UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

HAITI

PROJECT PAPER

AGROFORESTRY OUTREACH

AID/LAC/P-083/1

Project Number:521-0122

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: C (A = Add, C = Change, D = Delete) — Amendment Number 1

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Haiti

3. PROJECT NUMBER: 521-0122

4. BUREAU/OFFICE: LAC — 05

5. PROJECT TITLE (maximum 40 characters): Agroforestry Outreach

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 12 DD 31 YY 86

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)
A. Initial FY 85 B. Quarter 2 C. Final FY 86

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	1,230	1,770	3,000	4,715	6,785	11,500
(Grant)	(1,230)	(1,770)	(3,000)	(4,715)	(6,785)	(11,500)
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1.						
Other U.S. 2.						
Host Country						
Other Donor(s)				1,934	2,783	4,717
TOTALS	1,230	1,770	3,000	6,649	9,568	16,217

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) ARDN	210	160	–	5,867	–	3,500	–	11,500	–
(2)									
(3)									
(4)									
TOTALS				5,867	–	3,500	–	11,500	–

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 067 066 096 878

11. SECONDARY PURPOSE CODE: 201

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	BS	DEL	ENV	PVOU	PVON	TNG
B. Amount						

13. PROJECT PURPOSE (maximum 480 characters)

- To motivate Haitian peasants to plant and maintain trees for soil conservation, production of fuelwood and generation of income in rural areas.
- To achieve the planting and maintenance of a substantial number of trees over the life of the Project.
- To obtain reliable information through applied research on the technical, economic and social variables of forestation in Haiti.

14. SCHEDULED EVALUATIONS
Interim MM 12 YY 83 | MM YY
Final MM 01 YY 86

15. SOURCE/ORIGIN OF GOODS AND SERVICES
☐ 000 ☒ 941 ☒ Local ☐ Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment.)

This Amendment provides an additional $3.5 million and extends the PACD from 9/30/85 to 12/31/86 to (i) continue and expand successful tree planting and related activities and (ii) establish a strong research component under the project.

17. APPROVED BY
Signature: Jerome French
Title: Director, USAID/Haiti
Date Signed: MM 12 DD 14 YY 84

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM DD YY

AID 1330-4 (8-79)

PROJECT AUTHORIZATION
(Amendment No. 1)

Name of Country	:	Haiti
Name of Project	:	Agroforestry Outreach
Project Number	:	521-0122

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize an increase in the life-of-project funding for the Agroforestry Outreach Project, including increases in the respective grants thereunder to the Pan American Development Foundation (PADF), Operation Double Harvest (ODH) and CARE, and an increase in funding for the technical assistance component. Such funding increase shall involve planned additional obligations of not to exceed Three Million Five Hundred Thousand United States Dollars, thus increasing total life of project grant funding to an amount not to exceed Eleven Million Five hundred Thousand Dollars, to finance foreign exchange and local currency costs for the project. I also hereby extend the Project Assistance Completion Date (PACD) from September 30, 1985 to December 31, 1986.

2. The amended project («Project») consists of the four existing components implemented by PADF, CARE, ODH and the Project Coordination/ Technical Support Unit, and an additional Research Component.

3. The Project Grant Agreement amendments, and the new research Grant Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with AID regulations and Delegations of Authority, shall be subject, as deemed appropriate by AID, to the essential terms and covenants and major conditions of the original Project Authorization, together with the following additional covenant:

Covenant

Each grantee shall covenant that, unless A.I.D. otherwise agrees in writing, it will submit quarterly financial reports to A.I.D. (USAID/Haiti) no later than forty-five days after the final day of the preceeding quarter of the fiscal year.

4. Except as expressly amended or modified hereby, the Project Authorization, dated September 23, 1981, remains in full force and effect.

Jerome French
Director
USAID/Haiti

1/11/85
Date

Clearances: DRE : B. Burnett
ADO : J. Lewis
ADO : R. Wilson
CSO : R. Webber
CONT : D.K. Shannon

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I. BACKGROUND AND RATIONALE FOR AMENDMENT

A. Project Summary

The Agroforestry Outreach Project represents the principal USAID/Haiti project effort in forestry, energy and natural resources conservation. The goal of the project, which was authorized on September 23, 1981, for a four-year period is to reduce and ultimately reverse the ongoing degradation of Haiti's natural resources and thereby maximize the productive potential of its land. This degradation has been caused by deforestation associated with clearing land for agricultural production and exploitation of forest resources to help meet the demand for fuelwood and charcoal, and other wood products. Deforestation has resulted in soil erosion, reduction of scarce energy resources, increased rural poverty and decline in agricultural production. At current rates of deforestation, Haiti's wood supply will be exhausted by the end of the century.

The primary purpose of the project is to motivate Haitian peasants to plant and maintain a substantial number of trees (6-9 million) over the life of project. A secondary purpose is to obtain reliable information on the technical, economic and social variables of forestation in Haiti. The trees planted are to meet one or more of the following general objectives: soil conservation, increased supply of fuelwood, and additional rural income generation through cash cropping of trees.

The primary focus of the project currently is on distributing and planting a substantial number of trees as quickly as possible. A key assumption, distinguishing the project from other reforestation and soil conservation efforts in Haiti, is that the trees can become viable cash crops, providing peasants with a short-term economic returns, and indirectly engaging them in reforestation and conservation. Emphasis is placed on planting fast-growing coppicing hard-wood species.

Project implementation is done under a framework of PVOs and non-governmental organizations rather than the Government of Haiti. Grants are provided to Operation Double Harvest (ODH), the Pan American Development Foundation (PADF) and CARE. A Coordination and Technical Support Unit, is also established to ensure coordination of efforts, documentation of field trials and project results, analysis of field operations, adherence to AID's project objectives, and senior level technical assistance.

Operation Double Harvest, through a $850,000 grant, is responsible for tree nursery experimentation, seedling production, seed storage and distributions, development of a seedling plug system, large-scale demonstration tree plantations and an extensive adaptive research program.

Pan American Development Foundation, through a $3,900,000 grant, promotes tree growing and other land use practices by small farmers through

provisions of tree seedlings and agroforestry extension. It was to establish an Agroforestry Outreach Center and three regional Agroforestry Outreach Teams, plant three million trees through about 80 sub-projects and train appropriate personnel. PADF also was to provide financial and technical assistance to other organizations to plant trees rather than implement projects itself.

CARE, with a $2,350,000 grant, also provides promotion and extension services, concentrating in the Northwest. Regional nurseries and demonstration plots were to be constructed and expanded, and about four million trees were to be planted by 3,500 farmers through training of extension agents. In most cases, CARE was to be the implementing agency, directly providing seedlings, technical assistance and extension.

The PADF and CARE projects share a number of program principles. The motivation for planting trees is to increase the income of the planter, who owns land and benefits exclusively from the trees. He is to have complete control of harvesting decisions and the resources devoted to trees in the agricultural system. Guidelines and advice are offered from PADF and CARE.

B. Project Implementation to Date (Summary)

1. Tree Planting by PADF and CARE

The project has moved rapidly in meeting most of its objectives, in some cases far exceeding the projections in the project paper. Farmers in the PADF and CARE regions have responded enthusiastically to the opportunity to plant trees on their land. The pace of tree planting through both organizations has been much more rapid than anticipated. Although it is perhaps too early for definitive conclusions, it appears that farmers do see the trees as having economic value and that the primary assumption of the project is valid. Various incentive payments for planting and maintaining trees were tried early in the project, but proved to be unnecessary, as peasants were sufficiently motivated to plant and take care of trees without them.

The PVOs have identified and developed effective implementation models for producing and distributing tree seedlings in Haiti. Agroforestry extension systems have been developed which have been successful in motivating and training farmers to plant trees and in creating mechanisms to get trees to farmers on a reliable schedule. After three years of operation, over 14,000,000 seedlings have been planted by about 24,000 farmers. Both fast growing exotic and indigenous tree species have been planted, with survival rates averaging around 50%.

As anticipated in the project paper, different outreach models were followed by the various grantees. PADF provided sub-grants to nearly 100 diverse PVOs; established an Agroforestry Outreach Center, regional agroforestry teams and regional nurseries; and has already exceeded its target for tree planting for the entire project. PADF was able to respond quickly to

changing circumstances and adapt its techniques as needed. For example, as demand grew for seedlings, it began developing PVO nurseries and now supports 20 such decentralized nurseries.

CARE, operating in the Northwest, where it has worked in rural develpment for decades, was also successful at developing an effective implementation model. A minimum number of PVOs operate in the Northwest, so CARE's approach provides assistance directly to farmers. Despite the difficulties of working in the Northwest, CARE has implemented the program according to schedule and has successfully established seven nurseries and corresponding outplanting networks of farmers.

2. ODH Tree Planting

ODH established nine tree-plantations on larger farms in the Cul-de-Sac region outside of Port-au-Prince. They have planted just over 1.2 million seedlings called for in the grant agreement, with estimated 70% survival. ODH also established a central nursery which furnished large numbers of seedlings to the PADF and CARE projects. ODH developed a seedling container system, Winstrip, which has made transporting and planting seedlings much easier, and had also made progress on developing a soil mix made from local materials. Recently, with trees from several plantations maturing, ODH has begun to record data on the potential benefits from the plantations. Charcoal production studies have also been started.

3. Project Coordination/Technical Support Unit

The Project Coordination/Technical Support Unit has played a critical role in providing guidance and technical assistance to the three separate grantees, particularly when the project was establishing its implementation models. This was especially true in the case of CARE, which did not have a full-time project director for the first year and a half. The Senior Forestry Advisor focussed much of his attention toward ODH, as was mandated, since ODH had the most extensive research agenda. The technical assistance provided through this component has served as the liaison between the three grantees; PVOs and the farmers; and between USAID and the grantees; coordinating activities towards fulfillment of the project objectives, and ensuring adherence to USAID's grant requirements.

4. Research conducted by ODH, PADF and CARE

Research efforts have not been as effective as originally envisaged at obtaining and documenting information on the variables of agroforestry in Haiti. The first two years were largely devoted to implementation - establishing project arrangements, delivery systems and technical packages - and a full-fledged research program was given a lower priority. The emphasis was on moving trees. ODH in particular was to carry out a program of extensive research, but staff constraints caused its research program to be poorly designed and unsystematic, not producing sufficient valid scientific data. ODH recently hired a full-time researcher to consolidate and document

its research experiences over the past two and a half years. PADF and CARE established some 20 species trials, and are also carrying out socio-economic case studies.

Much data on the technical, social and economic variables of agroforestry in Haiti has been generated by the many activities of the project and it needs to be consolidated and analyzed. Research efforts of all the grantees have improved and, as increasing numbers of trees mature, there will be opportunity for more effective research.

C. Project Evaluation and Audit (Summary)

1. Evaluation

A mid-term evalution was carried out in November-December 1983, conducted by a team comprised of a social scientist and a forester. The team made a number of field trips to a representative sample of project sites for each component and held interviews with the three grantees, some PADF sub-grantees, peasant farmers and others.

Overall, the evaluation concluded that the project has been very successful. Most of the short to medium-term indicators demonstrate that the project implementation model has not only maintained its intended pace but in some instances far exceeded the design team's expectations. The evaluation stated that the project was successful in identifying an effective implementation model for moving trees in rural Haiti. PADF and CARE were evaluated as quite successful and complementary in their approach, based on small-scale, village level multi-purpose forestation activities. ODH had a different approach to planting trees and experienced more difficulties. Generally successful with nursery activities, it had less success with research and establishing large scale tree farms.

Despite the success in meeting project objectives, however, the evaluation stated that the project may not contribute as much toward broader sector goals as initially anticipated. Expectations regarding rural income, erosion control and increase of the charcoal supply cannot yet be evaluated. The evaluation also noted that the project cannot come close to replacing the estimated number of trees cut each year in Haiti. It would need to increase its tree planting capacity by a factor of seven to replace the estimated 20,000,000 trees harvested annually. As originally envisaged, the project is a demonstration to farmers to plant trees as a cash crop.

The evaluation stressed that the research component of the project has received less attention than planting trees. Significant changes are needed if the project is to provide sufficient reliable information on the technical, economic and social variables of agroforestry in Haiti.

While acknowledging the effective training of project personnel which has taken place, the evaluation noted the need for more emphasis on training, especially of the monitors and animators, to acquire and utilize newly produced information on agroforestry.

The evaluation made seven recommendations for the second half of the project, most of which have already been incorporated in project activities. It recommended, inter alia, that the project should continue to focus on the extension activities of PADF and CARE and on planting trees, that any project expansion should focus on qualitative rather than quantitative growth, and that more and better research be undertaken. The evaluation also recommended an extension of the project prior to an Agroforestry II Project to provide additional time to test the underlying hypotheses, refine the technical, social and economic packages and incorporate research findings into recommendations for follow-on agroforestry activities in Haiti. The recommendations are quoted in Annex A of this project amendment.

2. Audit

An audit of the Agroforestry Project was conducted in May 1984 and an audit report was issued (Audit Report No. 1-521-84-8) in September 1984.

The audit concluded that achievement of the goal and purposes of the project has been mixed. The project has been very successful in motivating farmers to plant a substantial number of trees but less successful in motivating or instructing them to properly maintain the trees. The Audit found the survival rate to be too low, limiting the accomplishments of the project. The research program has not progressed as well as planned and the number of trees planted under the project will have a limited effect on reducing the degradation of Haiti's natural resources. USAID Haiti concurs with several of the recommendations and has incorporated appropriate mid-course corrections in the project extension. The main points made in the audit report and a summary of the USAID/Haiti response to each are as follows:

1. Survival and Growth rates of trees not satisfactory

The project has not been very successful in achieving its tree survival percentage targets. Only about 45 percent of the trees planted have survived compared to 70 percent, and the growth of many trees is stunted because of a drought in 1982 and because the PVOs and farmers have not applied the most appropriate technology for planting and growing trees. Also, (1) many of the sites available for planting were seriously degraded with regard to soil type, depth and nutritional contents, (2) effective rainfall in much of Haiti places the land in an arid or semi-arid category, and (3) project planners may have overestimated the survival rate of seedlings. This could adversely affect the economic viability of tree farming in Haiti under this project.

The Mission disagrees with this conclusion. The survival rates attained by the project, while lower than the 70% rate used in the Economic Analysis section of the project paper, are actually close to the rates predicted by PADF and CARE in the paper. The Economic Analysis assumed a 70% rate for various calculations of the economic return of the project; this is the only mention of such a rate in the paper. The PVOs implicitly assumed

various survival rates; ODH 80%, PADF 50% and CARE 62.5%. The average anticipated survival rate, weighted by the projected number of tree plantings by each of the PVOs, is 60%. If the projected survival rates are weighted by the actual number of tree plantings by each PVO thus far, the average anticipated survival rate is 55%. This latter figure is the most accurate representation of the survival rates implied in the technical section of the paper and is close to the actual rates achieved thus far in the project.

The Senior Forestry Advisor considers the survival rates achieved to date acceptable, and states that survival rates will vary considerably betweeen different regions and, various planting conditions within regions. As further information from the many project sites becomes available, better estimates of reasonable survival rates under different species and ecological conditions can be made. The research component of the project will study survival rates under various circumstances. Projections of realistic survival rates will thus be an output of the project rather than an assumption to be made prior to having adequate data.

Furthermore, achievement of higher survival rates would not necessarily indicate that project purposes were being better met. Trees planted on slopes or other marginal land would help meet the objectives of the project in terms of such things as erosion control but would be expected to have lower survival rates. Or, as another example, charcoal production tends to take place on marginal lands where growing trees is more difficult, but increased fuelwood production is one of the objectives of the project. Focusing too much attention on survival rates might reduce achievement of project outputs by encouraging tree plantings only on the most favorable lands.

2. Research Not Adequate

Research on the technical, economic and social variables of forestation in Haiti was not adequate. Research was not designed and implemented in a systematic fashion.

In response, USAID determined after the first year of the project that the research was not adequate and the project amendment/extension component has been specifically designed to improve and expand the research efforts.

3. Minimal Effect on Reducing Natural Resource Degradation:

Given the demand for wood in Haiti, the trees planted by the project, although exceeding expectations, would not significantly reduce the degradation of Haitian natural resources.

In response, USAID would claim that the number of trees planted by the project far exceeds design expectations. Moreover, the implementation model can be expected to have a significant spread effect beyond the life of this project. By demonstrating to farmers the value of planting trees for their own economic benefit and by developing technical information and

providing training to thousands of extension workers and farmers on appropriate tree planting techniques, the project will continue to have an impact beyond the trees directly planted by the project. This could have a significant effect on reducing the degradation of Haiti's natural resources. Moreover, the project model has demonstrated that large extensive agroforestry projects can be implemented and be successful in Haiti. A principal constraint is the level of resources devoted to such a project.

4. Training Inadequacies

Training programs for extension agents and other personnel were not adequate.

Training efforts will be refined and improved during the extension. The success of the project in motivating farmers to plant trees and achieving a much higher survival rate than other Haiti reforestation efforts, however, suggest that training has generally been effective.

5. ODH Accounting Records Not Adequate

The ODH accounting records were not adequate to sufficiently substantiate charges to the grant.

USAID agrees that ODH did not maintain adequate accounting records in Haiti and requested ODH to present to USAID/Haiti controller complete accounting records combining their U.S.A. and local records. ODH has submitted the records to USAID/Haiti for review. USAID/Haiti does not anticipate any problems in verifying expenditures. The grant amendment will require appropriate improvements in the accounting system.

