669-0154

PFP/LIBERIA

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E V A L U A T I O N

GRANT NO. AID/afr-G-1395

(As of July 15, 1979)

SECTION I

DESCRIPTION OF AID/afr-G-1395

AID/afr-G-1395 is a grant to Partnership for Productivity Foundation/Liberia (PFP) from AID of $164,000 to support development program activities in Liberia (see Exhibits A, Section I, Grant Agreement; Exhibit B, modification of grant; and Exhibit C, Budget modifications).

The grant period is from March 2, 1978, through November 15, 1979.

The Program description under which the grant is being administered in summary form is as follows:

Purpose of grant

To expand a development effort already underway to diversify the economy of Yekepa, an iron ore mining concession area, in order to create alternative economic activities to keep the community viable after depletion of the iron ore. Primary emphasis is to be placed on improving the living standards of rural farmers located on the fringes of the concession area.

Specific objective (1)

To augment the capacity of PFP's existing Appropriate Technology Center (ATC) to make and repair rural industry devices such as roto-tillers, rice mills, rice threshers, fan mills, block machines, etc. by enabling the ATC to procure needed workshop tools, machinery, materials and spare parts ($35,607).

First year tasks

- prepare and equip approp. tech. workshop
- procure prototypes and components
- hire short-term consultant to assist in production techniques, shop lay-out, and engineering problems

Second year tasks

- continuation of testing production techniques and working out engineering problems
- making roto-tilers available for sales or leasing and providing essential repair and maintenance services

Specific objective (2)

Building on previous PFP experiments, to enhance PFP's capacity to produce crops and test their feasibility as animal feeds, especially for poultry and pigs ($35,607).

First year tasks

- surveying, clearing and preparing test plots and a training farm
- lining up interested farmers
- purchasing a tractor and allied equipment
- organizing an equipment maintenance program
- plowing, planting, and harvesting crops
- purchasing and installing a grain mill

Second year tasks

- continuation of lining up interested farmers
- continued use of tractor and allied equipment to prepare farm plots
- implementing a continuous training and extension assistance program

Specific objective (3)

Handicraft: expand the small-scale, profitable handicraft industry, known as Y-Craft and operated largely by local women, by providing additional space, equipment, supplies, and management support ($17,000).

First year tasks

- altering and equipping a new craft building
- purchasing equipment and supplies
- hiring and training Liberian managerial counterparts
- increasing the number of trainees from 10 to 30

Second year tasks

- increasing the number of craft trainees
- obtaining additional supplies

Objective (4)

Evaluation: gather data from the three experimental projects to determine whether or not they are effective in creating alternativ income generating activities which diversify the economic base of Yekepa and contribute to long-term viability ($43,786). (see Exhibit B, Section I, Evaluation Plan).

First year tasks

- prepare and present to AID a detailed project evaluation plan for each experimental activity enhanced by the grant
- submit a final report on the effectiveness of the projects with conclusions and recommendations upon completion of the grant
- submit an appendix to the final report outlining the extent to which minorities and women were used as members of PFP's field staff and as individuals carrying out the projects enhanced by the grant.

Objective (5)

Overhead: in order to provide overall management, experienced guidance, and project coordination, the grant included an overhead allowance ($32,000).

SECTION I EXHIBITS

Exhibit A, Section I - Grant Agreement (this incorporates approved amendments to the text of specific objectives).

Exhibit B, Section I - Amendment/modification of grant

Exhibit C, Section I - Approved budget modifications and modifications of fund application within budget categories.

Exhibit D, Section I - Evaluation Plan

Liberia

SECTION I

GRANT AGREEMENT

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

MAR 2 1978

Partnership for Productivity
Post Office Box 1970
Annandale, Va. 22003

Subject: Grant No. AID/afr-G-1395

Gentlemen:

Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, the Agency for International Development ("AID" or "Grantor") hereby grants to the Partnership for Productivity ("PFP" or "Grantee") the sum of one hundred and sixty-four thousand dollars ($164,000) to support program activities in Liberia as more fully described in the attachment to this Grant entitled "Program Description".

The Grant is effective as of the date of your acceptance of this letter and shall apply to commitments made by the Grantee in furtherance of program objectives during the period from date of acceptance to 15 November 1979.

This Grant is made to PFP on condition that the funds will be administered in accordance with the terms and conditions as set forth in Attachment A entitled "Program Description" and Attachment B entitled "Standard Provisions", which have been agreed to by your organization.

Please sign the Statement of Assurance of Compliance, enclosed herein, and the original and seven (7) copies of this letter to acknowledge your acceptance of the conditions under which these funds have been granted.

Please return the Statement of Assurance of Compliance and the original and six (6) copies of this Grant to the Office of Contract Management, Regional Operations Division-Africa, AID, Washington, D.C. 20523.

Sincerely yours,

James A. Anderson

James A. Anderson
Grant Officer
Regional Operations Division-Africa
Office of Contract Management

ATTACHMENTS:

A. Program Description
B. Standard Provisions

ACCEPTED:

PARTNERSHIP FOR PRODUCTIVITY

BY: Andrew H. Oerke

TITLE: Executive Director

DATE: MAR 2 1978

ACCOUNTING AND APPROPRIATION DATA

Appropriation No.: 72-1181021.3
Allotment No : 843-50-669-00-69-81
PIO/T No. : 669-0154-80005

PROGRAM DESCRIPTION

A. Purpose of Grant

To expand a development effort already underway to diversify the economy of Yekepa, an iron ore mining concession area, in order to create alternatives to iron ore production so that the community will remain viable after the iron ore is depleted. This effort applies primary emphasis on improving the living standards of rural farmers located on the fringes of the concession area.

B. Specific Objectives

The Partnership for Productivity (PFP), in cooperation with the Government of Liberia, will implement three experimental activities to develop the above-mentioned alternatives for Nimba County.

(1) Procurement of workshop tools, machinery and materials for making rural industry devices and repair parts for standard make roto tillers, rice mills, threshers, fan mills, block machines.

Under D. of the grant, entitled Budget, please delete "Roto Tiller Manufacture" as the first item and substitute "Workshop tools and Rural Industry Devices and Repair Parts"

(2) Animal concentrate production and processing: Building on previous experimental efforts, local and introduced concentrate crops will be produced and tested in various mixtures to determine their technical and economic feasibility as animal feed for poultry and pigs. The objective is to increase the productivity and reduce costs of barnyard animal production.

(3) Handicraft: A small profitable on-going handicraft industry operated largely by local women will be expanded by providing additional equipment, supplies, and management support.

All three project activities are experimental and will be implemented primarily for the purpose of determining through the data they yield (cost-benefit analysis, market analysis, acceptability and feasibility studies, etc.) whether or not they are effective in diversifying the economy, are impacting on the rural farmer, are creating alternatives to iron ore production and are developing a more viable economic base for Yekepa and Liberia.

