestry and natural resource projects, through training and workshops.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Technical assistance	30,000
B. Participant support	20,000
C. Auburn Training, Equipment	140,000
D. Research grants	20,000
E. Publications	1,000
F. Other	3,000
TOTAL	\$214,000

4. Indonesia

F/FRED activity in Indonesia increased following the initialing of an MOU with the Agency for Forestry Research and Development (AFRD)

Past and On-going F/FRED Activities in Indonesia

F/FRED has supported Indonesian researchers through the following activities:

1. Involvement in the F/FRED Research Committee by Komar Soemarna of the Forestry Research and Development Center.
2. Support for the Indonesia National MPTS Organizing Meeting, held in December 1987. Participants at the meeting agreed to establish a National MPTS Secretariat with Komar Soemarna as Director and Setiyati Sastrapradja as Secretary.
3. Participation in international conferences and workshops sponsored by F/FRED in Thailand (MPTS for Small Farm Use) and Nepal (Social Science Methods). On-going.
4. Participation in regional Network Trials, by the Forestry Research and Development Centre. On-going.
6. Development of regional psyllid research plan, with strong Indonesian participation. Dr. Ida Nyoman Oka, Director of the Food Crops Research Agency, is the Regional Coordinator of the regional effort. F/FRED supports his travel and

other expenses in conjunction with the regional psyllid research program. Meeting of national psyllid research coordinators held in Thailand. On-going.

7. Purchase of a computer for the Forestry Research and Development Centre to be used for analysis of data from Network trials. Near completion.
8. Case study of farmers' access to, production and use of MPTS and the characteristics of trees the farmers desire for various uses. Near completion.
9. Support for five junior scientists to attend short-courses on "Forestry Concepts for Social Scientists" and "Social Science Concepts for Foresters" held in the Philippines. Completed.
10. Support for two researchers to attend a regional training course on forestry research management held in Malaysia. Completed.
11. Selection of a researcher at BIOTROP in Bogor as one of six F/FRED Ph.D. fellows to study at Michigan State University beginning September 1988. On-going.

F/FRED Plans for Indonesian Participation

In addition to the above activities, the planned F/FRED program includes considerable Indonesian participation under several broad categories:

A. MPTS Networks

1. Continue 1987 Humid and Sub-Humid Zone Network Trials, and complete the Social Science Case Study conducted in conjunction with the trials.

B. Improved Linkages Among Institutions

1. Explore possibility of sending researchers from Indonesian institutions to institutes in other F/FRED countries, and supporting jointly organized workshop and other activities with other participating MPTS Research Network institutions. This will take place under a twinning program to begin in late 1988.
2. Contribute to cooperation among forestry, agricultural and socioeconomic research institutions in Indonesia, through workshops, seminars, and joint research projects.
3. Contribute to cooperation among researchers and extension agencies and policy makers, through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Organize an international meeting in Indonesia on "Orienting MPTS Research to Small Farm Needs," set for mid-June 1989.
2. Sponsor National MPTS Organizing Meetings, including in-country travel for participants. Biological and social scientists will meet to discuss directions for MPTS and farm forestry research in Indonesia, to exchange information (through papers, discussion - sessions), and to select representatives to the F/FRED Research Committee. Mr. Komar Soemarna, of the Forestry Research and Development Centre, and Dr. Setiati Sastrapradja, Director of the National Center for Research in Biotechnology, as Director and Secretary of a National MPTS Secretariat, will serve as co-coordinators for these meetings.
3. Sponsor a "traveling workshop" of participants in the 1987 Humid and Sub-Humid Zone Network Trials (including social scientists carrying out case studies), to visit network trial and case study sites and to discuss plans for future cooperative trials. The workshop will visit the trials and case study sites in Indonesia, and Indonesian cooperators will join the workshop to Thailand, Malaysia, and the Philippines.

D. Publications

1. Publish results of research sponsored by F/FRED and disseminate to other Network participants.
2. Provide participating institutions and researchers with MPTS Research Network publications.

E. Training

1. Graduate degree fellowships. Continue support for Ph.D. fellow from BIOTROP.
2. Participant support for Indonesian scientists in short-term training courses offered in the region.
3. Organize short-term training courses on Technical Writing Skills, Use of Microcomputers in Forestry Research, and Forestry Research Methods, with participation of Indonesian researchers.

F. Research Support

1. Provide small research grants. Many applications were received from Indonesia. Final selection will be made in September 1988. Other grants will be provided

directly by the Coordinating Unit on topics critical to the achievement of the project's goals.

2. Provide commodities required for research. The computer for the Forestry Research and Development Centre is an example of this.
3. Assist with the preparation of research proposals on regional or national issues to be submitted to other donor agencies for funding.
4. Implement a subcontract for leucaena psyllid research.

G. Technical Assistance

1. At the request of the USAID mission or network institutions, provide technical assistance on MPTS, farm forestry, or related issues.
2. Assist the USAID mission with its forestry and natural resource projects, through training and workshops.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Technical assistance	10,000
B. International workshop	30,000
C. Participant support	40,000
D. Research grants	50,000
E. Publications	5,000
F. Ph.D. Fellowship	30,000
G. Other	5,000
TOTAL	\$170,000

5. Malaysia

Two institutes in Malaysia are involved in the F/FRED network through MOUs. They are the Forest Research Institute Malaysia (FRIM) and the Universiti Pertanian Malaysia (UPM). Dr. Salleh Mohd. Nor, Director-General of FRIM, has been instrumental in the establishment of the MPTS Research Network and is currently Chairman of its Steering Committee. Dr. Kamis Awang of the Faculty of Forestry, UPM, has been active in the establishment of the Humid and Sub-humid Zone network trials, and in setting up the MPTS Research Committee.

Past and On-going F/FRED Activities in Malaysia

F/FRED has supported several Malaysian biological and social science researchers through the following activities:

1. International meeting of the MPTS Research Network Steering and Research Committees, held in Kuching, Sarawak, April 4-8, 1988. Organized by FRIM and the State Forest Department of Sarawak. The report of the meeting was compiled jointly by F/FRED and FRIM staff.
2. Involvement of three Malaysian scientists as members of the MPTS Research Network Steering and Research Committees.
3. Participation of Malaysian researcher in an international workshop on Social Science Methods for Farm and Village Forestry Research, held in Nepal in April.
4. Participation in regional Network Species Trials, by FRIM and the Faculty of Forestry, UPM, including provision of necessary equipment. On-going.
5. Participation of Malaysian scientists in regional meetings on the Leucaena psyllid pest, held in Thailand. Development of regional psyllid research plan, with Malaysian representation. Support research on the Leucaena psyllid pest. On-going.
6. Support for a case study of farmers' access to, production and use of MPTS and the characteristics of trees the farmers desire for various uses to be done by Dr. Bahari of the Pusat Pengembangan dan Pendidikan Lanjutan, UPM. On-going.
7. Support for a training visit of Mr. Cheah Leang Chiew, FRIM, to the U.S. in 1987. A result of this visit will be Mr. Cheah's active role in the organization, management, and conduct of a short-term training course on research management, to be offered by FRIM in 1988 and subsequent years.
8. Support for the Regional Course on Research Management, held at FRIM, July-August 1988. Sponsored regional participants to attend the course.
9. Sponsorship of two regional participants to a short-course offered by FRIM on statistical methods. Completed.
10. Support for FRIM publication of an international Journal of Tropical Forest Science. On-going.
11. Support for participation of a Malaysian researcher to an International Rangeland Congress in India. On-going.
12. Participation of 1987 Network Trials Cooperators in the "travelling workshop" to be held October 1988. The workshop will visit Malaysia for presentations by the Network Trials cooperators and the social science case study researcher. Network Trials cooperators will participate in the workshop in Thailand, Indonesia, and the Philippines. On-going.

13. Support for a twinning arrangement between the UPM Faculty of Forestry and the Kasetsart University Faculty of Forestry, to include exchange of faculty, a joint symposium of development in tree plantations in the humid and sub-humid tropics, and organization of joint short-term training courses. Starting.
14. Support for international travel for a participant to a Community Forestry Workshop in Kuching.
15. Organization of a National MPTS Organizing Meeting at FRIM in 1987. Travel and other support were provided to bring in participants from outside Kuala Lumpur. Funds were provided to assist with the organization of the meeting.
16. Support for a Malaysian researcher to the IUFRO Meeting on Forest Pests in Thailand.

F/FRED Plans for Malaysian Participation

In addition to the above activities, the planned F/FRED program includes considerable Malaysian participation under several broad categories:

A. MPTS Networks

1. Continue the 1987 Humid and Sub-Humid Zone Network Trials, and complete the Social Science Case Study conducted in conjunction with the Trials.

B. Improved linkages among institutions

1. Develop the link between UPM Faculty of Forestry and Kasetsart University Faculty of Forestry. Explore possibility of twinning arrangements between FRIM and another MPTS Research Network institute.
2. Support cooperation among forestry, agricultural and socio-economic research institutions in Malaysia, through workshops, seminars, and joint research projects.
3. Support cooperation among researchers and extension agencies and policy makers, through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Sponsor participants to an international workshop on "Orienting MPTS Research to Small Farm Needs," set for mid-June 1989.
2. Sponsor National MPTS Organizing Meetings, including in-country travel for participants. Biological and social scientists will meet to discuss directions for MPTS and farm

forestry research in Malaysia, to exchange information (through papers, discussion sessions), and to select representatives for the MPTS Research Committee.

3. Sponsor a "travelling workshop" of participants in the 1987 Humid and Sub-Humid Zone Network Trials (including social scientists carrying out case studies), to visit network trial and case study sites and to discuss plans for future cooperative trials.

D. Publications

1. Publish results of research sponsored by F/FRED and disseminate to other Network participants.
2. Provide participating institutions and researchers with MPTS Research Network publications.
3. Support publication at FRIM of the International Journal of Tropical Forest Science.

E. Training

1. Participant support for Malaysian scientists in short-term training courses offered in the region.
2. Organize short-term training courses on Technical Writing Skills, Use of Microcomputers in Forestry Research, and Forestry Research Methods, with participation of Malaysian researchers.

F. Research Support

1. Provide small research grants. Final selection will be made in September 1988. Other grants will be provided directly by the Coordinating Unit on topics critical to the achievement of the project's goals.
2. Provide commodities required for research. A computer provided the UPM Faculty of Forestry last year is an example.
3. Assist with the preparation of research proposals on regional or national issues to be submitted to other donor agencies for funding.
4. Implement a sub-contract for leucaena psyllid research.

G. Technical Assistance

1. At the request of Malaysian network institutions, provide short-term and long-term technical assistance on MPTS, farm forestry, or related issues.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Technical Assistance	5,000
B. Participant Support	40,000
C. Research Grants	50,000
D. Publications	20,000
E. Other	10,000
TOTAL	\$125,000

6. Nepal

The Institute of Forestry has joined the MPTS Research Network by signing an MOU. Two more institutes, the Institute of Agriculture and Animal Science (IAAS) and the Forest Survey and Research Office, have joined the network through signing Letters of Agreement. The International Centre for Integrated Mountain Development (ICIMOD) will participate with Winrock International-F/FRED on a case by case basis in activities of mutual benefit to the two organizations.

Past F/FRED Activities in Nepal

1. Participation of Nepali scientists in MPTS Network trials planning meetings held in Karachi (November, 1988) and Kathmandu (March, 1988). At these meetings, participants designed the trials for the arid and semi-arid zones. Three participants from Nepal indicated an interest in undertaking a network trial.

The meeting in Kathmandu was co-sponsored by the Forestry Survey and Research Office.

2. A National MPTS Organizing Meeting was conducted January 20-21, 1988 in Kathmandu. Eka Raj Sharma served as the meeting organizer. The representatives selected to serve on the MPTS Research Committee including Eka Raj Sharma, Chief of the Forest Survey and Research Office, and Kailash Pyakuryal, Dean of the Institute of Agriculture and Animal Science.
3. Involvement of Eka Raj Sharma and Kailash Pyakuryal on the MPTS Research Committee in Kuching, Malaysia in April, 1988. Dr. Pyakuryal was also selected to serve on the Steering Committee.
4. Participation of Asian scientists in the meeting in Kathmandu, April 24-28, 1988 to develop the minimum social science data set. This meeting was co-sponsored by IDRC, IAAS, ICIMOD, and Tribhuvan University.

5. Sponsorship of four Nepali scientists to attend a course in the Philippines on social science concepts for foresters.
6. Sponsorship of three Nepali scientists to attend a course in the Philippines on forestry concepts for social scientists.
7. Madhav Karki, of the Institute of Forestry, was selected as one of the six Ph.D. fellowship recipients.

In addition to the above activities, the planned F/FRED program will include additional Nepali participation under several broad categories:

A. MPTS Networks

1. Establish arid and semi-arid zone network trials.
2. Support additional National MPTS Organizing Meetings.
3. Make arrangements to collect seed for the arid and semi-arid zone network trials (Dalbergia sissoo) and for planned progeny trials.

B. Improved Links Among Institutions

1. Explore the possibility of exchanges between researchers from Nepali institutions and those in other F/FRED countries.
2. Support cooperation among forestry, agricultural, and socioeconomic institutes in Nepal, through workshops, seminars, and joint research projects.
3. Support cooperation among researchers and extension agencies and policy makers, through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Organize theme meetings. Sponsor several Nepali participants to the international workshop, "Strategies and Methods for Orienting MPTS Research to Small-Scale Farm Use" in June 1989.
2. Sponsor National MPTS Organizing Meetings, including travel for participants from outside Kathmandu. Biological and social scientists meet to discuss directions for MPTS and farm forestry research in Nepal, to exchange information (through papers, discussion sessions), and to select representatives for the MPTS Research Committee.

D. Publications

1. Publish results of research sponsored by F/FRED and disseminate to other network participants.
2. Provide opportunities for publication of scientific papers of regional significance in the MPTS Research Network Series.

E. Training

1. Sponsor travel to and participation of Nepali scientists in short-term training courses offered in the region.

F. Research Support

1. Provide small research grants through solicited proposals and through the on-going small grants program.
2. Assist with the preparation of research proposals on regional or national issues to be submitted to other donor agencies for funding.

G. Technical Assistance

1. At the request of the USAID mission or participating institutes, provide short-term and long-term technical assistance on MPTS, farm forestry, or related issues. The F/FRED Coordinating Unit team and the USAID/Nepal mission are exploring several ways in which F/FRED can support mission forestry programs in Nepal.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Technical Assistance	20,000
B. Participant Support	30,000
C. Research Grants	20,000
D. Publications	1,000
E. Other	3,000
TOTAL	\$74,000

7. Pakistan

The F/FRED Project operates in Pakistan through an MOU between the Government of Pakistan and USAID. This allows any institution in Pakistan to become involved in F/FRED activities. In addition, F/FRED signed an LOA with the Agricultural Research Centre of the Atomic Energy Commission.

Past and On-going F/FRED Activities in Pakistan

F/FRED has supported Pakistani researchers through the following activities:

1. The Network Trials Planning Meeting for Arid and Semi-arid Zone Meeting was held November 1987 in Karachi. Over 40 scientists participated from six different countries. The proceedings of this meeting were published by Winrock International. M.I. Sheikh of the Pakistan Forestry Institute (PFI) was the Chairman of the Organizing Committee for this meeting.
2. Participation in the regional network trial at two sites by PFI in conjunction with the Humid and Semi-humid Zone Network.
3. Meeting with foresters, economists, sociologists and anthropologists in Pakistan to discuss the role of social sciences in forestry research in Pakistan.
4. Coordination and implementation of farm forestry field trips to Thailand and the Philippines for ten Pakistani scientists. Each trip was for approximately one week.
5. Sponsorship for the extension of a visit by the IG/F Abeedullah Jan to Bangkok to visit with the Network Team to discuss plans for further F/FRED involvement in Pakistan.
6. Provision for a National MPTS Organizing Meeting was held in Peshawar November 11-12, 1987. M.I. Sheikh, Director General of PFI, served as meeting organizer. Dr. K. Siddiqui and Saliheen Khan of PFI were selected as Pakistan's representatives on the MPTS Research Committee.
7. Involvement of two Pakistani scientists at the MPTS Research Committee Meeting in Kuching, Malaysia in April, 1988. Dr. Siddiqui was selected to serve on the F/FRED Steering Committee.
8. Several Pakistani scientists attended the Network Trials Planning Meeting in March in Kathmandu. Six Pakistani scientists demonstrated an interest in undertaking fourteen experimental trials.
9. F/FRED provided a consultant of the U.S. Forest Service to design a seed processing and storage facility for the GOP.

Plans Involving Pakistani Participation

In addition to the above, the planned F/FRED program will include considerable Pakistani participation under several broad categories.

A. MPTS Networks

1. Continue 1987 Humid and Sub-Humid Zone Network Trials, and initiate new experiments in 1988.
2. Establish arrangements for participants to undertake the arid and semi-arid zone network trials.

B. Improved linkages among institutions

1. Explore possibility of sending researchers from PFI, IGF, and the provincial forestry departments in Pakistan to institutes in other F/FRED countries for two- to six-month research trainings. Researchers from the other country's institutes would come to Pakistan for similar training.
2. Support cooperation between forestry, agricultural and socio-economic research institutions in Pakistan, through workshops, seminars, and joint research projects.
3. Support cooperation between researchers and extension agencies and policy makers, through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Co-sponsor Pakistani scientists to attend an international workshop on "Strategies and Methods for Orienting MPTS Research to Small-Scale Farm Use" in June 1989.
2. Sponsor National MPTS Organizing Meetings, including in-country travel for participants. Biological and social scientists will meet to discuss directions for MPTS and farm forestry research in Pakistan, to exchange information (through papers, discussion sessions), and to select representatives for the MPTS Research Committee.
3. Sponsor a "traveling workshop" of participants in the 1987 Humid and Sub-Humid Zone Network Trials (including social scientists carrying out case studies), to visit network trial and case study sites and to discuss plans for future cooperative trials. The workshop, to take place in October 1988, will include at least one Pakistani participant.

D. Training

1. Participant support for Pakistani scientists in short-term training courses offered in the region.

E. Research Support

1. Provide small research grants through solicited proposals and through the on-going small grants program.
2. Provide some commodities required for research.
3. Assist with the preparation of research proposals on regional or national issues to be submitted to other donor agencies for funding.

