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UNIVERSITY OF MAINE

AGROFORESTRY OUTREACH RESEARCH PROJECT

QUARTERLY REPORT

FOR THE PERIOD JULY 1 - SEPTEMBER 30, 1986

BY

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AND

AFORP STAFF

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AFORP Technical Reports and Working Papers

Technical Reports:

Ashley, M.D. 1986. A study of Traditional Agroforestry systems in Haiti and Implications for the USAID/HAITI.

Balzano, Anthony. 1986. Socio Economic Aspects of Agroforestry in Rural Haiti.

Conway, F. 1986. The Decision Making Framework for Tree Planting in the Agroforestry Outreach Project.

Dupuis, Roland. 1985. An Interim report on Container/Mix Research in Haiti.

Ehrlich, M. 1986. Fuelwood and Biomass Yield Tables for Leucaena leucocephala, Cassia siamea, Azadirachta indica, Colubrina arborescens, Eucalyptus camaldulensis, Prosopis juliflora.

Ehrlich, M. 1986. Establishment of Coppicing Trials Involving Leucaena leucocephala and Cassia siamea near Cap Haitian (Haiti)

McGowan, Lisa. 1986. Potential Marketability of Charcoal, Poles, and Planks Produced by Participants in the Agroforestry Outreach Project.

Working Papers:

Number 1. Salazar, Rodolfo. 1985. An English version of "Normas Para la Investigation Silvicultural de especies Para Lena" (Norms for the Silvicultural Investigation of Firewood Species" 46 p.

Number 2. Salazar, Rodolfo. 1985. Version Francaise de "Normas Para la Investigation Silvicultural de Especies para Lena" (Normes pour la recherche Agrosylvicole sur les especes de Bois de Feu). 44 p.

Number 3. Ashley M. D. and Grosenick G. 1985. Ecological Zones and Erodibility of Terrain in Haiti. 30 p. plus appendices.

Number 4. Gill, Douglas. 1985. Harvesting Time Estimates for Leucaena leucocephala on a Fuelwood Plantation in the Cul-de-Sac Region of Haiti. 5 p.

Number 5. Gill, Douglas. 1985. Working Paper on Survey Research in the Agroforestry Context. 13 p.

Number 6. Grosenick, Gerold. 1986. Economic Evaluation of the Agroforestry Project.

Number 7. Grosenick, Gerold and McGowan, Lisa. 1986. Determining the Consumption of Wood Products in Port-au-Prince Using Supply Surveys.

Number 8. Grosenick, Gerold. 1986. A Review of Literature Documenting Consumption of Wood Products in Haiti.

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UNIVERSITY OF MAINE

AGROFORESTRY OUTREACH RESEARCH PROJECT IN HAITI

QUARTERLY REPORT FOR THE PERIOD ENDING SEPTEMBER 30, 1986

OVERVIEW

This report comes shortly after the original, scheduled completion of our contract. However, with the four-month extension of AFORP to the end of this year, it marks various stages of completion of new activities scheduled under the extension, some of which have already been completed, others of which are well underway. This quarter has also seen several changes in our staff.

All of the original project components have been included in the extension activity. Three new student interns have been added in the technical forestry and silviculture areas. Staff have also been added to expand support for these components. An editor is now working to synthesize our reports into a standardized, less technical format and two new staff have been added to build a more complete Literature Search base from which we can obtain background information for our studies. Entries to this literature base are being put on the USAID MicroDis computer filing program.

As in previous project status reports, a detailed description of the work undertaken in the technical forestry, economics and marketing, and sociology research areas is presented in another section of this report. Before these, a synopsis of the status of each will be given.

Again, my sincere thanks to the Grantee staffs, who have continued to be so supportive of our efforts. Their help is especially appreciated now as we approach the project's completion and our fieldwork must soon be finished. We are also thankful for the prompt review and critique of our draft report submissions to the Mission. They have been helpful in maintaining our reporting schedules.

SYNOPSIS OF ACCOMPLISHMENTS BY COMPONENT

Traditional Agroforestry Systems

Work to produce a booklet with color illustrations of the agroforestry systems in Haiti was begun. Three systems of classification are to be shown. Two of these were developed by international agroforestry research organizations such asICRAF. These classify agroforestry systems by the land uses:

1. agrisilviculture,
2. silvopastoral,
3. agro-silvo-pastoral, or
4. multipurpose tree production.

and by a combination of the land use and geometrical cropping patterns:

1. intercropping,
2. alley cropping,
3. contour plantings,
4. border plantings,
5. interspersed planting, and
6. multipurpose tree production.