During the first year of the grant, several tasks are to be performed or started: For the roto-tiller project these

will include preparing and equipping the workshop, ordering prototypes and components, producing and testing the first Liberia prototypes, and hiring a short-term consultant to assist in production techniques, shop lay-out and engineering problems. For the feed production project the tasks include surveying, clearing and preparing test plots and a training farm; lining up interested farmers; purchasing a tractor and allied equipment; organizing an equipment maintenance program; ploughing, planting and harvesting crops and purchasing and installing a grain mill. For the Y-Crafts project the tasks include altering and equipping a new crafts building, purchasing equipment and supplies, hiring and training Liberian managerial counterparts and increasing the number of trainees from 10 to 30.

During the second and final year of the grant, the primary tasks will be as follows: For the roto-tiller project they will include the continuation of testing production techniques and working out engineering problems, placing orders of roto-tiller components and commencing the production of roto-tillers for sales and leasing. For the feed production project, second year activities include a continuation of lining up interested farmers, continued use of tractor and equipment for preparing farm plots, and implementing a continuous training and extension assistance program. For the Crafts project, second year activities include increasing the number of craft trainees and ordering additional supplies.

Covenant to Grant Agreement

Within six months of Grant issuance, PFP must submit to USAID/Liberia and AFR/DR/CAWARAP (AID/W) a detailed project evaluation plan for each of the experimental activities. The plan should focus on determining the feasibility (especially the economic feasibility) of the new technologies under small farmer conditions. The plans should also describe data collection needs and methods and the types of analyses to be performed.

C. Reporting

1. Quarterly progress reports on the three activities will be submitted by the PFP projects director to the AID/Mission beginning o/a 12/78.

2. Yearly audits of the books will be conducted by a commercial auditing firm under contract to the PVO beginning o/a 9/78.

3. Since the three projects are experimental, in depth testing, analysis and documentation will be undertaken to determine their effectiveness. Consequently, final reports,

with conclusions and recommendations, will be submitted to the AID/Mission and to AID/Washington upon completion of said grant (7 copies):

2 - USAID/Liberia

4 - AID/W - AFR/DR/CAWARAP (R. Solem)

1 - CM/ROD/AFR

As an Appendix to its final report, the grantee shall submit a brief summary outlining the extent to which minorities and women were used in carrying out the activity and the extent to which they were used as members of teams which were sent to the field.

D. Budget

The funds provided herein shall be used to finance the items described in the following budget:

Purchase of workshop tools	$ 30,000
Consultants/Evaluators	55,000
Feed Production	30,000
Crafts Expansion	17,000
Overhead	32,000
Total	$164,000

The Grantee may not exceed the total amount of the Budget. Reasonable adjustments among the line items in the Budget are unrestricted.

E. Special Provisions

Delete from Attachment B, Standard Provisions, the following provisions:

7A - Payment - Federal Reserve Letter of Credit (FRLC) Advance

7C - Payment - Reimbursemen

12 A - Title to and Use of Property (Grantee Title)

12B - Title to and Care of Property (US Government Title

16 - Prohibition on Abortion-Related Activities

19 - Patents

F. Overhead Rate

For the period of this grant, until changed by modification of the grant, the grantee's provisional overhead rate shall be 24% of total costs.

EXHIBIT B, SECTION I
MODIFICATION OF GRANT

STANDARD FORM 30, MAY 1969
GENERAL SERVICES ADMINISTRATION
FPR (41 CFR) 1-16.101

AMENDMENT OF SOLICITATION/MODIFICATION OF GRANT

PAGE 1 OF 2

1 AMENDMENT/MODIFICATION NO	2 EFFECTIVE DATE	3 REQUISITION/PURCHASE REQUEST NO	4 PROJECT NO (If applicable)
1	See Blk 19	669-0154-80005	669-0154

5 ISSUED BY CODE
Contracting Officer
Regional Operations Division - AFRICA
Agency for International Development
Washington, D.C. 20523

6 Tech Office: CODE
AID, Bureau for Africa
Office of Development Resources
Central & Anglophone West Africa Regional
Affairs Project Division

7 CONTRACTOR NAME AND ADDRESS CODE FACILITY CODE
Partnership for Productivity
2311 18th STREET, NW
WASHINGTON, DC 20009
(Street, city, county, state, and ZIP Code)

8 ☐ AMENDMENT OF SOLICITATION NO ____
DATED ____ (See block 9)
☒ MODIFICATION OF Grant ORDER NO. AID/afr-G-1395
DATED 2 March 78 (See block 11)

9 THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS
☐ The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:
(a) By signing and returning ____ copies of this amendment, (b) By acknowledging receipt of this amendment on each copy of the offer submitted, or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10 ACCOUNTING AND APPROPRIATION DATA (If required)

11 THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS
(a) ☐ This Change Order is issued pursuant to ____
The Changes set forth in block 12 are made to the above numbered contract/order.
(b) ☐ The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.
(c) ☒ This Supplemental Agreement is entered into pursuant to authority of the Foreign Assistance Act of 1961, as amended, and Executive Order 11223.
It modifies the above numbered contract as set forth in block 12.

12 DESCRIPTION OF AMENDMENT/MODIFICATION

1. ATTACHMENT A, Program Description, Paragraph B (1) is deleted and replaced by the following:

"(1) Procurement of workshop tools, machinery and materials for making rural industry devices and repair parts for standard make roto tillers, rice mills, threshers, fan mills, and block machines."

2. ATTACHMENT A, Program Description, Paragraph B (3), third sub-paragraph is amended to read:

"During the first year of the grant, several tasks are to be performed or started: For the workshop tools, machinery, etc. project these, with conclusions and recommendations, will be submitted the AID Mission and to AID/Washington upon completion of said grant (7 copies):

2 - USAID/Liberia
4 - AID/W - AFR/DR/CAWARAP (R. Solem)
1 - CM/ROD/AFR"

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13 ☐ CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT ☒ CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 11 COPIES TO ISSUING OFFICE.

14 NAME OF CONTRACTOR/OFFEROR
(Signature of person authorized to sign)

15 UNITED STATES OF AMERICA
BY James A. Anderson
(Signature of Contracting Officer)

16 NAME AND TITLE OF SIGNER (Type or print)
Andrew H. Gerke
Executive Director

17 DATE SIGNED
17 July 78

18 NAME OF CONTRACTING OFFICER (Type or print)
James A. Anderson

19 DATE SIGNED
12 JUL 1978 (MSK)

30-101

3. ATTACHMENT A, Program Description, Paragraph D, Budget,

The budget chart is amended by deleting the cost line entitled "Roto-Tiller Manufacture $30,000" and replacing it with "Purchase of Workshop Tools $30,000".