F. Technical Assistance

1. At the request of the USAID mission or network institutions, provide technical assistance on MPTS, farm forestry, or related issues. This assistance can be provided from at least three sources: the Coordinating Unit members, Asian scientists who are active in MPTS related research, and scientists from the U.S. or other industrialized countries who have extensive experience in Asia.
2. Assist the USAID mission with its forestry and natural resource projects, through training and workshops.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Technical assistance	10,000
B. Participant support	15,000
C. Research grants	10,000
D. Publications	1,000
E. Other	2,000
TOTAL	\$38,000

8. Papua New Guinea

In June, F/FRED co-sponsored with the Governments of Papua New Guinea and Australia, and two other donor organizations, a short course, "Tropical Forest Ecology and Management in the Asia-Pacific Region." This took place at the University of Papua New Guinea in Port Moresby (see Appendix 8). Following this and further meetings, F/FRED is signing an MOU that will permit greater participation of the country's scientists in the MPTS Research Network in the future.

9. Philippines

Three Philippine institutes are involved in the F/FRED Network through formal MOUs. They are the University of the Philippines at Los Banos College of Forestry (UPLB), the Visayas State College of Agriculture (ViSCA), and the Department of Environment and Natural Resources (DENR) for the Ecosystems Research and Development Bureau (formerly the Forest Research Institute, FORI).

Past and On-going F/FRED Activities in the Philippines

F/FRED has supported biological and social science researchers in the Philippines through the following specific activities:

1. Participation in regional Network Trials by ViSCA in Leyte and by ERDB in Nueva Ecija. Experiments were successfully established at each site. Unfortunately, the Nueva Ecija site has been burned, but will be monitored to provide data on re-growth.
2. National program support of research on the leucaena psyllid pest. Meetings were held in Los Banos and Manila to discuss both several small grants proposals and two larger proposals to the Asian Development Bank and IDRC. F/FRED funds have also been provided for two small research grants on priority psyllid research topics. A subcontract with PCARRD for psyllid research to be done as part of the regional psyllid research plan has been prepared and is being negotiated at present.
3. Purchase of two Compac Deskpro 286 computers for use in network and other forestry research. One computer was provided for the Department of Forestry at ViSCA and another for joint use by ERDB and the UPLB College of Forestry. These have been installed and training provided to the operators at each institution.
4. Case study of farmers' access to, production and use of MPTS and the characteristics of trees the farmers desire for various uses.
5. Sponsorship of Filipino MPTS researchers to attend training courses on statistics in forestry research and forestry research management in Malaysia.
6. Sponsorship of a ViSCA faculty member to attend the Regional Community Forestry Certificate Course in Bangkok. This has been part of the emphasis in providing support to a young and vibrant Department of Forestry at ViSCA.
7. Development and organization of two regional training courses entitled: 1) Forestry Concepts for Social Scientists and 2) Social Science Concepts for Foresters were conducted

by the Institute of Forest Conservation of the University of the Philippines at Los Banos.

8. One Filipino forester, Mr. E.S. Guiang, was selected to receive one of the six F/FRED fellowships for Ph.D. study at MSU.
9. Provision of a short-term consultant, Dr. C. Buford Briscoe of the F/FRED staff, to assist DENR in analyzing and summarizing MPTS research, at the request of USAID/Manila.

F/FRED Plans for Philippine Participation

In addition to the above on-going activities, the planned F/FRED program will include considerable Philippine participation under the following categories.

A. MPTS Networks

1. Continuation of the 1987 Humid and Sub-Humid Zone Network Trials and participation in the Field Trials Tour scheduled for October, 1988.
2. F/FRED funding of short-term leucaena psyllid research and a sub-contract for national program support for psyllid research.

B. Improved linkages among institutions

1. Explore possibility of sending researchers from Philippine MOU institutions to an institute in another F/FRED country for two- to six-month research trainings. Researchers from the other country's institute would make a reciprocal visit.
2. Support cooperation among forestry, agricultural and socioeconomic research institutions in the Philippines, through workshops, seminars, and joint research projects.
3. Support cooperation among researchers and extension agencies and policy makers, through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Sponsor National MPTS Organizing Meetings, including travel for participants from outside Bangkok. The second such meeting will be held in early October, 1988. Biological and social scientists will meet to discuss directions for MPTS and farm forestry research in the Philippines, to exchange information (through papers, discussion sessions), and to select a representative for the 1989 F/FRED Research Committee.

2. Sponsor a "travelling workshop" of participants in the 1987 Humid and Sub-Humid Zone Network Trials (including social scientists carrying out case studies), to visit experiment sites and to discuss plans for future cooperative trials. Will include at least two Filipino participants, and visits to trial sites in Nueva Ecija and Leyte.

D. Publications

1. Publish results of research sponsored by F/FRED and disseminate to other network participants.
2. Provide opportunities for publication of scientific papers of regional significance in the MPTS Research Series.

E. Training

1. Provide participant support for Filipino scientists in short-term training courses offered in the region.
2. Design and conduct a course on Experimental Designs for MPTS research to be held at the UPLB in late 1988.

F. Research Support

1. Provide small research grants. Over 40 proposals were received from the Philippines for the Small Research Grants Program.
2. Provide commodities required for research.
3. Implement a subcontract for leucaena psyllid research.

G. Technical Assistance

No requests for technical assistance have yet been made for the coming year.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Ph.D. fellowship	30,000
B. Participant support	50,000
C. Research grants	90,000
D. Publications	1,000
E. Other	2,000
TOTAL	\$173,000

10. Republic of China

Past and On-going F/FRED Activities in the Republic of China (ROC)

F/FRED has supported researchers from the ROC through the following activities:

1. Participation in the F/FRED Research Committee meetings by Dr. Ta-Wei Hu from the Chinese Cultural University. Dr. Hu attended these meetings in Bangkok, Kuala Lumpur, and Kuching. Dr. Hu has also served as an F/FRED consultant for network research in the Arid and Semi-Arid zone.
2. Active participation in the regional leucaena psyllid research plan. Dr. Fuh-Juinn Pan participated in the national coordinators meeting in Bangkok in April, 1988 and has prepared a proposal which is now being processed in the form of a subcontract between the Taiwan Forest Research Institute and Winrock.
3. Sponsorship of Dr. Hsu Chun to attend the Forestry Research Management Course held in Malaysia, July-August, 1988.
4. Continued participation in the humid zone network trials at three sites in Taiwan, and in the network trials field tour to be held in October, 1988.

F/FRED Plans for ROC Participation

1. Sponsor a National MPTS Organizing Meeting, coordinated by Dr. Ta-Wei Hu.
2. Implement the subcontract for research on the leucaena psyllid.

10. Sri Lanka

Members of the Coordinating Unit made a preliminary visit to Sri Lanka in November 1987, resulting in an MOU with the Forestry Department. In addition to participation in network activities by Forestry Department staff, there has been participation by Sri Lankan researchers from the Coconut Institute, the University of Peradeniya, and agricultural agencies of the Sri Lankan government.

Past F/FRED Activities in Sri Lanka

Sri Lankan scientists have played key roles in the international meetings to establish the Humid and Sub-Humid Zone MPTS Network, the Arid and Semi-Arid Zone MPTS Network, and the Standardized Methods for Research on Farm and Village Forestry. A leading

forester, Dr. Nanayakaran, was selected to be the Sri Lankan representative to the MPTS Research Network Research Committee. He was not able to attend the Research Committee meeting in Malaysia. Although Sri Lankan participation in other project activities, such as the network trials and other regional research, has been less than originally hoped, F/FRED involvement in Sri Lanka has increased steadily over the past year, and has included:

1. Support for a Sri Lankan participant to the international workshop, "MPTS for Small Farm Use," in November 1987 in Thailand.
2. Sponsorship of Sri Lankan participants to the international meeting to establish the Arid and Semi-Arid Zone Network, in November 1987 in Karachi.
3. Sponsorship of a participant to IUFRO workshop on pests and diseases of forest plantations, in Bangkok. Completed.
4. Sponsorship of a participant to a short-course on Social Science Concepts for Foresters, at UPLB, Philippines in June 1988.
5. Sponsorship of a participant to an International Conference on Training Forestry Technicians at Paul Smith's College, New York. Completed.
6. Provision of a Ph.D. fellowship to Sri Lankan economist to study forestry economics at Michigan State University, beginning September 1988. On-going.
7. Support through a sub-contract with Plantek International field trials of MPTS species propagated by tissue culture. On-going.

F/FRED Plans for Sri Lankan Participation

In addition to the above on-going activities, the planned F/FRED program until the end of 1989 will include increasing Sri Lankan participation under several broad categories:

A. MPTS Networks

1. Continued participation in the field trials of tissue culture propagated MPTS.
2. Possible involvement in the Arid and Semi-Arid Zone Network Trials.
3. Possible participation in the regional Social Science Network Study.

B. Improved linkages among institutions

1. Support exchanges with institutions in other Asian countries. Develop links between Sri Lankan institutions and MPTS Research Network institutions in other countries.
2. Support cooperation among forestry, agricultural and socio-economic research institutions in Sri Lanka, through workshops, seminars, and joint research projects.
3. Support cooperation among researchers and extension agencies and policy makers, through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Sponsor participants to an international workshop on "Orienting MPTS Research to Small Farm Needs," set for mid-June 1989.
2. Sponsor National MPTS Organizing Meetings, including in-country travel for participants. Biological and social scientists will meet to discuss directions for MPTS and farm forestry research in Sri Lanka, to exchange information (through papers, discussion sessions), and to select representatives for the F/FRED Research Committee.
3. Co-sponsor with the International Foundation for Science an international meeting in Sri Lanka on Fast-Growing Tree Species. to be held in Colombo in October 1989.

D. Publications

1. Publish results of research sponsored by F/FRED and disseminate to other Network participants.
2. Provide participating institutions and researchers with MPTS Research Network publications.

E. Training

1. Provide participant support for Sri Lankan scientists in short-term training courses offered in the region.
2. Organize short-term training courses on Technical Writing Skills, Use of Microcomputers in Forestry Research, and Forestry Research Methods, with participation of Sri Lankan researchers.

F. Research Support

1. Provide small research grants. Final selection will be made in September 1988. Other grants will be provided directly

by the Coordinating Unit on topics critical to the achievement of the project's goals.

2. Provide commodities required for research.
3. Assist with the preparation of research proposals on regional or national issues to be submitted to other donor agencies for funding.

G. Technical Assistance

1. At the request of the USAID mission or of network institutions, provide short-term and long-term technical assistance on MPTS, farm forestry, or related issues.
2. Assist the USAID mission with its forestry and natural resource projects through training and workshops.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Participant Support	20,000
B. Research Grants	10,000
C. Theme Meetings	18,000
E. Publications	5,000
D. Other	2,000
TOTAL	\$55,000

11. Thailand

Three institutes in Thailand are involved in the MPTS Research Network through MOUs or LOAs. They are the Kasetsart University Faculty of Forestry, the Thailand Institute for Scientific and Technological Research (TISTR), and the Center for Applied Economics Research at Kasetsart University. Researchers from the Royal Forestry Department, other government agencies involved in natural resource issues, and Chiang Mai, Khon Kaen and Chulalongkorn Universities have also participated in network activities.

Past and On-going F/FRED Activities in Thailand

F/FRED has supported Thai biological and social science researchers through the following specific activities:

1. Participation in the MPTS Research Committee by Suree Bhumibhamon and Yongyuth Chalamwong. On-going.
2. Participation in regional Network Species Trials by the Royal Forestry Department (Khon Kaen and Ratchaburi), the

Kasetsart University Faculty of Forestry (Chachoengsao and Uthai Thani) and TISTR (Chumporn and Chiang Mai). On-going.

3. Participation in F/FRED international conferences and workshops in Thailand and Nepal. Completed.
4. Development of a regional psyllid research plan, with strong Thai participation. Dr. Banpot Napompeth, Director of the National Biological Control Research Center, is the Deputy Regional Coordinator of the regional effort. F/FRED supports his travel and some expenses in this work. Meeting of national psyllid research coordinators was held in Thailand. On-going.
5. Purchase of Compaq 286 computers for Kasetsart University Faculty of Forestry, Royal Forest Department, and TISTR, to be used for analysis of network trials and for other forestry and social forestry research. Completed.
6. Case study of farmers' access to, production and use of MPTS and the characteristics of trees the farmers desire for various uses. Near completion.
7. Case study of major social, economic and cultural factors that affect farmers' access to, production and use of trees and wood products. Near completion.
8. Support for five junior scientists to short-courses on "Forestry Concepts for Social Scientists" and "Social Science Methods for Foresters" held in the Philippines. Completed.
9. Support for two researchers to a regional training on forestry research management in Malaysia. Completed.
10. Study on Mycorrhiza in MPTS. Included sponsoring travel and participation of Thai scientist in Mycorrhiza Conference in U.S. On-going.
11. Selected a Thai researcher as one of six F/FRED Ph.D. fellows to study at Michigan State University beginning September 1988. On-going.

F/FRED Plans Involving Thai Participation

In addition to the above on-going activities, the planned F/FRED program will include considerable Thai participation in activities under several broad categories:

A. MPTS Networks

1. Continue 1987 Humid and Sub-Humid Zone Network Trials, and complete the Social Science Case Study conducted in conjunction with the trials.

B. Improved links among institutions

1. Support cooperation among researchers/institutions in other Asian countries. With encouragement from the F/FRED project, the Faculty of Forestry and the UPM Faculty of Forestry in Malaysia have drafted an MOU for a twinning arrangement. Further potential arrangements for twinning in the region will be explored.
2. Support cooperation among forestry, agricultural and socio-economic research institutions in Thailand, through workshops, seminars, and joint research projects.
3. Support cooperation among researchers and extension agencies and policy makers, through workshops, seminars and training.

C. Network Meetings and Site Visits

1. Sponsor National MPTS Organizing Meetings, including travel for participants from outside Bangkok. The first meeting for Thailand was held in Bangkok in December 1987. Biological and social scientists met to discuss directions for MPTS and farm forestry research in Thailand. The next National Organizing Meeting will take place later in 1988.
2. Sponsor a "traveling workshop" of participants in the Humid and Sub-Humid Zone Network trials (including social scientists carrying out case studies), to visit experiment sites and to discuss plans for future cooperative trials in October 1988. Will include several Thai participants and travel in Thailand.

D. Publications

1. Publish results of research sponsored by F/FRED and disseminate to other network participants.
2. Translate into English and disseminate to other network participants studies on MPTS and farm forestry originally published in Thai.
3. Provide opportunities for publication of scientific papers of regional significance in the MPTS Research Network Series.

E. Training

1. Continue support for Thai Ph.D. fellowship recipient.
2. Sponsor travel to and participation of Thai scientists in short-term training courses offered in the region.

3. Organize short-term training courses on: 1) the Use of Micro-Computers in Forestry Research; 2) Forestry Research Methodologies.

F. Research Support

1. Provide small research grants. Many applications were received from Thailand. Final selection will be made in September 1988. Other grants will be provided directly by the Coordinating Unit on topics critical to the achievement of the project's goals.
2. Assist with the preparation of research proposals on regional or national issues to be submitted to other donor agencies for funding.
3. Provide a subcontract for leucaena psyllid research.

G. Technical Assistance

1. At the request of the USAID mission or participating institutes, provide technical assistance on MPTS, farm forestry, or related issues.
2. Assist USAID mission with its forestry and natural resource projects, through technical assistance, training and workshops. Discussions have been held with USAID/Thailand staff on ways that F/FRED can assist with the natural resources program of the Mission.

Estimated 1988-89 F/FRED Budget Contributions

	US\$
A. Technical assistance	10,000
B. Participant support	40,000
C. Research grants	50,000
D. Publications	5,000
E. Ph.D. Fellowship	30,000
F. Other	5,000
TOTAL	\$140,000

VIII. PROJECT MANAGEMENT

The F/FRED Project Management Office is located with the Winrock International office in Arlington, Virginia, allowing close coordination with A.I.D. and other international donor agencies with offices in Washington, D.C. Through an electronic mail system, project management staff communicate with the Coordinating Unit in Bangkok, Thailand, and the Global Research Unit in Hawaii on details of project planning and implementation. Periodically, also, representatives of the three project offices meet to review the project's progress, goals, and implementation strategies. Figure 2 shows a scheme of the management structure of the F/FRED project.

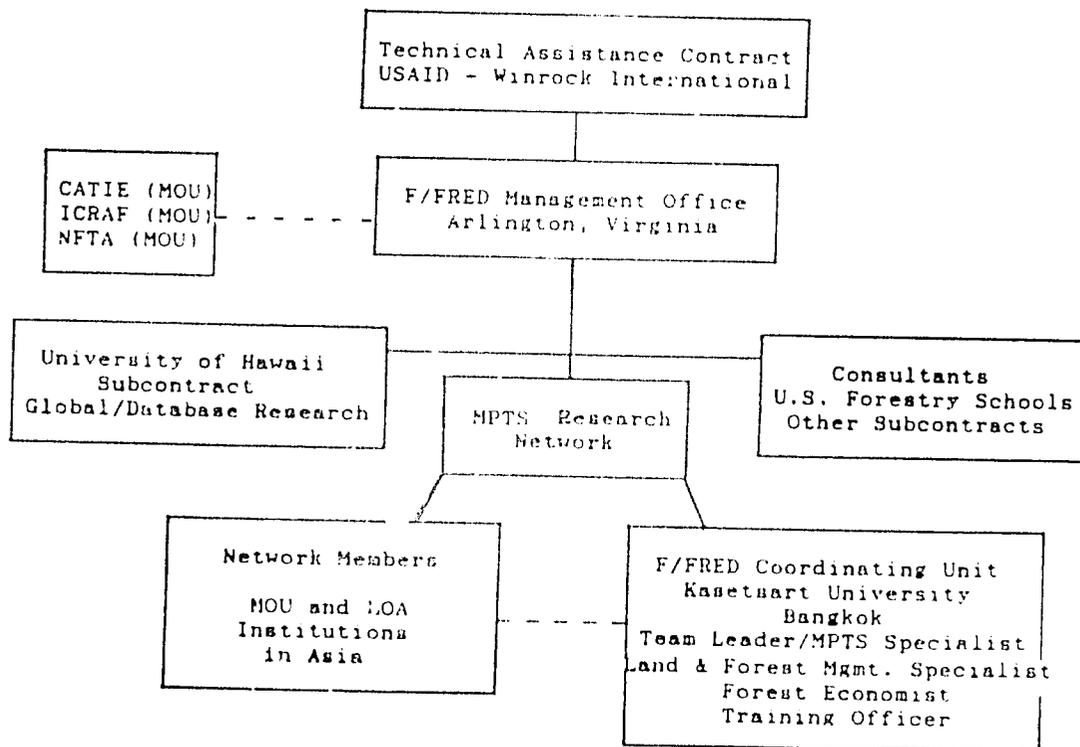


Figure 2. F/FRED-Asia Project Organizational Structure

1. Component Workplans

Project policy direction and control takes place through the development and approval of workplans for the Coordinating Unit and Global Research Unit offices. (see appendices 4 and 5). The currently proposed workplans, submitted in August 1988, were presented to A.I.D./Washington at the monthly coordination meeting with A.I.D. held on August 31, 1988.