6. The participating PVOs have not prepared manuals that document their current organizations, policies and procedures.

While the experimental implementation models of the project were still being developed and perfected, it would not have been useful to produce policy and procedure manuals. Now that highly successful implementation techniques have been developed, documentation on technical procedures is needed and will be accomplished during the extension.

7. PVO progress reporting has not been adequate to provide USAID/Haiti with information to monitor project progress and problems.

PVO reporting has not always been adequate and stronger and more precise reporting requirements will be added to the grant amendments.

The Audit findings are further discussed in appropriate sections of this paper; the specific recommendations of the audit report are quoted in Annex B and the USAID/Haiti response is included as Annex C.

D. Rationale for Project Paper Amendment

Basically, the amendment will enable the project to continue to distribute substantial additional numbers of trees, provide more time to refine operations and further test the project hypotheses, and generate information and data for follow-on forestation efforts in Haiti. It will continue those elements which have been successful and work to improve those that have been less successful or deficient.

1. Continuation of Successful Project Components

Given the priority of addressing environmental degradation in Haiti, the extension will continue tree planting activities by the PVOs at basically the same pace as at present. Most changes will be qualitative rather than quantitative, reflecting the need to perfect current arrangements before initiating new activities. During this period there will be further refinement of the project implementation models and additional opportunities to test the project premise of the viability of trees as a cash crop, both on peasant farms and larger tree plantations. At the same time, the project's components will continue to evolve and adapt to changing circumstances, as they have done in the past. Some subjects, such as soil erosion and fruit tree production, will receive greater emphasis.

While large numbers of trees have been planted by the project, even fast growing species require several years to mature. At this point, information on such things as how trees will be utilized, when they will be harvested, and what the benefits will be is largely unavailable. As trees mature, more information will become available to fully evaluate the operation and impact of the project. The amendment will provide the additional time to test project hypotheses in order to recommend appropriate follow-on activities.

2. Addition of Discrete Research Component

Both the evaluation and the audit faulted the research efforts of the project. While a great deal of technical, social and economic data on agroforestry in Haiti has been generated by the project, it needs to be analyzed and documented to be useful.

The project was intended to provide a learning experience in agroforestry and many technical, social and economic questions have arisen which need to be addressed. The extension will provide the opportunity to do this. A Title XII university will be engaged to carry out a specific research program and systematically consolidate and analyze research data. It will pull together data from the many activities in the project and generate the technical and socio-economic information needed to fully evaluate it. The findings of the research will be made available for the design of follow-on efforts in Haiti. The improved research component also will help to fully integrate Haiti and the project activities into the world wide network of agroforestry research.

E. Other Donor Projects (Update)

The following is a brief review of the status of activities identified in the original project paper.

The GOH-supported nursery established at the Levy Farm, under the U.N. F.A.O. - sponsored erosion control/reforestation project near Les Cayes is still operational. The nursery manager is an agronomist who worked on the Integrated Agricultural Development (PDAI) project, and has received training in the United States. The PADF regional forestry team in Les Cayes has collaborated with the nursery manager by providing technical assistance. The nursery produces fruit trees and forest tree species.

The FAO/GOH "National Society of Friends of the Tree" (SONAMAR) initiative was plagued by lack of funding and cooperation between the various parties involved and thus never went much beyond the publicity campaign stage.

Forestation activities being financed by the Inter-American Development Bank (IDB) under broader development schemes such as the erosion control/irrigation subproject for the Riviere Blanche Watershed and the Morne l'Hopital terracing and reforestation subproject continue to be implemented. The Riviere Blanche project has been slowed considerably due to renegotiations between the IDB and the GOH, but trees continue to be planted (450,000 to date) on the Morne l'Hopital although problems are being encountered through continued unauthorized cuttings of young trees.

Negotiations continue between the GOH, the IDB and the World Bank on the Artibonite erosion control/reforestation project, originally scheduled to commence in 1983, and aimed at inter alia reducing sedimentation affecting the Peligre Dam. Project start-up is now scheduled for 1985/1986.

Of the five components of the major World Bank soil conservation/forestry project, being negotiated with the GOH at the time of the writing of the original PP for the Agroforestry Outreach project, progress can be reported in the areas of nursery development, species trials and management of the Forest of Pines. Nurseries have been established in the three target areas: Duvalierville, Jean Rabel and the Forest of Pines. Species trials are being carried out on a plantation near Duvalierville. Management of the Forest of Pines has started with thinning and harvesting trials and demonstration plots.

Much of the discussion in the original PP on forestation and similar activities being carried out by PVOs and community groups remains valid. Specific mention should be made, however, of the achievements reached, during an 18-month period, under the AID-funded Fruit Tree Crop Improvement Project implemented by an indigenous PVO, the Haitian Society for Tree Production and Culturing (SHEEPA). Since April, 1983 SHEEPA has planted approximately 400,000 fruit tree seedlings (e.g. mango, cashew nut, citrus and avocado) on farm lands in a 40-mile radius in the Hinche region. 25 extension agents have

been trained and are providing information and advice on fruit tree cropping to participating small farmers. SHEEPA staff have been collaborating with PADF, in particular, through sharing of information and experimental planting of SHEEPA seedlings in PADF nurseries.

The U.S. Peace Corps, which entered Haiti in 1983, assigned three of its first six volunteers to GOH forestry related programs. This commitment to forestry continues with the development of a Peace Corps forestry program with ODNO in the Northwest. The program will be designed as a community forestry program with an applied research mandate. Volunteers for this program will arrive in mid-1985.

Finally, the reforestation activities and successes of PADF in Haiti have attracted financial support from other donors. The Canadian International Development Agency (CIDA) has provided PADF $250,000 over the past two years for vehicles and administrative support. During the same period the Shell Corporation provided more than $100,000 in free publicity (e.g. posters and bumper stickers) and approximately $25,000 for procurement of seedlings. Also, the Swiss Helvetas organization has provided PADF $365,000 to cover regional forestry program administrative costs and it is expected that this assistance will be expanded in future. A private entrepreneur has provided approximately $10,000 worth of assistance for development of a new root trainer system and related publicity expenses.

II. PRELIMINARY INDICATIONS OF PROJECT EFFECTS

A. Trees Planted

As indicated in the background section, tree plantings have greatly exceeded the estimates provided in the project paper. As of June 30, 1984 over 14,000,000 trees had been planted, versus between 6 and 9 million anticipated for the entire life of project. Even with survival rates less than the rates estimated in the project paper, (PADF 50%; CARE 62.5%; ODH 80%) total surviving trees will far exceed original estimates. While the trees planted in the project will only replace about 15% of the estimated number of trees cut each year in Haiti, they do indicate the success of this demonstration model as an incentive for farmer planting of a large number of trees.

1. Performance of Various Species

Many tree species have been planted in the project. Because of the ecological diversity of Haiti, these species have been planted in a number of different environments. The project initially focused on fast growing "exotic" species which would provide cash income within a few years. Gradual adjustments were made in light of the peasants' desire for certain favorite indigenous tree species. Since peasants knew their potential, these species had greater acceptability. Valuable species such as mahogany and Haitian oak were provided in selected cases. Indigenous species seemed to have somewhat greater acceptance; technically, this may be a favorable development as indigenous species are uniquely adapted to the ecological conditions of Haiti.

2. Survival Rates

The draft audit report emphasized the lower than projected survival rate of the seedlings planted and noted the increase in project benefits and cost effectiveness which would occur with higher survival rates. The project paper projected survival rates of 50% for PADF, 62.5% for CARE and 80% for ODH (Refer to Section I.C.2. Audit Findings). The average survival rate of 47% reported by the grantees for the period covered by the audit, compares favorably with the estimates projected by PADF and CARE. However, the audit report chose the 70% survival rate, assumed in the Economic Analysis, as the target survival rate and based its findings on this 70% rate.

There was disagreement on the methodology for determining survival rates. The draft audit report equated the number of seedlings produced in the nurseries with the number of trees planted, despite the incidence of seedlings that were given away to relatives, stolen, or which died prior to planting. CARE and PADF calculate survival rates by checking a 3% random sample of farmers' plots within the first month after outplanting. This figure is used as the baseline against which six, twelve and twenty-four month survival rates are calculated. At present PADF and CARE calculate that between 10-30% of seedlings delivered from the nursery are not planted on the

participating farmers' land. Since most of these seedlings are given away or stolen and planted on other land, PADF and CARE assume the same survival rate for the "missing" seedlings, thus producing a higher rate than that calculated in the audit report. Observations indicate that this is a valid methodology, especially since it can be used to specifically monitor the farmer's maintenance of the trees and therefore measure the impact of training farmers.

Determining a valid acceptable survival rate is a difficult technical judgement call. The project paper rate was an estimate which had no solid basis in Haitian experience, given the pilot nature of the program. Below average rainfall in 1982 and the beginning of 1983 adversely affected survival rates, particularly for the first critical year of growth. Given Haiti's degraded arid to semi-arid sites, wandering livestock and pressure to grow food crops, survival rates around 70% may be technically unobtainable.

Although there is little comparative data to base judgement on, the 47% rate appears to compare well with survival rates on North American plantations under much better conditions. It certainly compares favorably with prior projects in Haiti which had survival rates of around 20%. Given that new species of trees have been planted in thousands of widely dispersed plots, often on marginal land, the survival rate is satisfactory to the Senior Forestry Advisor. It should also be noted that the purpose of the project involves surviving trees, rather than survival rates; the project will greatly exceed its goal of surviving trees despite the lower than projected rate.

The draft audit report suggested that the lower survival rate was due to farmers not applying the most appropriate technology to planting and growing trees. This in turn was attributed to insufficient training of extension workers and supervision of farmers. As more information from the project experience becomes available, survival rates are expected to improve. However, assuming the current level of manpower and resources available to PADF and CARE, intensifying training and extension activities might lead to higher survival rates but fewer total trees.

While it is not appropriate to target a survival rate for the remainder of the project including the extension, given the many different sites and environmental conditions in which trees will be planted, experience to date suggest a survival rate in the range of 40% - 60%. At the end of the project, much better information on feasible rates under various sets of circumstances will have been generated and documented.

B. Peasant Farmer Involvement

1. Cash-Cropping

The response to the project by peasant landowners has been overwhelming. Neither incentive payments nor intensive animation have been necessary to motivate villagers to plant trees, although CARE and PADF have developed effective motivational techniques to stimulate demand. Even if

peasants are unsure for what purposes the trees will be used, they appear to recognize that the trees do have economic value, and that they will benefit from planting them.

The enthusiastic response to the opportunity to plant seedlings, however, does not necessarily demonstrate that the project premise of the viability of trees as a peasant cash crop has been proven. Observations thus far tend to support the hypothesis for some project beneficiaries but it cannot be fully tested until the first crop of trees has been harvested and a full cycle has been completed, about 4-6 years. Some cutting of trees has already taken place and evidence indicates that the wood is used for a variety of purposes; polewood, housing construction, fuelwood, for instance. Much of the wood production may thus be used on a subsistence basis and not enter markets. This use, however, would substitute for market purchases and, presumably for trees cut elsewhere. While not strictly a cash crop, these multiple uses of trees are consistent with the design and goals of the project.

The success of ODH large scale tree farming, more directly tied to charcoal production for markets, is uncertain at this point because few trees have yet been harvested. Other large landowners have not yet expressed much interest in large scale tree production as a business opportunity and until additional data on the economics of large scale tree production becomes available, it is not clear how the concept will work out. While research on this is continuing, preliminary findings indicate that to be economically viable, the plantations should be managed for multi-purpose wood production rather than only charcoal production.

2. Inter-Planting with Food Crops

The project design assumed that farmers would intercrop some trees with annual food crops in addition to planting on uncultivated marginal lands. This was necessary since farmers typically have very small pieces of intensely cultivated land. After reaching a certain size, however, trees would be expected to have an impact on crop production.

In some cases, land is left fallow as crop yields decline and trees have been planted without affecting crops. When crops are again planted on this land, they will presumably be intercropped with the trees but this stage has not yet arrived.

More typically, trees have been intercropped with other crops but the trees are not yet large enough to evaluate what the effects will be. Similarly, the trees have not yet matured sufficiently to indicate how effective nitrogen-fixing species will be at improving the soil. There is evidence of a tendency toward planting on land borders but further research needs to be conducted on intercropping as the trees mature and more information becomes available. ODH assigned plots on its tree plantations to individual workers who have interplanted food crops successfully. This has assisted project implementation but the impact will also not be known until the trees are larger.

3. Incentive Payments

All three grantees included incentive payments in some of their tree planting. Rather than give cash or FFW payments for planting trees, however, subsidies were most often provided for trees which actually survived, providing a further incentive to protect and maintain the trees. PADF, for 20% or 30% of the first season's trees, paid $0.05 for each surviving tree after 6 months and $0.05 for each one after 12 months. With some sub-grantees the strength of the positive response, however, was such that even greatly expanded seedling production was insufficient to meet demand. Early survival rate data, although inconclusive, did not indicate significant differences between incentive and non-incentive sub-projects. PADF, therefore, dropped all incentive payments for new sub-projects, thereby enabling the supply of approximately twice the number of trees for the same level of financial resources.

CARE provided incentive payments for some of its activities, providing either FFW for reforestation work or cash payments for surviving trees. FFW for clearing/planting was dropped as an incentive payment as it was found that most participants were more interested in the food payments than the trees. Preliminary indications were that some trees planted under an incentive program have lower survival rates than those which do not receive planting incentives. Farmers who planted trees without incentive payments may see the surviving trees as their only benefit and provide better maintenance.

CARE also phased out cash payments for surviving trees for the same reason as PADF; there is heavy demand for the seedlings without incentives and peasants recognize that surviving trees do have economic value. A comparison between survival rates of trees in areas where incentive payment are still being provided with rates in other areas will provide additional data on the subject.

C. Organizational Arrangements and Performance

1. Operation Double Harvest

The performance of ODH has been mixed. While carrying out valuable work in some areas and providing large numbers of seedlings to the project, it has not met all its objectives in the area of research.

ODH was to establish demonstration tree farms in a variety of ecological zones to demonstrate the technical and economic feasibility of commercial forestry to meet Haiti's wood needs. Three organizational models were to be tested.

Nine farms have been actually planted, all but one using the private landowner/sharecropping option. In this model, essentially, the landowner releases land to ODH for tree planting, profits are shared once the initial investment is recovered and the land reverts back to the landowner. The system of assigning plots to individual workers, who interplant food

crops, has been effective. An attempt to develop land leased from the government encountered difficulties as it was already under cultivation by local peasants. All the farms were in the Cul-de-Sac plain, where differences were mainly in annual rainfall, rather than in more diverse ecological zones. Still ODH has planted the 1.2 million trees called for under its grant agreement.

Although ODH plantation activities cannot be fully evaluated until the trees have gone through a full cycle, preliminary findings are that the plantations must provide wood for multiple purposes rather than just charcoal to be viable.

A large scale nursery was established and annual production of seedlings increased tenfold to 3,000,000. The nursery has become a showpiece of technology and provided technical information for the nurseries established by the other PVOs. Most seedlings produced by ODH were sold to CARE and PADF at fixed cost. ODH seedling production, however, has at times lacked quality and reliability.

Under the grant agreement, ODH also developed a small seedling container system, "Winstrip", which was used in the central nursery. Utilizing this system, it is possible to carry many more seedlings than with large plastic sack seedlings, and planting is easier. This has made it more feasible to plant large numbers of seedlings even during busy periods in the agricultural cycle. PADF and CARE regional nurseries are not using the Winstrip system because its technical and economic feasibility had not been proven at the time they were established. Research comparing small container systems is continuing.

ODH is working on a soil mix using local materials. Problems have been encountered in obtaining a mix of consistently good quality, which has effected the quality of the seedlings.

Research activities have not been a priority for ODH. ODH was to carry out an extensive program of research at both the nursery level and in the field. ODH's technical staff was very limited, however, and it did not have previous research experience nor an orientation toward research. Tree planting and nursery production were given higher priority than research activities. Much of the research which was undertaken was observational and was not conducted in a scientific or systematic fashion that would provide statistically valid results and reliable data.

2. Pan American Development Foundation

PADF found that it could move trees effectively and efficiently through PVOs. A network of regional nurseries was established with PVOs to improve and expand its tree distribution capacity. PADF has been able to take advantage of the learning process inherent in this pilot project and research activities have been undertaken in various parts of the country which will provide important information for establishing small scale tree farms in rural Haiti.

The major emphasis of PADF activities has been on planting trees. PADF has provided support for a very wide variety of sub-grantees that represent a diversity of philosophies and structures. The amount of the sub-grants varies widely but does not exceed $25,000 per grant; grants consist of cash or, more often, in-kind materials, trees and technical assistance. Grants could support the purchase and planting of anywhere from 100 to 200,000 trees or finance seedling production or nurseries. Grants are made for a single planting season, so many groups have received more than one. As of September 1984, more than 100 sub-grants had been made to separate organizations.

Four regional agroforestry outreach teams have been established, based in Cap-Haitien, Port-au-Prince, the Central Plateau and Les Cayes. They are each supervised by an American forester, with support staff, and are responsible for the sub-grants in a particular zone.

The teams have been successful, and the decentralized structure permits the project to respond to the wide diversity of conditions in the country. Per the grant agreement, an Agroforestry Outreach Center was established in Port-au-Prince and officially continues to assume the overall coordination of the regional agroforestry teams. In practice, however, the Project Director assumes overall coordination of the regional agroforestry teams and there is no fulltime individual attached to the center. This has not apparently hindered effective project implementation, as the support work intended for the center is being accomplished by other project staff.