4. The term, ""Roto-Tiller project" is deleted and replaced with "Workshop Tools, etc. project" wherever it appears.

PLAN FOR EVALUATING THE PROGRESS OF PFP/LIBERIA TOWARD ACHIEVEMENT OF OBJECTIVES SUPPORTED BY AID/afr-G-1395

The proposed evaluation will place special emphasis on PFP/Liberia's three experimental projects to facilitate development in Upper Nimba County by helping to improve the living standards of rural farmers. USAID Grant No. AID/afr-G-1395 has the objectives to strengthen PFP's appropriate technology in agriculture and rural industrial growth; to increase the productivity and reduce costs of barnyard animal production (specifically poultry and swine); and to expand handicraft industry by providing additional equipment, supplies and management support. Therefore USAID/Liberia has requested a special evaluation to measure the effectiveness of this grant. Specific elements of the proposed evaluation are as follows:

A. To evaluate the extent to which the purchase of workshop tools, machinery, parts and materials for making and testing rural industry and agricultural devices and keeping standard rototillers and other rice processing machinery and equipment maintained and repaired

1). To determine the impact of appropriate technology which will be accomplished by weighing the cost of hiring the rototiller vs the cost of labor to do the same with family labor taken into account.

2). The increased total production as a result of agricultural devices will be compared to the production without this equipment. In this analysis, the difference of possible annual production will be determined.

3). To compile figures and study the cost of inputs into specific small farmers induced to start irrigated rice production.

4). To analyze the cost to unassisted farmer to initiate equivalent size projects. To determine the cost of private investment by the individual.

5). Determine the economic feasibility of rototiller production, marketing and purchase. Review the PFP leasing plan for subsistence farmers to enable them to grow two full crops per year.

6). From the prior information, the cost differences between PFP assisted projects with its appropriate technology inputs and privately completed projects will be weighed against the farmer's net earnings. This will reveal the impact of PFP assisted projects versus the cost to the farmer of land preparation, planting, weeding and harvesting.

7). The evaluation will consider the length of time the farmer could take to pay for inputs. Realistically, the amount could probably never be repaid and is justified on the basis of getting him started.

8). Determine total cost of rototiller operation which will include purchase, fuel input, parts replacement, service, operation and transport. To reduce this cost, there will be a study to determine the optimum method of managing and maintaining and rototillers.

9) In a different sphere of appropriate technology on rural industrial development, a study will be conducted of the rural brick enterprise and charcoal manufacuture on cost input and cost benefit analysis.

B. To evaluate the production of local and introduced crops as feeds for poultry and swine including various mixings of feed during the first year. During the second year, lining up farmers interested in producing feeds, using the tractor to prepare farm plots and implementing a continuous training and extension assistance program.

1). To analyze animal concentrate production and processing and determine technical and economic feasibility of various mixtures as animal feed. To determine if productivity has increased and if costs have increased or decreased for animal feed production and what is the best combination.

2). In animal feed production, the evaluation will endeavor to compute the expense of growing maize and other feed products as opposed to the cost of importing. In conjunction with this, there will be a need to study the impact of imported feed on animal weight production against the local feed with imported additives on the same.

3). In feed production analysis, the factors of local availability of feed is vital since imported sources are unreliable. Along the lines of animal feed sources, new Liberian food sources will be investigated.

4). To illustrate comparative cost differences of local and import poultry and swine food varieties and determine the impact of AID grant input to promote lower cost of feed production.

5). To compile statistics to reflect the affedt of local and imported feed on swine weight. Determine if further savings can result with locally grown and milled feeds that are mixed with imported products. Combinations and results will be documented and record what has been accepted and implemented beyond the experimental stage. PFP believes a feed additive with some corn, some rice bran, and some other dried milled grains, beans and peas could be produced locally and cheaper than imported feed.

6). To determine guidelines and evaluate cost control for corn production.

7). Measure the extent of the impact of tractor cultivation in animal feed production and use of tractor cultivation in land preparation for private farms.

POULTRY FEED PRODUCTION ANALYSIS

1). Investigate the various import and local feed mixtures to establish the cost benefits of variable alternative.

2). Determine the impact of these mixtures on the price per kilo in the local market and impact of these feeds on the poultry product and egg quality.

3). Determine impact of appropriate technology devices an the poultry production.

Such an evaluation of feed production must not be expected to produce clear cut recommendations for reed growing and animal feeding which could be applied anywhere in Libeia because:

a. the availibility of feed differs from Monrovia and up country
b. transport costs become a major factor up country and in different seasons.
c. customer preferences and buying habits vary
d. some animal feed operations can kill and freeze at optimum weight while others must sell live or kill to order

Also, because the size and range of the PFP experiment and evaluation will cover a very small portion of Liberia. It would be too small a sampling of farming and animal enterprises which may not be typical. In short, the amount of variables including such things as managerial ability, access to markets, access to transport, cooperative membership, application of technical assistance, weather restraints, the entrepreneur's own personal concept of his enterprise are too many for such a small experiment to produce more than indicative results.

C. <u>To evaluate effectiveness of altering and equipping a new crafts building, purchasing equipment and supplies, hiring and training Liberian managerial counterparts and increasing the number of trainees from ten to thirty.</u>

1). To study and evaluate the impact of AID grant on the Y-Craft operation in increased sales; improvement in quality of product and improving overall management of Y-Craft.

2). To study and evaluate the training and economic effect on the Trainees. To accomplish this, there will be a review of the trainees economic position after training as opposed to what it was like before their training. This will measure the impact on employment and income for rural women as a result of the AID grant with the overall objective to improve skills and income of rural women.

This will determine the viability of the organization by looking at its effect on individual trainees.

In the review of the program and from data collected, the program's relationship to all PFP/Liberia endeavors and PFP's progress to date in terms of beneficiaries will be determined. Thus, with analysis of data compiled for cost benefit analysis and market analysis for projects. PFP will determine whether the project should be continued or terminated. If it is to be continued, necessary project modifications will be defined.

After the evaluation will have been completed, final conclusions and recommendations will be forwarded to USAID Mission/Liberia, USAID/Washington, PFP/Liberia, and PFP/USA/ This evaluation will commence immediately upon the acceptance by USAID/Liberia of this plan for evaluation.