Most of the photography to be used in the booklet was taken over the quarter, and twenty sketches have been contracted for with an artist to complete the illustrations. The text to accompany the illustrations is nearly complete, and a company has been found which has the facility to do the final printing in color.

This work is scheduled for completion early in the next quarter, so as to meet the deadlines for completion of the contract.

Nursery, Outplanting and Species Trials

Field measurements on several of the subcomponents of this work were taken over the quarter. The container/mix growth schedule, top pruning and direct seeding trials had several more sets of data collected on them. The data for all of these subcomponents was analyzed and the reports on each will be forthcoming in the next quarter.

The species trials component was nearly completed. Some new trial data generously made available by the GOH Projet Forestier National (PFN) was added to the data base and the final draft report will be completed early in the next quarter.

An additional experiment to obtain acceptable growth schedules in the nursery, in terms of shoot/root ratios was also initiated. This work will use the average ratios over time for height or weight of three successful Grantee nurseries to set the standard for what will be considered desirable ratios. The species involved are *Leucaena leucocephala, Cassia siamea, Azadiachta indica, and Colubrina arborescens.* The objective of this experiment is to produce data and a set of equations and graphs which can be used by nursery managers to tell if at a given time, up until outplanting, their seedlings are within an acceptable range of shoot/root ratios based on the assumption that nurseries having produced good quality seedlings in the past can be used as a model for the future.

Seed was sown at the three nurseries in mid-September. Measurements on existing seedlings awaiting outplanting this fall were undertaken in early September so as to have some base line data for older seedlings, which might not be obtainable for those just seeded because of the time restriction for completing field measurements to be included in the presentations for the final report. Special mention should be give to the AOP Forestry Advisor, Richard Pellek, for his help in designing this experiment.

Silviculture

Work on this component was reactivated late in this quarter. Research was been initiated on the yield of leucaena hedgerows and reinstituted on the yields of coppiced leucaena and cassia stands. Several living terraces planted by CARE and PADF farmers were identified for study.

There are three people working on this component and it is expected that the fieldwork will be completed mid- way through the next quarter and the final report on this research incorporated into the Project final report.

Economics and Marketing

Each of the subcomponents of this research area had work being done over this quarter. The Cost-Benefit analysis of the AOP was updated and data collected from several sources on the benefits of coffee, cocoa, coconut, mango and citrus agroforestry systems to farmers.

The consumer preference studies of charcoal and lumber have had but limited work. However both should be completed in the next quarter for inclusion in the Final Report.

Several reports have been produced from the marketing studies. One Working Paper was produced on literature documenting consumption of wood products in Haiti. This paper will be released soon and if nothing else will convince one of the tenuous nature of much of the past data on wood consumption in

Haiti. Another Working Paper Ku-authored by Lisa McGowan and Gerold Grosenick is in the process of final duplication. This paper presents an updated estimate of the consumption of wood products in Port au Prince. McGowan's report on risk aversion, produced from her work under the Project extension was also prepared and is under final review before release to USAID. This report should be finalized early in the next quarter.

Another report on the price trends of forest products in Haiti was written by Grosenick and will be released as a Working Paper early in the next quarter.

Sociological Studies

The two social scientists working on this component had varying degrees of activity over the quarter. Balzano completed his work under the Extension and submitted a report on the relationships and incentives for or against sharecroppers participating in the AOP. In fact one model of a positive arrangement was found, along with an understanding that the relationships of land ownership and sharecropping are more complex than reported previously.

Senior Anthropologist Fred Conway began his work under the Extension late in the quarter. He has initiated work, to be completed in the next quarter, on synthesizing the work done by himself, Balzano, and others from PADF who have done AOP village case studies. This will be completed in the next quarter and will be included in the Project Final Report.

Literature Search

The establishment of a standardized literature or library information retrieval base from which AFORP and other researchers could draw on agroforestry and related activities on a world-wide basis was started this quarter. Two staff are now working full time to establish this base using several identified data bases and recent literature which may not yet have been entered in these bases. The literature citations are being entered on the USAID MicroDis program and on an independent dBASE 3 program.