PADF decided to support establishment of decentralized nurseries to provide more effective production and distribution of seedlings, and now supports 20 nurseries with technical and financial assistance. Some sub-grantees grow seedlings for themselves, while others produce for purchase by PADF. The regional nurseries provide 90% of the seedlings distributed by PADF (ODH produces the the other 10%). Nursery development has proven very successful and the decentralized nurseries have been shown to be economically viable operations.

PADF has trained about 370 animateurs. Training of project personnel has been adequate for implementing the tree planting activities but it is not clear yet if the same level of training will be adequate for the long-term sustainability of these tree planting efforts.

In addition to data gathering for record keeping activities, PADF has undertaken species trials. These will provide useful technical information as the data is analyzed.

3. CARE

CARE has focused its activities in the Northwest, where it has a long history of project implementation. The project headquarters is based in Gonaives with a full-time American project director and part-time backstopping by CARE staff. Two agroforestry extension teams are implementing the project,

each supervised by an American forester and Haitian support staff, including agronomists. The CARE project was slower to get underway, as a project director was not hired until 6 months after the signing of the grant agreement and he was part-time for almost one year.

CARE signed an agreement with HACHO, the GOH regional development authority to provide personnel to carry out the project and worked closely with it. In November 1983, HACHO was dissolved and replaced by the Organization for the Development of the Northwest (ODNO). CARE's collaboration with ODNO has thus far been limited; ODNO has provided some agronomist counterparts to the foresters and they have worked with some soil conservation efforts. This change has not hampered implementation of the project.

CARE has generally carried out its activities directly, rather than through sub-grants to other organizations because few such organizations operate in the Northwest. Of three operational models described in the grant agreement, only planting on individually owned property with the active participation of the landowner has proven successful. This has been an effective implementation model for planting trees. Attempts to plant on rented or share-cropped land selected by the community council with profits being shared, and planting on state land with profits distributed to individual participants through sub-leasing or share-cropping have not been successful, although the latter model is potentially useful if appropriate modifications can make it feasible.

CARE established seven regional nurseries, sufficient to provide all of its seedlings. Training has been adequate for the current stage of project implementation. Species trials have been undertaken to provide additional technical data but little research has been done on the social or economic aspects of agroforestry activities.

4. Other Project Outputs

a. Research

An important objective of the project was to provide a learning experience for agroforestry in Haiti. The first year of project activities were primarily devoted to setting up institutional arrangements, delivery systems and technical packages for planting trees. Once these were in place, more attention was devoted to research. The emphasis has been on technical research, with socio-economic research beginning more recently. Data which has been collected needs to be consolidated and analyzed to obtain a better understanding of the variables of agroforestry in Haiti. As trees are in the ground longer and there is more to observe and measure, research efforts will become more productive.

The ODH grant had the most specific mandate for research. It was to carry out an extensive program of research, both in the field and at

the nursery level, on technical, economic and social variables. The PADF and CARE grants were less specific but required data collection and planting of demonstration areas.

ODH did not give priority to the research elements of the grant and its efforts suffered from inadequate staffing. The research program was not planned and implemented in a systematic or scientific way that would provide statistically valid results. ODH was more successful in developing the Winstrip seedling container, experimenting with a seedling mix using local materials, and supplying the large number of seedlings needed by other project grantees in the project's earlier stages.

CARE and PADF had a less specific mandate to conduct research. Much information was gathered through questionnaires, case studies and research trials but relatively little data has been processed. Similarly, the broad ranging experience being obtained from the many project activities has not been consolidated and documented.

b. Nursery Development

The project design focused primarily on the establishment of an outreach program and not on nursery development because past reforestation efforts in Haiti have left behind patches of undistributed and overgrown nursery stock. Nursery development was limited in the project, except for the ODH central nursery, until peasant demand for trees was ascertained and exceeded readily available supply.

The project has been very successful in establishing nurseries, which has vastly increased the number and availability of seedlings in Haiti. Nursery establishment was specifically included in the grant agreements for ODH and CARE but not PADF. PADF became very successful in supporting nurseries when the need for them became evident, and ODH and CARE exceeded expectations in their nursery development. Twenty-seven regional nurseries have been established in addition to the ODH central facility. The success of the nurseries allowed the project to respond to the greater than anticipated demand for seedlings. Decentralization of seedling production has made distribution more efficient and effective. Survival rates have been enhanced due to better transportation, handling and availability of seedlings. Fruit tree production is also starting in the regional nurseries in response to demand from farmers.

<u>ODH</u>

ODH was mandated to create a central nursery to supply seedlings. It increased production of seedlings from 300,000 to 3,000,000 per annum, which was critical to PADF and CARE planting efforts in the first part of the project. Although there have been some problems with consistency in the quality of seedlings, the nursery has generally been a success and is a good demonstration of nursery technology.

PADF

PADF did not include nurseries in its original project proposal, as it wished to concentrate on outreach and let seedling production develop as demand grew. This avoided the danger of growing seedlings that would not be outplanted. Seedlings were also available from ODH in sufficient number. PADF began to support nurseries as the logistical problems of acquiring seedlings from a central source became apparent.

PADF now supports 20 nurseries throughout the country. All are operated by sub-grantees which receive PADF technical and financial assistance. PADF is close to self-sufficiency in seedlings production, and obtains approximately 10% of its seedlings from the ODH nursery. The economic feasibility of regional nurseries has been demonstrated by this project; with a guaranteed market, decentralized nurseries can be self-supporting.

CARE

Establishment of nurseries in the Northwest was part of the original CARE project. Seven nurseries have been successfully set up, surpassing the goal of four and providing for all of CARE's seedling needs.

c. Soil Conservation

Soil conservation was one of the sub-purposes of the project but implementation efforts have not yet specifically focused on the problem in-so-far as the substantial number of trees planted would have indirect soil conservation benefits. The implementation models are based on landowners' planting trees as an income generating activity. The peasant is planting trees for his own benefit; he clearly owns the trees and he is harvesting and utilizing them as he sees fit. Technical assistance is provided in planting but the decision on where to plant belongs to the peasant, thus reinforcing the individual's tree tenure rights. This model distinguishes the project from previous reforestation efforts which were not so directly tied to the peasants self interest, and is the reason for its success in planting so many trees and achieving higher survival rates.

Since soil conservation was not a principal objective of the peasants, however, trees have generally not been planted in areas and ways which always would have a significant impact on erosion. Trees have been planted on slopes or other places which may have some conservation benefits, and coppicing species allows the trees to be harvested without destroying their soil stabilization effect.

Now that peasants are successfully planting significant numbers of trees, more attention can be focused on combining tree planting with soil conservation measures. More training in soil conservation is being given to animateurs and farmers and PADF and CARE are developing demonstration projects using soil conservation structures such as leucaena hedges and terracing.

It is also reasonable to assume that production of trees as a cash or subsistence crop will reduce "mining" of trees. This would promote soil conservation by reducing tree cutting from areas where erosion is a problem. Whether this will have any impact will not be known until significant numbers of project trees are harvested and marketed.

d. Fuelwood Production

The project design anticipated that the primary use of the trees planted through the project would be for fuelwood production. This assumption was based on estimates that 80%-90% of wood consumed is for energy purposes, fuelwood and charcoal. However, preliminary information from both small farmer plantations and large landholder tree plantations indicate that fuelwood production will not be the primary use of the trees. Instead, farmer preferences are to manage and harvest the trees for other, presumably higher value, uses such as house and fence construction material. While little data is yet available and observations are still only qualitative, it appears that much less fuelwood will enter markets than was originally anticipated.

Although trees planted by the project may not have the expected direct effect on fuelwood supply, it is reasonable to assume that, as with soil conservation, they will have an indirect impact. By reducing pressure on other trees and wood supplies for non-fuelwood needs, the project trees may free up other wood sources for fuelwood uses.

III. REVISED PROJECT DESCRIPTION

A. Goal and Purposes

The goal of the project remains the same - to reduce and ultimately reverse the on-going degradation of Haiti's natural resources, and thereby maximize the productive potential of its land.

The purposes of the project were to motivate Haitian peasants to plant and maintain trees for soil conservation, production of fuelwood and generation of income in rural areas; to achieve the planting and maintenance of a substantial number of trees over the life of project; and to obtain reliable information through applied research on the technical, economic and social variables of agroforestry in Haiti. These purposes will remain the same. The participating PVOs will continue successful outreach activities to motivate and support planting of large numbers of trees by peasant farmers. The key to the success of these efforts will remain income generation, with peasant farmers continuing to plant trees for their own benefit and thereby indirectly achieving other project purposes.

The "substantial" number of trees to be planted is now estimated to be 17 million during the life of the original project and 8 million during the period of the extension for a revised total of 25 million. Based on project experience, the survival rate will be 40% - 60%, after the first year. Efforts to obtain information on agroforestry in Haiti will be enhanced by a university research contract which will coordinate and supplement research activities undertaken by the current project grantees.

B. Components and Outputs

The project amendment will extend the project 15 months from the original PACD of September 30, 1985 to December 31, 1986, and provide additional funding for certain activities to begin prior to September 1985. The project extension will continue successful sub-projects in planting trees, with attendant extension and training, and provide for enhanced and better coordinated and planned research efforts. The amendment will maintain the four present components of the project, grants with PVOs established in Haiti and personal services contracts for project coordination and technical support, and add a research contract with a Title XII institution. Except for the expanded research efforts, the extension will basically continue the same scope and level of activity as in the original project.

Through these agreements, the project will continue to provide information, training, technical assistance and material support to the implementing organizations. The sub-grantees will continue to plant large numbers of seedlings, reaching an estimated 25 million by the completion of the extension. The project will also continue to generate substantial technical and socio-economic data and fully document this data to serve as a guide for forestry and agroforestry projects sponsored by AID, the GOH, other donors and PVOs.

The five components of the project are those major activities to be implemented by Operation Double Harvest (ODH), the Pan American Development Foundation (PADF), CARE, a Title XII institution, with overall coordination to be provided by the Project Coordination/Technical Support Unit.

In summary, ODH will continue certain research activities carried out in the original project, concentrate on the management of the tree plantations, select and procure seed, and implement research comparing exotic and indigenous tree species. PADF and CARE will continue to concentrate on tree seedling production, extension to small farmers and training of PVO and project personnel. CARE will continue to operate in the Northwest, working directly with farmers, and PADF will continue to operate in the Southwest, Southeast, Central Plateau and North, working through other PVOs. The Title XII institution will undertake and coordinate research in traditional agroforestry systems in Haiti, species-site selection, nursery and outplanting technology, and socio-economic issues. The Project Coordination/Technical Support Unit will ensure proper complementary efforts between project grantees, complete documentation and analysis of all field efforts, adherence to AID project objectives and senior level technical assistance.

The PVOs will document technical procedures such as training and extension methods which will assist local institution building and technology transfer.

1. Operation Double Harvest Grant

ODH has carried out a variety of experiments in such areas as vegetables and row crops, ornamental plants, dairy livestock and pasture grasses, in addition to forestry activities. As discussed in the project paper, the AID grant finances only the ODH activities in the area of forestry, and ODH continues to carry out its agricultural work with its own funds and contributions from other donors.

Due to the problems ODH has had in the past three years in fulfilling the terms of the original grant agreement, the scope of work in the project extension will be limited to that which can realistically be carried out. In the first three years of the original grant, ODH successfully established a large, central nursery capable of producing close to 3 million seedlings per year. The central nursery's capacity to rapidly escalate production enabled the outreach project component to respond to the high demand for seedlings. The development of the regional nurseries through the PADF and CARE grants has significantly decreased the dependence on the ODH nursery although demands from non-AID financed reforestation projects, such as the World Bank Forestry Project, are growing and are expected to use ODH nursery capacity in the future. ODH established a program of seed procurement and distribution, although more work is required in the area of provenance identification and selection. ODH also established nine demonstration tree plantations in the Cul-de-Sac region, and serves as an invaluable source of information and demonstration with respect to forestry and nursery technology in the Port-au-Prince area.

ODH's primary constraint has been a limited staff. Due to this, it was not able to implement a satisfactory research program, as was called for in the grant agreement. AID will require the ODH amended project proposal to describe a staffing plan that will enable ODH to fully carry out the scope of work summarized below.

ODH's accounting system was faulted in the audit report for not maintaining records and other evidence to substantiate charges to the AID grant. ODH is currently working to improve its accounting system and the grant agreement will contain a condition precedent requiring improvement of the accounting system before funds are disbursed.

(a) Specific Objectives of the amended ODH Grant will be to:

(1) Strengthen the managerial, administrative, technical and financial capability of ODH to enable it to carry out its forestry program;

(2) Produce seedlings for outplanting on ODH tree plantations and nearby PADF outreach programs;

(3) Continue the program of seed selection, procurement, production, storage and distribution which will provide a reliable source of tree seeds appropriate for forestation efforts in Haiti;

(4) Continue monitoring and managing the nine established demonstration tree farms in the Cul-de-Sac, and to collect and analyze data on the economic feasibility to wood production on tree plantations;

(5) Carry out research with a qualified forest researcher to compare management and production rates of indigenous versus exotic tree species;

(6) Collaborate with the Title III university team engaged under the project research component in the areas of species trials and nursery and outplanting techniques;

(7) Establish additional tree plantations in different ecological zones comprising an additional 450,000 trees;

(8) Develop a consistently high quality and local nursery soil mix to be made available to the regional nurseries and other organizations working in agriculture and forestry.

(b) Components of the Extended ODH Forestry Program will be

(1) Seed Selection, Production, Procurement Storage and Distribution.

(2) Tree Plantation Demonstration and Research

The tree plantations were established by ODH to

test the hypothesis that cash cropping trees on large plantations for charcoal and other wood products is profitable for the large landholder. The first plantation established is now being partially harvested. Valuable data on management and production rates can thus be collected during the project extension period.

(3) Research Comparing Management and Production Rates of Indigenous versus Exotic Tree Species

A new staff person, who is a forest ecology doctoral candidate at the University of Georgia's Institute for Ecology, has been contracted by ODH to carry out this research program. He is carefully documenting all inputs and yields from various management treatments of Prosopis and Acacia stands versus Leucaena plantations. Full collaboration and technical support also will be provided to other research activities.

(4) Establishment of New Plantations

New plantations comprising an additional 450,000 trees above the 1.2 million trees called for in the original grant, will be located in different ecological zones. The plantation lay-out will maximize data generation on species-site criteria by following statistically sound trial replications. Pre-planting plans for the new plantations will also be submitted to the Senior Forestry Advisor (SFA) for recommendations and approval. Reimbursement to ODH for seedlings planted will be based on the SFA approved plan, following the PADF model, thereby eliminating time-consuming verification counts by the SFA.

(5) Local Nursery Mix Production

Currently, all the regional nurseries import soil mix and peat moss, significantly increasing nursery operation costs. However, this increased cost enables the nurseries to consistently produce quality seedlings in a timely manner. The grant will enable ODH to develop and start to produce a consistent, high quality nursery mix from local materials, thereby reducing nursery costs.

(c) Summary of AID Grant to ODH
($000)

Original Grant authorized	Obligated Through FY 84	FY 85	FY 86	TOTAL Amended Grant
850	825	208	167	1200

2. Pan American Development Foundation Grant

During the first two and a half years of the project, PADF has accomplished its project purpose of creating an agroforestry extension system, working with established PVOs in Haiti through which trees are planted by small farmers. With a grant of $3.9 million, it established an Agroforestry

Outreach Center, four regional agroforestry extension teams and twenty regional nurseries. PADF activities during the extension will continue to be largely the same and the description of project activities in the project paper remains valid.

PADF will continue its extension program and tree planting at the about the same pace as present. No major new activities or geographical expansion of the program are planned for the extension period, although PADF will remain flexible to adapt to changing circumstances and new opportunities. The grant objectives are slightly enlarged to include the institutional development of the PVOs currently managing the agroforestry sub-projects. Institutional development efforts will be directed towards improving PVO technical services and identifying outside sources of support in order to "wean" the organizations from PADF support. In this way, new PVO organizations can be added to the PADF extension network.

PADF will also continue to undertake limited research efforts associated with its field work in such areas as soil erosion control and fruit tree production. These will be carefully coordinated with the research activities of the Title XII institution and all information will be shared.

PADF project inputs will be similar to those in the original grant. PADF will provide:

1. Headquarters staff management

2. Agroforestry extension field staff

    a Project Director and staff
    b. Regional teams of "animateurs agroforestiers"
    c. Resource center and training coordinator

3. Training and extension teams and other key personnel

4. Sub-project contracts and support for promoting agencies
    a. Materials and equipment
    b. Seedlings
    c. Training and extension
    d. Financial support

5. Research reporting and analysis

6. Material support to PADF staff

By the end of the extension period, PADF will have planted 5.5 million trees in addition to the 12 million planted through September 1985. Four new regional nurseries will have been established and sub-grants with new PVOs will have been signed. The agroforestry extension network will have been strengthened; new information and data on agroforestry will have been generated and more farmers will have been convinced of the value of planting trees as an income generating activity.