Roger Heller
Administrative Assistant & Intern
PFP/Liberia

Mr. Jack M. Cornelius
Food and Agriculture Officer

January 31, 1979

James W. Dawson, RD

Budget Modifications to AID Grant
#AID/afr-G-1395 (PfP)

By the attached letter, George Butler is proposing certain budget modifications in the subject grant. Although AID approval is not explicitly required by the grant agreement, George has followed my suggestions to document the rationale for these changes and to submit a revised financial plan (attached). In summary, the proposed changes are as follows:

Budget Item	Grant Budget	Proposed Revised Budget
1. Appropriate Tech.	$ 30,000	$ 35,607
2. Consultants Center		
Evaluators	$ 55,000	$ 43,786
3. Feed Production	30,000	35,607
4. Craft Expansion	17,000	17,000
5. Overhead	32,000	32,000
Total	$164,000	$164,000

In addition to changes in specific budget categories he is proposing several adjustments in the application of funds within these categories. They include the following:

Category	Grant Request[1/]	Proposed Adjustments
1. ATC Center:		
a. Work shop tools and machinery	$20,000	$19,396
b. Metal stock & parts	10,000	12,367
c. Bldg. modification	------	3,844
Total	$30,000	$35,607

Category	Grant Request 1/	Proposed Adjustments
2. Animal Feed Production		
a. Tractor & Allied Equip.	$30,000	$22,777
b. Agricultural Supplies		12,830
Total	$30,000	$35,607
Consultants		
a. Technical		
(1) Business & Financial (1)	22,500	500
(2) IESC (1)	7,500	18,986
(3) App. Technology (1)		14,300
b. Evaluation		
(1) In-house Assistance		10,000
(2) Outside Consultant	25,000	
Total	$55,000	$43,786

The rationale for these changes is set forth in various sections of the attached letter.

As the above tables indicate, most of the proposed shifts are rather minor in nature. However, there are two proposed changes that could be considered major. The first involves using an in-house evaluator in combination with an outside evaluator. This would be in lieu of the exclusive use of an outside evaluator. PfP is proposing to use Roger Heller as the in-house evaluator and the outside assistance would be in the form of a contractor or from REDSO. I have cabled AID/W to get their reaction to this change, but I have received no response to date. REDSO has indicated that their Evaluation Officer will be in Liberia in early February and that we should review the evaluation proposal with him at that time. A copy of the proposed evaluation plan is attached for your review.

The second change involved increasing the level of local cost financing. The PIO/T that went forward to the AID/W Contractor office limited local cost financing to $17,000, but this limitation is not mentioned in the subsequent grant agreement which PfP signed. PfP is now proposing that up to $67,621 be spent as local costs. Since we are not buying foreign currency to make these payments, I personnally do not see any problem with this proposal as long as PfP observes the authorized origin preference for good and services set forth in the grant agreement.

As noted earlier, the grant agreement does provide for reasonable adjustments in budget items, presumably without AID approval. However, I thought the record should show that these changes had been discussed with us and had our general blessing. If you feel specific approval action is required, do you feel that it can be granted in-house or must it go to AID/W. You may want to discuss this point with the Director when he returns.

SECTION II

EXECUTIVE SUMMARY OF EVALUATION

PFP/Liberia has used AID/afr-G-1395 funds responsibly and advantageously. The majority of tasks specified in the grant agreement have been performed well. A few have been modified or omitted for sound economic, technical, and practical reasons. The impact of the AID assistance on PFP's overall objective accomplishment has been favorable. It is too early for information on the impact of experimental projects to be conclusive. Indications are that the three experimental projects fostered by AID, when more fully implemented and developed, will make significant contributions to diversification of the economy and eventual viability of the iron ore mining concession area.

Task performance

PFP's Appropriate Technology Center is fully constructed and well equipped. Production of the IRRI designed, single axile tiller has been postponed for technical reasons. Funds originally intended for purchase of IRRI tiller components have been used effectively to accomplish the same ultimate farmer assistance objective with a different brand of power tiller.

PFP's agricultural program has purchased a farm tractor and attachments. A training farm and trainee lodging is fully developed to enable 10 farmer trainees at a time to be exposed to a wide variety of crop production and animal husbandry. Emphasis on local production of animal feeds was shifted for economic and technical reasons to other crop production, farmer

training, and provision of extension services. Organization and implementation of systematic mechanical maintenance and repair of agricultural equipment and vehicles needs improvement to increase vehicle and equipment availability and reduce repair costs.

Y-Craft building extension is complete except for electric wiring and fixtures. Liberian personnel selected as production and sales managerial counterparts have been hired and are being trained. They are diligent and responsive to training and increased responsibility. Adequate supplies and equipment have been obtained; but efficiency of purchasing supplies such as dyes and screen printing components needs improvement. Y-Craft has not achieved the objective of increasing trainees from ten to thirty, and probably will not achieve it until 1980.

The merit of continuous "in-house" evaluation, as opposed to one-time, outside evaluation, has been proven by PFP's experience during the grant period. Constant information feedback is necessary for rapid program modification and adjustment. Evaluation of experimental project impact on the overall viable community objective, at this time, can only be indicative, It is too early for conclusive results.

Field programs such as that of PFP/Liberia need direction and guidance from a central body like PFP/USA in order to profit from the experience of other PFP third world programs, and in order to gain the advantageous guidance of experienced monitoring and coordinating Headquarters personnel. PFP/USA performs these functions effectively.

Impact of experimental projects

PFP's Appropriate Technology Center (ATC) used AID/afr-G-1395 funds to advantage creating, and supporting the creation of, several successful Liberian, small-scale enterprises such as charcoal and building block producers. The most successful appropriate technology support has been that rendered to low cost construction contractors.

The PFP experiment in brick and clay products has been excessively expensive and has proven only that satisfactory fired clay bricks and blocks can be made. For economic production, PFP must move the experimental site closer to the clay source, redesign and rebuild the kiln, and obtain clay mixing machinery and equipment.

The ATC provides essential supporting services to PFP's agricultural, integrated rural, and industrial development projects. AID funds have enabled PFP's ATC to equip itself for an expanded program involving more, and better-organized, training of small-scale rural industrialists and artisans.

PFP's agricultural program used AID funds to expand and diversify its training farm; to mechanize its land preparation services; and to increase educational activities, extension coverage, and cooperative organization assistance. For economic and technical reasons, emphasis was shifted from animal feed production to a wider range of projects including other forms of assistance aimed at increasing the production and profitability of animal husbandry enterprises.

Mechanization of land preparation at the present time appears to be uniquely appropriate in Upper Nimba County because of the presence of the mining company's mechanical repair capabilities. Results will be monitored and compared with results of other projects using labor intensive methods.

While there has been an increase in regional agricultural output stemming from the grant, it is too early, and involves too small a sample, for accurate measurement of additional farm income.

The grant portion for craft expansion was used as intended and has placed Y-Craft, the agency dealing with craft expansion, in position to formalize its training courses, diversify the skills taught, and increase the number of trainees. Increase in the number of trainees thus far has fallen short of the objective in the grant agreement.