2. Task Orders

The planning and execution of important project activities is aided by the use of task orders that, like annual workplans, are developed by project staff and enacted following A.I.D. review and approval. Task orders provide the rationale and course of action for specific project activities, and are accompanied by a budget estimate (although the task order is not an accounting document). Currently, 53 task orders have been approved (see appendix 6).

3. Coordination with A.I.D.

Important decisions affecting research policy and other project plans are reviewed at monthly project coordination meetings of A.I.D. and Winrock staff members concerned with the F/FRED project. These meetings, held at the Winrock International office in Arlington, include participation by the Project Officer from the Bureau for Science and Technology's Directorate for Energy and Natural Resources, as well as the co-managers from that bureau's Directorate for Rural Development and from the Bureau for Asia and the Near East. When their visits to Washington, D.C. permit, F/FRED monitors from the USAID missions, members of the F/FRED Coordinating Unit, and subcontractors are also invited to attend.

A meeting of the F/FRED Project Monitors in the USAID missions took place in April 1987. The meeting familiarized the missions with the regional role of F/FRED and its relationship to mission projects, and elicited their input.

For staff and consultant travel to participating countries, the F/FRED staff follow A.I.D. protocol for obtaining USAID and country clearances. F/FRED site visits include briefing sessions with USAID staff to coordinate F/FRED country-specific activities with mission directives, and to engage mission support and input into regional project activities.

4. Budget

An accounting budget allows Winrock International to issue billings according to A.I.D. accounting categories. To better facilitate budget programming of activities, however, a program budget format was developed in the past year. This budget tracks actual and planned expenses by specific item under the categories of Administration, Network Development, Research Support, Training, USAID Consultant Support, and Publications.

With the current task orders and estimated administrative costs, F/FRED funds are fully committed to an extensive program of

activities to support the MPTS Research Network in Asia and the appropriate links worldwide.

Funding flexibility under the first five-year phase of the project has been restricted by A.I.D. requests to incorporate activities not specified in the contracted scope of work (the India biomass project, curriculum development workshop, support for CATIE staff, and psyllid control planning and research), and by the need for a training officer and a full-time editor/publications officer. Altogether, "add-ons" to the original specified contractor responsibilities total over \$1.2 million. This situation will result in sharply limited network activities in the last two years of the project as contracted.

Project accomplishments have exceeded expectations and have led to identification of some attractive opportunities to build upon these achievements. These opportunities cannot be included in the contracted budget. Accelerating the start of the second phase would permit the F/FRED Project to maintain its innovative character and retain flexibility to respond to important opportunities for network development as they evolve. This would also fund some previously planned activities forced out of the budget by the "add-ons" referred to above. To make such acceleration feasible, A.I.D. would need to initiate funding for Phase 2 of F/FRED early in Fiscal Year 1990.

5. Administration of Subcontracts

The F/FRED Project Management Office currently monitors six important subcontracts for implementation of specific project activities. In addition to subcontracts with the University of Hawaii and Auburn University, begun in 1986 and 87 respectively, four have been negotiated and started in the past year.

Negotiations with Yale University and the University of California-Berkeley for a survey of Asian forestry schools curricula and follow-up workshop concluded with a signed subcontract with the Tropical Resources Institute of Yale University in July 1988 (see section VI.7 for planned activities under the subcontract).

PLANTEK International of Singapore concluded a subcontract with Winrock International to undertake the network tissue culture trials outlined in section IV.6.

The Project Management Office is also monitoring administration of the subcontract with Michigan State University for the provision of Ph.D. fellowships.

The F/FRED-sponsored position at CATIE was first handled under a subcontract with Weyerhaeuser for the services of a forestry

systems programmer, Dr. Terence Linkletter. With the recent assignment of Dr. Dean Current to CATIE as a socioeconomic information specialist, it is now managed directly with CATIE.

6. Links with U.S. Research

As is clear from the above section, F/FRED has very close working relationships with at least four U.S. universities. In addition to these institutional links, F/FRED has engaged short-term consultants from Washington State University, Southern Methodist University, and Cornell University to advise the network on particular issues.

Specific activities that have served to strengthen links between U.S. research organizations and F/FRED cooperators include: a study tour of U.S. forestry research institutions and schools by two Indian deans of forestry, under the Auburn subcontract; support for a tissue culture network and information exchange among Asian and U.S. institutions; and participation of Forest Service and Soil Conservation Service personnel as short-term consultants, members of advisory committees, and workshop participants.

Winrock International supports numerous additional links with U.S. universities through its activity in other projects.

7. Communications

F/FRED uses the ITT Dialcom E-Mail system for efficient communications. In addition to linking the three project offices, the electronic mail network includes CATIE in Costa Rica, the School of Forestry at the University of Minnesota, the A.I.D. office of S&T/FENR in Arlington, and the U.S. Forest Service Northeastern Experiment Station in Pennsylvania. A further link with ICRAF in Kenya is planned as service is extended to Africa.

The Dialcom system also permits telex communication with USAID missions and network member institutions for better coordination. Important documents can also be transmitted between the project offices in Bangkok and Arlington using FAX.

IX. INFORMATION/PUBLICATIONS

Information exchange is important for developing networks -- particularly for an interdisciplinary network such as the MPTS Research Network -- and for improving research capabilities of institutions. F/FRED's information program has developed considerably in the past year and includes project publications, provision of core MPTS libraries for member institutions, and plans for several workshops.

1. F/FRED Publications

Research Series

F/FRED launched its Research Series of publications in 1987 with three papers on tissue culture feasibility, regional research on control of the leucaena psyllid, and the status of MPTS in Thailand. This series expanded in the past year with the publication of two important manuals, a consultancy report, and a second biotechnology feasibility study.

The two manuals support the 1987 Network Trials in the humid and sub-humid zone. The Information and Decision Support System User's Manual, for use by cooperators in the trials and others interested in IADSS, was issued with the Field Methodology for the 1987 Humid and Sub-humid Zone Trials in the spring of 1988. Together these supply the necessary information for conducting the 1987 field trials and recording the data on IADSS for storage and analysis.

A report by C. Buford Briscoe, F/FRED Forestry Program Officer, compiles the results of a consultancy to the Philippine Department of Environment and Natural Resources. The report, issued in June, details the results and analyses of MPTS provenance and species trials conducted in the Philippines. The second biotechnology feasibility study commissioned by the project explores potential for improved exudate production of priority MPTS species. Another study on the socioeconomic impact of biotechnology on small farmers in Asia also was published in the Research Series in September 1988.

The Research Series is published at both the Coordinating Unit and Project Management offices of the project.

Technical Series

The first volume in the MPTS Research Network Technical Series, was published in 1988. "Modeling Growth and Yield of Multipurposes Tree Species," edited by Norma R. Adams and Foster B. Cady, is a series of five state-of-the-art papers prepared for an F/FRED workshop on modeling that took place in January 1988 at

the Global Research Unit office in Hawaii. The volume reviews aspects of predictive modeling as they pertain to short-rotation MPTS, and in addition to a free distribution to network members, is available for purchase through Winrock International's Agribookstore.

A second volume in the series is in the planning stage.

Volumes in the Technical and Research Series are distributed to network members, donor representatives, and other institutions and individuals interested in MPTS research through a schedule of periodic mailings.

Proceedings

F/FRED began its Proceedings Series early in 1987 with "Forestry Networks," the record of the first network workshop held in Bangkok, Thailand in September 1986.

In the past year the project has published two additional proceedings. "Trees on Small Farms" reports the results of the workshop inaugurating network activities in the Arid and Semi-arid environmental zone, held in Karachi, Pakistan in November 1987. "Multipurpose Tree Species for Small-Farm Use," proceedings of the workshop co-sponsored with IDRC and FAO in November 1987, was issued to workshop participants and network members in September 1988, and will also be available through IDRC.

A Report of the MPTS Research Network Steering and Research Committee Meetings, resulting from the meetings held in Kuching, Malaysia in April 1988, was distributed in June. This report presented the MPTS research priorities for each participating country as presented by the members of the Research Committee, and outlined project plans for the small grants program, exchange of network data, twinning arrangements among network member institutions, and a field tour of the 1987 network trial sites.

A report on the workshop, Standardized Social Science Methodologies for Farm and Village Forestry, held in April 1988, is being compiled, and is scheduled for distribution in October 1988.

Brochures

To acquaint potential network members and other donor agencies with important F/FRED activities, the project has produced three brochures. The first brochure on the overall project was prepared in July 1987 and updated in May 1988. A second brochure on the project's program of MPTS Network Field Trials was developed by Dale Withington of NFTA and distributed in July 1988. The third brochure, on the Information and Decision

Support System and its uses, is being issued in September 1988. A project poster also has been printed for participants to display to generate greater awareness of the network.

Newsletter

Farm Forestry News, the project newsletter, is produced at the Project Management Office in Arlington, Virginia. Over 1,900 subscribers currently receive the newsletter, which contains articles on a wide array of subjects within farm and village forestry, as well as an insert on project activities and plans. Recent issues have included articles on Trees and the Rural Poor, community forestry, and book reviews by leading scientists.

When first-year data from the 1987 network trials is compiled and analyzed, Farm Forestry News will publish the results.

Agroforestry Handbooks

Four handbooks on agroforestry research and social forestry were commissioned by the project in 1987. These handbooks, assembled collaboratively by Asian and American experts in the field, are intended primarily for use in Asia. Dr. William Bentley, managing editor for the series, has arranged for Oxford Press in India to publish the handbooks, which will then be available for purchase widely in Asia in addition to an initial free distribution to network members. The volumes are expected to be published early in 1989.

2. Core Library Development

In addition to F/FRED publications, the project supplies participating institutions with core libraries containing more than 70 titles in MPTS and forestry research and social forestry. In the past year provision of the libraries was extended to LOA institutions. A total of 21 libraries have been distributed to date.

Recognizing that each member institution has unique MPTS information needs, the project recently established a system through which cooperators may order up to \$US400 of publications directly from publishers using project funds. The selections will be made jointly by the cooperating scientist and the institution's librarian, and must relate to MPTS or social forestry.

3. Literature Search Service

As part of its growing collaboration with ICRAF, F/FRED will soon offer to perform MPTS literature searches for MPTS Research

Network members. Using a bibliographic software program developed for UNESCO and a reference database supplied by ICRAF, the F/FRED Coordinating Unit will be able to search approximately 10,000 references by subject, author, institution, and key words.

The Coordinating Unit has installed the UNESCO program at the Bangkok office and has requested ICRAF to supply its database of literature references.

4. Workshops and Trainings

F/FRED plans to sponsor a workshop for scientists and institutional librarians on MPTS information management, particularly of bibliographic information. The recommendation for this activity came from a consultant's report on librarian development, completed for F/FRED in 1987. The workshop would be organized by ICRAF Information staff, and would use UNESCO bibliography software used by ICRAF as well as the IADSS abstracts database. Tentative plans are for the workshop to take place in mid-1989.

Related to information/publications, the F/FRED Coordinating Unit plans to develop two short-courses to be conducted on an as-needed basis in the region. These are:

- o Research problem identification and proposal preparation
- o Technical writing and communication techniques for forestry researchers

F/FRED also recognizes the need for translations in order to communicate important MPTS research results in the region. To the extent budget limitations permit, the project plans to fund such translations from Asian languages into English.

Appendices

F/FRED Services in Asia Contract (LAC-5547-C-00-5214-00)
Between Winrock and A.I.D. signed September 19, 1985

Specific Contractor Responsibilities

Winrock Performance
Activities

A. RESEARCH POLICY, PLANNING AND MANAGEMENT

A. RESEARCH POLICY, PLANNING AND MANAGEMENT

1. Country Specific Forestry Research Sector Assessment and Plans

1. Country Specific Forestry Research Sector Assessment and Plans

Provide services to at least 3 AID assisted governments in formulating and designing: 1) national forestry/fuelwood research programs that address biological, sociological, and economic research topics; and 2) institutional and management frameworks that help countries formulate policies, programs and projects that enhance (forestry/fuelwood) research program implementation.

Specific assistance will include: TA in defining (country) research policies and programs, and project needs and issues; training curricula in research techniques and data interpretation; conducting at least six (6) workshops for host and donor investigations of research results; and participation in joint donor program reviews and preliminary project identification.

Comment: The requirement for country specific forestry research sector assessments under the F/FRED project was partially pre-empted by the action of an international task force convened by the World Resources Institute, the World Bank, and the United Nations Development Programme. The task force report issued in October, 1985 under the title Tropical Forests: A Call for Action contained country profiles and estimated total forestry investment by country including research. Subsequently, the FAO in Rome assumed responsibility to coordinate follow-up and secretariat activities, issuing The Tropical Forestry Action Plan in June 1987. Follow-up plans include country forestry sector review missions assisted by donor agencies, and country-level forestry exercises conducted by nationals. As of June 30, 1988 donor-assisted sector missions had been completed or were underway in 38 countries. Seven sector reviews by nationals were completed or on-going. Nine country requests for assistance were pending. F/FRED project support was not needed for these types of activities as envisioned when the project was planned. As for follow-on activities related to forestry research for multi-purpose trees, a meeting held at Bellagio, Italy in July, 1987 by sponsors of the Action Plan issued a call for, inter alia, strengthening forestry research, particularly on multipurpose trees, through breeding and biotechnology, and for establishment of a consultative group for forestry research and policy development comparable to that now existing for agricultural research. A working group from the Bellagio meeting is pursuing these recommendations. The chairman of the MPTS Research Network Steering Committee, Dr. Salleh Nor, is a member of the working group. Complementing the FAO-sponsored forestry sector missions is a series of more in-depth country studies under the auspices of the World Resources Institute. Three such studies have been conducted, including one in Indonesia. They are multi-sectoral and policy- rather than investment-oriented, as are the FAO sector reviews.

These developments have permitted the F/FRED project to focus its resources (approximately \$1.7 mil./year) on research related to short rotation, multi-purpose (MPTS) trees of special interest to small farmers and villagers in the developing world.

- a. Country specific MPTS sub-sector assessments and planning is being carried out through a series of National MPTS Organizing Meetings. Such meetings are scheduled annually in member countries of the MPTS Research Network. As of September, 1988 the first round of such meetings had been held in eight (8) countries. The second round of meetings will begin in October, 1988. See Winrock's "F/FRED-Asia Interim Progress Report" issued in May, 1988 for a full report on the National MPTS Organizing Meetings. In each of the initial meetings forestry, agricultural, and social science researchers with interests in multipurpose trees assessed the level of interest and activities in the field, and produced preliminary reports of national research priorities. Several members of the MPTS Research Network have expressed interest in using the National MPTS Organizing Mechanism to produce compendiums of forestry research institutions. Preparation of such compendiums will be on the agenda of future national organizing meetings.

Task Orders 10, 28 and 33 relate to carrying out the specific contract requirement.

2. Institutional Specific Guidelines and Plans for Research and Management

The Contractor will work with selected LDC institutions to develop a quality research organization that can function effectively to conduct research on multipurpose/fuelwood species and related forestry and socio-economic issues to facilitate effective introduction and integration of forestry and tree/crop agricultural development. These activities will be cleared by Missions and will be in support of on-going and future Mission efforts and/or complementary to network development activities.

The Contractor will work with missions and national forestry research institutions to develop a new emphasis in their program on multipurpose/fuelwood tree species with strong integration of biophysical and socio-economic factors.

The Contractor will work with at least 6 institutions (for example, national agricultural university or research institutions) to address the issue of integrating forestry into agricultural system research. This assistance will complement resources that Asia missions have programmed for institutional development or help missions develop the concept for a social forestry, agroforestry, watershed management, or wood energy research activity.

The Contractor will conduct at least twelve (12) workshops in the above areas.

2. Institutional Specific Guidelines and Plans for Research and Management

(a) The framework devised for working with specific institutions in Asia for MPTS research is a Memorandum of Understanding (or Letter of Agreement) between the institution concerned and Winrock. As of 9-10-88, 19 such documents had been signed. They spell out agreement to cooperate on MPTS research in the areas of training, information management, and research support, plus collaboration in a regional network which includes field trials using selected germplasm. Ten institutions are participating in the first phase of field trials begun in 1987. Eighteen institutions are scheduled to take part in the arid and semi-arid network trials. "Core libraries" of over 40 selected titles have been sent to the 19 participating institutions. In 1987, a consultant visited the libraries of seven MOU institutions to assess possibilities for further strengthening their research support capabilities. Project workplans for next year (Oct 88-Sept 89) provide for expanding the number of participating institutions and continuation of these and other strengthening activities.

These activities, plus the activities described in Section 1 above, show a heightened interest in MPTS on the part of national scientists representing both biological and social sciences, and moves toward integration of forestry, agricultural, and applied social science research. (See Appendix 3 for a list of MOU/LOA institutions.)

Included among the cooperating institutions are four universities/colleges of agriculture. The involvement of such institutions, with more expected to participate in F/FRED activities in the coming year, provides the opportunity to integrate forestry into agricultural research systems. The National MPTS Organizing meetings amount to workshops to develop a broader and deeper constituency for research on multipurpose trees.

Under a "buy-in" to the F/FRED project by USAID/Delhi, a workshop is budgeted for India on nursery improvement at several universities involved in MPTS bio-mass research as one component of a training/TA project. Under the subcontract with Auburn University, core staff of three Indian institutions are receiving post-graduate training.

3. Regional Research Planning, Evaluation and Related Training

The Contractor will assist in the establishment of regional research priorities; mechanisms for collaborative regional research, including network's the development of regional information management systems; and improved understanding of essential elements of effective research planning and management. In Asia, this effort will build on recommendations made at the Asia IUFRO conference held at Sri Lanka.

In order to improve the quality and effectiveness of forestry/fuelwood programs and projects in Asia, better feedback is required on specific experiences with these programs. This helps determine what kinds of social, economic, and technical information is of greatest need. To accomplish this end, the Contractor will assist in the identification of successful approaches and issues for research which will be a key to evaluating the issue of the distributional impact of the introduction of new tree species and production technologies and conduct at least three (3) instructional evaluations of forestry/fuelwood programs and projects.

The Contractor will be responsible for developing and conducting at least three (3) planning conferences and fifteen (15) training workshops for a cadre of experts from Asian countries in the planning and management of research in forestry, agroforestry and agroecosystems. The objective is to begin developing a core group within any one country that has a shared and informed perspective on the economic, social, technical and environmental issues involved in the planning and implementation of forestry and related natural resource projects and the research needed to address these issues.