Summary of AID Grant to PADF
($000)

Original Grant Authorized	Obligated Through FY 84	FY 85	FY 86	Amended Grant
3,900	3,034	1,448	1,448	5,930

3. CARE Grant

The CARE program has focused on the Northwest Peninsula, where CARE has worked in rural development for many years. As already mentioned, a minimum number of PVOs are established in this region, necessitating a more direct implementation model rather than working through sub-grantees. In the first two and a half years of the project, CARE has developed a fully staffed agroforestry program with two agroforestry teams, planted 2.5 million trees, established seven regional nurseries and conducted species trials. The project gradually evolved from the use of Food for Work payments for land clearing and preparation, and cash payments for surviving trees to discontinuation of all payments.

CARE's current implementation model will be followed in the project extension period and the project description in the project paper remains valid, except as discussed below. Trees will continue to be planted at about the current rate and the project will not expand geographically or add any significant new components. Training will be intensified; the training program will focus on the agroforestry training provided to the monitors, with more emphasis on soil erosion control management with trees (such as leucaena live hedges) and fruit tree production and management.

As mentioned, the original project involved significant CARE collaboration with HACHO, a quasi-governmental organization working in the Northwest. HACHO was dissolved in November 1983 and replaced by the Organization for the Development of the Northwest (ODNO), a regional organization under the Ministry of Planning. ODNO is still getting started and CARE involvement with ODNO remains limited. ODNO has provided agronomists to the CARE project and there is collaboration in soil erosion control and fruit tree production and distribution.

Although CARE has maintained the pace of activities described in the project paper, it has not utilized all grant funds. Only $50,000 in addtional funds is required to continue activities during the extension period.

Summary of AID Grant to CARE
($000)

Original Grant Authorized	Obligated Through FY 84	FY 85	FY 86	Amended Grant
2,350	1,355	522	523	2,400

4. Research Component

The mid-term project evaluation determined that the primary project purpose of motivating Haitian peasants to plant and maintain a substantial number of trees was being more than satisfactorily addressed under the original grant agreements with CARE, PADF, and ODH. However, the research mandates under the original grant agreements with CARE, PADF, and ODH were not being adequately carried out. During the first year the emphasis on meeting the tree planting goals of their outreach programs so utilized the limited manpower that ODH, CARE and PADF fell behind in research efforts. In the second and third years, they were able to establish a number of species trials and 27 regional nurseries as well as plant over 6,000,000 trees/year. ODH concentrated on reforestation on large scale tree farms, as well as in growing seedlings for all 3 Grantees during the first two years. As it received a more specific research mandate than CARE and PADF, its lack of accomplishment in this area was more obvious. Assuming that all of the Grantees would have similar difficulties in adequately shifting emphasis to research, the addition of a discrete, research-oriented component was recommended to concentrate on applied research, the secondary project goal.

a. Research Component Planning

The research unit will analyze needs and prepare written plans for this work, including the layout of statistically designed trials. It will be clearly stated in each plan how the results will assist in providing (i) sound technical advice and support services to CARE, PADF and ODH so that they can improve and refine various aspects of their programs and (ii) reliable agroforestry information to USAID and other development planners and policy makers.

b. Organizational Relationships

Due to the non-governmental nature of USAID/Haiti's forestry activities, the research component will be implemented outside a government support setting. The three original grantees, CARE, PADF, and ODH, have created an active network of non-governmental organizations (NGO) including private voluntary organizations, community councils, farmer groups and large landholders working in agroforestry. This network can serve as an effective framework for intensive research activities. However, the outreach program is the primary purpose of this project, and therefore the credibility of the grantees with their NGO contacts, and especially with the peasant planters, must be maintained. Other forestry efforts have stressed that the planted trees should not be harvested because the State owns them, or because they are part of an erosion control management program. The unique approach of this agroforestry project encourages people to plant trees as a cash crop which they control and harvest, and from which they will personally benefit. The overwhelming response of the peasants to the project indicates that this approach is appropriate, and people will plant and maintain trees if the tree tenure is clearly theirs. In order to preserve this distinction of tree ownership by the planter, and to efficiently install the research component, initial contact with the NGOs will be coordinated through CARE, PADF and ODH.

The Project Coordinator and the Senior Forestry Advisor will be responsible for initially orienting the research grantee personnel to project and related activities. CARE, PADF and ODH personnel will assist in the orientation, coordinate initial contact with their local networks and farmers, and help identify suitable land for trials.

Specifically, CARE and PADF will work closely with the research grantee to establish more agroforestry trials and socio-economic studies in areas representative of the various environments in their geographic regions. Since ODH is the only grantee which normally has large enough tracts of land available to put in adequate-size trials, and their grant extension involves more activities which overlap with the research grantee's mandate, such as seed selection and development of a high quality nursery mix, their relationship with the research grantee will be more complex.

The ODH grant extension calls for the establishment of additional demonstration tree farms on sites outside the Cul-de-Sac environment. Pre-planting plans will be developed in conjunction with the Senior Forestry Advisor and the research grantee to maximize the opportunity to extract statistically valid data from the tree plantations. It is expected that the ODH will reserve a portion of each site for research plots. In order not to impede the establishment of the plantation, the sites will be identified well in advance of the planting season, and site visits by ODH, research grantee personnel and the Senior Forestry Advisor will be made as soon as the land is identified. In the area of seed selection, the research grantee will make recommendations to ODH on various provenances to be procured for trials. The research grantee will also work closely with ODH in the development of a consistently high quality nursery mix made from locally available materials. The research grantee will analyze samples of the ODH nursery mix.

Coordination between the grantees will be required to efficiently establish the research program while continuing and improving the outreach and planting activities. As specified above, the research grantee will depend on the other grantees to make initial contacts. In turn, the three original grantees will be able to improve their outreach and planting activities by incorporating the research results into their programs. To ensure this coordination of efforts towards an improved agroforestry outreach program, a formalized system of communication will be established.

The format of this coordination mechanism will consist of quarterly reports and workplans circulated in a timely manner, and meetings to discuss the content of the reports. The meetings will be chaired by the Project coordinator or the Senior Forestry Advisor, and at least one representative from each grantee will attend. It is envisaged that in the initial meeting the original three grantees will present the research data generated thus far, to help focus the specific elements in the research implementation program. Recommendations and conclusions reached in these meetings will be the basis for program modifications.

Due to the relatively short period of time available to the research grantee (18 months) to analyze the existing data, establish trials, collect and analyze data from those trials and design a comprehensive agroforestry research program, the Senior Forestry Advisor and Project Coordinator will be required to review and approve the research grantee's quarterly workplans. This formalized review and approval structure will serve to provide guidance to the research grantee, and to efficiently accomplish the objectives of the research component.

The research data generated by the original three grantees, thus far, will be made available to the research personnel as background material. Specific studies which have been initiated by the three grantees should be completed as soon as possible to provide as much information as possible to the research granteee. The information generated by the research grantee will be communicated to the other grantees for incorporation into the outreach program. Information shall be communicated through the quarterly meetings and can also be distributed to a wider audience involved in agroforestry through the Agroforestry Newsletter, which is distributed by the Project Coordinator. As stated in the Standard Provisions, any papers based on the research or outreach program should be cleared for publication by USAID.

In addition to the organizational relationships within the project, the research grantee is expected to establish contact with the GOH research entities, and other organizations involved in forestry research in Haiti.

c. University Research Contract

The Request for Technical Proposals was advertised in the Commerce Business Daily in June, 1984, requesting that universities with prior experience in implementing research programs in agroforestry in developing countries submit proposals. Three universities responded to the request. These proposals have been reviewed by the Selection Committee, and negotiations will be held shortly.

Since the Haiti Agroforestry Outreach Project is being carried out through non-governmental organizations, the research component was designed to have institutional backstopping to support all research activities. The selection criteria for the university includes evaluation of the backstop support, as well as the administrative capacities of the institution and the field team. The responsive universities are experienced in implementing research in developing countries, and no problems are foreseen.

d. Specific Objectives and expected outputs from the Research Grant

The Research Grantee will be required to implement a multi-faceted program.

The following describes and lists expected outputs from each component:

(1) Identification, evaluation and observed outputs of traditional, local agroforestry systems:

Some Haitian farmers have long practiced what a number of professional foresters accept as forms of agroforestry. Examples are: (a) the intercropping of fruit trees, farm crops and/or forage (grass). This usually begins with annual farm crops. Later fruit trees (mango, coconut, avocado) are planted, purposefully or accidentally in or around the vegetables/grain. A low-productive part of the unit may be allowed to revert to grass or perennial species on which livestock are grazed. As portions of the tree(s) die, or perhaps are deliberately removed, these may be used for firewood, posts, and similar uses, and (b) the protection of naturally reproduced trees in a vegetable area.

Systematic search for and evaluation of traditional systems which maximize useful biomass output and enhance soil productivity and conservation in an economically feasible manner will be made by the Research Grantee. This will yield valuable clues for future agroforestry outreach (extension), and the establishment of demonstration areas which will have great potential value in getting the farmers to practice agroforestry.

(2) Systematic evaluation of the adaptation of various exotic, fast-growing tree species to the multitude of ecological conditions in Haiti.

About 20 species trials have been established by the project to date. Usually 5 to 8 of the species which appeared to have excellent potential for fast growth in a given environment (e.g., moderately deep, well-drained soil, 0-500 meters elevation, average annual rainfall of 600-800 mm) were selected after theoretically matching sites in Haiti with those where the species have performed well. Using as few as 75 to 100 trees of each species in a well-designed trial, and using techniques of replication, much information can be gained on a small area.

Adaptation to a site is revealed by percentage of survival after the first dry season, and by relative growth rate of survivals until a harvestable age is reached. For example, these trials have already ruled out Casuarina equisetifolia, Cassia siamea and Cassia emarginata for most sites tested. The Eucalyptus camaldulensis provenance (a geographic source of seed of a simple species) generally planted in early trials has also been eliminated in many areas, but different provenances are now being planted as the results of a trial established by CARE.

A major responsibility of the Research Grantee will be to observe trials established by this project, as well as any other plantings showing potentially valuable growth rates. These observations will be used to prepare a preliminary set of recommendations for planting in Haiti, both in general plantations and for establishing new species trials by all four Grantees.

(3) Research on nursery and seedling outplanting techniques.

The purpose of future research on nursery production of tree

seedlings and on outplanting techniques is to increase the rate of seedling survival and to obtain a maximum growth rate in each environment.

a) Improved nursery techniques

Nursery techniques can be improved and seedlings produced which are better prepared to thrive under harsh field conditions. This means that (i) root systems of some species should be more multi-branched, with better ability to be transported to the field without damage and (ii) the ratio of the length of the top (above soil) portion of a seedling should be from 1 to 1.5 times that of the root plug. Smaller seedlings suffer more from competition from other plants. Larger tops transpire water at a more rapid rate than can be provided by a relatively small root system. If a plant produces too large a top, the stem is usually not study enough to keep itself upright in the windy conditions of Haiti. Species such as Eucalyptus camaldulensis and Casuarina equisetifolia are two species where improvement in seedling production might make them competitive with Leucaena or Neem.

Another factor needing more research concerns the development of a better rooting mix using only materials available in Haiti. The Research Grantee will work with the other Grantees to achieve this within 18 months. Until a mix is developed which is known to be better than commercially available mixes from outside Haiti, the locally produced mix should be used only in trials.

Research has begun to determine which of the seedling containers now in use is better for Haiti. This will be continued by the Research Grantee with a recommendation after 18 months as to which combination of container and rooting mix is most efficient for each species. At the same time, investigation should be made to determine the necessary time in the containers for each species to produce a sturdy stem, somewhat dense root system and top-root ratio of 1-1.5:1. With available information, this should be accomplished in three growing seasons and a final report available in 18 months.

b) Improved planting techniques.

The problem concerns planting tools as well as planting techniques. Currently, the tools used are the planting hoe and machete. The machete is the better tool in some soils as it can be used to make a vertical hole, and when moisture conditions are right, to close the soil properly around the planted seedling. The hoe is less satisfactory as it can not be used to make a vertical hole. This is a major factor in causing J-rooting, a serious problem where a root system does not spread properly.

Changing planting techniques will be largely a matter of extension and training. The problem is to get farmers to plant the seedlings so that the roots are vertical and so that the soil is pressed firmly around them. The Research Grantee should investigate this problem thoroughly and be able to make a recommendation concerning improved technical packages at 12 months. These packages should be designed for animators or other extensionists to use in training farmers to adopt better tree planting techniques.

(4) Analysis of the socio-economic aspects of Haitian agroforestry systems.

The project design was based on a socio-economic hypothesis that farmers would plant and maintain a substantial number of trees if they knew of the potential cash income which could be earned in the relatively near future. This hypothesis will be confirmed if substantial number of project trees are grown to a harvestable age. Studies to test the validity of this hypothesis will include:

(i) Cost benefit analysis of cash cropping trees by small farmers, as a form of inter-cropping, and by large landholders as a profit making venture.

(ii) marketing analysis to determine the use and value of the harvested wood.

(iii) a social profile of the farmers who chose to participate in the project versus non-participants.

e. Project Inputs

Under the grant, the university will provide a professional research team consisting of two long-term senior researchers, an Agroforestry Specialist and a Forest Economist (36 months), and short-term social, economic and technical consultants (18 months). A support staff including student interns and local enumerators will assist the research team in implementing field activities. The research component will provide adequate vehicles, field equipment, office space and supplies, and other material support to operate independently and efficiently.

f. Reports and Briefings

A comprehensive schedule of reporting will be followed to ensure that information from the researcher's activities are available to the other project components and USAID in a timely fashion. Three types of reports to be prepared and submitted to USAID will be (i) quarterly status reports, (ii) annual reports, and (iii) a final report. Quarterly research meetings will also be held by the Coordination/Technical Support component with representatives from the four grantees.

g. End of Project Status

At the end of this 18 month grant, the research component will have accomplished the following:

(1) A systematic analysis of all available data on the four research project components;

(2) Formulation of a comprehensive applied research program in agroforestry in Haiti; and

(3) Establishment of all necessary trials.

h. Summary of AID Grant to Research Component ($000)

FY 85	FY 86	Grant Total
452	448	900

5. Project Coordination/Technical Support Unit

a. Project Coordinator's Role

This project component serves as an objective, independent liaison which is responsive to all four grantees and responsible to the USAID Mission. The Project Coordinator played a critical role in the initial orientation of the grantees and the general approach to implementation, ensured that the field activities which were supported were consonant with the Project purposes and that resources to support those activities flowed smoothly. The Project Coordinator will continue to play a key role as a fourth separate grantee, mandated to design and implement an agroforestry research program, is added to the project. The increasingly decentralized project activities, the increasing amount of information collected under the project, and the integration of the discrete research component will require the continuing attention of a full-time coordinator/trouble-shooter/documenter to coordinate the four grantees' activities and maximize the information flow between the grantees themselves, as well as AID, such that the project outreach program and research component efficiently and effectively attain the project goals and purposes.

In general, the role of the Project Coordinator remains unchanged from the description in the original project paper. The five areas of activity envisioned for the role of the Project Coordinator encompass (i) overall cooordination and leadership in project implementation, (ii) evaluation and monitoring of project activities in terms of their fulfillment of project objectives, (iii) documentation of information and distribution of reports to grantees and other interested organizations, (iv) liaison between the grantees and the USAID Mission, and (v) submission of reports and work plans to the AID Project Manager.

b. Technical Support

The role of the Senior Forestry Advisor (SFA) was to ensure that the technical forestry aspects of this project were designed, implemented and documented in a professional and systematic manner, so that the project could serve as a reliable base for future agroforestry activities by AID and other organizations. The role of the SFA was originally designed to (i) generally extend technical advice on forestry matters to all grantees to ensure that project activities are implemented with an acceptable standard of performance, with particular emphasis on ODH which was mandated to carry out the most extensive research program, (ii) evaluate and document technical lessons learned and their implications for project implementation, (iii) provide

technical advice to grantees for their training programs, and (iv) prepare and submit reports to the USAID Mission on the technical progress of the project. Both the mid-term evaluation and the audit recommend that the SFA role be modified, delegating more authority to the position to effectively oversee the design, planting and implementation of the research trials. In response to other recommendations made by the evaluation team, a fourth grantee is being added to the project specifically mandated to design and implement an agroforestry research program. Therefore, the role of the SFA needs to be modified to respond to the needs of the evolving project.

Specifically, the SFA will have the authority to evaluate and approve, or disapprove, the university's research design and implementation program. This evaluation will be formally carried out on a quarterly basis, whereby the university submits a report and work plan to the SFA for review and approval. Any recommendations for modification will be communicated to the university in a timely fashion so as not to impede implementation. The SFA's inputs to the research component will be most critical at the end of the amended project period when a sustainable, long-term research plan for agroforestry is presented to USAID.

In addition, the SFA will have more formalized authority over ODH to ensure success of continuing ODH activities. This responsibility will include approval of pre-planting plans for new tree plantations. Reimbursements to ODH will be made on the basis of the pre-planting plan; no verification counts will be made, and ODH itself will carry out survival rate counts.

The SFA will coordinate the Research component's activities and continue in the role of: (i) providing technical advice on forestry matters, (ii) preparing and distributing documentation on technical information from demonstrations, field trials, nursery and outplanting activites, and (iii) advising grantees in the technical content of their training programs.

A person will be recruited to replace the incumbent SFA whose contract terminates in February 1985. The revised contract Scope of Work for the SFA contract is attached as Annex E.

The Project Coordination/Technical Support Unit budget is as follows:

($000)

Original Authorization	Obligated Through FY 84	FY 85	FY 86	Component Total
900	650	370	50	1,070

C. Revised Project Financial Plan

1. Project Funding

The total cost of the amended Agroforestry Outreach Project

is now estimated at $16,217,099, of which $11,500,000 (71%) will be financed by AID (Table I). The balance will be financed by ODH, CARE, PADF, subgrantees, and other affiliated organizations.