Computer and Data Analysis

This quarter has been highlighted by the setup of further analysis of the data for several AFORP researchers, a substantial amount of consulting with the Grantees and the arrival of two more computers to help meet the increased demand for machines as the Project comes to a close and final reports are being prepared.

Updating of existing software was also initiated with the purchase of some software and the orders for other. Computer Specialist, Gill suggests that to meet the needs of this project

that there is a need for one computer for every two staff members plus two more dedicated to the library retrieval system and secretarial work.

PLANS FOR THE NEXT QUARTER

All of these components should be completed by mid-November to early December. They will be collated and combined into the Final Report for the AFORP.

APPENDIX A

A Quarterly Report on Traditional Agroforestry Systems Research
For the Period July 1 - September 30, 1986

By

Marshall D. Ashley, Team Leader

Continued Activity

The main report for the activities scheduled under this report was submitted last quarter. This quarter has been used to work on a booklet to illustrate the various agroforestry systems found in Haiti. The first part of this quarter was spent taking more than two hundred color photos of gardens representing the systems in nearly all environmental zones. An artist has also been commissioned to do some twenty sketches showing agroforestry activities for which I have felt they would be more descriptive than the photos.

There will be three systems illustrated in this booklet. One is a generalized set of descriptors devised by a Haitian research organization, Madian-Salagnac, to broadly portray the character of the peasant farm. The other two are those used by several international agroforestry research institutions and reported by ICRAF. The first of these classifies agroforestry systems by the land uses:

1. agrisilviculture
2. silvopastoral
3. agro-sylvo-pastoral
4. multipurpose tree production

The other by a combination of land use and geometrical cropping patterns:

1. intercropping
2. alley cropping
3. contour plantings
4. border plantings
5. interspersed planting
6. tree plantations

Near the end of the quarter, those photos which had been returned from developing were catalogued under the different systems and several selected for use in the booklet. A series of rough sketches were also drafted by the artist and reviewed for

comment. Several printing firms in Port-au-Prince were contacted to find if and at what price they could produce the desired booklet in color. Only one was found which could do the work in full color. Another could produce a black and white offset printing with color prints produced at another local firm appended in separate folders. The full color presentation was selected as the better of the two.

The text for the booklet was also begun. A review draft of this was completed, and was left to await the arrival of some more photos which had not returned from developing, so the text could be completed.

Plans for Completion

The work on this booklet must be completed early in the next quarter so that it may be incorporated in the AFORP Final Report. The printer says that the booklet will take two months to complete from the time it is submitted to him. It is planned to submit this to him by the end of the second week in October.

Some aspects of this component have taken much more time than anticipated. The theft of a camera and film, along with a more than six week turn around time for film developing has caused a substantial disruption to the work plan time line. A substantial effort is planned to complete this work on schedule.

APPENDIX B

A Quarterly Report on
Nursery, Outplanting, Species Trial and Top-Pruning Research
For the Period July 1 - September 30, 1986

by

Roland A. Dupuis, Research Forester

During this quarter, the following people were shown various University of Maine and other research sites.

Loren B. Ford/RFA	Cabaret	- Top pruning Trial
		- Direct Seeding Trial
	Ganthier	- Container/mix Trial
Richard Pellek/ADO	Mirebalais	- PADF Species Trial
		- Baptist Convention of Haiti Leucaena Plantation

I will continue with the format of describing each of the five subcomponents within the agroforestry sector of the project for which I am responsible.

CONTAINER/MIX SUBCOMPONENT
Nadal (Bon Repos)

Survival was recorded monthly throughout the quarter and height at ten months was recorded in late August. These actions concluded the measurement schedule for this trial.

Presently, the survival data has been entered and analyzed and the height data is being entered. As mentioned in an earlier quarterly report, a major portion of the container/mix report has already been written and the final container/mix report will be forthcoming in the next quarter.

Preliminary observations show that *Leucaena* and *Prosopis* extremely high survival rates of ninety-four and ninety-seven percent respectively, which is significantly better than the survival rate of *Azadirachta* which was sixty-four percent.

Ganthier

The final survival, height and dbh measurements were taken in late August (34 months) for this trial. The data has been entered and analyzed.