In developing the training program, the Contractor will utilize models of the forestry and bioresource systems for instructional purposes and/or application in analyzing policy and program decisions in specific countries of the region.

3. Regional Research Planning, Evaluation and Related Training

The first step in regional research planning was mobilization of a team of specialists to review on-going USAID forestry, energy and agriculture projects; evaluate potential network institutions; and recommend priority multipurpose trees for network research. As a contract activity this item is called for under Art. III.2.b) and is described more fully in that section as it relates to network development.

Following acceptance by A.I.D. of Winrock's recommendations that regional research be organized on a zonal basis with three priority species recommended for network research in each of those zones; and the finding that there were suitable institutions in Asia interested in cooperation with A.I.D. and Winrock on a regional research program, steps were taken to establish a network for research in Asia, focusing on species recommended for priority research by an IUFRO meeting in Sri Lanka in 1984.

Initial steps for network development included establishment of a field office in Bangkok, Thailand and location there of two network specialists. The process of network development, the mechanisms for collaborative regional research and the activities of the field staff are described (and financed) in Component B below.

The regional information management system encompasses activities of all three project components and is national, regional, and global in scope. Global Research is concerned largely with design and development of the F/FRED project's Information and Decision Support System. The Coordinating Unit in Bangkok provides the on-site linkage and training plus the generation and publishing of a series of research reports. The third component, the Project Management office, provides a variety of information services; issuance of a quarterly newsletter, provision of a mini-library of MPTS books and materials to cooperating institutions; project information brochures; and production of a series of agroforestry handbooks.

Identification of successful approaches and issues for research, and the conduct of institutional evaluations are part of the workplan of The Coordinating Unit. These types of activities are supported largely through a process of field staff consultation, network field trials, workshops, and case studies.

The first planning conference called for was held in Bangkok, Thailand in September 1986 to establish the overall F/FRED Research Network and launch network research in the humid and sub-humid tropics. A second conference took place in November 1987 in Karachi, Pakistan to launch network research for the arid and semi-arid tropics. A third conference for planning a collaborative program of social science research on farm and village forestry was held in Kathmandu, Nepal in April 1988.

The minimum of 15 workshops are more than provided for by the National MPTS Organizing Conferences described in item A.1 above. Appendix 7 lists workshops and meetings under F/FRED through September, 1988.

The use of models and databases for training sessions is described in the section on Global Research.

The F/FRED short-term training program has been developed to address the expressed training needs of network member institutions. A project Training Officer has been hired to implement the development and administration of these courses (See Section VI of the progress report.)

4. Information Management Systems

The Contractor will serve a unique function by supporting the development of an integrated approach to the management of regional and global forestry/fuelwood research information. The Contractor will: (1) assist in the continuing development of data base activities, such as the multipurpose tree species database being developed by ICRAF, CATIE, etc.; (2) provide at least 3 sets of guidelines for information management systems on biophysical, socio-economic, and integration of biophysical and socio-economics that support research coordination, networking, training, and technical backstopping activities at all levels within countries; (3) facilitate the flow of information horizontally, between countries within the region; (4) develop or adapt frameworks for data organization to accommodate different levels of decision making and will conduct database design workshops which will be organized at different levels (project, national, regional, etc.); (5) facilitate the transfer of technology by making available condensed, well organized and readily accessible summaries of key information about specific problems.

The Contractor's responsibility here is to improve selection of priority research problems, reduce redundancy in field research, establish standards for conducting research, and increase output of usable data from field projects.

Approximately 50 person months (pm) of short-term Technical Assistance will be required for this component.

4. Information Management Systems

Much of the task of development at an integrated approach to the management of regional and global forestry/fuelwood information has been sub-contracted by Winrock to the University of Hawaii. Activities under the sub-contract are presented in detail under the global research component of the F/FRED Progress Report. The University of Hawaii has established a separate project office and staff for this work on Maui. The Director of Research and Development is Dr. Foster Gady, the individual designated for this position in Winrock's contract with A.I.D.

The F/FRED Global Research Unit has coordinated with ICRAF and CATIE staffs in developing the Information and Decision Support System (IADSS), and has distributed copies of the software to both institutions for review and use. F/FRED is collaborating with CATIE specifically on a summary database for global data exchange, the development of which involves determination of MPTS research data priorities.

The Global Research Unit has worked with the F/FRED Coordinating Unit at the regional level to design two sets of network field trials according to a consensus by Asian network members on which factors should be studied. The two F/FRED offices coordinated again on the development of a research design for a region-wide socioeconomic study of farm and village forestry to be done in conjunction with the network trials.

Participants in these trials will each receive data from the other sites, resulting in horizontal information exchange across national borders.

IADSS is being developed as a decision support tool for managers as well as researchers. With the socioeconomic study discussed in April in Kathmandu, farm and village forestry research will address decision-makers' information needs.

Condensed key information about specific subjects and problems is found in the abstracts database, which is now an operational part of IADSS. This database contains references and abstracts to literature worldwide on MPTS research. The summary database also will contain valuable key data useful in analysis and decision-making on agroforestry systems.

On a national level, many of the technicians trained on IADSS in 1987-88 are now using a generalized version of its data analysis package to draw conclusions from their other research, as a result of F/FRED's response to the needs expressed during the trainings. This is a major contribution to enhancing individual research capabilities and increasing usable output from research.

B. NETWORK DEVELOPMENT AND RESEARCH SUPPORT

The Contractor will be responsible for developing several research networks.

1. Multi-purpose Species Networks

Up to three Networks will be established for the assessment, improvement, and management of specific-purpose tree species. Research under these networks will be oriented to meeting the needs of small farmers and rural populations for tree products such as fuelwood, fodder, poles, fruits and nuts, and soil enrichment:

a. Species Assessment: screening species for the multipurpose tree products desired by rural populations, testing their performance, and matching site characteristics and cultural practices with species to achieve the highest level of product goals within the constraints of the species-site interaction.

b. Species Improvement: refining the species' capability to meet maximum levels of productivity desired by local populations thereby reducing the constraints imposed by the cultural/environmental factors.

c. Species Management: defining the management practices for integrating trees into existing small farmer land use and farming systems to achieve maximum production of desired food and tree products. The species networks for this purpose will be chosen from among those recommended at the IUFRO (International Union of Forest Research Organizations) meeting in Sri Lanka in July 1984. Ten species networks were proposed as follows:

1. Acacia species - *A. nilotica*, *A. auriculiformis*, *A. senegal*, *A. tortilis*, and *A. mangium*.
2. Bamboo
3. Albizzia and Leucaena
4. Eucalyptus species - *E. camaldulensis*, *E. microtheca*, *E. deglupta*, and *E. urophylla*
5. Dalbergia sissou, *Morus alba*, and *Populus* spp.
6. *Azadirachta* spp and *Melia* spp.
7. Rattan
8. *Prosopis cineraria*
9. *Salix* spp and *Robinia pseudoacacia*
10. *Alnus nepalensis* and *Grewia oppositifolia*

d. The Contractor will evaluate each of the species networks identified at the IUFRO meeting in Sri Lanka for their feasibility to succeed as a network and to meet project goals and provide the AID/W Project Officer on priorities for species networks for development and research support by A.I.D. Based on this evaluation, AID/W will provide the Contractor with recommendations for implementation of from one to three species networks.

Note: A decision was made at the First Network Workshop held in Bangkok, Thailand in September 1986 to establish a single overall F/FRED Research Network which would integrate both biophysical and the socioeconomic approaches to achieving the network objectives. The integrated network now includes the MPTS Networks and the Land and Forest Management Networks envisioned under B.1 and B.2 tasks. As recommended in Winrock's March 1986 report making recommendations for species networks, research is conducted on a zonal basis. The first zonal species network covers the humid and sub-humid tropics in Asia. A second zonal species network covers arid and semi-arid regions in Asia with a third possible network for mountainous species in Asia. This summary of activities should be read in conjunction with the workplan for FY 1989 which appears as Appendix 4.

1. Multi-purpose Species Networks

An overall MPTS Research Network has been established. Details concerning establishment and formal documentation are contained in the published proceedings of the September 1986 First Network Workshop of the F/FRED project. Agreement to establish the species network for the humid and sub-humid tropics was reached at a workshop in Kuala Lumpur, Malaysia in December 1986. The network for the arid and semi-arid zone was established at a workshop in Karachi, Pakistan in November 1987. Establishment of third network for the mountainous zones of Asia will be discussed by the Steering Committee in Spring 1989. Asian leadership of the network is provided through a 7-member Steering Committee. Guidance for research activities is provided through a 15-member Research Committee composed of 10 biological scientists and 5 social scientists. The activities of the F/FRED Coordinating Unit in Bangkok are directed at strengthening the F/FRED network. Activities particularly directed to address contractor responsibilities under item B.1 include:

a. Network Establishment

- Organizational Meetings for MPTS Research in the Arid and Semi-Arid Tropics
- Computer Hardware for Network Strengthening
- Establishment of National MPTS Organizing Conferences
- Land and Forest Management Core Group Workshop
- Travel to Establish F/FRED Networks
- Organizational Meeting for the F/FRED Research Network
- First F/FRED Workshop
- Network Trials Meeting
- Participant Travel for Network Building

a. Species Assessment

- 1987 Network Trials
- Azadirachta* and *Melia* Research
- Germplasm Collection and Distribution
- Case Studies on Farmer's Preferences for Trees and Preferred Tree Characteristics
- PLANTEK Tissue Culture Network Trials

b. Species Improvement

- Acacia Auriculiformis* Provenance Trials
- 1987 Network Trials
- Azadirachta* and *Melia* Research
- Germplasm Collection and Distribution
- Biotechnology Studies
- Research Grants
- PLANTEK Tissue Culture Network Trials

These networks may involve only a small number of researchers and should include only those scientists, institutes, and countries who wish to actively participate.

e. The Contractor will facilitate linkages and provide grants for twinning between LDC scientists and institutions and U.S. scientists and institutions or with institutions in other developed countries that will involve a more intensive interaction of researchers than is normally the case in networks. The Contractor will identify and strengthen linkages between forestry, agricultural and socio-economic research institutions, between these institutions and agricultural research and extension agencies (e.g., Bangladesh), between forestry research institutions and national policy makers, and between AID and other donors. The Contractor will work in collaboration with projects developed in the Asia-Near East Bureau and with ongoing and proposed Mission projects (see Asia Forestry Research and Development Project Paper for a list of these projects).

f. The Contractor is responsible for the following activities in implementing the species networks that focus on species assessment, improvement, and management:

(a) Network Meetings and Site Visits - The Contractor will (1) implement the networks with a series of approximately 12 network and theme meetings such as planning conferences, which will provide forums for discussing work plans, budgetary needs, and methodological issues related to standardization and comparability of results; (2) sponsor at least two (2) out-of-country site visits to six (6) sites twice per year as an opportunity for collaborators from other countries to see at first hand the facilities and experiments (e.g., *Leucaena* trials in India) at the host facility and, more importantly, provide for peer group review; (3) schedule formal and informal meetings as needs arise and as they are identified by members of the network.

(b) Newsletters and Publications - The Contractor will develop newsletters (4 issues each year for the first two years and 12/year for 3 years to convey network information on past and current events as well as to provide advanced information on upcoming network activities and to assist in the publications of completed research results and research methodologies (e.g. scientific reports, state-of-the-art papers, case studies, and technical publications). They will meet all AID requirements for newsletters and publications.

(c) Training - The Contractor will: (1) design the training component of this project to address issues related to the design and conduct of research, the interpretation of results, and the administration of research; (2) work with members of the networks to determine specific training activities and will address specific objectives within the scope of this project; (3) conduct training directed at different audiences, i.e., administrators, policy makers, scientists, and practitioners. The training will consist of approximately 10 workshops requiring approximately 5 pm. The Contract will support longer-term education (e.g. at the Ph.D. level of six (6) people for three (3) years each.

(d) Special Research Support - The Contractor will provide research activities through short and long term technical assistance grants (e.g., travel, commodities)

c. Species Management

1987 Network Trials

Case Studies on Existing Tree and Forest Management Practices by Farmers

Computer Hardware - Network members in Thailand, Philippines, Malaysia, and Indonesia

d. Winrock evaluated the species networks identified at the IUFRO meetings in Sri Lanka; and recommended MPTS networks and priority species. The report of the evaluation was accepted by A.I.D. as the basis for implementation of the F/FRED project in Asia. The report is cited in Appendix 10 along with other project publications. In carrying out the review, the Winrock team visited 14 forestry institutions in 6 countries. Nine species were identified for network research; three species from each of three environmental zones. A.I.D. approved Winrock's recommendation to proceed with network research for two of the three zones.

e. Linkages for twinning between Asian scientists and U.S./other institutions; between the agriculture and forestry sectors, socioeconomic disciplines, policy makers, and between A.I.D. and other donors.

Membership in the MPTS Research Network is open to agriculture and other faculties such as economics and sociology, as well as to forestry institutes. Membership in the MPTS Research Network now includes educational and research institution. See Appendix 3 for a list of members.

Twinning between U.S. and Asian forestry research institutions has been constrained by an A.I.D. ruling that "buy-in" funds from USAID field mission accounts could not add to the original Winrock contract amount. Nevertheless, a "buy-in" by USAID/Delhi of \$493,000 was absorbed by the project to permit an initial twinning between the Auburn University School of Forestry and three Indian institutions for training and technical assistance for improved bio-mass research.

Two general meetings have been arranged between the A.I.D. and Winrock staff concerned with the F/FRED project and representatives of the donor community. Special meetings and consultations with donor representatives are held as the occasion warrants to coordinate actions on particular issues such as psyllid control, theme workshops, and socioeconomic research.

f. Contractor activities that focus on species assessment, improvement, and management:

(a) Network Meetings and Site Visits

See Appendix 7 for a listing of network meetings. The meetings to date and those planned for years 4-5 indicate the target of 12 meetings will be substantially exceeded. With field trials underway in 1987, a program of exchange visits among cooperating scientists will begin in October 1988. In 1986, some 50 regional scientists took part in a tour of MPTS trials in Thailand as part of the first network workshop. Another field trial visit took place at the Karachi workshop in 1987. Consultants have conducted on-site Trainings and assessments in Pakistan, Burma, Nepal, Malaysia, Thailand and Philippines in 1988. A field tour of the 1987 trials will take place in October 1988 and include all involved researchers.

(b) Newsletters and Publications

See Appendix 10 for a listing of F/FRED project publications. By agreement with the A.I.D. Project Officer, the Newsletter will continue to be published on a

to support new or on-going research activities, twinning and commodities (e.g. Personal Computers) for management of support from the various missions, LDC governments and other bilateral and multilateral donors. The small research grants will be made to network participants to supplement support from host country governments, AID mission projects, or other donors. The purpose of the small grants is to enable the participating scientist/institutions to carry out the network's overall work plan.

quarterly schedule in years 4-5 rather than monthly as originally planned.

(c) Training

Section VI of this Progress Report contains a summary of short-term and long-term training.

(d) Special Research Support

Section IV of this Progress Report contains a summary of special research support.

2. Land and Forest Management Network

Asian research on the management of land and forest resources for the benefit of people is not well developed. Informal groups, such as the Agro-Ecosystems Working Group, have been established, but understanding of the social/economic as well as environmental implications of growing pressures on the forest and natural resource land base of Asian countries is limited.

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. This joint effort (Asia-Near East Bureau, S&T/FENR, S&T/RD) will require significant attention to building an increased human resource capacity to carry out the needed research and then translate it into effective policies and programs. 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 scientist and institutions in research design, implementation, and evaluation.

Illustrative issues that may be addressed as part of this network program include:

1. management approaches for converting marginal or commercial lands into tree crops or agroforestry systems;
2. the participation of small farmers and the landless in rural tree crop and agroforestry schemes and the distribution of benefits to these groups from such activities;
3. the nature of the wood and tree product marketing systems and the employment of the poor in this system;
4. current and traditional ethnobotany systems and their potential for enhancement and dissemination; and
5. sustainable upland farming systems and the role of trees and tree crops in providing income and promoting soil conservation.

2. Land and Forest Management Network

See Note. Even though the Land and Forest Management network as originally planned has, by agreement with A.I.D., been integrated into a single MPTS Research Network, the specific activities originally envisioned and issues for consideration are being addressed. Sections III-V of the progress report deal with most items as joint undertakings of the biophysical and social scientists. Some items are nevertheless designed specifically to address socioeconomic and environmental dimensions of the project. See section IV.5 Socioeconomic Research. Likewise, the Asia Workplan for FY 1988-1989, Appendix 4, treats most activities as fully integrated undertakings of the biophysical and social scientists. Some sections of the workplan are concerned particularly with social science issues. With particular reference to contract tasks 8.2.a-e:

- a. Research awards are being made to Asian scientists for field research and policy analysis on psyllid control, and through a program of small grants to encourage independent MPTS research in addition to network activities. See Section IV.7.
- b. A short-term training plan has been developed and issued as a guide for future training. Appendix 8 contains a listing of short-term training courses which have been co-sponsored by F/FRED.
- c. A special graduate training program for six Ph.D. candidates has been designed, and a U.S. university sub-contractor selected to administer the special program. The six trainees have been selected and will enter Michigan State University September 1988.
- d. See Appendix 7 for a listing of workshops sponsored by F/FRED in Asia. Section VIII describes publications activity; sections IV.2, 3, and 5 contain descriptions of methodology development under the project.
- e. Technical Assistance is provided on a continuing basis by the F/FRED staff social scientist based in Thailand. This TA research is augmented by Winrock core staff based in Arkansas and by other project consultants. Such consultants are playing a prominent part in planning and design of the socioeconomic data base.

3. Network Coordination

Over the life of the project, the Contractor will provide a Species Network Advisor (60 pm) and a Land and Forest Management Network Advisor (60 pm) who will work with LDC research administrators and scientists, with mission representatives and with representatives of other donor organizations to coordinate network activities, both within and among the networks that will be operating in each region. The Network Advisors will work with the long-term Field Project Coordinator to perform these functions.

Approximately 54 pm of short-term technical assistance will be required for this component.

3. Network Coordination

Two long-term specialists were joined by a third specialist, a forest economist. The forest economist replaces the Field Project Coordinator position and is an employee of Viking Corp. subcontracted to Winrock for field administration. All three specialists have performed ably since joining the project early in 1987.

C. GLOBAL RESEARCH

The Contractor will develop, collect, analyze and synthesize research information from all regions to encourage and support activities in selected research support areas, (such as multipurpose/fuelwood tree selection and improvement; biotechnology; environmental models; socio-economic research guidelines methods and tools) that have global application.