The additional AID financing required by this project amendment - $3,500,000 - comprises additional grant amounts of $350,000; $50,000; and $2,030,000 to ODH, CARE, and PADF, respectively, for the additional and prolonged activities described in earlier sections of this paper. An additional amount of $900,000 will be provided for new activities under the project research component, and $170,000 will prolong the project coordination component. Additional funding will permit an extension of the project timeframe from September 30, 1985 to December 31, 1986, taking into account requirements for three growing seasons.

2. Summary Financial Plans

Summary financial plans which describe project component expenditures to date and projected expenditures throughout the extended project time frame are presented in Tables II through VI. Accompanying each of the summary plans for the major grantees - ODH, CARE, and PADF - are notes explaining grantee-generated and, managed inputs into overall project activities in addition to AID-financing.

Each financial plan is denominated in U.S. $, primarily because of the relatively stable convertability between U.S. $ and Haitian gourdes ($1.00 = G5.00). Also, Haiti is not an excess-currency designated country. Grant monies will be disbursed in U.S. $ to field operations from the U.S.-based headquarters of each grantee organization.

Table I. AGROFORESTRY OUTREACH PROJECT BUDGET ($).

Project Component	Original Grant Authorized	Obligations To Date 9/30/84	Projected Obligation FY85	FY86	Additional Grant Auth. Requirements	Amended Grant Totals	Other Project Contributions
Operation Double Harvest	850000	825000	208000	167000	350000	1200000	1292499
CARE	2350000	1357000	522000	521000	50000	2400000	1142600
PanAmerican Development Foundation	3900000	3034000	1448000	1448000	2030000	5930000	2282000
Technical Assistance	900000	650000	370000	50000	170000	1070000	0
Research	0	0	452000	448000	900000	900000	0
Totals	8000000	5866000	3000000	2634000	3500000	11500000	4717099

Table II. SUMMARY FINANCIAL PLAN - ODH COMPONENT ($).

Budget Category	Original Budget	Expenses Thru 9/84	Projected Expenditures FY 85	FY 86	FY 87	Total Expenses
Nursery Experimentation and Demonstration	158895	158895	0	0	0	158895
Select Seed Component	37605	37605	0	0	0	37605
Hardwood Forest and Demonstration	351000	351000	67000	64000	18000	500000
Management Adminstration Technical Supervision Research	260000	205516	139000	110000	30000	484516
Contingencies Inflation	42500	18917	0	0	0	18917
Totals	850000	771933	206000	174000	48000	1199933

Note: The original ODH contribution to the above component was estimated at $1145499. To match the additional $350000 in AID funds, ODH proposes a contribution of $147000, which comprises $90000 in salary costs, $45000 in materials, and $12000 in land lease costs.

Table III. SUMMARY FINANCIAL PLAN - CARE COMPONENT ($).

Budget Category	Original Budget	Expenses Thru 9/84 (est.)	Projected Expenses FY 85	FY86	FY 87	Total Expenses
Equipment Materials	593000	330000	120000	120000	30000	600000
Personnel Operations	1353795	761000	278400	278400	69600	1387400
Training Costs	42000	26000	9600	9600	2400	47600
Contingency	198880	84000	28800	28800	7200	148800
Overhead	162325	119000	43200	43200	10800	216200
Totals	2350000	1320000	480000	480000	120000	2400000

Note: The original non-AID contribution to the above CARE grant component included $100000 in CARE-generated funds, and $718000 in other inputs managed but not contributed by CARE. In addition, Title I amounting to $189600 and project support amounting to $135000 was to be contributed by the Organization for the Development of the Northwest, a parastatal organization.

Table IV. SUMMARY FINANCIAL PLAN - PADF COMPONENT ($).

Budget Category	Original Budget	Expenses Thru 9/84	Projected Expenditures FY 85	FY 86	FY 87	Total Expenses
I.Resource Center						
Personnel	1105000	741000	470000	407000	102000	1720000
Material Support	360000	230000	146000	126000	32000	534000
Training,Documentation	175000	34000	17000	15000	5000	71000
Home Direct	25000	13000	16000	14000	4000	47000
Overhead	265000	357000	227000	197000	49000	830000
II. PVO Subprojects	1580000	1175000	746000	646000	161000	2728000
III. Contingencies	390000	0	0	0	0	0
Totals	3900000	2550000	1622000	1405000	353000	5930000

Note: The non-AID contribution specified in the original PADF grant agreement totalled $1470000, and was comprised of personnel,training and material support from PVO organizations, home office support from PADF headquarters. Over the extended life-of-project, an additional $812000 is expected in PVO-contributed support.

Table V. SUMMARY FINANCIAL PLAN - TECHNICAL ASSISTANCE AND COORDINATION ($).

Budget Category	Original Budget	Expenses Thru 9/84	Projected Expenses FY 85	FY86	FY87	Total Projected Expenses
Project Coordinator	325000	238514	0	120000	30000	388514
Long-term Forestry Advisor	400000	267338	70000	120000	30000	487338
Short-term Consultants	175000	111975	0	50000	0	161975
Commodities (Vehicles, office equipment, etc.)	0	32173	0	0	0	32173
Totals	900000	650000	70000	290000	60000	1070000

Table VI. SUMMARY FINANCIAL PLAN - RESEARCH COMPONENT ($).

Budget Category	Projected Expenses FY85	FY86	FY87	Total Expenses
Core Research Personnel	150000	200000	20000	370000
Short-term Research Assistants	60000	100000	30000	190000
Support Staff (Secretarial, Interns,etc.)	30000	40000	10000	80000
Vehicles Equipment,Supplies Support Materials	100000	30000	0	130000
Other Costs	50000	65000	15000	130000
Totals	390000	435000	75000	900000

IV. PROJECT ANALYSES

A. Technical Analysis

1. Technical discussion of Project components

a. ODH

When designing the Project, AID recognized that there was little information concerning performance of exotic, fast growing tree species on Haiti's arid and semi-arid sites which were available for tree planting in 1981. To help remedy this, the "primary focus" of the Grant Agreement with ODH called for "continually updating agroforestry practices through research and development of technology". ODH was to establish large scale demonstration tree farms designed to determine the economic potential of such a practice in a semi-arid region of Haiti. Meanwhile, the tree farms were to serve as on-site training areas for sub-grantees and farmers.

Research conducted by ODH has focused on basic questions:

(1) The development of more efficient nursery practices. ODH has made commendable progress in this direction, serving as a model for development of small-scale regional nurseries by the other grantees. However, research is still needed to reach ODH's goal of developing more nearly ideal rooting mixes for each of the principal species while using only raw materials which are readily available in Haiti.

(2) Local production of large quantities of quality tree seed. This is a continuing program in which ODH has also made considerable progress. Future emphasis is needed on the procurement of additional species and additional provenances of species which have shown promise of being economically viable.

(3) Tree species which are best adapted to the environments available for reforestation.

Additional species and provenance trials are needed. ODH, the only grantee which normally has large enough tracts of land available to put in adequate-size trials, has an excellent opportunity to meet this objective.

(4) Establishment of tree farms to test a range of agroforestry techniques under field conditions, in a variety of environments, meanwhile serving as demonstration areas. This is likewise a continuing program with ODH. Each of the farms established to date has been used as a demonstration area. Some have been used to establish trials investigating tree growth and soil moisture relationships, species trials, etc. This program will be an important activity in the extension of the ODH grant. During the extension, ODH will focus on the following activities:

i. Nursery practices

ODH will continue to test potentially better nursery techniques. It will work with PADF, CARE, and the Title XII institution on any attempts made to develop a better, 100% Haiti potting-mix or to improve other factors affecting nursery production; to develop better timing or pruning techniques for producing Eucalyptus and Casuarina and some other species which tend to produce a seedling "top" which is out of balance with the root system and often does not have as sturdy a stem as is needed in Haiti; to test site preparation techniques on a variety of environments; to establish additional seed production areas as seed of potentially valuable species becomes available; and to employ professionally trained foresters to plan, implement and monitor scientifically designed trials in the fields mentioned above. Their tree farms have provided an opportunity for a number of investigations of site/species interactions. Use of these tree farms as well as the older plantings established by small farmers is essential if the Title XII institution is to produce tangible recommendations during the Project's extension.

ii. Species - Site Studies

ODH will continue to establish and monitor species/provenance trials on a variety of environments in the Cul-de-Sac area. This work will be under the supervision of a research forester hired in Sept. 1984. In addition to conducting their own trials, ODH will cooperate with the research institution. Future trials are to be discussed with the Project's senior forester and planting designs approved by him.

iii. Seed production and handling

ODH has already established seed production areas in small plantations of leucaena and neem. Trees of inferior growth and form will be thinned from these stands. Some genetic improvement is expected from well-managed seed production areas, but the major advantage is the supply of large quantities of source - identified seed for tree farm demonstration and for dispersal to other nurseries. Experimentation with other provenances is advisable before a breeding program is commenced. Appropriate seed processing methods and storage procedures under conditions of low temperature and low humidity are being developed by ODH.

iv. Demonstration tree farms

Operational-scale experience in agroforestry is being obtained as a result of different contractual arrangements: 1) private land-owner/share-cropping and 2) state land lease/peasant farmer employment. The farms have been established in somewhat different ecological zones in the Cul de Sac. Some of the replicated species-site studies are being conducted on the tree farms. Other technical questions to be addressed include site preparation methods, tree spacing, weeding and intercropping with agricultural crops. Where possible, statistically designed, replicated studies will be

installed. Where these are not practical, emphasis will be placed on gaining operational level experience. ODH has already begun nine tree farms, one of them under the state land lease arrangement.

b. CARE and the Pan American Development Foundation (PADF)

The Agroforestry Project recognizes that soil conservation in Haiti will not be achieved merely by planting trees on tree farms. Conservation of the land resource requires participation of the peasant farmers who must improve agricultural practices, construct soil conservation works, control grazing and do appropriate reforestation.

i. Food production, tree farming and cash income.

It is vital to remember that the focal point of the Project involves two major considerations: (1) trees are to be placed in a complementary way which does not significantly reduce food production and (2) enough trees are to be planted which will appreciably increase the farmers' total income once the trees become harvestable.

ii. Soil Conservation

Recognizing that soil conservation on Haiti's slopes can only be achieved by (1) an integrated cropping approach which includes improved agricultural practices, (2) a form of terracing , (3) elimination of use of fire when preparing land, (4) control or elimination of grazing, and (5) reforestation by small farmers, CARE and PADF will increase extension work to encourage the adoption of these ecologically sound farm practices.

iii. Extension, cash income, and production of fuelwood

Since small farmers in Haiti have traditionally collected wood at no cost, except their time and effort, extension efforts are required to convince them that while producing wood for sale they should also produce wood for their own fuelwood needs. The response of farmers under the project thus far, allowing elimination of the subsidy, makes the prospects encouraging.

iv. Extension, research, demonstration planting

As indicated above, the primary focus of CARE and PADF will continue to be on extension, i.e., getting a substantial number of trees planted. However, some research and demonstration efforts are needed since these two Grantees are functioning in a variety of environments not available to ODH. Species trials and case studies already established should be continued. Both Grantees will work closely with the Research Grantee to establish more agroforestry and socio-economic studies in areas representative of the various environments in their geographic regions.

v. Major technical activities.

The major technical activities of CARE and PADF will include:

(a) Continuing the operation of regional nurseries and establishing new ones as the program expands into new areas. This will require training of additional local staff.

CARE and PADF will continue to obtain source-identified seed from ODH and other reputable suppliers as well as to collect from selected trees of species which have performed well in Haiti. These will be sown in the 27 regional nurseries.

ODH is providing about 10% of PADF seedling needs in 1984. This arrangement is expected to continue in the Project extension period.

(2) a CARE: Providing technical advice and follow-up to Haitian assistants (agronomists, animateurs, monitors, etc.) who make initial contacts and later distribute trees and give training to farmers.

b. PADF: Providing advice as described above for CARE, except that such counsel and training is given to sub-Grantees (local, established PVOs) who in turn work with the farmers.

(3) Arranging for establishment of trials, demonstration plots and case studies, and monitoring the various steps.

c. Research Grantee (Title XII Institution)

A research grant will be awarded in the spring of 1985 to a Title XII Institution for a 18-month period. The grant will be made to satisfy research needs in both agroforestry and socio-economic aspects of the Project. More specifically, the grant will call for investigation of four project components:

i. Traditional agroforestry systems of Haiti;
ii. The relationships of both fast-growing exotic and indigenous tree species to various ecological conditions;
iii. Nursery and plantation establishment techniques; and
iv. Socio-economic aspects of Haitian agroforestry systems.

3. State of Agroforestry Knowledge

Critical factors determining the potential for earning cash income from agroforestry include the selection of species which is best adapted to each available planting site and the subsequent care of the trees until they are ready for harvest. Experience since 1981, including the study of pre-Project reforestation efforts, the establishment of species trials and the results of general project reforestation, has yielded considerable information concerning the need for supplemental (i.e., in addition to rainfall) water on arid to semi-arid sites, and the futility of planting *Cassia siamea* in areas with less than 1200-1500 mm of well-distributed

rainfall. However, by 1984 it was apparent that additional trials were needed to select the best adapted species and techniques for several sites. In response to this and other demonstrated needs, the decision was made to issue a grant to a research oriented, Title XII, university group to refine species selection, nursery practices and other agroforestry criteria as well as to investigate socio-economic aspects of the Project. The professional staffs of the original Grantees will continue their studies and cooperate with the Research Grantee staff in this search for additional agroforestry knowledge.

4. Technology Transfer and Utilization - Technical Support Component

As there were few trained agroforestry technicians in Haiti, a major element of the Project has been and will be the provision of technical assistance in forestry and related disciplines. Five skilled agroforesters with B.S. level education and overseas experience have worked in the field for CARE and PADF. At ODH first one and then two technicians skilled in nursery and reforestation have worked in both nursery and the field. Together with Haitian assistants, these seven have provided technical advice and on-site direction while overseeing the planting of over 11,000,000 tree seedlings.

With the addition of the Research Grantee, two Ph.D. level expatriates as well as several short-term, equally-trained individuals will be working in Haiti. An important phase of their work will be the documentation of information derived from Project or other agroforestry work. This will be the principal form of technology transfer to other organizations.

To ensure that technical issues were resolved as quickly as possible, the field agroforesters have been supported by a senior-level forester. The latter was assigned the task of ensuring that research conducted by the Project was designed so that results would have scientific, statistic validity. In the extension of the Project, the senior forester will work with the four Grantees to ensure a maximum of cooperation in the continuation and expansion of technical agroforestry investigations. He will work with the Research Grantee in designing such investigations and will approve plans for field trials.

During the extension, all short-term technical assistance will be arranged through the Research Grantee. Such assistance may be required to address specific problems in species and variety selection, pest control, agronomy and horticulture, soil suitability and conservation, nursery management and economics.

Beyond sources of technical expertise funded directly through this project, the Mission will avail itself of agroforestry related technical assistance available through a LAC Regional USDA-RSSA, (1-76) or the S&T Bureau's USDA-RSSA for forestry related T.A. In discussions held with personnel available under these arrangements, it is clear that they are prepared to commit substantial time to provide requested technical support.

5. Agroforestry Demonstration Models

The ODH large-scale (15-100 ha.) tree farms have been used for some research and have served as general demonstration areas for in-country visitors as well as agroforestry groups from several other countries and international agency representatives. A research forester has recently been hired by ODH to formalize its investigative efforts. Questions such as potential use of fertilizer, economic value of thinning Leucaena plantations, and effect of soil conditions on growth will continue to be explored.

Except for establishing species trials, the other Grantees have found that, in dealing with small farmers who plant 300-500 trees with an intent of earning an additional income, it is difficult to find interested sub-Grantees and farmers with enough land, time and facilities to plant and maintain acceptable research plots.

With the Research Grant assured, this group will assume responsibility for the type of demonstration/research which was assigned to CARE and PADF previously: That is, to develop small farm demonstration/ research sites aimed at increasing productivity and at slowing soil erosion.

6. Tree Production Targets

The success of the Project in planting at a rate of about twice as many trees as (8,000,000 vs 4,000,000 as of Dec. 83) called for in the Project Document is cited above.

CARE and PADF will continue to field teams of agroforesters and Haitian assistants, as called for. They expect to plant another 7,000,000 trees in the second 2 years of the project. However, as cited in (4) above, establishing the 5-hectare tree farms, asking each farmer to plant 800 trees, and planting at a density of 4000 trees/ha. has not been practical. If trees are fast growing, a spacing of 1.6 m x 1.6 m. (4000 trees/ha) is much too close to permit more than 1 intercropping season. This would conflict with the intent expressed in 1981 and above to not remove farm land from cultivation. It has also been learned that if land is not cultivated for farm crops, it is exceedingly difficult to prevent serious browse damage to trees planted there. This has been reduced from a minimum of 500, the figure used in 1982 extension work because it could not be done by many farmers without conflicting seriously with crop production.

Goals of having farmers plant 300 trees maximum, have been set in many regions.