Y-Craft will continue to need grant funds to cover purely training costs. It has done well in covering all except training costs from sales income. Its impact is primarily humanitarian, dealing with the need for unmarried mothers to earn income.

General Comment

PFP/Liberia's staff is hard working and dedicated. The agency is trying to generate too many kinds of development and has more projects underway than its small staff and resources can cope with efficiently. It has been forced into this position by pressures from donors. Each of its seven donors wants PFP/Liberia to concentrate on different aspects of development. Lamco, the mining company, wants PFP to attract

industrial investment which will have large scale employment potential and use the company's infrastructure, including the railroad. PACT wants PFP to concentrate on small-scale rural industry and artisan development. The IFS grant is for agricultural experimentation. USAID tends to regard PFP's appropriate technology development, subsistence farmerg training, and agricultural extension work as its highest priority activities (i.e. reaching the rural poor). The Swedish YMCA Association encourages activities in which PFP and Yekepa YMCA cooperate such as student intern programs, craft training and rural school construction. The Gov't of Liberia appears to regard PFP as an arm of Gov't dealing with all aspects of development in Upper Nimba County. The Peace Corps assigns volunteers to PFP requesting that the volunteers be supported in their specific skills such as construction contractor training.

All of these donor pressures have kept PFP hustling, and provided PFP with challenging objectives and a heavy work load. The program has done well, but the strain of overextension is evident.

I believe it is essential and that it is the right time for PFP/Liberia to expand its staff, its capacity to manage projects, and its resources. AID/afr-G-1395 has assisted PFP to envision its full potential and to assess what has to be done to realize it.

Roger Heller
Roger Heller
PFP/Liberia Evaluator
July 28, 1979

(See Section II, Exhibits - Photographs next page)

LISTS OF PHOTOGRAPHS

- Piggery manager observing livestock near Yekepa.
- Swine production.
- PFP's Senior Agricultural Advisor Buxton Cooper provides technical advise in poultry production.
- LPMC nursery at Lugbwee school in which PFP advises agricultural students.
- Local farmers participating in agricultural training at PFP's Farmer's Training Center.
- PFP's vegetable nursery at the Demonstration Farm near Grassfields, Nimba County.
- View of crops planted by PFP agricultural workers
- PFP's experimental fish ponds, stocked with Talapia, are harvested twice each year.
- Farmers transplanting rice seedlings from nursery area to paddy area.
- Women weeding rice paddy at local farm.
- Harvesting and cleaning paddy rice.
- New warehouse at Headquarters of the Wala Laake Multi-purpose Cooperative.
- Clearing of bush area for canal system for irrigated rice project near Lubgwee.
- PFP's 955-H Frontend loader clearing bush area to prepare irrigated rice farm.
- PFP's Massey Ferguson 135 tractor at Demonstration Farm, Grassfield.
- PFP's Yanmar rototiller preparing soil for planting.
- Rice thresher used by farmers to clean harvested rice.
- Traditional method of converting logging lumber waste into charcoal.
- Mr. Ben Kaye preparing to unload charcoal kiln which has a capacity of 35 bags.
- Briquette samples manufactured at PFP's Appropriate Technology Center.
- Chicken waterer designed at Appropriate Technology Center and manufactured by Liberian aluminum casterer.
- One type of PFP chicken feeder manufactured by Liberian entrepreneurs shown below.
- Equipment operated by Liberian apprentice at Appropriate Technology Center.
- Sample of implements designed and manufactured at Appropriate Tech. Center.
- Assembly of Cinveram block press machine
- Building constructed with cinveram block which is important in PFP's efforts to facilitate low cost construction
- Samples of clay bricks drying before they are baked in the brick kiln.

- Y-Craft extension to increase work and storage area which will alleviate restricted space.
- Women trainees preparing silk screen material at Y-Craft's workshop.

SECTION III

EVALUATION OF TASK PERFORMANCE

In this section, evaluation of progress in the performance of each specific task is presented and discussed separately.

After this separate analysis, in Section IV, progress toward specific objectives will be evaluated in terms of achievement of the overall purpose of the grant.

Specific objective (1): Appropriate Technology Expansion

Expenditures

As of July 15, 1979, PFP spent AID/afr-G-1398 grant funds to expand its Appropriate Technology Center as follows:

Vehicle, machinery and equipment	$19,396
materials, stock, and spare parts	12,367
shop improvements and power supply	3,844
Total	$ 35,607

Major expenditures were for a Ford pick-up truck to provide field service capacity; materials for construction of a 4 wheel trailer to enable transportation of roto-tillers to rural farm sites; metal for construction of 4 VITA designed metal charcoal production kilns; and materials for construction of 6 CINVA-ram building block presses. Smaller expenditures included purchase of hand tools, grinding equipment, metal stock, welding supplies, nuts, bolts, clamps etc, parts for repair of roto-tillers and additions to the Approp. Tech. Center such as an office, roofed over work space, and security fencing.

Preparing and equipping the workshop

At the beginning of the grant period PFP's Appropriate Technology Center (ATC) had limited capacity to produce devices and repair machinery and equipment. PFP was forced to use outside services.

These were largely unreliable, expensive, and slow. Since March '78 the Center has greatly expanded in work space, capacity to train technicians, and in its ability to produce, repair, service and transport mechanical devices used in farming, in low cost construction, and in rural industries such as charcoal and brick production.

One first year task, preparing and equipping an appropriate technology workshop, has been performed. PFP's ATC has 200 sq. m. of enclosed workshop 140 sq. m. of roofed-over repair space and 400 sq. m. of fenced in yard. It has an office, a secure tool room, a workers toilet.

It must be stated here that PFP applied substantial funds from sources other than AID/afr-G-1393 to construction and equipment of this Center. The ATC has a metal working lathe, milling machine, shaper, arc and gas welders, sheet metal cutter, air compressor, battery charger, work benches and vices, and approx. $5,000 of power and hand tools, metal stock and spare parts.

Procuring prototypes and components

The task of procuring prototypes and components was originally intended to cover obtaining International Rice Research Institute (IRRI) rota-tillers designed and recommended by IRRI for manufacture in countries where low income farmers must cultivate swamps and irrigated rice paddies.

Two prototypes were obtained from IRRI. These were tested by PFP and the United Nations Food and Agricultural Organization (FAO) in Nimba County, Liberia, swamps and irrigated paddies. The single axle feature, whereby the same axle drives the tiller and also tills the soil, makes the IRRI tiller difficult to turn and prevents it from doing an acceptable job of rice paddy preparation. Just

to do minimal job with the IRRI tiller requires 5 or 6 passes using the plow to turn over the clumps, the rake to break them up, and finally the tiller blades to cut up the clumps and weeds and mix in fertilizers and soil conditioners. IRRI engineers must have arrived at our same appraisal, because they requested PFP to suspend any IRRI tiller production program until they had prototypes available of a new, double-axle design which would also incorporate steering clutches.