In the selected global research support areas, the Contractor will develop guidelines, state-of-art (e.g. on biotechnology, species selection and improvement, agroforestry incentives, etc.) manuals, 2 workshops for exchange of information modeling feasibility and model evaluation, and special training (e.g., database management systems).

The Contractor will utilize these functional global research areas (e.g., biotechnology, species selection, socio-economics, environmental models) to ensure exchange of information across the various species networks through the use of special workshops, meetings or publications directed at these functional areas, (e.g. biotechnology, soil fertility).

The Contractor will synthesize research information on a global scale to provide technology assessments, to refine research needs, and to integrate both existing and new information for the development of research models to further evaluate and refine research needs.

Over the life of the Project (LOP) the Contractor will provide a half-time Asia Research and Development Officer (30 person months). As the project evolves, activities also will be initiated in Africa and Latin America. The Asia R&D Director will coordinate with counterparts in each of the other regions (e.g. Latin America and Africa after forestry/fuelwood research and development activities are initiated there) to ensure more systematic methodologies, reduce redundancy of work that may have global implications (e.g. development of R&D guidelines), and design at least minimum standards for data collection to ensure comparability of data across regions.

Approximately 20 pm of short-term technical assistance will be required for this component.

C. GLOBAL RESEARCH

Much of the Global Research activity was, as planned, sub-contracted to the University of Hawaii. The subcontract was signed in March, 1986. The contract as signed was less than originally planned since \$1,074,000 for Training Courses, Workshops and Research Grants was consolidated with similar activities to be administered by Winrock from its field office in Bangkok. Dr. Foster Cady joined the University staff as R&D Director for the project in the summer of 1986. He was the candidate originally proposed for the position.

Dr. Cady proposed that the primary mechanism for accomplishing the Global Research Scope of Work be the development of an Information and Decision Support System comprised of a set of databases and collateral activities. The Information and Decision Support System is described in some detail in Section V, Global Research. Further specifics are provided in Appendix 5, 1988-89 Workplan for the Global Research Team. The workplan was described to a coordination meeting between A.I.D. and Winrock staff on August 31, 1988 and accepted as the basis for proceeding with this component of the project. A user's manual for IADSS has been prepared and distributed, and a volume of state-of-the-art papers on predictive modeling of MPTS has been published. A schedule for performance of specific tasks is included with the workplan.

Other activities relating to the Global Research Component of F/FRED include the following:

- a. Assignment for two years of a database specialist to CATIE in Costa Rica (Terry Linkletter, Weyerhaeuser Co.) and follow-on assignment of a socioeconomic information specialist for 1 year.
- b. Support for a Costa Rican graduate student working on the CATIE Data Base
- c. Workshops for Database Development, including trainings in 6 countries to date.
- d. Biotechnology
Initial activities to develop the F/FRED role in biotechnologies relevant to improvement and use of multipurpose trees involve a series of studies to determine the most appropriate role for a project such as F/FRED. The first two studies have been produced. Task Order No. 22 describes the plan for these investigations. Task Order 52 provides for the initiation of an informal international network on tissue culture studies, which the U.S. Forest Service has offered to assist by providing a channel for information exchange on tissue culture techniques.
- e. Psyllid Control for Leucaena
In response to a serious and damaging infestation of a Leucaena pest in SE Asia, the F/FRED project created an international advisory group and task force of Asian scientists to study the problem and recommend measures to deal with the pest. National meetings were held culminating in a regional meeting and regional research plan of action. The regional research plan is listed among the F/FRED publications at Appendix 10.

Information is now being exchanged and research linkages being formed between CATIE in Central America; ICRAF in Africa and the F/FRED in Asia project. The various databases being developed by the F/FRED project are being made known to and available on a global basis to interested scientists and institutions. This is facilitated by the F/FRED newsletter, brochures, manuals, exchange visits, and other means.

Revised Framework of the MPTS Research Network
under the F/FRED Project

Para 1: Membership/Participation

1.1 Membership in the MPTS Research Network (hereafter referred to as the Network) shall be open to Asian research organizations that have signed, or have expressed the intention of signing, a Memorandum of Understanding (MOU) or a Letter of Agreement (LOA) with Winrock International Institute for Agricultural Development.

1.2 Participation in the Network is open to any and all Asian institutions that are invited to attend meetings of the Network or exchange information with Network members.

Para 2: Organization

2.1 The governing body of the Network is the Steering Committee. The Steering Committee shall oversee the activities of the Network through the Research Committee.

2.2 The Network was formally established in 1987 when six (6) institutions had signed an MOU or LOA.

Para 3: Membership of the Steering Committee

The Steering Committee is composed of:

<u>No.</u>	<u>Member</u>	<u>Term</u>
1	Asian scientist with senior ranking in the International Union of Forestry Research Organizations	indefinite
1	Regional Forest Officer for Asia of the U.N. Food and Agriculture Organization	indefinite
1	Dean of the Faculty of Forestry, Kasetsart University	indefinite
2	F/FRED Network Specialists	one year, without vote
1	USAID-designated F/FRED Monitor for the country in which the Steering Committee meeting is being held	one year, without vote

Appendix 2

<u>No.</u>	<u>Member</u>	<u>Term</u>
4	Representatives from the Research Committee, to include a biological and a social scientist from both the Humid and Sub-humid Zone and the Arid and Semi-Arid Zone (one of these will be the Chairman of the Research Committee)	one year

Para 4: Rules and Terms of Reference for the Steering Committee

4.1 The Steering Committee shall meet annually or as needed. Meetings of the Steering Committee shall be called by its Chairman or by the Network specialists at the F/FRED Coordinating Unit in Bangkok, Thailand.

4.2 The Steering Committee shall select a Chairman from among its members. The Chairman shall serve a one-year term.

4.3 Decisions of the Steering Committee shall be made by a majority of at least two-thirds of the voting members present at any meeting.

4.4 The Steering Committee could invite specialists to advise them as and when considered necessary.

4.5 The Steering Committee shall provide guidance and advice to the MPTS Research Network by:

- o establishing policies and strategies
- o planning Network activities
- o guiding and assisting the Network Specialists
- o promoting Network programs and activities
- o approving annual Network progress reports
- o encouraging the global sharing of information
- o carrying out other functions as deemed necessary to implement the MPTS research program

Para 5: Membership of the Research Committee

5.1 The Research Committee is composed of Asian scientists from participating institutions. Each Asian country with participating institutions will be allowed representation on the Research Committee.

5.2 On alternate years, half of the countries with participating institutions will select two representatives to the Research Committee. In order to integrate the biological and social science disciplines on the Committee, one of these representatives must be a biological scientist and one must be a social scientist.

5.3 Ideally, the selection process would be done in conjunction with National MPTS Organizing Meetings held in each country with participating institutions. Where this is not possible, selection will be done by the Chairman of the Research Committee with consideration of the policies and procedures adopted by the participating institutions.

5.4 Non-voting members of the Research Committee include the two Network Specialists from the Coordinating Unit and the USAID-designated F/FRED Monitor in the country where the Research Committee is meeting.

Para 6: Rules and Terms of Reference of the Research Committee

6.1 The Research Committee shall report and be responsible to the Steering Committee.

6.2 The Research Committee shall select a Chairman from among its Asian members. The Chairman shall serve a one-year term.

6.3 The Chairman of the Research Committee shall serve a one-year term on the Steering Committee.

6.4 The Research Committee shall meet regularly as and when needed. Meetings of the Research Committee may be called by the Chairman of the Steering Committee or by the Network Specialists at the F/FRED Coordinating Unit.

6.5 Decisions of the Research Committee shall be made by a majority of at least two-thirds of the voting members present at any meeting.

6.6 The Research Committee shall:

- o plan research activities
- o review and approve research activities
- o coordinate research and other related activities
- o ensure that standard methodologies are used in research and other related activities
- o carry out any other functions as deemed necessary to ensure the success of Network activities

Appendix 2

Para 7: National Policies

The implementation of the MPTS Research Network shall take cognizance of national policies.

Para 8: Changes to the Network

The Steering Committee may make changes in the Network as and when considered necessary.

**Memoranda of Understanding
and
Letters of Agreement**

INSTITUTION	COUNTRY
<u>Memoranda of Understanding (MOU)</u>	
1. Department of Botany, University of New Delhi	India
2. Agency for Forestry Research and Development	Indonesia
3. Forestry Institute of Malaysia	Malaysia
4. Universiti Pertanian Malaysia	Malaysia
5. Institute of Forestry, Nepal	Nepal
6. Ministry of Natural Resources	Philippines
7. Visayas State College of Agriculture	Philippines
8. University of Philippines, Los Baños	Philippines
9. Plantek International (Pte), Ltd.	Singapore
10. Forest Department	Sri Lanka
11. Taiwan Forest Research Institute	Taiwan
12. Faculty of Forestry, Kasetsart University	Thailand
13. Thailand Institute of Scientific & Technological Research	Thailand
14.* Ministry of Food, Agriculture, and Cooperatives Government of Pakistan	Pakistan
* Formal agreement between Government of Pakistan and USAID	
<u>Letters of Agreement (LOA)</u>	
1. The Bharatiya Agro Industries Foundation	India
2. National Institute of Wastelands and Rural Development (New Delhi)	India
3. Forest Survey & Research Office Government of Nepal	Nepal

Appendix 3

INSTITUTION	COUNTRY
4. Institute of Agricultural and Animal Sciences	Nepal
5. Central Mindanao University	Philippines
6. Department of Technical and Economic Cooperation at Kasetsart University	Thailand
7. Atomic Energy Agricultural Research Centre	Pakistan

F/FRED Coordinating Unit
Proposed Workplan

October, 1988 - September, 1989

This workplan is a series of output-oriented goals that are grouped into three categories:

- o Network development
- o Research support
- o Training

A. Network development

1. Goal: Continue to integrate biological and social science research through F/FRED activities.

F/FRED is designed to integrate social science and biological research on improved MPTS production on small farms. A strategy was developed at the beginning of 1987 to integrate the two components through research, training, and seminars and workshops, using a conceptual approach similar to that used in farming systems research. The design and implementation of the Network Socioeconomic Study will further this goal, as will the Tree Improvement Objectives study. Both are region-wide. This strategy will be adjusted as necessary to further link MPTS and social science research activities.

Completion date: This is an on-going activity.

2. Goal: Organize and conduct a second theme workshop relevant to MPTS for small farm use.

A second major workshop is being organized in coordination with FAO and IDRC, scheduled for June 5-8, 1989 in Indonesia. The first theme workshop, "Multipurpose Tree Species for Small Farm Use," was held in Thailand in November, 1987. The title of the second workshop is "Strategies and Methods for Orienting MPTS Research to Small-Scale Farm Use."

This workshop is designed to improve the methods used in MPTS research on the needs of small-scale farmers in Asia by attempting (1) to assess the research needs of small-scale farmers, (2) to focus research efforts toward those needs, (3) to enhance the capabilities needed to make this research available to farmers, and (4) to identify means of standardizing research methods among researchers. The proceedings of this meeting will be published.

Completion date: July, 1989

Appendix 4

3. Goal: Conduct a field tour of the 1987 network trial sites.

All of the 1987 network trials were established by the end of 1987. One mechanism for network building is the exposure of network participants to the sites, conditions, opportunities, and constraints faced by fellow researchers. The Coordinating Unit has arranged for a tour of on-going 1987 network experiments. Scheduled for October 16-29, 1988, the tour participants will be the principal investigators (or their representatives) of the experiments and representatives of the F/FRED project staff. A tour report will be prepared to include recommendations for future network trials.

Completion date: November, 1988

4. Goal: Monitor USAID Mission forestry programs and provide mission-requested support.

The USAID missions and their forestry and agricultural projects are an integral part of the MPTS Research Network. Lines of communication will be improved and projects of mutual interest developed.

Completion date: This is an on-going activity.

5. Goal: Conduct a second series of National MPTS Organizing Meetings.

A second round of National MPTS Organizing Meetings is planned for 10 participating countries. The purpose of these is to (1) provide a forum for the exchange of information and views on F/FRED Network related research, (2) monitor F/FRED-related MPTS research, and (3) select a country representative to serve a one-year term on the Research Committee, and (4) develop a country research agenda for the selected country representative to present to the Research Committee.

Completion date: August, 1989.

6. Goal: Support twinning arrangements to strengthen linkages among network member institutions.

In June, 1988, a formal twinning agreement between the Kasetsart University Faculty of Forestry and the Faculty of Forestry of University Pertanian Malaysia was established with F/FRED support. F/FRED will encourage the establishment of other twinning arrangements by providing financial and other forms of assistance.

Completion Date: This is an on-going activity.

7. Goal: Develop national compendiums of forestry research.

Forestry research compendiums, designed to provide state-of-the-art knowledge on MPTS-related research activities with emphasis on research on the F/FRED priority species, are to be compiled in three or four of the countries participating in the MPTS Research Network. This will be organized in association with the National MPTS Organizing Meetings.

Completion date: September, 1989.

B. Research support

1. Goal: Administer the MPTS Research Network grants program.

Mechanisms for providing research grants have been established to provide grants on MPTS research in biological and social science disciplines. These were finalized at the Research and Steering Committee meetings in Malaysia in April 1988. The primary objectives of the small grants are: 1) to augment research on MPTS for small farm use by providing seed money for new areas of research; 2) to foster network development; and 3) to supplement and complement research programs currently funded by USAID missions and other donor agencies. The mechanisms for making these grants were approved in T.O. 36.

Completion date: December, 1988

2. Goal: Continue to support the 1987 network trials.

The 1987 Network Trials for the Humid and Sub-humid Zone experiments began on 15 sites in 5 countries. The Coordinating Unit will help follow-up these trials, providing training and support where necessary. Third-year funding of these experiments will begin in May, 1989 following the submission of annual reports from cooperators.

Completion date: This is an on-going activity.

3. Goal: Facilitate regional coordination of pest management research on leucaena psyllid problem.

Activities are well underway to help coordinate leucaena psyllid research in Asia. Support will continue for a regional psyllid research coordinator and a deputy coordinator, psyllid research subcontracts with national programs, small research grants, and additional meetings on the psyllid problem and research.

Completion date: This is an on-going activity.

Appendix 4

4. Goal: Complete germplasm collections for at least five priority species.

Quality germplasm is one of the major constraints to MPTS improvement in Asia. Seed will be collected, processed and disseminated for the two Australian Acacia species in cooperation with CSIRO. Melia and Azadirachta will be collected in Thailand and possibly elsewhere in cooperation with KUFF. Seed production of psyllid-resistant leucaenas will also be initiated and germplasm collections completed for three priority species for the arid and semi-arid zone.

Completion date: December, 1989

5. Goal: Support establishment and management of the arid and semi-arid network trials.

Network experiments in the arid and the semi-arid zones were designed by network participants in a meeting in Kathmandu in March, 1988. Eighteen scientists from four countries indicated a desire to establish 29 experimental sites. The Coordinating Unit will follow-up by securing germplasm, finalizing the user's guide and training sessions for the experimental design, and obtaining the necessary contracts and clearances for these experiments to get underway.

Completion date: September, 1989

6. Goal: With the Global Research Unit, establish the minimum socioeconomic data set.

The minimum socioeconomic data set on farm and village use of MPTS, defined in July 1988 by the Asian social scientists who will carry out the research and use the data, will be set up with F/FRED-Maui. A goal of eventually establishing network trials in farmers' fields is another major factor in establishing this data set, which will be an autonomous component of the minimum data set for MPTS field trials established with the assistance of the Global Research Unit. Socioeconomic data can then be analyzed separately by social scientists yet remain a part of the complete analysis of MPTS for small farm use.

Completion Date: December, 1988

7. Goal: Finalize methodologies and an experimental design for collaborative social science studies.

A network experiment using the minimum socioeconomic data set was designed by participating social scientists. This experiment will be conducted in at least 5 of the F/FRED countries. The Coordinating Unit will provide support and follow-up for this set of studies.

Completion Date: January, 1989

8. Goal: Conduct regional study on farmers' tree preferences.

A regional study will be conducted to determine what tree characteristics farmers prefer for various uses. The results of the study will be made available to participants in both the Humid and Sub-Humid and the Arid and Semi-Arid Network Trials, to help them decide what characteristics they should look for in their selection of improved species. A consultant will assist in the design and implementation of the study. The study will be conducted by social science participants in the MPTS Research Network.

Completion date: July 1, 1989

9. Goal: Design farming systems research (FSR) network trials for full integration of social and biological sciences in MPTS research.

An improved approach to farm forestry research will be developed to integrate fully the social and biological sciences, and to implement on-farm trials with farmer participation in management and use of the multipurpose trees. Discussions on possible methodologies are slated to start during the MPTS for Small Farm Use workshop in Thailand and the meeting in Pakistan to establish the Arid and Semi-Arid Zone network.

Completion date: December 1, 1989

10. Goal: Conduct a social science network study on farm and village forestry practices.

Regional collaborative study on farm and village forest practices are to start by early 1989. F/FRED will give support for up to 15 cooperating researchers. Additional support for more researchers will be sought from other donors. A training workshop for cooperating researchers will take place in December 1988, to assure they are familiar with the standardized methods and the data set. Field research will last one year. The Land and Forest Management Network Specialist will supervise and provide logistical support for the research. Descriptive reports and analyses of each of the study sites will be completed by mid-1990. National and regional level analyses will be done by two participating researchers and the Land and Forest Management Network Specialist.

Completion date: July 1, 1990

11. Goal: Complete an assessment of the potential for improvement

Appendix 4

of small farm MPTS production through several areas of biotechnology.

Studies on biotechnology to improve small-farm production of MPTS are currently in progress on the potential uses of Rhizobium and mycorrhiza. Studies have identified fields such as tissue culture, mycorrhiza and Rhizobium use as promising. To date, three F/FRED studies in this assessment have been completed: (1) potential for tissue culture development of the six tree species that have been selected as priority species for the biological science component of the project, (2) study on the socio-economic factors that affect small farm use of biotechnology in the production of MPTS, and (3) on gums and resin-producing trees.

Completion date: June, 1989

C. Training

1. Goal: Establish a four-week training course on design and analysis of experiments for MPTS research.

The Coordinating Unit will work with the UPLB College of Forestry to design and implement this course. The course is expected to give the participants a good working knowledge of sampling techniques and experimental procedures that are applicable to MPTS studies.

Completion Date: January, 1989

2. Goal: Establish a three-week training course on the use of microcomputers in forestry research.

This course will be designed and organized by the Coordinating Unit in cooperation with an appropriate institution in Thailand. The course will be designed to meet the following objectives: (1) to provide participants with general information about the development, capabilities and applications of microcomputers; (2) to train participants in the use of relevant software for forestry research; and (3) to provide the participants with a working knowledge on the care and maintenance of microcomputers.