Even with reduced densities, Grantee goals are to plant double the original number of trees estimated in 1981, as shown below:

SUMMARY OF OUTPLANTING TARGETS

A. TREES PLANTED (000)	ODH	CARE	PADF	TOTAL
1. Original Target	1,200	4,000	3,000	8,200
2. To Date (As of 9/84)	1,200	2,500	7,500	11,200
3. Revised Target for (9/30/85)	1,350	4,000	11,800	17,150
4. Target for PACD Extension (10/85 - 12/86)	300	2,000	5,700	8,000
TOTAL Outplanting Target	1,650	6,000	17,500	25,150

B. NO. PARTICIPATING FARMERS				
1. To Date (7/84)	8	7,500	19,000	26,508
2. Estimated for PACD - 12/86	14	18,000	45,000	63,014

B. Economic Analysis

Background. The economic analysis provided in the original project paper consisted of a financial analysis and a cost-benefit analysis to determine economic feasibility. The purpose of this amended analysis is to review the statements made in the first project paper, and to determine whether the assumptions made in that original paper continue to be applicable to the project as it has been implemented to date. In those cases where the original assumptions have been proved questionable, their qualitative impacts on economic viability are discussed.

The benefits estimated in the original project came from two principal sources: first, the conservation of soil which is currently threatened by inappropriate and damaging cultural or cultivating practices; and second, the sustained production of wood and charcoal for household energy use, or sale as a cash crop. The costs calculated were primarily production costs, including a modest subsidy payment to farmers to encourage them to plant trees on their land. The analysis estimated an overall IRR of approximately 10% for the project based upon these assumptions.

This revised analysis has found that some assumptions relating to costs and benefits must be modified. These findings are summarized below:

(1) Benefits attributable to soil conservation are difficult to calculate. The project does not consist of a systematic attempt to develop an appropriate soil conservation package for the small hillside farmer, but rather an afforestation program with possible ancillary benefits from reduced damage to the marginal lands taken out of annual-crop production. An illustration of this point is that emphasis was placed *ab initio* upon the production of fast-growing species rather than upon species tailored to soil-conservation requirements.

(2) Benefits attributable to wood production were understated. The trees harvested to date have apparently had a higher value to the farmer in alternate uses, such as polewood for construction, rather than charcoal.

(3) Benefits attributable to improved land management and an eventual reversal of deforestation are extremely difficult to measure. The impact of wood plantations upon agricultural land use is not yet apparent, and its effects may be either positive or negative. The research effort financed under this amendment will look at this in a systematic way.

(4) Emphasis upon improved survival rates was misdirected. The project can achieve higher survival rates through, for example, planting upon more productive land, with a lower slope and more agricultural potential. To the extent, however, that soil stabilization is indeed a major objective, an even lower survival rate may be desirable, because it would demonstrate that the most marginal lands were those being affected.

(5) One of the major benefits of this project will be the research findings only available from such a large scale field project. Research benefits that may well result from the project include knowledge of how certain species may serve as complementary crops to the farmer's food crops. It is known, for example, that leguminous species such as Leucaena have the ability to fix nitrogen in root nodules, but it is not known to what extent other plants in the vicinity can benefit from this nitrogen fixation, nor whether the net economic return of a legume-staple mix is greater than that of a simple staple cropping pattern. Once again, research on this will be undertaken during this extension.

(6) Because the incentive payment was found to be unnecessary, the costs of production are lower than was estimated. When sufficient quantitive data are gathered to recalculate ex post the economic costs and benefits of the project, the elimination of this subsidy payment will improve the internal rate of return and the economic attractiveness of the project.

In summary, it is assumed that the benefit stream is increased by the use of wood for higher valued uses other than charcoal production. This increase is offset by lower than anticipated benefits due to limited use of trees in an appropriate soil conservation package on the hillsides and the lower than expected tree survival rate. The net effect on expected benefits is uncertain. Hence, while it is clear that the elimination of the subsidy payment to farmers lowers project cost, the impact on the internal rate of return is uncertain.

C. Social Soundness Analysis

The social soundness analysis in the original project paper generally remains valid, and the assumptions on which the project was based appear to have been borne out. The project has been very successful in reaching its intended beneficiaries. The major premise of the project - that peasant farmers could plant trees as cash crops - appears to have been affirmed, as discussed below, and the various potential difficulties discussed in the project paper have not impeded project implementation.

The project paper assessed the social soundness of the project on the basis of three general requisites:

1. Compatibility with the basic economic, domestic and social organization of the participating communities.

2. Recognition - and conscious rectification - of the weaknesses which have undermined most previous efforts to carry out reforestation and soil conservation activities in rural Haiti.

3. Thorough anticipation and consideration of possible unintended side effects from project activities.

The project's feasibility was based on the willingness of peasants to plant trees as a cash crop. This assumption derived from the fact that peasants grow only part of the food which they consume and consume only part of that which they grow, thereby being heavily involved in local markets. Peasants have also shown interest in trying new crops which have promise of generating a higher cash income.

The enthusiastic response to planting tree seedlings, far exceeding design expectations, confirms that many peasant farmers have in fact viewed trees as having economic value. While a quantification of the premise will have to await completion of a complete cropping cycle, it appears that the organization and attitudes of the peasant communities are such to accept and be able to manage cropping of trees, given the levels of animation and extension carried out by the project.

It is not clear, however, to what extent trees are viewed and will be treated as cash crops. Preliminary observations of early cuttings of trees suggest that they may be utilized for polewood, lumber, fuelwood or other uses on the farm rather than be sold in markets. Trees which are marketed may be sold for lumber, rather than for charcoal as premised in the project paper. However, even if used on the farm, trees will presumably substitute for products which the peasant would have had to buy and which would have required the cutting of trees elsewhere. The peasants should be equally motivated to plant trees for susbsistence use as for cash crops and most of the goals of the project would be met equally well in this case. The question, however, cannot be answered until more trees have matured and there is a better understanding of what peasants will do with them.

As for comparison with other reforestation efforts in Haiti, which generally have not fared very well, this project is based upon the importance of cash crops in Haitian farming systems rather than on any other assumed set of needs or objectives on the part of peasant farmers. The apparent success of this approach has avoided, as anticipated in the project paper, some of the problems encountered by other reforestation efforts in Haiti which were not based on this assumption. Problems such as nurseries producing large numbers of plants for which there was no demand, reluctance of peasants to plant project trees on their land, and very low survival rates due to destruction by grazing animals, have not arisen. Land tenure, local government, and legal restrictions also have not been problems, as was anticipated in the project paper.

D. Administrative Analysis

The organizational arrangements and performance of the current grantees are discussed in section II C above. Most of the information provided in the project paper remains valid but a number of changes have occurred in the administrative arrangements. Although the four grantees will be discussed individually, since they represent separate activities with distinct approaches, the audit report made two findings applicable to all of the current grantees.

The audit criticized the grantees for not preparing manuals that document their current organizations, policies and procedures. Because of the experimental nature of the project, however, it would not have made sense to produce policy and procedures manuals at the beginning of the activity. Now that successful implementation models and procedures have been established, documentation on technical procedures such as training and extension methods which would assist local institution building, technology transfer and replication of the project is needed. This will be undertaken by the PVOs under the extended life-of-project timeframe.

The draft audit also stated that PVO progress reporting has not been adequate to provide the Mission with information to monitor project progress and problems. The Mission agrees that reporting has not always been adequate and stronger and more precise reporting requirements will be included in the grant agreements.

The project will continue to implement through the three PVOs, which will receive funding via separate grant ageeement amendments, and through a new university contractor. The Project Coordinator, assisted by the Senior Forestry Advisor, will continue to coordinate the activities of these organizations and remain directly responsible to the USAID Project Manager.

Operation Double Harvest

Some of the difficulties which ODH has encountered can be attributed to administrative deficiencies in the organization. The project paper recognized limitations of the small ODH staff and provided funding for new administrative and research personnel. Despite grant funds for personnel salaries, ODH did not have sufficient staff and technical personnel to fully carry out research and documentation required in the grant agreement. Experiments were not well designed, data and records were poorly organized, management of the tree farms and nurseries was not always adequate and staff did not fully cooperate with the Senior Forestry Advisor in designing and implementing research. Part of the problem resulted from over-extended staff working on other aspects of the ODH program.

The audit report faulted ODH for not maintaining an adequate accounting system. Books, records, documents and other evidence were not sufficient to substantiate charges against the grant. The ODH accounting system did not segregate Agroforestry Project expenditures from other ODH activities.

The project extension grant agreement amendment will address these problems and ODH should be able to carry out the activities in its scope of work. Improvements in the research program have already been made, with additional technical personnel, and the scope of research activities in the amendment has been narrowed and will focus on what ODH can do well. A condition precedent in the amendment will ensure that adequate staff is available to carry out the project. The grant agreement will carefully specify what is expected of ODH and what activities it is to perform.

ODH is currently working to resolve its accounting problems and is

working with the USAID Controller. Another condition precedent will require that the deficiencies in ODH accounting practices be fully rectified before disbursements are made.

Pan American Development Foundation

The administrative analysis of PADF in the project paper remains valid. PADF has been successful in supporting local organizations and distributing seedlings, and quickly adjusting to changing circumstances. It will continue its successful approach of providing technical assistance, training, financial support and material inputs to a wide variety of sub-grantees. The proposed project extension will continue the work carried out thus far and no problems are anticipated in implementing the scope of the amendment.

CARE

CARE has also been successful in implementing its model of working directly with farmers to plant trees. No problems are foreseen in carrying out the scope of work in the amendment, which is a continuation of current activities. As with PADF, greater priority will be given to training and research activities, which CARE appears to be capable of performing without difficulty.

The project paper envisaged a major role for HACHO in CARE's project implementation. HACHO has been abolished and was partially replaced by ODNO (Organization for the Development of the Northwest). ODNO is still getting organized but has officially assumed responsibility for coordinating rural development projects in the Northwest. CARE's collaboration with ODNO has consisted of counterpart support and some soil conservation efforts. This change in organizational arrangements does not appear to have adversely affected the CARE project and should not affect the administration of the extension.

University Research Contract

The Request for Technical Proposals was advertized in the Commerce Business Daily in June 1984, requesting that universities, with prior experience in implementing research programs in agroforestry in developing countries, submit proposals. Three universities responded to the request. These proposals have been reviewed by the Selection Committee, and negotiations will be held shortly. (See Section III.B.4.b. above for additional discussion).

Project Coordination/Technical Support Unit

The Project Coordinator and Senior Forestry Advisor positions have been filled through personal services contracts. Other short-term technical assistance has been provided through the Forestry Support Program. The incumbent Senior Forestry Advisor's contract expires in February, 1985. He has advised the Project Coordinator that he will depart at that time. Therefore, a replacement for that position will have to be recruited and contracted on a personal services basis, or through the USDA (RSSA/PSSA).

V. REVISED IMPLEMENTATION ARRANGEMENTS

A. Implementing Agencies

As described above in Section III.B., Project Components and Outputs, the Project will be implemented primarily by: (i) three grantee agencies (ODH, CARE, and PADF), each of which is a non-governmental organization, established and operating in Haiti; (ii) one university to implement the research component; and (iii) personal services contracts or agreements with the USDA (RSSA/PASA), as appropriate, for the Project Coordination/Technical Support Unit. Grant agreement and contract amendments will be signed with each; these will encompass the requirements of AID Handbook 13 regulations on specific support grants. Each contractor will be responsible for its own contracting and procurement, subject to the restrictions and order of preference described in the standard provisions applicable to U.S. Grantees (HB 13, ch.4, App. 4C).

The four continuing grantees and contractors (ODH, PADF, CARE and the Project Coordination/Technical Unit) will, following discussions with USAID/Haiti, submit detailed implementation plans to attach to their grant agreement amendments. For the purposes of this project paper amendment, a general schedule of events for these amended grants and contracts is presented below. Respondents to the RFTP have submitted detailed implementation plans for their activities. The selected contractor's plan will be attached to the grant agreement. Thus, only an overall schedule of major events for the amended project is provided in this section.

B. Schedule of Major Events for Amended Project

FY 85 - 2nd QUARTER

1. AID signs grant amendments with CARE, ODH and PADF (Feb.)

2. AID signs grant agreement with university. University contracts consultants. Long-term consultants arrive in Haiti.

3. CARE Region I forester replacement oriented and operating in region

4. Senior Forestry Advisor replacement contracted

5. ODH recruits additional staff members and reviews qualifications with the Senior Forestry Advisor

6. All nurseries are seeded for spring outplanting

7. Research meeting to present existing information to university personnel.

8. Research component activities:

- Establish office facilities in Port-au-Prince and locally procure needed office equipment, furniture and supplies
- Locally procure vehicles
- Develop detailed work plan including locations for research on traditional agroforestry systems, silvicultural treatments, socio-economic studies and species trials.

9. Prepare and submit quarterly reports

3rd QUARTER

1. Rains fall for seventh outplanting season. CARE ODH and PADF distribute seedlings

2. Research component activities:

- Initiate agroforestry systems field study
- Locate sites for species trials and silvicultural treatments
- Field measurements of past species and container/mixture trials
- Short-term anthropology consultant prepares socio-economic studies with forest economist

4. Prepare and submit quarterly reports

4th QUARTER

1. Nurseries seeded

2. Research component activities:

- Analysis of agroforestry systems data, report write-up
- Nurseries seeded for species trials, nursery trials, and outplanting trials
- Initiate interviews for socio-economic studies

3. Technical meeting

4. Begin recruiting for any staff turn over

5. Prepare and submit annual reports

FY 1986 - 1st QUARTER

1. Eighth Outplanting season

2. Research component activities:

- Planting trials
- Testing outplanting implements

- Continue socio-economic studies interviews
- Continue monitoring established trials

3. Orient new staff, arrange for overlapping

4. Prepare for evaluation, recruit consultants

5. Begin necessary procedures for follow-on project activities, arrange for TDY assistance in documentation

6. Submit quarterly reports

2nd QUARTER

1. Seed nurseries

2. Research component activities:

- Submit preliminary reports on silvicultural treatment results, species trials, socio-economic studies
- Continue monitoring and follow-up activities

3. Contract evaluation team, conduct evaluation

4. Decision made whether or not to continue programming for agroforestry projects and draft follow-on project documents

5. Research Meeting

6. Submit quarterly reports

3rd QUARTER

1. Ninth outplanting season

2. Finalize follow-on project documentation. Send project documentation to AID/W for review and approval

3. Research component activities:

- Final measurements and interviews
- Analysis and write-up of project activities
- Submission of long-term research plan based on the information collected during this project.

4. Submit quarterly reports

4th and Final QUARTER

1. ODH, CARE and PADF internal evaluation

2. Follow-on Agroforestry Outreach Project approved.

3. Final reports submitted to USAID

VI. REVISED EVALUATION AND AUDIT PLAN

The project will be evaluated in early 1986 to assess progress toward meeting the objectives of the original project and the project amendment. Information provided by the evaluation will be used in designing a contemplated Agroforestry II project. The evaluation will provide further data on the validity of the project model, which implementation approach works best, the effectiveness of the research efforts, the performance of the participating organizations and other information needed to determine the most effective way to promote agroforestry in Haiti. The evaluation will form the basis of a decision to design a follow-on project and the nature and scope of such a project. It is expected that the evaluation will be carried out by outside consultants, as was done in the first evaluation. A revised evaluation plan is presented as Annex G.

An audit of the project was carried out in the spring of 1984 by the Office of the Inspector General and no further audit is anticipated.

ANNEX A

RECOMMENDATIONS OF PROJECT EVALUATION

1. The second phase of the Agroforestry Outreach Project should continue as an integrated project focusing on the interventions of PADF and CARE; in fact it is that concept that is normally understood when speaking of the Agroforestry Outreach Project in Haiti. The concept of large-scale tree plantations as promoted by Double Harvest should receive a careful review following the completion of the current phase. New plantations should be introduced only if that concept is found worthy of continued experimentation. If Double Harvest is to receive new funding, it should only be as a distinct experimental component of the overall USAID Project. If such an ongoing experimental effort is found to be of little benefit for Phase II, Double Harvest should only receive sufficient additional funding to maintain the existing research sites.

2. The primary focus of the project -- moving trees -- should continue as is for the next two years. Haiti's environmental situation combined with the grass-roots demand for trees requires that action orientation be maintained in the immediate future. The project should also maintain its flexible, simplified implementation model which is one of its basic strengths. Because of the overwhelming success with the first step, planting trees, indicators of project success should be redefined toward a medium to long-term perspective to get a better measure of long-term project impact (i.e. the number of trees surviving instead of the number of trees planted, the number of trees cut for subsistence purposes versus the number of trees cash-cropped).

3. Realistic expectations for the impact of the project should be brought in line with the experiences of the past two years. However, certain <u>incremental shifts</u> in the implementation model should take place to focus on areas which have so far received insufficient attention:

a) Technically, more work should be done in certain problem areas -- on steep slopes, in high altitudes, and in arid zones. Some of this work should focus on erosion control as well as agroforestry. In the area of agroforestry, there should be a greater effort integrating tree production directly into existing crop production and herding practices. In this regard, grantees should continue to build on their strengths. This means that CARE should continue to focus more on the soil conservation efforts, while PADF continues to focus on moving trees.

b) Institutionally, the project should interact more regularly with indigenous Haitian institutions and Haitian personnel. USAID should increase communication (interaction) with the Government of Haiti and work more closely with other reforestation efforts. The implementing agencies should work more closely with competent Haitian institutions. This is being done by PADF in some areas, but not in others. A concentrated effort should continue to develop capable village institutions where they do not exist, and continue to work with those that already exist. More qualified Haitian personnel need to be integrated into the project implementation staff, particularly in the Northeast.