Meanwhile PFP obtained two Yanmar roto-tillers along with a supply of spares and maintenance tools selected to keep them operational. PFP also procured 6 prototype CINVA-ram block machines (VITA design, i.e., Volunteers in Technology, USA), 2 prototype Chinese, foot-treadle rice threshers, and a variety of prototype small tools such as rice harvesting sickles and tree nursery and seedling planting devices. The latter were developed in PFP's own ATC. Other prototype appropriate technology devices either acquired or made by the ATC include 6 VITA designed charcoal kilns, a small-farmer poultry brooder (kerosene lamp heated), and poultry feeding and watering devices.

Components acquired and kept on hand at the ATC include 2 5 HP Briggs and Stratton power units, angle iron, metal strapping and tubing, sheet metal, a wide variety of metal fasteners, stove pipe, galvanized pipe, V-belts, and a stock of gears, bearings, seals, gaskets, and specific spare parts for the Yanmar roto-tiller, and for ATC and Agricultural Extension vehicles and motorcycles.

<u>Consultation on techniques, lay-out, and engineering</u>

PFP's Approp. Tech. Center is managed by an experienced Approp Tech. specialist, Mr. Llewellyn E. Roberts, who came to PFP as a consultant after three years at the Appropriate Technology Production

unit in Bo, Sierra Leone. Mr. Roberts is training two, full-time, Liberian appropriate technology apprentices, Messrs. Lasannah Sesay and Fred Theager. The Director of the AID supported Rural Development Institute (RDI) in Bong County, Dr. Edward Holmes, was favorably impressed with the training administered by Mr. Roberts and sent RDI Liberian trainee, Mr. William Powell, for ten weeks of training and experience at PFP's ATC.

Since March 2, 1978, Mr. Roberts has administered 3000 man hours of appropriate technology, training to 3 trainees. In addition, the PFP ATC has directed and administered motorcycle riding and maintenance training to two PFP Agric. Extension Aids and two Ministry Agric field officers assigned to PFP for a total of 2000 trainee hours.

The lay-out of PFP's ATC is taking shape gradually as the space required by various repetitive tasks becomes known. Motorcycle and vehicle maintenance require inordinate amounts of both space and time. This constitutes an organizational problem which must be solved if the ATC is to have maximum effectiveness.

Engineering problems being worked on include how to design a fired clay brick kiln; how to mix brick clay to produce the homogenity needed for a high quality brick; how to prevent unnecessary damage to reto-tillers in the course of transporting them; how to forge rice harvesting sickles; how to produce low-cost rice threshers to replace the Chinese models which are no longer available; how to reinforce the VITA charcoal kilns to assure longer life; and how to mass produce charcoal briquettes. Some of these problems can be solved by trial and error, some by engineering analysis and design; and some will require additional consultation. The ATC is gradually building an indexed library of appropriate technology information and of sources for parts, supplies, and stock. These problem solving

Roto-tiller leasing

PFP's 2 Yanmar power tillers (one is 5 years old) are leased to farmers for $2.00 per operational hour. PFP hires its own operator and transports the tillers to farm sites on the AIC made trailer free of charge. This is a purposely subsidized price to encourage farmers to use power tilling. It is believed that the increased yields resulting from power tilling will, in the future, justify a per-hour rate which could make power tiller leasing and operation a profitable enterprise. Since PFP started leasing power-tillers, the PFP sponsored Gala Lankeh Multi Purpose Farmer's Cooperative obtained a loan from the Agricultural and Cooperative Development Bank (ACDB) and purchased a Yanmar Tiller which the cooperative leases to members at the same rates established by PFP. It is estimated that since March '78 the program has resulted in 3000 hours of power tilling.

Summary

With the AID assistance, PFP has made good progress performing the specific tasks outlined in the grant agreement under the appropriate technology expansion objective. A major difference between the original objective and actual accomplishment is that PFP is not presently gearing up to produce IRRI design roto-tillers. This element of the objective will be reassessed when IRRI completes its design and testing of the double-axle tiller with steering clutches. IRRI's preliminary design prints for this machine have been studied by PFP's approp. tech. specialist and found to be promising in that the machine will be lighter in weight and less expensive to produce than the Yanmar machine on which Liberia appears to have standardized

Specific objective (2): Crop Production for Animal Feed

Expenditures

As of July 5, 1979, PFP spent AID/Afr-G-1395 grant funds on crop production for animal feeds and human consumption as follows:

Farm tractor & attachments	$17,133
Agric vehicles & equip operation & repair	5,598
Agric supplies (handtools, fertilizers, seeds)	12,876
Total	$35,607

Major expenditures were for a farm tractor; five plowing, harrowing, discing and tilling attachments; operation and repair o the track front loader used in farm land preparation; and purchase of fertilizers and feeds. Minor expenditures were for small tools and seeds and contract irrigation work.

Preparing a training farm with test plots

PFP's training farm now has 20 acres under cultivation as follows:

4.00 acres	upland rice
3.00 "	irrigated rice
4.00 "	other grains
3.00 "	vegetables
2.00 "	tubers
1.50 "	pineapple
1.00 "	access roads, bunds, canals
.50 "	European potatoes
.50 "	tree stands
.25 "	fish ponds
.25 "	nurseries
20.00	total

In clearing the bush and preparing the training farm, PFP used the track front loader to construct roads and canals, clear heavy bush,

and remove stumps and roots. The farm tractor and attachments were used to plow, harrow, and shape test plots.

Lining up interested farmers

Using funds from a grant awarded to PFP by the International Foundation for Science (IFS), PFP constructed a Farmers Training Center (using low cost construction techniques such as CINVA-ram blocks) with lodging for 10 farmers, classroom/assembly room, kitchen, and latrine. PFP's Agric Extension Aide selected 10 farmers and brought them in to the Center for a 3 week training course in May, 1979. The course called for two weeks unbroken attendance, a recess of two weeks, and a final 3rd week to complete the course. Trainee farmers said they could not stay away from their farms for more than 2 weeks at a time. PFP's Senior Agric Advisor wanted the farmers to have the experience of preparing nurseries and then returning to transplant from the nurseries they had prepared; hence the return for a third week.

Purchasing a tractor and attachments

Using AID/afr-G-1398 funds, PFP purchased a Massey Ferguson 135 farm tractor in August 1978 from SATCO in Monrovia. PFP farm tractor operator, Tarkpor Lamin, attended a 14 day operation and maintenance course at SATCO while the tractor was being checked in and having its maintenance requirements studied at the PFP Approp. Tech. Center. SATCO provided operator training as part of the tractor purchase price. Also in August, '78, PFP purchased 5 attachments for the tractor including a two prong plow with tail disc; a 2 unit disc harrow; a single heavy discer with tail plow; a lighter weight triple disc with tail plow; and a spring steel, multi-fork tiller.