Completion Date: April, 1989

3. Goal: Manage fellowships for Ph.D. study in the U.S.

Six fellows have been selected for Ph.D. study in the U.S. (See section VI.6.) Dissertation topics will be subject to approval by the F/FRED management and Coordinating Unit team. Transportation is being arranged, clearances obtained for visas, and other logistical support provided for the six fellows to

Appendix 4

begin their studies at Michigan State University in September 1988.

Completion date: This is an on-going activity.

4. Goal: Organize a course on research problem identification and proposal preparation.

The Coordinating Unit will avail the services of an experienced researcher/teacher to conduct this training course in four countries, potentially: Bangladesh, Nepal, Sri Lanka, and Pakistan. The course will deal mainly with major considerations in research problem identification and selection and proposal preparation.

Completion Date: November, 1989

5. Goal: Finalize designs of the following courses: (1) Technical writing and communication techniques for forestry researchers and (2) Field and laboratory techniques for agroforestry crop protection studies.

The above courses will be offered in Fiscal Year 1990. The course on technical writing and communication techniques will be conducted in Indonesia, Taiwan, Sri Lanka, and Thailand. The other course will be held in the Philippines where there is an expressed need to develop manpower in crop protection research for agroforestry.

Completion Date: January, 1990

6. Goal: Prepare and disseminate updates of training course inventory.

Updates of the training course inventory will be made and published regularly in Farm Forestry News; quarterly listings will be prepared and mailed to MOU/LOA institutions.

Completion Date: January, 1990

Proposed 1988-1989 Workplan for the Global Research Unit

October 1988 to September 1989

This workplan focuses on outputs in seventeen categories grouped by four major program areas of F/FRED-Maui.

Development of the Information and Decision Support System (IADSS). IADSS development will be a continual activity throughout 1988-1989. Receipt and distribution of six-months data from network cooperators in the same experiment network will be an expanding activity. The farm and village forestry database will be fully developed and weather and climate databases will be initiated. Intersite analysis will become a regular activity and a one-year analysis of the 1987 Humid and Sub-humid Zone trials reported. The simulation model will become operational and integrated into IADSS.

Training. The major new training activity will be a modeling workshop. IADSS on-the-job training for field technicians at network member institutions will be a regular activity as needed.

MPTS Network Manuals and Papers. The IADSS Users manual will be upgraded as needed and revised to accompany the newly installed databases and decision support programs of Version 2.0 of IADSS.

A new volume of F/FRED's multipurpose tree species network technical series on tree improvement strategies will be assembled to reflect the state-of-the-art and to give MPTS specialists opportunity to have input in a coordinated strategy.

The IADSS technical manual and an users guide for the F/FRED modeling decision support package will be published and an IADSS newsletter will be initiated. An IADSS demonstration diskette with an overview of the system will be released.

Global Coordination. Decisions on the minimum data set and experiment database structure for the Asian regional semi-arid, arid and Acacia auriculiformis experiment networks will be finalized and implemented.

The joint F/FRED-CATIE design of the global summary database will be implemented, tested and ready for data entry.

Appendix 5

I. Information and Decision Support System (IADSS) Development

1. Experiment database

Goal: The experiment database will continue to be generalized to offer maximum flexibility for the existing minimum data set (forms or computer screens) of the 1987 trials. The database will also be expanded for new forms, and modification of existing forms, needed by new network trials (semi-arid, arid and provenance trials in 1988-1989). Exchange of diskettes with trial cooperators (receipt of six-months data and return of data from other cooperators with summaries of intrasite and intersite data analyses) will be an expanding activity.

Completion date: On-going.

2. Specialist database

Goal: New data entry will be continual as well as modifications to increase retrieval speed. A schedule for mailing an update form to each specialist in the database will be implemented.

Completion date: On-going.

3. Abstract database

Goal: Abstract entries for the existing priority species will be added with modifications to increase retrieval speed. Abstract entry for new priority species and farm forestry will be initiated as new network trials are established.

Completion date: On-going.

4. Summary database

Goal: The summary database is being designed in cooperation with CATIE with assistance from CSIRO. Prototypes will be developed and tested on Maui by joint F/FRED/CATIE staff. Data entry programs will be developed for transfer from the experiment database.

Completion date: December 1988.

5. Soils database

Goal: Interface programs will be written to retrieve user-specified data from the soil database and to input the retrieved data into IADSS decision support programs. Testing will begin with inputting soil information in the simulation model.

Completion date: February 1989.

6. Farm and village forestry database

Goal: The minimum data set and enduses have been specified by the network cooperators and the Coordinating Unit and the design of the database structure initiated. The full design will be implemented and the prototype developed, tested and sent to network cooperators for initial user testing.

Completion date: December 1988.

With feedback from cooperators' prototype testing, modifications and enhancements will be incorporated. General distribution will be with version 2.0 of IADSS.

Completion date: June 1989.

7 Weather database

Goal: The weather database will be designed based on the experiment database daily weather files. User-specified summaries will be implemented. General distribution will be with version 2.0 of IADSS.

Completion date: June 1989.

8. Climate database

Goal: Long term monthly averages for specified variables will be obtained from existing databases. General distribution will be with version 2.0 of IADSS.

Completion date: June 1989.

9. Graphics and analysis decision support

Goal: Additional enhancements for cooperator use and further development of F/MOD, and use of the commercial SAS package in Maui, for intrasite analysis of data over time to compare species growth curves.

Completion date: August 1989

10. MPTS modeling decision support

Goal: Additional development of F/MOD, and use of the commercial SAS package in Maui, to handle complex intersite analysis, followed by formulation, estimation and evaluation of environment prediction models.

Completion date: March 1989.

Appendix 5

Goal: Integrate environment and simulation models with inputs from IADSS's databases.

Completion date: May 1989

Goal: Maintain two field species*management experiments, measure growth and yield components and calibrate simulation model. Validate model with F/FRED network trial data and, if necessary recalibrate model. Plant species*water stress experiment in December 1988.

Completion date: On-going.

11. Land-use decision support

Goal: Examine existing land use program developed by Cornell University for compatibility with F/FRED objectives and inputs available from F/FRED databases.

Completion date: March 1989.

II. Training

1. MPTS modeling workshop

Goal: Design, preparation and implementation of a four day MPTS modeling workshop at one or two Asian locations. Principles, history and current practices of environment and simulation modeling will be covered concurrent with hands-on experience. Participants will be mainly those needing to use the MPTS modeling decision support programs of IADSS.

Completion date: September 1989.

2. IADSS on-the-job training

Goal: Hands-on experience under the guidance of Maui staff for handling research network trial data with IADSS. The locations will be primarily at the research network cooperators' institutions.

Completion date: On-going.

III. MPTS Network Manuals and Papers

1. IADSS manuals

Goal: Publication of an IADSS technical manual, an F/MOD users guide, an IADSS newsletter including updates to the IADSS users manual, a revision of the users manual to accompany the

distribution of version 2.0 of IADSS, and a demonstration diskette with an IADSS overview.

Completion date: On-going.

2. Tree improvement state-of-the-art papers

Goal: Publication of a new volume of the MPTS network technical series with a theme of MPTS tree improvement. Invited authors will discuss tree breeding objectives for MPTS and strategies for obtaining desirable tree ideotypes by genetic improvement, in addition to the state-of-the-art.

Completion date: September 1989.

IV. Global Coordination

1. Regional experiment network research design

Goal: In cooperation with the Bangkok group and cooperators of three experiment networks to be initiated in 1989 (semi-arid, arid and Acacia Auriculiformis), assistance will be given in the finalization of minimum data sets to accomplish stated enduses, preliminary site characterizations, and site selection to understand the variation in species responses to management at different sites.

Completion date: On-going.

2. Global database management

Goal: A global summary database will be jointly designed, implemented and tested by F/FRED and CATIE.

Completion date: June 1989.

Goal: Use of database commonalities, e.g., species abbreviated names, and sharing of computer source codes and MPTS data among interested institutions will be a continual activity.

Completion date: On-going.

TASK ORDER SUMMARY

Appendix 6

NO. TASK ORDER TITLE	STATUS/ SIGNED	COST
*1. Planning Meeting for Species Evaluation	09/28/85	\$6,918
*2. MPTS Evaluation and Recommendations for Network Research	05/03/86	\$70,021
*3. Assignment of Computer Specialist to CATIE in Costa Rica	12/31/86	\$18,930
*4. Visit of Tissue Culture Specialist to Thailand	12/10/85	\$3,689
5. Planning Meeting for Global Research (Database)	02/18/86	\$4,608
6. Participation in East-West Center Forestry Workshop	03/01/87	Per Diem
7. Second Planning Meeting for Global Research (Database)	03/03/86	Consultant
8. Donor Coordination Meeting (Arlington) of Donor Institutions/Agencies	03/03/86	Staff Time
9. Meeting of Ad Interim Steering Committee in Bangkok	03/03/86	Staff Expense
10. Research Grant to Thai Forester	02/20/86	\$2,000
11. LFMN Core Group Workshop	7-24-86	\$7,038
12. Travel to Establish F/FRED Networks	7-24-86	Staff time travel
13. F/FRED Workshop (Bangkok Sept. 24-27, 1986) into to Asian Forestry Community	07/06/86	\$64,398
14. Psyllid control for leucaena Development and Implementation of Leucaena Psyllid Research Plan (Amendment)	07/29/86	\$15,000
PSA: 87037, 88009, 88014, 88015, 88019	09/17/87	\$79,000
15. Preparation of Handbooks on Agroforestry Research	08/06/87	\$183,384

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16. Information Distribution and Establishment of Documentation Centers	01/27/87	\$43,600
17. Network Trials Meeting PSA: 87001, 87003	10/22/86	\$54,165
18. Continuation of Services of Terence W. Linkletter	12/15/87	\$42,500
19. Implementation of 1987 Network Trials PSA: - 87006-18, 87022 87023, 87028, 87029, 87038, 87039 87045, 88006, 88007	01/13/87	\$127,000
20. Computer hardware for Kasetsart University Faculty of Forestry	08/20/87	\$10,692
21. Applied Social Science and Workshops and Training	09/17/87	\$260,000
22. Biotechnology Opportunities for Priority MPTS Species PSA: 87002, 87004, 87046, 87047 87048, 87049	03/04/87	\$73,500
23. Land & Forest Management Workshop	03/08/87	\$1,250
24. Establishment of Azadirachta & Melia Research PSA: 87025	04/06/87	\$15,000
25. Co-sponsorship of Training Workshops Titled "Project Evaluation and Economic Valuation of Environmental Impacts in Watershed Areas" PSA: 87020	04/06/87	\$2,100
26. Support of Workshop on "MPTS for Small Farm Use"	05/12/87	\$45,000
27. Acquisition of Germplasm for Network Research in Humid and Sub-humid Tropics PSA: 87026, 87027, 88004	04/07/87	\$60,200
28. Development and Implementation of National MPTS Organization Conferences/MPTS Research Committee Meeting for 1987. PSA: 87030-87034, 87036, 87044, 88003	07/31/87	\$50,500

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29. Participant Travel for Network Building <u>PSA:</u> 87024	04/07/87	\$72,500
30. Implementation of Short Term Training Plan <u>PSA:</u> 87005, 87021	05/07/87	\$14,700
31. Analysis of Networking Activities Relevant to F/FRED	12/18/87	\$19,300
32. Workshop Established Socio-economic Component of Minimum Data Set	12/21/87	\$27,150
33. Study of "Homestead Forests and their Potential for Meeting Rural Energy Needs" in Bangladesh <u>PSA:</u> 87040	09/17/87	\$1,650
34. Co-sponsorship of Short-Term Training Courses, Seminars and Workshops <u>PSA:</u> 87041, 88001, 88005	09/17/87	\$45,000
35. Twinning Arrangements for Asian Scientists	09/17/87	\$90,000
36. 1988 Research Grants Program	09/17/87	\$260,000
37. Translation of Important MPTS Research Papers	09/17/87	\$27,240
38. Socioeconomic Database Planning Meeting	09/17/87	\$23,000
39. Computer Hardware for Network Strengthening	09/17/87	\$71,500
40. Organizational Meetings for MPTS Research in the Arid and Semi-Arid Tropics <u>PSA:</u> 87042, 88002, 80016	09/17/87	\$53,020
41. Ph.D. Fellowship Selection	01/19/88	\$26,000
42. Training Specialist <u>PSA:</u> 88017	01/25/88	\$63,000
43. Problem Solving Short Courses for Agroforestry Research	06/03/88	\$25,000
44. Acquisition of germplasm for network research in humid, arid & semi-arid zones	06/14/88	\$190,000
45. Field Trials Brochure <u>PSA:</u> 88011, 88012	04/28/88	\$10,300

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46. Support of a workshop on "Strategies and Methods for Orienting MPTS Research to Small-Scale Farm Use."	06/03/88	\$64,000
47. Tree improvement Activities for <u>Acacia auriculiformis</u>	06/14/88	\$41,000
48. National Organizing Meetings & MPTS Research Network Committee Meeting	07/29/88	\$135,000
49. Definition of tree breeding objectives for MPTS in Asia	07/29/88	\$92,000
50. Implementation of Arid & Semi-Arid zone Network Trials	07/29/88	\$143,000
51. Development of Methods for on-Farm MPTS	07/28/88	\$25,575
52. Improved Tissue Culture Methodology for Selected Woody Species of Asia	07/28/88	\$52,100
53. Regional Social Science Network Study on on Farm and Village Forestry Practices	09/01/88	\$95,000
Total to date (does not include staff, other administrative costs, subcontracts, most publication costs)		<u>\$2,907,528</u>

* Authorized by memorandum prior to development of T.O. format.

Appendix 7

Workshops and Participants
September 1987 - August 1988

Workshop: Multipurpose Tree Species For Small Farm Use at Royal Cliff Hotel, Pattaya, Thailand, November 1-5, 1987.

<u>Participant</u>	<u>Institution</u>	<u>Country</u>
Brian Palmer	CSIRO	Australia
Kibriaul Khaleque	University of Dhaka	Bangladesh
Mohammad Zainul Abedin	Bangladesh Agriculture Research Institute	Bangladesh
Amarnath Chaturvedi	TATA Energy Research Institute	India
Lal Relwani	The Bharatiya Agro-Industries Foundation (BAIF)	India
Narayan Hegde	BAIF	India
Gunawan Sumadi	Ministry of Forestry	Indonesia
Jeffirin Lapongan	Forest Research Centre	Malaysia
Weng Chuen Woon	Forest Research Institute Malaysia (FRIM)	Malaysia
Kevin J. White	UNDP, Asian Development Bank	Nepal
Khubchand G. Tejwani	International Centre for Integrated Mountain Development (ICIMOD)	Nepal
Madhav Karki	Institute of Forestry	Nepal
Maheshwar Sapkota	Institute of Agriculture and Animal Science (IAAS)	Nepal
Patrick Robinson	Nepal-UK Forestry Research Project	Nepal
Pradeepmani Dixit	Farm Forestry Project	Nepal
Ramesh Shakya	Forestry Research Project	Nepal
Yam B. Malla	Nepal-Australia Forestry Project	Nepal
Kamane Saroa	Wau Ecology Institute	Papua New Guinea
Dominador Gonzal	Visayas State College of Agriculture (ViSCA)	Philippines
Eduardo Mangaoang	ViSCA	Philippines
Rene Rafael Espino	University of the Philippines at Los Banos (UPLB)	Philippines
Saturnina Halos	University of the Philippines Diliman	Philippines
Warlito Laquihon	Mindanao Baptist Rural Life Center	Philippines
Vajira Liyanage	Coconut Research Institute	Sri Lanka
Arjen Sterk	U.N. Food and Agriculture Organization (FAO)	Thailand
Robert E. Lamar	Payap University	Thailand
Narong Srisawas	Kasetsart University	Thailand

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<u>Participant</u>	<u>Institution</u>	<u>Country</u>
Jacques Amyot	Chulalongkorn University	Thailand
Suree Bhumibhamon	Kasetsart University	Thailand
Kovith Yantasath	Thailand Institute of Scientific and Technological Research (TISTR)	Thailand
Suttiyed Chantrasiri	TISTR	Thailand

Workshop: Multipurpose Tree Species Research for Small Farm
Use in the Arid and Semi-Arid Tropics in Karachi,
Pakistan, November 16-19, 1987.

<u>Participant</u>	<u>Institution</u>	<u>Country</u>
Stephen J. Midgley	OIC Tree Seed Center	Australia
Gurvinder Singh Cheema	TATA Energy Research Institute	India
Chin K. Ong	ICRISAT	India
Thomas S. Walker	ICRISAT	India
Kedar Prasad Prajapati	Institute of Forestry	Nepal
Deepak Bajracharya	ICIMOD	Nepal
Rajendra B. Joshi	Forest Survey and Research Office	Nepal
Krishna Prasad Sharma	IAAS	Nepal
Ashfaq Ahmed	c/o CDD/Baluchistan	Pakistan
Mohammad Hafeez	Punjab Forest Research Institute	Pakistan
Abeedullah Jan	Ministry of Food and Agriculture	Pakistan
Salaheen Khan	Pakistan Forest Institute (PFI)	Pakistan
Mirza Mohammad Ashraf	Pakistan Agricultural Research Council	Pakistan
M. Nasir Gazdar	Adjunct Faculty/Associate	Pakistan
Raja Walayat Hussain	PFI	Pakistan
Yar Mohammad Khan	Forest Department	Pakistan
Noor Mohammad	NARC, Pakistan Agricultural Research Council	Pakistan
Ishtiaq Ahmad Qazi	Ministry of Food and Agriculture	Pakistan
Shams-UI-Haq Memon	Sind Forest Department	Pakistan
Mahmood Iqbal Sheikh	PFI	Pakistan
Bahauddin Sirhindi	Sind Forest Department	Pakistan
J. Vistro	Sind Forest Department	Pakistan
K. Siddiqui	PFI	Pakistan
Ahmad Rafiq	University of Karachi	Pakistan
Neville S. Fernando	Coconut Research Institute	Sri Lanka
Kandavanam Vivekanandan	Forestry Department	Sri Lanka
Ta-Wei Hu	Chinese Cultural University	Taiwan
Yongyuth Chalamwong	Kasetsart University	Thailand
John C. Cool	Winrock International	Thailand

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<u>Participant</u>	<u>Institute</u>	<u>Country</u>
Suree Bhumibhamon	Kasetsart University	Thailand

MEETING NAME: MPTS Research Network and Steering Research
Committee Meetings, Kuching, Sarawak, Malaysia
April 4-8, 1988.