4. Any project expansion undertaken over the next 2-3 years should focus on qualitative instead of quantitative growth. The number of trees to be planted and the number of farmers to be reached should remain close to existing levels. As additional funds are available, staffing increases within the above constraints should be the first priority.

5. USAID should consider a one-year extension of Agroforestry Outreach I, prior to implementing Agroforestry Outreach II. Agroforestry Outreach I will require additional time to test its underlying hypotheses and sufficiently refine its technical, social, and economic packages. Research findings in each of these areas need to be incorporated into the design effort for Agroforestry Outreach II.

6. More and better research must be undertaken as a secondary project focus. Technical research has begun and is an integral part of the existing implementation model. Useful project related social and economic research has not yet begun. The Project Coordinator's Office should be redefined as a Planning Unit and take responsibility for the required research over the next two to three years.

7. The project's technical assistants (both AID and grantee staff) should be more directly involved in the training component. The Agroforestry Resource Center under the jurisdiction of PADF should be strengthened and should take a much more active role providing training and technical assistance for forestry activities in Haiti. Although initially the Resource Center would work primarily with PADF personnel, eventually such a center should be available to any agency active in reforestation efforts in Haiti.

ANNEX B

RECOMMENDATIONS OF AUDIT REPORT

1. USAID/Haiti obtain from the PVOs through the Technical Coordination Unit:

(a) extension materials and recommendations for the most appropriate technology for planting and growing trees in Haiti.

(b) an improved program for training agents and farmers based on these extension materials,

(c) a plan of improved supervision of farmers to obtain better farmer compliance with the recommendations of the agents.

2. USAID/Haiti:

(a) obtain satisfactory research plans from the PVOs.

(b) delegate sufficient authority to the project forestry advisor to oversee the design, planting and implementation of the PVO research trials,

(c) ensure that the staffing of the Technical Coordination Unit and PVOs is sufficient to effectively carry out the research program, and

(d) obtain the full cooperation of ODH technical personnel in planning and implementing the research program.

3. USAID/Haiti suspend disbursements to ODH until it has:

(a) conducted adequate verification of payments made to date under the ODH grant to ensure the eligibility and propriety of costs billed to AID by ODH, and

(b) ensured that ODH has established an accounting system adequate to fulfill its obligations under the grant.

4. USAID/Haiti obtain from ODH, CARE and PADF manuals for their programs that describe their current organizations, policies and procedures.

5. USAID/Haiti obtain from the PVOs the required quarterly and annual progress reports and define more clearly the type of information needed in the reports to effectively monitor PVO operations.

ANNEX C

Mr. Coinage N. Gothard, Jr., RIG/A/LA

September 18, 1984

Donald K. Shannon, Controller, USAID/Haiti

Draft Audit Report on Project No. 521-0122, Agroforestry Outreach

Enclosed are the comments of the Project Officer, USAID/Haiti on the findings and recommendations contained in the subject report.

USAID/Haiti hopes that your office will give serious consideration to these comments during the preparation of the report for final issuance.

In connection with the finding and recommendation, beginning on Pg. 29 of the draft, relating to "ODH Accounting Records Not Adequate," USAID/Haiti has no disagreement. The Controller of ODH's "parent sponsoring" organization in the U.S. has taken an interest in ODH's accounting operations and is now working closely with ODH to develop acceptable accounting records and supporting documentation.

Drafted By:DKShannon:kb 9-18-84

INFO: Mr. V. Cusumano, ADO

Mr. R. Wilson, ADO

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UNITED STATES GOVERNMENT

Memorandum

CONTROLLER
17 SEP. 1984
RECEIVED

: D.K. Shannon, CONT

DATE: September 14, 1984

ROM : Robert J. Wilson, RDO

ROUGH: Vincent Cusumano, Chief RDO

BJECT: Comments on Draft Audit Report of Agroforestry Outreach Project (Audit Report No. 1-521-84; Project No. 521-0122)

With respect to your request for comments on the subject draft Audit Report, we have compiled the following for transmittal to RIG/A/LA. The comments are both general with respect to the Report's format and tone, and specific with respect to the Report's recommendations and certain factual discrepancies throughout the Report.

General Comments

In essence we are in agreement with the audit recommendations to:

1) increase survival and growth rates;
2) implement a well designed research program;
3) ensure that ODH established an adequate accounting system, and verify payments to date under the ODH grant;
4) obtain implementation manuals; and
5) obtain timely quarterly and annual reports from the PVOs.

However, we are disappointed that despite the last comment on page iii, the auditors did not in fact incorporate in the draft report any of the comments provided by USAID/Haiti officials during the exit briefing on May 15, 1984 (Attachment A). Due to these omissions, there are inaccuracies in the draft audit report. In addition to the comments made in this memo, we recommend a review of Mission comments from the initial audit debriefing outlined in Attachment A.

In addition, we suggest that the report be critically edited for presentation and format. For example, the title should not sensationalize the audit findings; it should simply identify itself as an audit report of the Haiti Agroforestry Outreach Project No. 521-0122, executed in May, 1984.

Another example is the table of contents. This indicates that "Recommendations" are located between pages 6-10, while # 1 is found on Page 19.

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Pay U.S. Savings Bonds Regularly on the Payroll Savings Plan

This indicates a lack of organization to the document.

Specific Comments

- p.i., paragraph 3 and p.3 paragraph 1: The Government of Haiti did not participate in the project not only because it lacked absorptive capacity, but also because it is involved in a multi-year, multi-million dollar institution building project financed by the World Bank.

- p.i., paragraph 4: ODH is not the lead PVO under the project. It represents the smallest grant under the project and for a number of other reasons (trees planted, beneficiaries, training) it should not be considered the lead PVO.

- p. ii., paragraph 2: Large amounts of technical and socio-economic data have been recorded and are being analyzed relative to overall volume of project data. The paragraph does not indicate this.

- p. 7, paragraph 1:

  a) The explanation for why Haitian farmers have been successfully motivated to plant a substantial number of trees should also include recognition that the PVOs established a large network of extension agents very quickly. The extension agents were trained by the PVOs to not only promote the program, but also to effectively implement the production and distribution of millions of seedlings per year.

  b) It is inaccurate to state that the farmers were given free tree seedlings as well as cash incentives to maintain the trees. This implies that all farmers received free trees and cash incentives. All the trees are distributed free of charge, however only a small percentage of farmers received cash incentive payments. PADF used cash incentives during their first year of Operation, disbursing payments for 3% of all seedlings distributed to date. After the first year, PADF discontinued the incentive program because demand for seedlings already exceeded supply, and the logistics to verify the number of surviving trees for each individual farmer was extremely demanding. CARE used a combination of cash incentive payments and Food for Work payments, but only in one of their two regions, and only for a portion of the farmers in Region I (therefore less that 50%). After this Fall 84 season, CARE will discontinue all incentive payments also.

- p. 7, paragraph 3: Since the auditors allow that PADF's original tree planting target was underestimated, equal allowance should be given to the overestimation of the 70% survival rate estimated in the project paper (page ii; page 7, para. 3). If the auditors would evaluate survival

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rates in difficult sites in the U.S.A., they would find that after 2 years a survival rate of 50-60% would be readily acceptable. In Haiti, under the various negative conditions (rainfall, animals, degrated sites, inadequate weeding, etc.) 50% after 6-12 months should not be criticized. The target survival rate should be adjusted to reflect reality, just as the outplanting target has been revised.

The auditors fail to mention 2 other causes of a survival of 45%:
(1) seriously degraded sites;
(2) that the "effective rainfall" on these sites puts many of them into the arid or semi-arid status.

The paragraph could be edited to read as follows:

"Although the survival rate after 6-12 months is only 45%, this is not surprising because of a severe drought in 1982, because most of the sites available for planting trees are seriously degraded with regard to soil type, depth and nutritional contents, because the effective rainfall in much of Haiti places the land in an arid or semi-arid [illegible], and as expected in such a large program, the most appropriate technology for growing and planting seedlings was not always used. A discussion of some specifics of planting techniques, seedling care after planting and other factors affecting survival and growth is given in this report."

- p.3, paragraph 1: The project was not designed to satisfy all of Haiti's reforestation needs, rather to demonstrate around the country that agroforestry would work and thus convince enough other farmers (PADF and CARE) or large landowners (ODH) that growing trees could be profitable. In turn this would inspire enough tree planting to meet Haiti's needs. (See (1.) Project Document, a) Project Data Sheet, Item 13, "purpose" - item 2, "to achieve the planting and maintenance of a substantial number of trees over the life of the project". b) Page 1, Item I. B., Paragraph 2 and page 2 (same paragraph), particularly lines 2, 3, and 10, 11. c) Page 29, Item II c, last paragraph on page "The purpose of the Project is ... to modify existing and establish new behavior patterns" d) Page 31, Item II D, I second paragraph, 5-last lines: "... AID's emphasis will be on experimental projects... e) Page 31, II D II, 1st, end and 3rd paragraphs, 1st paragraph, lines 4-10" ..., a results oriented, high impact initiative to illustrate that the cumulative process of deforestation ... can be showed ..." 2nd paragraph, second sentence "... Project is somewhat experimental in nature ... 3rd paragraph, 2nd sentence " the present phase can be considered as foundation building" f) page 34 III A 3. " ... in which the peasant views tree planting as a profitable activity".

- p. 10, paragraph 2: The methodology for calculating survival rates should be included because it changed as the project progressed. Therefore, the survival rates cannot be directly compared. For example, the baseline count was initially determined as the number of seedlings leaving the nursery (The audit report also uses this system). Any seedlings which were not

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planted on the participating farmer's field were registered as not surviving. However, as Mr. Hanson witnessed during his field trip to a CARE plantation, the missing seedlings are in fact to be found in nearby fields. This accounts for a 10-30% error in survival rates during the first several seasons (page 11, footnote 2). The foresters revised the methodology to more accurately monitor the participating farmers management of the seedlings. The revised methodology uses the number of seedlings found in the farmers' field within one month of outplanting as the baseline. Follow-up survival rates at six, twelve and twenty four month intervals are determined according to that baseline.

In addition, it is inaccurate to state the project has not been successful in achieving its tree survival targets; it has. Even if the 45 percent survival figure were accurate, 45 percent of the estimated 16.5 million trees (7.42 million) exceeds the projected 70 percent of 8.2 million trees (5.74 million). This also will result in lower unit costs than PP expectations.

- p. 10-19: Perhaps, the most glaring fault of the analysis presented in this section is the failure to consider the costs as well as the benefits of increasing the survival rates.

- p. 20: In response to Recommendation No. 1, d, the project is an agroforestry project, not only reforestation. The project implementation model to motivate farmers to cash crop wood trees is based on the traditional practice of producing and marketing charcoal in Haiti's semi-arid and arid regions. Specifically, la Gonave and Northwestern Haiti are prototypes of charcoal production regions where people have limited alternatives for income generation. The positive response from farmers in those areas indicates that the concept of cash cropping wood trees is successfully influencing farmers' management systems. If the project narrowed its focus towards "the most favorable regions of the country". the regions most needing fuelwood, reforestation and effective cash cropping alternatives would be eliminated. We suggest that section (d) of Recommendation No. 1 (page 20) be revised to not exclude the more degraded, semi-arid to arid regions where people's income generating potential is limited already.

- p. 25, paragraph 4: The use of the questionnaires by PADF and CARE should be clarified. The questionnaires were initially designed to obtain technical and socio-economic data from 100% of the farmers. However, the quality of the data varied tremendously, and PADF and CARE decided to conduct research through the case studies. The questionnaires are now used primarily for administrative purposes.

Contrary to the auditors statement on page 25, paragraph 4, 'the PVOs have not clearly defined the objectives... (of the case studies) ...', in fact a research committee, consisting of the Technical Coordination Unit and representatives of the PVOs, met for the ninth time on May 25, 1984 to define project research needs and to design the research program. The four subcommittees (Nursery management, Species trials, Case studies and Socio-economic research) presented research implementation plans. The research program is progressing according to the plans discussed in this meeting.

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- p. 29 - 32: While we do not have any major objections to this section, we feel the recommendations have not adequately considered the potential impacts on project implementation. Accounting issues aside, ODH represents an important component of the overall project. A cessation of their activities would jeopardize seedling production and distribution, and the research components of the project.

Attachment A

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UNITED STATES GOVERNMENT

Memorandum

: Agroforestry Outreach Project Files

DATE: June 6, 1984

FROM : R. Wilson, ADO

SUBJECT: Record of Audit Findings of Agroforestry Outreach Project Audit and Summary of Mission Concerns - Informational

On May 15, 1984 a meeting was held to present review and comment upon the draft Record of Audit Finding Report (attached) resulting from an IG/RIG/A/LA audit of the Agroforestry Outreach Project. Attending the meeting were Roland Hanson, Ed Stonebrook, and Santiago Valladares from IG/RIG/A/LA, and Phyllis Dichter, Don Shannon, Vince Cusumano, and Bob Wilson from USAID/Haiti. This meeting represented the first in a series of exchanges between the project auditors and mission personnel which eventually will result in a final project Audit report. The purpose of this memorandum is to outline for the record the USAID mission's reactions to the five audit findings.

Record of Audit Finding No. 1 - ODH Accounting Records not Adequate

This audit finding states that Operation Double Harvest "has not maintained books, records, documents and other evidence to sufficiently substantiate charges to the grant as required by the standard provisions of the grant agreement". The reason for the lack of adequate accounting procedures was given to be the non-compliance of the ODH project administrator to his job description to keep all books and financial records in generally accepted accounting order. In addition, USAID was criticized for not requesting nor reviewing "detailed support documentation prior to reimbursing ODH". Consequently, it is not known whether "1) AID funds have been used as intended; 2) contributions from ODH have been made as required; 3) tree farms are economically viable and 4) the reflows from tree farms are accounted for and reinvested in other farms."

In the meeting it was expressed that USAID has long sought improvements in ODH accounting and reporting practices. Over the past three years, USAID has witnessed several personnel changes at ODH meant to rectify the problems, However, none of the changes brought about the desired improvements nor could they easily resolve past problems. ODH still has inadequate accounting procedures and may in fact have difficulty substantiating all charges to the grant.

While the audit finding placed at least some of the responsibility for the current situation on USAID because it may not have requested and adequately reviewed ODH's support documentation for disbursements, it was recognized that neither AID project managers nor controller staffs are capable of thorough investigation of all claims for cost reimbursement made by grantees.

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They are under time constraints and it is not required under the terms of the grant agreement. Rather, until such time as USAID believes that documentation is incorrect, or false, or requests an audit, the burden of proof for all grant expense accounting is with the grantee who signs a statement which certifies the truthfullness and correctness of all financial vouchers. It was hardly expected that ODH did not have an accounting system that at least justified project expenses.

Another point raised by mission personnel with respect to this audit finding was that USAID has not established as fact ODH's use of funds for non-project purposes. USAID has every reason to believe that project funds have been used as intended because of the observed tangible outputs of the grant. It was expressed that the audit finding language could be interpreted as implicating ODH in a case of misuse of funds, an interpretation that would be wrong to make at this time. The USAID Controller recommended that the project manager request support documentation for all reimbursement claims made by ODH for the remaining period of the grant. Essentially, no funds will be disbursed that are not thoroughly justified. When the final audit recommendation is made, USAID will request thorough supporting documentation for previous disbursements to ODH.

Record of Audit Finding No. 2 - Percentage of Trees Surviving is too low.

This audit finding essentially took a critical look at the discrepancy between a 70 percent survival rate of trees as projected in the project paper and the average 47 percent actual survival rate reported by the project grantees. The audit finding recommends following a variety of technical tree planting practices, enhanced and expanded training programs, more farmer supervision, and the preparation of more training materials. The audit finding states that the cost per surviving tree would be reduced and additional benefits would accrue from the project were the survivability percentage increased to 70 percent through the above means.

There were several reactions to this audit finding by mission personnel. First, was the feeling that a 70 percent survivability rate may not be technically feasible under Haitian conditions and project assumptions and that such a rate probably should not have been projected in the project paper. In order to approach a particular survival rate, appropriate levels of support need to be provided and technical information needs to be known. In the case of this project, which theoretically is a pilot project, these levels of support and information were assumed to be adequate for high survival but they had not been substantiated with previous experiences in Haiti. Really, there was no basis to assume a 70 percent survival and it should not have been made. As we have seen from our actual experiences, survival only averages 47 percent. Clearly, this experience tells us that changes in levels of support and/or technical packages have to be made in order to increase survival, and the question becomes how to do it economically and efficiently. However, the audit finding did not provide estimates of costs and benefits nor the marginal benefits in survivability from the adoption of their recommendations.

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Another reaction to the audit finding was that the relatively low percentage of surviving trees may be more of a reflection of inaccurate survey methodologies than reality. Currently, the methodology equates the number of seedlings produced in nurseries with the number of seedlings planted. There is no accounting for seedlings that are lost, given away to non-project farmers, die, etc. What is missing in the project is a simple and effective sampling frame which would clearly indicate survivability on project sites, rather than the current methodology which indicates survivability on the basis of seedlings produced in the nurseries. On the subject of farmer adoption of a variety of technical tree planting practices it was expressed that making technical information available does not assure its adoption. CARE and PADF farmers are made aware of certain practices through project animators but always do not adopt all those recommended. The audit finding attributed the cause of this non-adoption to the low level of technical competency of the animators and went on to recommend enhanced and expanded training programs and manuals. The reaction to this was strongly supportive, but also emphasized that it implied greater inputs of manpower, money, and material support. Increased farmer supervision was discouraged on the basis of projects incentive structure, namely the returns from cultivating tree species in small farm plantations, and the lessons learned from unsuccessful supervised credit programs.