Organizing for equipment maintenance

Maintenance of PFP vehicles, machinery and equipment is supervised by the Senior Approp. Technology advisor and is conducted in the field and/or at the Approp. Technology Center (ATC). Having observed this function of PFP over a period of time, this evaluator concludes that much needs to be done to improve it. The space in the ATC is adequate and the tools and equipment needed for service and maintenance have been acquired. But organization and implementation of good mechanical maintenance requires a maintenance conscious attitude on the part of both operators and mechanics. PFP has not allocated enough personnel and supervisory time to fostering this attitude. Because progress toward the accomplishment of this task is inadequate, PFP vehicles, motorcycles, and equipment experience too much down time; and PFP itself experiences excessive repair and part replacement costs. This evaluator also believes the situation will not improve until more skilled supervisory mechanical maintenance personnel are hired.

Plowing, planting and harvesting

Plowing, planting and harvesting of trial crops on the training farm has been a constant and well executed activity. One deviation from the original objective has been that not all crops tried are animal feed crops. In November, 1978, it became clear that it was not wise for the animal husbandry enterprises assisted by PFP to put emphasis on experimentation with locally grown feeds. The experimental feeding programs did not produce adequate weight gains in the animals to indicate that such programs would be commercially viable. In the case of pig feed, the Agricultural and Cooperative Development Bank (ACDB) required its loanee, PFP client Dunbar & Dunbar Piggery, to stop all experimentation with locally produced

feeding programs as a condition of an operating capital loan to the Piggery (see paragraph (c), Exhibit E, Section III, ACDB letter). Rice bran, however, as a feed supplement for pigs and as a major feed for poultry after 4 weeks of growth remains not only viable, but essential to reduce feeding costs for profitable operation.

Crops planted and harvested which also have animal feed supplement value include local field corn, ground nuts, and cassava. Almost all crops have some value as animal or fish feed; the rinds of melons, outer cabbage leaves, rejected squash and cucumber etc.

For three months while Dunbar & Dunbar Piggery awaited a decision from the Agric. and Cooperative Development Bank on an operating capital loan application, 130 pigs were kept fed and in good condition using rice bran, wheat bran, cabbage, cassava, pau pau, and other vegetables and fruits which were not of high enough quality for human consumption. While they did not gain sufficient wieght, they did remain healthy.

Other crops planted and harvested at the training farm were for human consumption. These include European potatoes, edo, string beans, bitter balls, sweet corn, tomatoes, lettuce, collard greens cabbage, ochre, sweet pepper, hot pepper, spring onions, broccoli, and egg plant.

<u>Purchasing and installing a grain mill</u>

PFP did not purchase a grain mill. This task was proposed when it was envisioned that local corn would be grown in quantity and milled to produce pig and poultry feed suitable for consumption by piglets and baby chicks. When emphasis was removed from quantity

production of local corn as an animal feed, the cost of a multi-purpose grain mill did not appear justified. Althoughthe eventual acquisition of such a mill is still probable, it is not required at present.

PFP did make a loan to Nimba Farm Supply Store (James Tabla is the Liberian proprietor) which enabled this enterprise to purchase a rice mill. The mill separates the edible milled rice, the bran, and the hulls. Rice bran is a major feed for poultry. PFP assisted poultry enterprises such as Ajavon Farm use 25% rice bran mixed with fortified, imported feed when chicks are 4 weeks to 6 weeks old; 75% 6 to 9 weeks, and 100% after 9 weeks. Moreover locally produced rice bran and wheat bran (purchased from Life Flour in Buchanan) are used to feed poultry and pigs when imported feed is not available because of short supply or unpassable road conditions.

Implementing a continuous training and extension assistance program

Prior to the signing on March 2, 1978, of AID/afr-G-1395 grant agreement, PFP had already started an agricultural extension assistance program with two Ag. Ext. Aids, Messrs. Dolo Cooper, and Alvin Jallah, both Booker Washington Institute (BWI) Agricultural graduates. One Extension Aid, Dolo Cooper, covers the training farm and all PFP assisted farmers and school agricultural clubs East of Yekepa and not more than 30 miles from Yekepa. The other Aid, Alvin Jallah covers Yekepa farms such as Dato Farm and all farmers and school agricultural clubs within a 30 mile range West of Yekepa. Both Aids are supervised by PFP Senior Agricultural Advisor, Buxton Cooper, also a BWI graduate, who had post graduate training in Agric. and animal husbandry in Denmark and was formerly Nimba County Agricultural Agent, representing the Ministry of Agriculture.

Mr. Buxton Cooper and the Extension Aids felt that their extension work with farmers would be more effective if the farmers were brought together in a PFP run Farmer's Training Center for an initial course, and from time-to-time for refresher courses. They felt the training should include some classroom theoretical work; but that it should be mostly training by doing actual work on the training farm and observing demonstration projects (i.e. fish, poultry, irrigated rice) and crop trials, (see Exhibits F and G, Section III, Small Farmer Training Program Lesson Plan and Certificate of Completion)

Since the AID participation in PFP's program, the Training Farm has been expanded by more than 6 acres and the number of crops and types of farming have been increased.

Although AID/afr-G-1393 provided only $38,607 for expansion of PFP's crop production, farmer training, and agricultural extension services, PFP, using funds from other donors and Gov't of Liberia inputs, spent $44,368.45 on these activities since March 2, 1978, the beginning of the grant period. (See Exhibits H and I, Section III Demonstration Farm Expenses and Agricultural Extension Expenses).

Summary

PFP has performed the major tasks specified in the grant agreement responsibly. As work progressed, PFP found it logical and necessary to shift emphasis from animal feed production to general agricultural farmer training and extension services. Equipment specified in the grant has been acquired except for the grain mill. This omission, again, reflects the change in priority from animal feed production to other activities. One costly weakness in PFP's operation is in the organization and implementation of mechanical maintenance. That activity needs to be more skillfully and intensively supervised.

Specific Objective (3): Expansion of Y-Craft

Expenditures

As of July 15, 1979, PFP spent AID/afr-G-1395 grant funds for Y-Craft expansion as follows:

Addition to Y-Craft workshop	$5,120
Equipment and supplies (mostly cloth and dyes)	8,480
Liberian managerial counterparts	3,400
Total	$17,000

Altering (adding to) the craft workshop

An addition to the Y-Craft workshop of approx 50 sq. m was completed, except for electrical installation, in mid July 1979. This addition creates a single cloth printing room long enough to allow for a 16 m. printing table which makes possible economic silk-screen printing of yard goods for sale as yard goods. The previous maximum printing length was 3.5m.