GROWTH SCHEDULE SUBCOMPONENT

Monthly survival was recorded throughout the quarter and ten month height was recorded in late August. These were the final measurements for this trial.

Presently, the data has been entered and analyzed. Sections of this report have already been written and the final growth schedule report will be forthcoming in the next quarter.

TOP PRUNING SUBCOMPONENT

Cabaret and Saut d'Eau

The final survival and height measurements were recorded in August (fourteen months) for these trials. During the weeding of the Saut d'Eau trial in July, several trees were weeded out of the trial.

The data has been entered and analyzed for both trials. Sections of this report have already been written and the final top pruning report will be prepared in the next quarter.

DIRECT SEEDING SUBCOMPONENT

During the dry summer months of July and August, the remaining seedlings died. Therefore, the last available data for this trial was recorded in the late March 1986 (11 months).

The data for this trial has been entered and analyzed. Sections of the report have already been written and the final report on direct seeding will be prepared in October.

Cabaret and Saut d'Eau

Fifteen month survival and height were recorded in early August for both of these trials. At Cabaret, both the direct seeded seedlings and the outplanted seedlings were measured. During the weeding of the Saut d'Eau trial in July, *Albizia* was completely weeded out of the trial. These weeding mishaps occurred while the local pastor, on whose land the trial is located, was on vacation. In his absence, another pastor who was not familiar with the U of M research plots, hired the laborers to weed the trial. Because most of the *Albizia* seedlings were smaller and less visible than the *Cassia* and the *Leucaena* seedlings, they were weeded out of the trial.

The data has been entered and analyzed. Sections of the report have already been written and the final report on direct seeding will be prepared in October.

SPECIES TRIAL SUBCOMPONENT

No species trials were measured during this quarter, but with the assistance of Elia Mora de Beliard (forester-PFN/WB) nine FAO and six WB trials are included in the species trial report. The final draft of the species report is almost finished.

APPENDIX C

A Quarterly Report on Silvicultural Research
For the Period July 1 - September 30, 1986

by

Marko Ehrlich, Silvicultural Consultant
and
David Schmitt and Solo Di Mavindi, Student Interns

With the return of Dr. Marko Ehrlich, the Silviculture Tean consisting of Dr. Ehrlich and interns David Schmitt and Solo I Mavindi has kicked into high gear. Since that time, thre experiments have been designed and will be implemented in th next month.

First to be carried out will be a study of contour hedge rows of *Leucaena leucocephala.* The objective is to estimate th productivity of the contours in terms of fuelwood productivity forage production, and total above-ground biomass.

Specifically, green and dry weight, moisture content an specific gravity will be examined for the fuelwood produced while for forage, the green and dry weights, moisture content and percent of protein will be determined. Finally, the gree and dry weight and moisture content of the above ground biomas will be found.

Tied in with the contour hedgerow study will be a socio economic survey designed by the team members. The purpose of th questionnaire is to relate certain facts about land tenure an care of livestock to the success/failure of hedgerow use. Th questionnaire will be administered by *agronomes/technicians* o the cooperating USAID grantees, CARE and PADF, so that th presence of team members will not effect the answers received The contour hedgerow study will take place on various sites i and around Passe Catebois, Fond-des-Blancs and Les Cayes.

The second phase of the team's efforts will be a coppicin study involving first, the remeasuring of a Cap Haitien sit established one year ago, consisting of two species, *Leucaen leucocephala* and *Cassia siamea*, and coppiced in March, 1986, an second, the establishment of a new site at Mirebalais involvin *Leucaena leucocephala.*

The objectives of this study are three-fold.

1. To assess the relative productivity of coppice growt relative to tree growth in an untreated stand of trees.

2. To assess the relative productivity of different coppicing treatments (compared to each other).

3. To assess the effect of coppice on the tree's overall performance as a producer of fuelwood over one or possibly several coppicing cycles.

The final stage of the team's field work will be to determine the biomass/yield of two previously unmeasured species, *Casuarina equisetifolia* and *Catalpa longissima*, thereby extending the range of the yield tables produced by Dr. Ehrlich last year.

The stated objective of the study is to examine the fuelwood, biomass, and polewood production potential of two tree species, and to add to the data already collected by this project for a number of other tropical species.