<u>Participant name</u>	<u>Institute</u>	<u>Country</u>
Narayan G. Hegde	BAIF	India
Komar Soemarna	Forest Research & Development Centre	Indonesia
Kamis Awang	Universiti Pertanian Malaysia	Malaysia
Woon Weng Chuen	FRIM	Malaysia
Ek Raj Sharma	Forest Department	Nepal
Kailash Pyakuryal	IAAS	Nepal
K.M. Siddiqui	Forest Products Research	Pakistan
Saliheen Khan	Pakistan Forest Institute	Pakistan
Cerenilla Cruz	UPLB	Philippines
Roberto V. Dalmacio	UPLB	Philippines
Ta-Wei Hu	Chinese Culture University	Taiwan
Suree Bhumibhamon	Kasetsart University	Thailand
Yongyuth Chalamwong	Kasetsart University	Thailand
Salleh Mohd. Nor	FRIM	Malaysia
Sathit Wacharakitti	Kasetsart University	Thailand
Y.S. Rao	FAO	Thailand

Workshop: Meeting of National Psyllid Plan Coordinators, held in
Bangkok, Thailand, April 26-28, 1988

<u>Participant</u>	<u>Institute</u>	<u>Country</u>
Lim Guan Soon	Central Research Laboratory	Malaysia
I.N. Oka	Bcgor Research Institute for Food Crops (BORIF)	Indonesia
Fernando Sanchez	UPLB	Philippines
Fuh-Jiunn Pan	Taiwan Forestry Research Institute	Taiwan
Jeff Waage	CIBC, Imperial College	United Kingdom
Max W. McFadden	USDA Forest Service	U.S.A.

Workshop: Standardized Methods for Applied Social
and Economic Research on Farm and Village Forestry,
Kathmandu, Nepal on April 25-29, 1988

<u>Participant</u>	<u>Institution</u>	<u>Country</u>
Syed Z. Sadeque	Rajshahi University	Bangladesh

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<u>Participant</u>	<u>Institution</u>	<u>Country</u>
Chun Lai	Winrock International	Bangladesh
Thomas MacKenzie	CATIE	Costa Rica
Soleh Sukmana	UACP-FSR	Indonesia
Pervaiz Amir	UACP-FSR	Indonesia
Ir. Junus Kartasubrata	Fakultas Kehutanan IPB	Indonesia
Chairil Anwar Siregar	Forest Research & Development Centre	Indonesia
Tongroj Onchan	Asian Productivity Organization (APO)	Japan
D.A. Hoekstra	ICRAF	Kenya
Bahari Yatim	Universiti Pertanian Malaysia	Malaysia
Amulya Tuladhar	Institute of Forestry	Nepal
Khaleel A. Tetlay	Aga Khan Foundation	Pakistan
J.A. Qureshi	Winrock International	Pakistan
Wilfrido Cruz	UPSB	Philippines
Ma. Concepcion Cruz	UPLB	Philippines
Marianne de Los Angeles	Philippine Institute for Development Studies	Philippines
Hermenia Francisco	Highland Socio- Economic Research Institute	Philippines
Lucylen Ponce	ViSCA	Philippines
Eliseo R. Ponce	ViSCA	Philippines
Romy Raros	ViSCA	Philippines
Yongyuth Chalarwong	Kasetsart University	Thailand
Apichart Pattaratuma	Kasetsart University	Thailand
Komon Pragtong	Royal Forest Department	Thailand
Shalardchai Ramitanondh	Chiangmai University	Thailand
Nongluk Suphanchaimat	Khon Kaen University	Thailand
Songkram Thammincha	Kasetsart University	Thailand
David Thomas	Ford Foundation	Thailand
John Cool	Winrock International	Thailand
Napoleon Vergara	FAO/Royal Forest Dept.	Thailand

Meeting: Working Group Meeting for a Network Social Science Study
Proposal, Bangkok, Thailand, July 19-22, 1988

<u>Participant</u>	<u>Institute</u>	<u>Country</u>
Syed Z. Sadeque	University of Rajshahi	Bangladesh
Deepak Bajracharya	ICIMOD	Nepal
Marianne de Los Angeles	Philippine Institute for Development Studies	Philippines

Other Sponsored Participants

MEETING NAME: Expert Consultation of the Asian Network on Forestry Education, FAO Regional Office, Bangkok, Thailand, June 15-17, 1988

<u>Participant name</u>	<u>Institution</u>	<u>Country</u>
A. Gnanam	Bharathidasan University	India
Kailash N. Pyakuryal	IAAS	Nepal
Marianito R. Villanueva	ViSCA	Philippines

MEETING NAME: IUFRO-WP-Meeting (Workshop) Protection of Forests in the Tropics, Bangkok, Thailand, June 5-11, 1988.

<u>Participant name</u>	<u>Institute</u>	<u>Country</u>
K.S.S. Nair	Kerala Forest Research Institute	India
Tho Yow Pong	FRIM	Malaysia
P.D.M.G.D. Bandara	Forest Department	Sri Lanka

Course: Study Tour to Review U.S. Forestry Research Management Practices in Preparation for FRIM Resource Management Training Course, at forestry research institutions in the U.S., including Wisconsin, Michigan, Pennsylvania, and Washington, D.C., September 26 - October 16, 1987

Other sponsors: U.S. Department of Agriculture Forest Service

MEETING NAME: The Regional Community Forestry Training Center (RECOFTC), Bangkok, Thailand, June 12 - December 11, 1988.

<u>Participant name</u>	<u>Institute</u>	<u>Country</u>
Dominador G. Gonzal	ViSCA	Philippines

MEETING NAME: 5th International Congress of Plant Pathology (ICPP), in Kyoto, Japan, August 20-27, 1988

<u>Participant name</u>	<u>Institute</u>	<u>Country</u>
Ruth Sarra Guzman	Isabela State University	Philippines

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MEETING NAME: Travel grant for study at the College of Environmental Science and Forestry, Syracuse, New York, U.S.A., August, 1988

<u>Participant name</u>	<u>Institute</u>	<u>Country</u>
Sunil Nepal	Institute of Forestry	Nepal

MEETING NAME: International Conference on Educating Forest Technicians into the 21st Century, at St. Paul Smith, Saranac Lake, New York, U.S.A., August 15-22, 1988

<u>Participant name</u>	<u>Institute</u>	<u>Country</u>
Niwat Ruangpanit	Kasetsart University	Thailand
K.J.T. Dayananda	Forest Department	Sri Lanka

**F/FRED-Supported Short-Term Training Courses
October 1987 - August 1988**

Course: Regional Training Course on Production and Use of Nitrogen-fixing Trees, held at the Vieng Tai Hotel, Bangkok, Thailand, October 21-30, 1987.

Other sponsors: U.N. Food and Agriculture Organization (FAO)
Nitrogen Fixing Tree Association (NFTA)
International Development Research Centre (IDRC)

F/FRED Participants: 2 scientists from Bangladesh

Course: Maintaining Upland Development, held in the Philippines, December 1987

Other sponsors: Ford Foundation
International Development Research Centre (IDRC)

F/FRED Participants: 36 Filipino scientists, including 33 from universities and agricultural colleges in the Philippines, 2 from the Ecosystems Research and Development Bureau, and the Regional Executive Director of the Department of Environment and Natural Resources, Region 8

Course: Forestry Methods for Social Scientists and Social Science Methods for Foresters, held at the University of the Philippines at Los Banos (UPLB), June 6-10, 1988

Other sponsors: None

<u>Participant</u>	<u>Institute</u>	<u>Country</u>
Firoza Ahmed-Sadeque	Bangladesh-Canada Agriculture Sector Team	Bangladesh
Syed Zahir Sadeque	University of Rajshahi	Bangladesh
Subandi Antaatmadja	Forest Product Research and Development Centre	Indonesia
Muhammad Yamin Mile	Forest Research and Development Centre	Indonesia
Chairil Anwar Siregar	Forest Research and Development Centre	Indonesia
Slamet Riyadhi Gadas	Badan Litbang Kehutanan	Indonesia
Bambang Purwono	Minister for Population and Environment	Indonesia
Nor'ini bt. Hj. Haron	Forest Research Institute Malaysia	Malaysia
Jyoti N. Rayamajhi	Institute of Forestry	Nepal
Chintamani Lal Das	Institute of Forestry	Nepal

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<u>Participant</u>	<u>Institute</u>	<u>Country</u>
J.N. Mehta	Institute of Forestry	Nepal
Badri Bahadur Singh Dongol	IAAS	Nepal
Ashok K. Mallik	Institute of Forestry	Nepal
Anjana Rajbhandari	Institute of Forestry	Nepal
Josefina Otarra-Sembrano	De La Salle University	Philippines
Buenaventura B. Dargantes	ViSCA	Philippines
Beverlo P. Pascual	ViSCA	Philippines
Porferio M. Balanay	Central Mindanao Univ.	Philippines
Eduardo O. Mangaoang	ViSCA	Philippines
Justino M. Quimio	ViSCA	Philippines
Paulo N. Pasicolan	Isabela State University	Philippines
A.C. Fernandez	Forest Department	Sri Lanka
Sayan Tanpanich	TISTR	Thailand
Bunchit Pudaeng	Royal Forest Department	Thailand
Khumron Sungauan	Royal Forest Department	Thailand
Sutthichai Pullawon	Royal Forest Department	Thailand
Ampai Lekawiwatanakul	Royal Forest Department	Thailand
Somboon Boonyuen	Royal Forest Department	Thailand
Apichart Pattaratuma	Kasetsart University	Thailand
Vute Wangwacharakul	Kasetsart University	Thailand
Manita Somroop	Kasetsart University	Thailand
Amnouy Rianchareon	Royal Forest Department	Thailand
Ampai Harakunarak	NESDB	Thailand
Monton Jamhoenpruksa	Kasetsart University	Thailand

Course: Tropical Forest Ecology and Management in the Asia-Pacific Region, held at the University of Papua New Guinea, June 18 - July 2, 1988.

Other sponsors: Government of Papua-New Guinea
 Government of Australia
 UNESCO-Man and the Biosphere Program (MAB)
 International Foundation for Science

<u>Participant</u>	<u>Institute</u>	<u>Country</u>
Hashim Md. Nor	FRIM	Malaysia
Wanchai Arunpraparuk	Kasetsart University	Thailand

Course: Training Course in Forestry Research Management, held in Kuala Lumpur July 18 - August 5, 1988

Other sponsors: Forest Research Institute of Malaysia (FRIM)

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<u>Participant</u>	<u>Institution</u>	<u>Country</u>
Bakir Ginoga	Forestry Research Institute Ujung Pandang	Indonesia
Ir. Mieke Suharti	Forest Research and Development Centre	Indonesia
Abang Abdul Hamid Karim	Forest Department Hq.	Malaysia
Ahmad Said Sajap	Universiti Pertanian Malaysia	Malaysia
Abhoy Kumar Das	Institute of Forestry	Nepal
Wilfredo Carandang	UPLB College of Forestry	Philippines
Atty. Warlito R. Natividad	Ecosystems Research and Development Bureau	Philippines
Edilberto E. Nasayao	ViSCA	Philippines
P.D.M.G.D. Bandara	Forest Department	Sri Lanka
Hsu-Ho Chung	Taiwan Forestry Research Institute	Taiwan

Course: Thailand training course on Problem Solving for
Agroforestry Research, held at Kasetsart University,
Faculty of Forestry, August 1-5, 1988

Other sponsors: None

<u>Participant</u>	<u>Institution</u>	<u>Country</u>
Mr. Pramoth Khaow-Vongsri	Songkla Nakaran University	Thailand
Mr. Vichien Kerdsuk	Khon Kaen University	Thailand
Mr. Chumpol Maniratanavongsiri	Chiang Mai University	Thailand
Mr. Suksan Saiwa	Forest School, Kampanpeth	Thailand

Publications List for F/PRED Core Libraries

- Nutrition of Plantation Forests. Bowen and Nambiar. Academic Press. 1984.
- Australian Acacias in Developing Countries. J.W. Turnbull (ed). ACIAR. 1936
- Forages in Southeast Asian and South Pacific Agriculture. G.J. Blair et al. eds. ACIAR. 1986.
- Multipurpose Australian Trees and Shrubs: Lesser Known Species for Fuelwood and Agroforestry. J.W. Turnbull. ACIAR 1986.
- Shrub Legumes in Indonesia and Australia. ACIAR proceedings series, no. 3. 1984.
- Soil Erosion Management. E.T. Craswell et al. eds. ACIAR. 1985.
- Determinants of Soil Loss Tolerance. ASA pub. no. 45. 1982.
- Soil Erosion and Conservation in the Tropics. ASA special pub. no. 43. 1986. Reprint.
- Calliandra: A Versatile Small Tree for the Humid Tropics. BOSTID. 1983.
- Casuarinas: Nitrogen-Fixing Trees for Adverse Sites. BOSTID. 1983.
- Firewood Crops: Shrub and Tree Species for Energy Production. BOSTID. 1980.
- Food, Fuel, and Fertilizer from Organic Wastes. BOSTID. 1981.
- Leucaena: Promising Forage and Tree Crop in Developing Countries. BOSTID. 1984.
- Mangium and Other Fast-Growing Acacias for the Humid Tropics. BOSTID. 1983.
- Priorities in Biotechnology Research for International Development. BOSTID. 1982.
- Sowing Forests from the Air. BOSTID. 1981.
- Tropical Legumes: Resources for the Future. BOSTID. 1979.
- Deciduous Fruit Tree Cultivars for Tropical and Sub-Tropical Regions. H.C. Ruck. CAB. 1975.
- The Propagation of Tropical Fruit Trees. R.J. Garner et al. CAB. 1976.
- Briefbook: Biotechnology and Genetic Diversity. Steven C. Witt. CALP. 1985.
- Quickbook: Genetic Engineering of Plants. Steven C. Witt. CALP. 1982.

Appendix 9

- Biological Nitrogen Fixation Technology for Tropical Agriculture. P.H. Graham and S.C. Harris (eds.). CIAT. 1982.
- The Farmers of Yurimaguas. Rhoades and Bidegaray. CIP. 1987.
- Proceedings for the Short Course in Agroforestry. Colorado State University. 1986.
- Common Fuelwood Crops. Elbert L. Little, Jr. Communi-Tech Associates, Morgantown, West Virginia.
- Tropical Land Clearing for Sustainable Agriculture. IBSRAM. 1985.
- D&D User's Manual. comp. and ed. John B. Raintree. ICRAF. 1987.
- Global Needs and Problems of Collection, Storage, and Distribution of Multipurpose Tree Germplasm. J. Burley. ICRAF. 1985.
- Land Evaluation for Agroforestry: The Tasks Ahead. Anthony T. Young. ICRAF. 1984.
- Land, Trees and Tenure: Proceedings of an International Workshop on Tenure Issues in Agroforestry. John B. Raintree, ed. LTC/ICRAF. 1987.
- Multipurpose Tree and Shrub Directory. ICRAF. 1986.
- Multipurpose Tree Germplasm. J. Burley and P. Von Carlowitz (eds.). ICRAF. 1984.
- Multipurpose Trees and Shrubs: Opportunities and Limitations. P. von Carlowitz. ICRAF.
- Plant Research and Agroforestry. P.A. Huxley (ed.). ICRAF. 1983.
- Professional Education in Agroforestry. Esther Zulberti, ed. ICRAF. 1987.
- Site Selection for Multipurpose Trees. A. Young. ICRAF.
- Soil Productivity Aspects of Agroforestry. P.K.R. Nair. ICRAF. 1983.
- Trees and Tenure. Louise Fortmann and James Riddell. ICRAF. 1985.
- Agroforestry Research in the Semi-arid Tropics. ICRISAT. 1986.
- Irrigated Forestry in Arid and Semi-arid Lands. F.B. Armitage. IDRC. 1985.
- Leucaena Research in the Asian-Pacific Region. IDRC. 1983.
- Multiple Cropping in the Humid Tropics of Asia. A.A. Gomez and K.A. Gomez. IDRC. 1986.
- Rattan. IDRC. 1980.
- Biotechnology in International Agricultural Research. IRRI. 1985.

- Agroforestry for Rural Needs. Workshop Proceedings. 2 vols.. IUFRO.
- Increasing the Productivity of Multipurpose Species. J. Burley and J.L. Stewart. IUFRO. 1985.
- Economic Analysis of Ag Projects. 2nd ed. J. Price Gittenger. Johns Hopkins U. Press. 1982.
- Eucalypts in India: Past, Present, and Future. Kerala Forest Research Institute. Peechi, Kerala, India. 1986.
- Common Property Resource Management. National Academy Press. 1986.
- Attributes of Trees as Crop Plants. M.G.R. Cannell and J.E. Jackson (eds.). Institute of Terrestrial Ecology, Natural Environment Research Council. 1985.
- Gliricidia sepium. (Jacq.) Walp. Management and Improvement. NFTA. 1987.
- Leucaena Research Reports. Special Issue, vol. 7 (2). January 1987. Proceedings of a Workshop on the Biological and Genetic Control Strategies for the Leucaena Psyllid. NFTA. 1987.
- The Public Management of Forestry Projects. OECD. 1986.
- Leucaena: Its Cultivation and Uses. B. Pound and L. Martinez Cairo. Overseas Development Administration. 1983.
- Field Measurement of Dinitrogen Fixation and Denitrification. SSSA Special Publication No. 18. 1986.
- The Economics of Afforestation. Dennis Anderson. World Bank Occasional Paper No. 1/New Series. 1987.
- Fuelwood Consumption and Deforestation in African Countries. Dennis Anderson and Robert Fishwick. World Bank Working Paper. 1984.
- Land Assets and Rural Poverty. Michael Lipton. World Bank Working Paper. 1985.
- Land Tenure Systems and Social Implications of Forestry Development Programs. Michael M. Cernea. World Bank Working Paper. 1983.
- Traditional Land Tenures and Land Use systems: Design of Agricultural Projects. R. Noronha and F.J. Lethem. World Bank Working Paper. 1983.
- Growing Power: Bioenergy for Development and Industry. World Resources Institute. 1986.
- Not Far Afield: U.S. Interests and the Global Environment. Norman Myers. World Resources Institute. 1987.
- Tropical Forests: A Call for Action. World Resources Institute. 1985.
3 vols.