Finally, it was concluded that the grantees should do all that is possible to provide sound technical and material support to farmers. Training is one area where grantee efforts can be expanded with the possible outcome of improved survivability rates. Certainly, if the grantees are doing all they can within their power and budget constraints, then, the issue is not low survivability but rather low budgets, levels of technical information, and manpower. This leads to other conclusions.

Record of Audit Finding No. 3 - The P.V.Os Have not Prepared Policy and Proceedures Manuals for their Programs.

This audit finding essentially takes the grantees to task for not having "prepared manuals for their programs which document their current organizations, policies and procedures as required by sound principles of management." The audit finding goes on to state: "Such documentation is needed to serve as a basis for fixing responsibilities, training staff, and planning, implementing, and controlling their activities."

The USAID reaction can be summarized as follows: Recognizing the novelty of the project both to Haiti and in terms of PADF's and CARE's previous project experience, the grantees could not have been expected to produce policy and procedures manuals at an early date. Now that relatively successful modus operandi have been established and the project is generating useful information, the grantees should document procedures and information with a view towards local institution building, technology transfer, and replication of reforestation techniques and models on a broad scale.

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The grantees should not be asked to do this with a view towards creating new PADFs or CAREs in Haiti, so that the documenting of hiring and firing procedures for example do not appear necessary. But, technical procedures, such as local training methods, research plans, extension, nursery and forest technology and recommendations should be documented.

Record of Audit Finding No. 4 - Technical and Socio-Economic Research has not Been Adequate.

This audit finding points to the lack of a systematic design and implementation plan for research and the failure to analyze research data already collected under the project as major inadequacies of the project. USAID recognizes these inadequacies and attributes them to inappropriate financial and implementation planning. Essentially the grant agreements are deficient in laying-out comprehensive and adequate research plans, responsibilities and funding support. Research has not proceeded as desired basically because no one really knew what to do, nor had the money or time to do it. USAID feels that many of these problems will be resolved in the near future as AID and grantee staffs are meeting on a regular basis to review research plans methodologies, and results, and additional funds and manpower will be forthcoming through a USAID and Title XII University collaboration on the project.

Record of Audit Finding No. 5 - PVO Progress Reporting not Adequate

This audit finding states that "PVO progress reporting has not been adequate to provide the USAID with information to monitor project progress and problems." "Adequate" is interpreted to imply both timely and substantive reporting through quarterly and annual reports.

USAID generally agreed with this finding and will insist in the future that all reports required under the grant agreement be submitted on a timely basis. As of the date of this memo, neither reports for the quarter ending March 31, 1984 nor 1983 annual reports have been submitted by ODH, CARE, OR PADF. The grantees are being encouraged to complete these as soon as possible.

D. Shannon, CONT

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ANNEX D

Performance of principal species planted under the Project

i. Exotics Leucaena and Neem

For low elevation sites, these two species have shown the best results in semi-arid areas. Leucaena outgrows neem if the soil is basic, well-drained and has ample moisture. Neem can tolerate soils which are slightly acid, is more tolerant of drought and is more resistant to browsing and fire. However, both of these will not do well if moisture is inadequate and some means of providing supplemental water is not arranged during dry periods following planting.

ii. Exotics Casuarina equisetifolia (casuarina). Eucalyptus camaldulensis (Eucalyptus) on low elevation sites. Neither casuarina nor Eucalyptus have performed to their potential in semi-arid plantations. There are a variety of reasons, of which inadequate moisture is believed the principal one. Nursery production of seedlings with better balanced top to root ratios available at the most advantageous time will help. Seed from Cartesine and Petford, Australia, first used in 1984, may produce Eucalyptus more adaptable to Haitian conditions. Trials are also needed with other species of Casuarina and Eucalyptus.

iii. Cassia Siamea (Cassis), C. emarginata ("bois kabrit"), acacia auriculiformia (acacia). Only "bois kabrit" is indigenous. None of these has performed as expected. For the exotics, Cassia and Acacia have not been planted on the proper sites to demonstrate their potential. In wet regions, near Cap Haitien and Anse d'Hainault, Cassia growth equals or exceeds Leucaena. "Bois kabrit" has poorly developed rooting systems. Acacia often does well where planted, but does not equal Leucaena or neem.

iv. Indigenous species Prosopis juliflora (mesquite), Acacia farneseana (Acacia f.) and Parkinsonia Aculeata have perhaps the best potential for arid to semi-arid, saline or otherwise very poor sites. A study is being made of mesquite versus Leucaena growth on a poor site.

v. Venezuela mahogany (Sweitenia Marsophylla), Haitian Mahogany (s. Mahogani), Haitian Oak (Catalpa longissima), "frene" (simaruba glauca). Venezuela mahogany outperforms its indigenous relative in the plantations observed, at least for 10-12 years. The three indigenous species are slower growing, but are known, and often preferred by farmers. Over 10-12 years, the latter three species will probably bring the greatest per year income. They will do little to solve the growing deficit of fuelwood, however.

vi. Other species have been tried, but most are very site specific and slow growing. Trials are desirable with new seed sources of some species and new provenance (i.e. an unique geographic and environmental source of seed for a single tree species) of others species.

Scope of Work for Senior Forestry Advisor -

The Contractor shall serve as the Senior Forestry Advisor for the Agroforestry Outreach Project. He or she shall assume the following responsibilities:

A. Technical Advice on Forestry Matters:

(1) Consultation with the USAID Project Manager, the project Coordinator, and the Chiefs-of-party and forestry staff members of the four grantees (Operation Double Harvest, CARE, Pan American Development Foundation and the research grantee) to facilitate implementation of technical forestry activities under the project. Specific consultation responsibilities include: (i) assessments of the technical feasibility of proposed sub-projects; (ii) the provision of technical assistance on the design and establishment of nurseries, research trials, and demonstration plots; and (iii) the provision of advice on other technical problems and issues which arise during the course of the project;

(2) Assess progress toward project objectives by making regular field visits to project sites. The purpose of the visits will be to hold in-dept discussions and to assess technical issues with expatriate and Haitian forestry staff members of the grantees and subgrantees and with peasants participating in project sponsored activities. The project coordinator will be consulted before and after each field visit;

(3) Advise and aid grantees with selection of technicians, fulfillment of the technical-related components of their scopes-of-work, and other project-related technical matters not specifically cited above.

B. Documentation/Distribution of Project Information:

(1) Evaluate technical information from project demonstrations, field trials and other forestry activities carried out by grantees and subgrantees;

(2) Identify technical lessons learned and their implications for project implementation;

(3) Assist the Project Coordinator in the preparation and distribution of reports, educational materials and evaluation documents relating to technical forestry matters.

C. Standards of Performance:

(1) Ensure that the technical forestry aspects of this project are designed, implemented and documented with respect to the highest professional standards so that the project can serve as a reliable base for future forestry activities by AID and other organization in Haiti and around the world;

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(2) Ensure that project activities are consistent with AID forestry policies and specific USAID mission policies and strategies in forestry, natural resources conservation, energy, and related areas.

D. Training:

(1) Advise grantees in planning their technical training programs for expatriate and Haitian staff;

(2) Assess the need for further on-the-job technical training as the project proceeds and assist in providing such training.

E. Other:

(1) Obtain reference material pertinent to agroforestry as additions to the USAID library in Port-au-Prince;

(2) Propose and arrange periodic technical seminars for project personnel to discuss the problems and progress of reforestation activities in Haiti. As appropriate, other organizations in Haiti involved or interested in reforestation and soil conservation shall be invited;

(3) Assist the project manager in responding to inquiries for technical information. This includes drafting appropriate written responses, and or arranging site visits to project demonstration areas;

(4) Carry out other project-related tasks as necessary or requested by the project coordinator or USAID project manager.

F. Reporting:

The contractor shall prepare and submit quarterly reports to the USAID project manager concerning technical aspects of the project and contractor performance. The fourth such report of each year shall be prepared as an annual report. A final report covering activities, observations and project implementation implications is required upon termination of the contract. The contractor also shall submit reports on a frequent basis regarding all field trips and technical assessments of project activities. Written technical assessments will comprise the areas of project research plans and implementation, plantation establishment, specific trials, nursery management, and others as may be specified by the USAID project manager.

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Annex F

Life of Project:
From FY 81 to FY 87
Total U.S. Funding $11.5 mill
Date Prepared Oct/Nov. 1984

Project Title & Number: Agroforestry Outreach (521-0122)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: To reduce and ultimately reverse the ongoing degradation of Haiti's natural resources, and thereby maximize the productive potential of its land.	**Measures of Goal Achievement:** - A slowing and reversal of the existing negative rate of growth re average annual agricultural productivity (now est. between -0.7 and -2.5%) - Increased supply of wood for fuel and other uses without a reduction of remaining forest reserves.	- Data generated by GOH (Haitian Institute of Statistics, Ministries of Agriculture and Plan) - Data and trend information generated by donor agencies (World Bank, IICA,etc) - Field surveys.	**Assumptions for achieving goal targets:** - Agroforestry activities will have a salutary effect on soil erosion, wood production and rural incomes. - Increased supply of wood will reduce pressure on remaining forested areas and marginal lands. - Peasant agroforestry is an economically and technically viable enterprise.
Project Purpose: 1. To motivate Haitian peasants to plant and maintain trees. 2. To plant and maintain substantial number of trees during the LOP. 3. To analyze information on the technical, economic and social variables of forestation in Haiti, and on the basis of this analysis, design a comprehensive research program.	**Conditions that will indicate purpose has been achieved: End of project status.** 1.a.Substantial numbers of Haitian peasants undertaking agroforestry activities or more active subprojects. b.Agroforestry Resource Center (PADF) ODH and CARE and CARE forestry programs in full activity w/demand for services. 2. 10-12 million trees planted and surviving at project termination. 3. Existence of analyzed and interpreted data on technical and socio-economic factors, and an agroforestry research program design.	- Reports received from implementing grantees. - Field Surveys and observations of Project Coordinator. - Project evaluations. - Reports on controlled experiments carried out by project technicians. - Research program design.	**Assumptions for achieving purpose:** -Resource Center and CARE will be able to carry out promotional and technical assistance activities freely. -PVOs will retain current interest in agroforestry and will carry out outreach activities. -Larger PVO's will manage regional nurseries with technical assistance and support from PADF and CARE. -ODH will provide seed to PVOs. -ODH will find adequate land under accept conditions for demonstration tree farms
Outputs: 1. Outreach subprojects continued with PVOs and community council groups. 2. PVOs strengthened to undertake agroforestry activities including regional nursery management. 3. Seeds and seedlings produced and distributed by ODH. 4. Demonstration tree farms established by ODH 5. Agroforestry Resource Center (PADF). 6. To continue the CARE forestry program with ODNO. 7. To obtain reliable information on the tehcnical, social and economic variables of forestation, including reliable survival targets for major eco-zones in Haiti. 8. Design for long-term, comprehensive agroforestry research program.	**Magnitude of Outputs:** 1. 125 groups or more. 2. 32 regional nurseries or more. 3. Selected seed provided to regional nurseries; seedlings for ODH tree farms and PADF central region. 4. Twelve or more. 5. One, with four regional sub-centers. 6. Seven regional nurseries with outreach programs. 7. Comprehensive analysis of existing data. 8. Detailed research program design.	- reports received from implementing grantees. - Field surveys and observations of Project Coordinator - Project records and evaluations. - Reports generated by project technicians and Coordinator. - Project Records and Reports. - Grantee Records and Financial Reports. - Agency Records.	**Assumptions for achieving outputs:** - PVO interest will remain as high as currently and PVO estimates of peasa contacts and ability to motivate are accurate. - GOH will continue expanding its operations. - Sufficient land area will be available to carry out subprojects and sufficient supplies of seedlings and inputs will be forth - Training programs are successful. - Research grantee can mobilize to effectively implement research program in 18 months.
			Assumptions for providing inputs: - Continued availability of AID grant funding. - High quality field extension agents can be located and hired by grantees - USAID can enter into PSCs for coordinator and other consultants. - USAID can sign grant with Research institution.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 81 to FY 87
Total U.S. Funding $11.5 million
Date Prepared: Oct/Nov. 1984

Project Title & Number: Agroforestry Outreach (521-0122)

NARRATIVE SUMMARY					OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	Project Inputs: (D-1) ($000)				Implementation Target (Type and Quantity) (D-2)	(D-3)	Assumptions for providing inputs: (D-4)
:oject :mponent	Aut. Proj.	Add. Req.	Amended Totals	Other (approx)		Project Records and Reports	- Continued availability of AID funding
DH	850	350	1,200	1,300		JPIP	- Recruitment of new Senior Forester
ARE	2,350	50	2,400	1,100		AID Records	
ADF	3,900	2,030	5,930	2,300			
A	900	170	1,070	-0-			
esearch	-0-	900	900	-0-			
otal	8,000	3,500	11,500	4,700			

:e revised Financial Plan for additional info.

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ANNEX G

REVISED EVALUATION PLAN

1. BACKGROUND

The Agroforestry Outreach Project was originally designed as a demonstration project to test three models of project implementation; tree-planting with large landholders (ODH), tree-planting with small farmers through established NGOs (PADF), and tree-planting directly with small farmers (CARE). Within each of the three grants, variations on the implementation models were also identified. Therefore, one of the primary purposes of this project is to identify the most effective model(s) for continued tree planting activities in Haiti.

A mid-term evaluation was conducted as scheduled in November-December 1983 after approximately two years into the implementation phase. This evaluation provided recommendations for mid-course modifications which are being or have already been incorporated into the project implementation models (refer to Section I.C. Project Evaluation and Audit, page 7).

A second evaluation is scheduled towards the end of project to assess project implementation and to provide recommendations for the design of any follow-on project. This project amendment extends the life of project by fifteen months from September 1985 to December 1986. The second and final project evaluation is now scheduled for January 1986. This will provide adequate time for the project modifications recommended in the first evaluation, such as the addition of a discrete research component, to be fully incorporated in project implementation. At the same time it will allow ample preparation time for the design of a follow-on project which includes lessons learned from four years of project implementation.

Generally, the text for the Evaluation Plan in the original Project Paper is valid. Based on the experience gained and due to modifications in project implementation, the following refinements in evaluation criteria are presented.

2. IDENTIFICATION OF EVALUATION CRITERIA

An evaluation requires clearly stated criteria to serve as indicators of whether project purposes have been met and which project implementation model(s) are most effective in successfully attaining the project objectives. The final project evaluation should provide guidelines for the design of any follow-on project in forestry.

a. PROJECT ORGANIZATIONAL VARIABLES

The tree-planting implementation models through the three grantees must be evaluated in terms of identifying the most effective model(s) for attainment of the project objective of environmental protection through reforestation and soil conservation activities. Criteria for this overall evaluation should not only include quantitative factors such as numbers of trees planted and surviving and numbers of farmers participating, but should also include qualitative factors such as establishment of effective information generating processes.

The illustrative list of desired outcomes in the original project paper's evaluation section (page 103) serves as a guideline for evaluation criteria of this aspect of the project. In addition to the original list, the following should be added:

- The establishment of technically sound nursery production units which serve individual regions.

- The development of a group of well trained extension agents to transfer tree-planting, maintenance and harvesting technologies to the participating farmers.

- The establishment of information feed-back processes which stimulate the incorporation of new information into project implementation systems, specifically including species performance.

b. RESEARCH COMPONENT EVALUATION CRITERIA

The research component will have been in place for approximately eleven of its eighteen month contract by the time of this evaluation. Therefore, only preliminary research findings will be available. However, it will be possible for the evaluation to critically assess the research methodology.

The objectives of the research component are to systematically and scientifically assess and produce information on the technical and socio-economic project variables.

Specifically the research component will produce the following information, or establish procedures for generating that information.

1) TECHNICAL CRITERIA

a) Survival Rates

Target survival rates must be systematically identified for the major economical life zones. Based on these target survival rates, outplanting procedures will be evaluated.

b) Species-site Selection

The outcome of improved species-site selection will be increased survival rates. The species-site selection process is a continuous process which will provide technicians with new information. Therefore, it is not an outcome that must be evaluated, but rather the effectiveness of the process; the system for generating, collecting, analyzing and utilizing the information.

c) Nursery Production Systems

The production of quality seedlings is a critical factor in survival rates. The variables in seedling production systems, such as nursery mix, containers, chemical inputs, et cetera, should be assessed and compared to other economically viable alternatives.

d) Outplanting and Maintenance Techniques

Although outplanting and maintenance techniques are already being presented to farmers through the project, these techniques need to be systematically assessed in comparison with alternative techniques. Specifically, the research component will look at the tools used for outplanting, micro-catchments, spacing strategies, weeding, and silvicultural practices including pruning, thinning, and coppice management.

2) SOCIO-ECONOMIC CRITERIA

The project was designed on the premise that Haitian farmers would plant and maintain substantial numbers of trees if they are planted on their own land for a short-term cash return. A substantial number of trees have been planted under the project, as of December 1984 appriximately 14 million trees. The original project hypothesis must now be tested in order to refine the project implementation model(s). The research component is mandated to collect information in order to evaluate the hypothesis of cash cropping trees.

a) Identify the participating farmers' perceptions of the uses of trees after harvest.

b) Determine market demand and consumer preference for wood products which could be produced from trees planted for cash cropping, i.e. charcoal, polewood, lumber.

c) Determine cost/benefits for participating farmers based on target growth rates, calculated from established trees over a four year period.