The sites for this study will be located with the cooperation of PADF.

In the first part of November, the team will be busy hustling back and forth between the office and MARNDR where some of the necessary laboratory analysis will be taking place. Simultaneously with this activity will be the statistical analysis of data collected in both the field and the lab. Mid-November to the end of the quarter will be occupied primarily with the writing and compilation of reports.

APPENDIX D

A Quarterly Report on Economic Research
For the Period July 1 - September 30, 1986

By

Gerold Grosenick, Economist

Cost-Benefit Study

During the past three months, I have been able to collect a good deal of information on traditional agroforestry systems in Haiti. From this information I have begun summarizing the costs and benefits of these systems to Haitian peasants. I will have analyses for the following systems:

1) Coffee
2) cocoa
3) coconuts
4) mangoes
5) citrus

A certain amount of time was also spent updating the analysis of AOP systems.

Consumer Preference Study

Very little was done on the consumer preference study during this quarter. All charcoals have been tested with the exception of neem and cassia. I do not foresee any difficulties finishing this study on time.

Lumber will be tested for moisture content as soon as our drying oven arrives. To be fair to the exotic species the tests for lumber should not be made until the lumber is properly dried.

Marketing Study

Two reports were finished during this quarter:

1) A review of literature documenting consumption of wood products in Haiti.

2) Determining the consumption of wood products in Port-au-Prince using supply surveys.

A third report on price trends will be finished early in the next quarter. In addition, if time is available, we will attempt to write a summary of all marketing reports, integrating the information, and presenting it in a more comprehensive format.

Administrative Duties

During the last three months, U of M has begun several tasks. Some of my time has been devoted to helping these tasks. We have begun a bibliographic search system which will help researchers locate documents relating to their research programs. This system will use the MicroDIS system created for USAID. It will also be valuable in the acquisition of documents for and the management of the Agroforestry Library. We have begun to order books, reports, and periodicals for the library.

APPENDIX E

A Quarterly Report on Anthropological Research
For the Period July 1 - September 30, 1986

By

Frederick J. Conway, Anthropologist

Work under the extension of the contract was begun late in the quarter. Preparations were made for a synthesis of socioeconomic findings about peasant planters in the AOP. The synthesis will include data from studies by Balzano, Conway and McGowan of U of M AFORP, as well as by Buffum, King and Lauwerysen of PADF. The report is expected to combine quantitative data collected by Balzano and McGowan with qualitative data also collected by Conway, and Buffum and King. This will include integration of McGowan's findings about the economics of wood production with the anthropological findings of AFORP. Quantitative data collected by Buffum and Lauwerysen of PADF will be used for comparative purposes. Thus the report is expected to bring together for the first time the results of AOP village case studies from Fond-des-Blancs, Grenier, St. Michel de l'Atalaye and Bainet.

Plans for the next quarter include completion of the analysis of the implications of the quantitative data from PADF, review of the U of M data and completion of draft and final reports of the synthesis. Preparations will be made for integration of reports by Balzano and Conway into the final contract report. Drafts of other U of M reports will be reviewed before submission. Decisions about additional fieldwork will be made when the synthesis of findings is complete.

APPENDIX F

A Quarterly Report on Anthropological Research For the Period July 1 - September 30, 1986

By

Anthony Balzano, Anthropologist

During the quarter the contractor completed his work for the AFORP. His final report was presented, which included a summary of his previous field research and results of additional field research. The additional research, which took place during the quarter, was concerned with land tenure aspects of the AOP tree-planting program at Fond-des-Blancs.

The focus of the research was on the relation of sharecropping to incentives for and constraints against planting seedlings. Seven landowners who planted trees on land they had let out to a sharecropper were found and interviewed. Three of these were absentee landlords and four were residents.

In addition, seven planters who had planted seedlings on *te asosye* belonging to another were found and interviewed. Five of these planters were found to be sons who were planting on land allocated to them by their fathers. One was a woman planting on her absent husband's land, over which her brother-in-law had control. The one informant who was a sharecropper had entered into an innovative agreement with the landowner for dividing the profits from the trees. This kind of agreement could form a model to provide incentives for other sharecroppers in Project areas to plant trees on land belonging to others. These interviews indicated that the term *te asosye*, usually translated as "sharecropped," is in fact used for several different kinds of land tenure relationships.