Appendix 9

- World Resources 1987. World Resources Institute. 1987.
- Worldwatch Paper 83: Reforesting the Earth. S. Postel and L. Heise.
Worldwatch Institute. 1988.
- Characteristics, Properties and Uses of Timbers, Vol. 1. Keating and Bolza.
Texas A&M University. 1982.
- World Literature on Leucaena. E. Olvera, M.D. Bengé, and S.H. West.
U. of Florida, Gainesville. 1985.
- Environmentally Sound Small-Scale Forestry Projects. CODEL/VITA. 1983.
- Reforestation in Arid Lands. Fred R. Weber with Carol Stoney. VITA. 1986.
- Forest Farming. J. Sholto Douglas and R. Hart. (Available from Winrock's
Agribookstore.)
- Man, Agriculture, and the Tropical Forests. Fujisaka, Sajise, and del
Castillo (eds.). Winrock International. 1986.
- Cold Hearths and Barren Slopes: The Woodfuel Crisis in the Third World. Bina
Agarwal. Zed Books Ltd., UK.
- Agroforestry in Australia and New Zealand. R. Reid and G. Wilson. 1985.

F/FRED Publications

Multipurpose Tree Species Network Research Series

Papers

- no. 1. Feasibility Study on Tissue Culture for Multipurpose Tree Species. Paiboolya Gavinlertvatana, A. Colin Matheson, and Eng Peng Sim. 1987.
- no. 2. A Regional Research Plan for Leucaena Psyllid Control., Banpot Napompeth, Kenneth G. MacDicken, Max McFadden, and L.N. Oka. 1987.

Reports

- no. 1. Multipurpose Tree Species Networks for the Forestry/Fuelwood Research and Development Project: Recommendations. Kenneth G. MacDicken, Michael R. Dove, James I. Brewbaker, and William F. Hyde. 1986.
- no. 2. The Status of Multipurpose Trees in Thailand. Suree Bhumibhamon. 1987.
- no. 3. Multipurpose Tree Species Trials Data Compilation, Republic of the Philippines. C. Buford Briscoe, Jocelyn M. Alcazar, and Paciencia A. Votacion. 1988.
- no. 4. 1987 Seed Collections of *Acacia auriculiformis* from Natural Populations in Papua New Guinea and Northern Australia. Brian Gunn, Maurice McDonald, and James Moriarty, compilers. 1988.

Manuals

- no. 1. IADSS Information and Decision Support System (Version 1.1) User's Manual. Global Research Unit. 1988.
- no. 2. Manual for Multipurpose Tree Species Research Cooperators for the F/FRED 1987 Humid and Sub-humid Network Trials. Kirtland M. Barker, ed. 1988.

Videos

- no. 1. A Guide for Multipurpose Tree Species Research Cooperators for the F/FRED 1987 Humid and Sub-humid Network Trials. Kovith Yantasath and Celso B. Lantican. 1987.

Multipurpose Tree Species Network Technical Series

- no. 1. Modeling Growth and Yield of Multipurpose Tree Species, vol. 1. Norma R. Adams and Foster B. Cady, eds. 1988.

F/FRED Proceedings Series

- no. 1. Forest, Networks: Proceedings of the First Network Workshop of the Forestry/Fuelwood Research and Development (F/FRED) Project held Sept. 24-27, 1986 in Bangkok, Thailand. Norma Adams and Robert K. Dixon, eds. 1986.
- no. 2. Trees on Small Farms: Multipurpose Tree Species Research for the Arid and Semi-Arid Tropics. Proceedings of the Network Workshop of the Forestry/Fuelwood Research and Development (F/FRED) Project held Nov. 16-19, 1987 in Karachi, Pakistan. David A. Taylor and Lee Medema, eds. 1988.
- no. 3. Multipurpose Tree Species for Small-Farm Use. Proceedings of an International Workshop held Nov. 2-5, 1987 in Pattaya, Thailand. Dale Withington, Kenneth G. MacDicken, Chella B. Sastry, and Norma R. Adams, eds. 1988.

General Project Publications

Newsletters

Farm Forestry News. Norma Adams, ed. vol. 1:1-4, vol.2:1-3.

Brochures

F/FRED Project; July 1987, revised May 1988
Multipurpose Tree Species Network Field Trials, July 1988
Information and Decision Support System (IADSS), August 1988

Progress Reports

March 1987
September 1987
May 1988 (interim report)
September 1988

Special Reports

Report of the MPTS Research Network Steering and Research Committee Meetings. compiled by David A. Taylor and Woon W. Chuen. 1988.

Budget and Person Months Summary

The F/FRED accounting budget is organized according to the twelve billing categories listed in the contract, and details separately the costs incurred by the Project Management Office in Arlington (including subcontracts administered from that office) and by the Coordinating Unit in Bangkok. Table 1 shows expenses incurred to date by category, and the project total budgeted for each.

When budget reallocation based on billing experience and plans shifts funds among categories by more than 15% of the line item amount, an amendment to the contract is submitted to the A.I.D. Contract Officer for approval. There have been 10 contract amendments to date that have incrementally obligated contract funds and/or revised funding categories.

While the accounting budget tracks expenses for billing purposes, F/FRED management has developed a program budget detailing activities by activity for more informed project planning. The program budget relates the line item to the task order authorizing the activity where appropriate, and combines activities under the program categories of network development, training, research planning and support, USAID mission consultant support, publications, and administration (including subcontracts).

Currently the total planned activities included in task orders, combined with recently-identified project opportunities and estimated administration expenses, exceeds the contract amount by about US\$1.2 million. This is due to the absorption by the project, at the request of A.I.D., of activities not specified in the contract, including the Auburn biomass training program, the forestry curriculum workshop, and the major funding and organization of leucaena psyllid research. Without mechanisms such as mission buy-ins and/or the accelerated start of the second five-year phase of the project, this will result in severe constrictions on the depth and responsiveness of project activities in the last years of the five-year contract (See Figure). Such mechanisms, however, can serve to preserve the innovative and responsive character of the project and make for an uninterrupted transition to Phase 2 of F/FRED.

Table 2 presents a summary of person months under the contract.

Appendix 11

Table 1. Line item detail of project spending as of 8/22/88.

<u>Budget line item</u>	<u>Project Budget</u>	<u>Claimed to date</u>
I. Salaries and Wages	\$ 1,581,904	\$ 686,004.33
II. Fringe Benefits	451,665	246,998.07
III. Consultants	309,398	195,738.81
IV. Overhead (57.09%)	1,079,831	503,387.17
V. Travel and Transportation	654,989	493,236.36
VI. Allowances and Per Diem	557,775	262,106.08
VII. Nonexpendable Equipment	205,647	186,819.73
VIII. Participant Training	707,853	65,157.82
IX. Workshops, Conferences	137,056	95,974.40
X. Research Grants	507,285	133,437.37
XJ. Subcontracts	2,424,384	853,845.21
XII. Other Direct Costs	330,198	201,987.41
Total Costs	<u>\$ 8,947,985</u>	<u>\$ 3,924,692.76</u>

Table 2. Summary of Person Months

<u>Position</u>	<u>Used to date</u>	<u>Project total</u>
Project Manager	32	55
Administrative Support Staff	41	83
Project Assistant/Intern	37	56
Winrock Consultants	7	12
Winrock Field Office Staff	2	10
Network Team Leader	21	45
Land & Forest Mgmt. Specialist	20	45
Other Network Team Staff	4	29
Project Editor	26	45
Publications Assistant	1	24
U.H. Subcontract	80	170
Field Consultants	16	126
U.S. Consultants	29	36
Other Subcontracts	15	72
Total	337	808

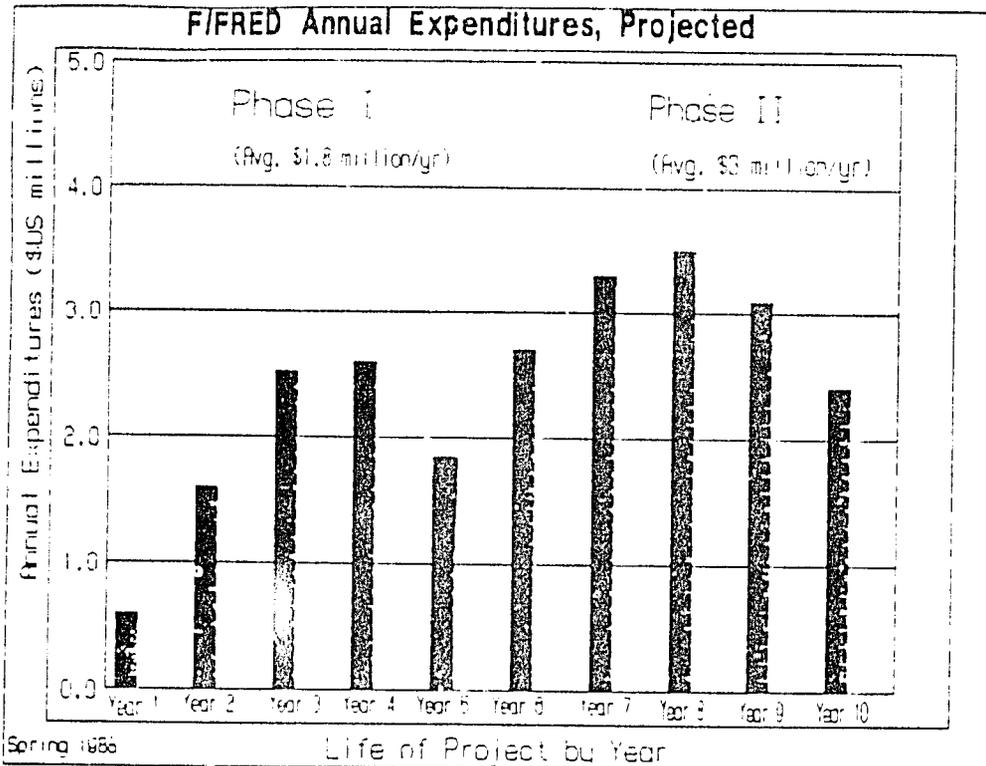


Figure. Project expenditures projected through the second five-year phase.

Project Staff

Name	Position	Period
<u>Project Management Office</u>		
Thomas Niblock	Project Manager	9/85 - Present
Norma Adams	Project Editor	9/85 - Present
C. Buford Briscoe	Forestry Program Officer	3/88 - Present
Kirtland Barker	Project Specialist	2/86 - 2/88
David Taylor	Project Assistant	8/87 - Present
Ava Flores	Project Assistant	6/87 - Present
Sandra Carter	Project Secretary	10/87 - 6/88
Ann Post	Publications Assistant	9/88 - Present
<u>Coordinating Unit Office</u>		
Kenneth MacDicken	Team Leader/MPTS Network Specialist	1/87 - Present
Charles Mehl	Land & Forest Management Specialist	1/87 - Present
Lee Medema	Forest Economist (through Viking contract)	2/87 - Present
Celso Lantican	Training Officer	6/88 - Present
Phatcharin Eiumnoh	Admin. Secretary	4/86 - Present
Apinya Charvatanasirikul	Admin. Secretary	9/87 - Present
Chaloamporn Rangaratna	Admin. Secretary	4/88 - Present
Suchada Meteekunaporn	Secretary/Receptionist	5/88 - Present
Leela Wuttikraibundit	Accounting Secretary	8/86 - Present
Komson Kiangpradoo	Driver	6/86 - Present
Supreecha Karnchanashas	Driver	1/87 - Present
Damrong Intamara	Driver	3/87 - Present
<u>Global Research and Development Office</u>		
Foster Cady	Research and Development Director (UH subcontract)	7/86 - Present
Julie Pak	Systems Programmer	7/86 - Present
Ruiz Tabora	Systems Programmer	7/87 - Present
Robin Harrington	Research Specialist	10/87 - Present
Damian Kam	Systems Programmer	6/88 - Present

Project Consultants (North America)

<u>Name</u>	<u>Activity</u>
Martha Avery	Handbook preparation
James Bethel	Study of related networks
Douglas Boland	Network trials preparation
Franklin Bonner	Seed processing and storage, Pak.
James Brewbaker	Workshops, conferences work
William Burch	Handbook preparation, curriculum activity
Robert Callaham	Conduct course on forestry research management at FRIM
Brian Carson	Land use survey seminar, Nepal
Dean Current	Agroforestry seminar, Burma
Robert Dixon	Network development
Alan Ek	Biomass program
Dean Djerstad	Biomass program
Stanley Gessel	Study of related networks
James Hanover	Study of gums and exudates
William Hyde	Handbook preparation
Kenneth MacDicken	MPTS species study, workshops
Colin Matheson	Biotechnology studies
Lek Moncharoen	Soil characterization
Dietmar Rose	Information management systems development
Uthaiwan Sangwanit	Mycorrhizae studies
Alice Spitzer	Library studies
Luis Ugalde	Database management systems development
Dale Withington	Editing workshop proceedings
Ronald Yeck	Soil characterization

Appendix 14

PERSONAL SERVICES AGREEMENTS

<u>Number</u>	<u>Awardee</u>	<u>Date Awarded</u>	<u>Task Order</u>
87001	Celso B Lantican (Philip.)	03-02-87	No. 17
87002	Colin Matheson (Australia)	03-17-87	No. 22
87003	TISTR Kovith Yantasath (Thailand)	04-09-87	No. 17
87004	Plantek Int'l (Singapore)	04-08-87	No. 22
87005	Aurorita Mendoza (Thailand)	05-06-87	No. 30
87006	Fuh-Jiunn Pan (Taiwan)	05-05-87	No. 19
87007	Fuh-Jiunn Pan (Taiwan)	05-05-87	No. 19
87008	Kamis Awang (Malaysia)	05-05-87	No. 19
87009	Mohd. Lokmal B. Hj. Ngah (Malaysia)	05-05-87 05-05-87	No. 19 No. 19
87010	Suree Bhumibhamon (Thailand)	05-05-87	No. 19
87011	Suree Bhumibhamon (Thailand)	05-05-87	No. 19
87012	Kovith Yantasath (Thailand)	05-05-87	No. 19
87013	Kovith Yantasath (Thailand)	05-05-87	No. 19
87014	Marcelino V. Dalmacio (Philippines)	05-05-87	No. 19
87015	Romeo S. Raros (Philippines)	05-05-87	No. 19
87016	Hu-Ta Wei (Taiwan)	05-05-87	No. 19
87017	Komar Soemarna (Indonesia)	05-05-87	No. 19
87018	Komar Soemarna (Indonesia)	05-05-87	No. 19
87019	Sriwan Janesuttarnkit (Thailand)	05-20-87	None
87020	Ruangdej Srivardhana (Thailand)	05-22-87	No. 25
87021	Neurotech Corp. (Thailand)	05-25-87	No. 30
87022	Kamolwat Visetsiri (Thailand)	06-19-87	No. 19
87023	Bunyalid Furiyakorn (Thailand)	06-19-87	No. 19
87024	Paiboolya Gavinlertvatana (Singapore)	06-19-87	No. 29
87025	Suree Bhumibhamon (Thailand)	07-16-87	No. 24
87026	CSIRO (Australia)	07-28-87	No. 27
87027	E.G. Cole (Australia)	07-28-87	No. 27
87028	Yongyuth Chalamwong (Thailand)	08-13-87	No. 19
87029	Yongyuth Chalamwong (Thailand)	08-13-87	No. 19
87030	Suree Bhumibhamon (Thailand)	10-09-87	No. 28
87031	M.I. Sheikh (Pakistan)	11/07/87	No. 28
87032	Marcelino Dalmacio (Philippines)	08-17-87	No. 28
87033	Ta-Wei Hu (Taiwan)	09-08-87	NO. 28
87034	Francis S.P. Ng (Malaysia)	10/12/87	No. 28
87035	CANCELLED		
87036	Koemar Soemarna (Indonesia)	08-24-87	No. 28
87037	I. N. Oka (Indonesia)	09-01-87	No. 14 amended
87038	Chairil Anwar Siregar (Indonesia)	09-14-87	No. 19
87039	Dr. Lucylen Ponce (Philippines)	10-15-87	No. 19
87040	Md. Zainal Abedin (Bangladesh)	09-20-87	No. 33
87041	Dr. Eliseo Ponce (Philippines)	10-09-87	No. 34
87042	Ta-Wei Hu (Taiwan)	10-15-87	No. 40
87043	CATIE (Costa Rica)	08-17-87	None
87044	The Bharatiya Agro Industries Foundation (India)	11-04-87	No. 28
87045	Dr. Bahari Yatim (Malaysia)	01-11-88	No. 19

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87046	Wilfrido D. Cruz (Philippines)	01-12-88	No. 22
87047	Chulalongkorn Univ. Soc. Research Institute (CUSRI) Amara Pongsapich	01-12-88	No. 22
88001	Prakash M. Shingi (India)	Unsigned	No. 34
88002	Chris Harwood	01-21-88	No. 40
88003	Forest Survey and Research Office (Nepal)	01-17-88	No. 28
88004	Nitrogen Fixing Tree Association	04-06-88	No. 27
88005	Dr. Simon M. Sallei (Papua New Guinea)	Unsigned	No. 34
88006	Uraivan Tan-Kim-Yong (Taiwan)	03-25-88	No. 19
88007	Dr. Eliseo Ponce (Philippines)	03-18-88	No. 19
88008	Kasetsart University-Bldg. Renov.	Unsigned	NA
88009	Philippine Council for Agriculture, Forestry and Natural Resources Research and Develop- ment (PCARRD)	03-09-88	No. 14
88010	Organization for Tropical Studies	05-02-88	NA
88011	Dale Withington	04-10-88	No. 45
88012	Melissa Beck Yazman	04-26-88	No. 45
88013	Dale Withington	04-15-88	NA
88014	Dr. Yongyuth Chalamwong	04-18-88	No. 14
88015	Ahmad Said Sajap	05-31-88	No. 14 amended
88016	Adelina A. Barrion	06-01-88	No. 40
88017	Dr. Chaweewan Hutcharern	05-23-88	No. 42
88018	Institut Penyelidikan Perhutanan Malaysia FRIM	06-10-88	No. 43
88019	Dr. Banpot Napompeth	06-22-88	No. 14 amended
88020-	Library Fund Agreements with		
88040	MOU/LOA Institutions	Pending	No. 16
88041	Narayan Hegde	08-26-88	No. 36
88042	Chulalongkorn University Social Research Institute, Bangkok, Thailand	08-17-88	No. 34

Subcontracts under the Project

Subcontractor	Related Task Order	Services
University of Hawaii	*	development of information management system
School of Forestry Auburn University	India "Buy-i. "	coordination of USAID/India biomass training
Weyerhaeuser Company	3,18	counsel on information management, (w/ CATIE)
Nitrogen Fixing Tree Association	27	logistical and other support for MPTS for Small Farm Use workshop
Tropical Resources Institute, Yale University	21	planning and conducting a workshop on integrating social sciences into forestry curricula
Michigan State University	*	training and support for Ph.D. fellows
PLANTEK International	22	establishment of network tissue culture trials

*Services specified in original contract