APPENDIX G

A Quarterly Report on the Agroforestry Bibliography Development For the Period July 1 - September 30, 1986

By

Clarence F. Kooi

The objective of this work is to set up a bibliography reference system in the Agroforestry area for the use of the Agroforestry Outreach Program. It will consist of literature citations in a standard fashion but with identifiers (key words or phrases) pertinent to project needs. It will be computerized so that the user can search efficiently for what is desired.

Progress in this quarter

A trial bibliography has been installed on dBase III Plus on the IBM Personal Computer. Thirty five citations have been entered and assigned identifiers. By use of dBase operations the user can search for, select, and print out desired literature citations. We expect to switch to the microdis system of the USAID Development Information Center when this program arrives (arrangements have been made to obtain it quickly).

The key task is to assign useful and accurate identifiers. With the help of the U of M staff a list of 230 identifiers has been created and entered into a dBase file. This list needs a lot more work.

A data entry person, Yolene Jean-Baptiste. has been hired for the duration of the program. She will begin entering citations into the dBase system, then switch to the Microdis system when we receive it.

Planned activity for the next quarter

The identifier list will be refined by consultation with the U of M staff and other agroforestry people.

The data entry person will be brought up to speed first on the dBase and then on the Microdis system.

Literature will be entered into the system on a daily basis, starting with that most easily available (U of M, USAID/Haiti, Damien, etc.) and then with that obtained from sources in the U.S.

U of M staff will use the bibliography within the next week, even though it does not yet contain an adequate number of citations, in order to test its performance particularly with respect to the assignment of identifiers. It is expected that this will continue to the end of the project on December 14.

Possible Problems

The IBM PC which we plan to assign full time to this work may not arrive in a timely fashion.

We have to learn the Microdis system, which may take some time. Will Microdis be what we need?

Obtaining materials from local and foreign sources may present problems. Is photocopying possible? Can we work on a computer at the information location (USAID, MARNDR, UNDP)?

Will it be possible to assign identifiers correctly to citations for which only the title is available?

Planned result for the next quarter

It is expected that a useful bibliography containing perhaps a thousand citations will be available to U of M staff by December 14.

APPENDIX H

A Quarterly Report on Computer Activities
for the Period July 1 - September 30, 1986

By

Douglas Gill
Computer Specialist

Equipment

During the past quarter the University of Maine Agroforestry Outreach Project acquired two computers and a printer to help meet data analysis and word processing needs. In addition, U of M has contracted for the lease of two computers to insure that sufficient computer time is available to the large staff of researchers currently working with the project. A lease agreement was sought due to the short period of time remaining in the project and the length of time required by the purchasing process.

One of the purchased computers will be dedicated to the establishment of a library information retrieval system currently being initiated by the project. The large database (of the information retrieval system) requires and will be established on the computer system with a 20Mb hard disk. U of M is considering the purchase of a tape backup system to insure that the integrity of the database will be secure.

U of M is acquiring software to upgrade statistical analysis capabilities; software to expand the graphic potential of reports; and software to assist with planning.

As the research agenda has evolved since the initiation of the project, so has the computer needs for research. As staff researchers increasingly rely on computers, the need for additional equipment also increases. To meet the needs of a research project, it is recommended that U of M adopt the following formula for determining the minimum number of computers necessary to adequately serve the needs of researchers: one computer for every two staff members, plus one dedicated to the library retrieval system, and one to clerical and secretarial tasks.

Other Activities

During the quarter, U of M has continued to assist the grantees of the Agroforestry Outreach Project their computer and analysis needs. In particular, U of M is working with Mike Bannister of PADF to develop a program to estimate fuelwood and biomass on a given parcel of land. The information generated from the program will be helpful in advising peasants regarding the management of project planted trees.

U of M is working with Joel Timyan on a program that will enable ODH to estimate biomass and fuelwood potential of standing timber on its plantations. The estimations will be useful in prescribing management plans for the plantations.

During July, the Computer Specialist assisted Gregor Wolf of CARE with statistical analysis of CFI species trial data. Several other topics (including a seedling survival program for the outplanting of project trees) were discussed. With Gregor departing the project in late August, it was decided that further work in this area be suspended until Gregor's position had been filled.