The addition was built by PFP trained low cost construction contractor, Steven Lamin, using CINVA-ram blocks and low cost window and roof design. Nevertheless, the addition, when completed, will cost over $6,000 of which the AID/afr-G-1395 funds will have covered approx. 85%. The balance will be paid from other donor funds.

The addition includes a secure storage room, a 1.9 m. double door so large items can be moved in and out; 5 shutter windows with rogue bars, a hard board ceiling, and zinc roof. Where it connects to the old building, a reinforced tie-beam stabilizes the truss span.

(See Exhibit J, Section III, Y-Craft Building Extension)

Purchasing equipment and supplies

Purchasing cloth printing dyes and screen making supplies such as plastic film, adherents, and polyester has always been a problem for Y-Craft. The supplier used is in California, USA, and must ship to Granges American Corp. in New York for sea shipment to Liberia. The process from ordering until receipt of the items takes 7 to 8 months at best.

This evaluator believes that some research into alternative suppliers would reveal either an Eastern USA or a European supplier which could receive orders and ship more efficiently. Failing this, Y-Craft should anticipate its needs more in advance. Part of the problem is that reorders are not placed until supplies are almost exhausted.

Y-Craft used approx. $2,800 of the AID/afr-0-1395 funds to purchase dyes, screen printing film, and polyesters from Screen Process Supply in California. These have been received, and are satisfactory. $5,680 has been spent to purchase cloth locally to use in training cloth printers, and for additional equipment such as sewing machines, cloth cutting tools, etc.

Hiring and training Liberian managerial counterparts

Since March, 1978, Y-Craft has employed Ms. Augustina Arkosah, a skilled dressmaker hired to train and supervise the designing, dress making, and tailoring section of the workshop. Y-Craft has employed Ms. Jane Saye as counterpart retail store manager learning sales, inventory control, and bookkeeping. Y-Craft has also promoted and increased the salary of Liberian, Ms. Mama Jackson, who presently manages the cloth printing section of the workshop.

All employees given managerial responsibility are performing well. Ms. Jane Saye needs more bookkeeping training before she can a assume full responsibility. With this in mind, Y-Craft has sponsored her attendance at evening bookkeeping courses at Yekepa Memorial Institute.

Increasing the number of trainees from 10 to 30

Early in 1979, Y-Craft decided to divide its employees into two groups:

- production workers, who had completed training
- trainees

In addition, Y-Craft's Board directed that the workshop should function 8 hours per day instead of 4 hours. The morning is used for training and the afternoon for production of goods for sale.

While this increased the total number of trainees and production workers from eight to twelve, it has not yet resulted in the target increase of trainees to thirty. This is partly because of a change in policy whereby trainees are no longer paid, and partly because Y-Craft will not have space for the additional trainees until the building addition is fully completed including electric lighting.

Y-Craft's rationale in no longer paying trainees is that the courses offered are fully organized and skillfully taught (i.e. if anything trainees should pay for the course) and because trainees are no longer required to produce goods for sale during the training.

Y-Craft's Board believes that the number of trainees will reach twenty before the end of 1979 because basket weaving has been

added to the course, and that it will reach the target of thirty during 1980. This evaluator believes that the Y-Craft Board's projections are attainable, but that recently trained production workers will have to be included in the figure to reach a total of thirty employees learning skills at any given them.

PFP and Y-Craft have fallen short of the projected increase in number of trainees.

Summary

AID/afr-G-1395 funds have been spent on projected activities. More than projected was spent on a building addition and less than projected on equipment and supplies.

Anticipated tasks have been accomplished except for the increase in number of trainees which has fallen short of target.

Organization of the purchasing of regularly needed supplies needs improvement. Managerial training of Liberians is progressing well. Major reorganization of the workshop has been accomplished and should increase Y-Craft capacity to train and to produce goods for sale.

Specific Objective (4) Evaluation/Consultation

Expenditures

As of July 15, 1979 PFP spent AID/afr-G-1395 grant funds for evaluation and consultation as follows:

Appropriate Technology Consultant	$18,986
Evaluator	14,300
Short-term Accounting Consultant	500
Total spent	33,786
Remaining funds not yet drawn	10,000
Total allocation	$43,786

Gathering data from experimental projects

In Febr. 1979 it was decided by PFP in consultation with AID/Liberia Project Director, James Dawson, that a continuous "in-house" evaluation of PFP performance and impact would be more valuable than a one-time, outside evaluation. The rationale was that "in-house" evaluation would produce more rapid feed back and therefore make the program more responsive to needs for changes and adjustments.

With this rationale in mind, this evaluator commenced gathering data on PFP's experimental projects and discussing the data and its interpretations with PFP management and staff on a regular weekly staff meeting basis.

It became clear that many program changes and adjustments were needed. For example:

a). This evaluator devised and installed an improved system for PFP management to control expenditures and budget ahead. Expense control was not functioning effectively

financial decisions unilaterally.

b). Program adjustments were recommended to management that less resources should be allocated to a few, favored large clients, who were not responding adequately and that more resources should be allocated to the more receptive smaller-scale entrepreneurs and rural development projects.

c). Staff organisational changes were recommended whereby more complete responsibility for performance should be delegated to Senior Advisors in order to increase PFP's capacity to serve clients and remove the bottle neck created by involvement of the General Manager in minor decisions.

The recommendations have resulted in gradual moves in the right direction within PFP. They have not, however, been as fully accepted and acted upon as this evaluator believes would have been of maximum benefit to over-all program impact.

In addition, the collection and dissemination of data by the "in-house" evaluator often has served the immediate purpose of pointing out a need for corrective action with respect to client enterprises, training programs, asset maintenance, and PFP personnel management.

For example, in the course of collecting data, the evaluator ran into situations in which:

a). client enterprises were established with financial structures and plans which would not be viable

provided for

f). PFP assets were being allowed to depreciate too rapidly, or had reached a point where the cost of repair was not justified

g). inequities existed in the treatment and compensation of PFP personnel

The immediacy of the need for corrective action, and the beneficial results therefrom, tend to support the value of "in-house" (as opposed to outside) evaluation.

Evaluation plan

In consultation with AID/Liberia project personnel and PFP management, an evaluation plan was designed and submitted to AID/Liberia in March '79.

The foregoing portion of this document, Section III, has been evaluation of PFP's performance of tasks specified in the grant agreement.

Section IV of this evaluation addressed itself to the impact of AID assisted, experimental projects on achievement of PFP's overall area development objectives. This evaluation of necessity will have to be indicative, because inadequate time has passed for the development of conclusive information.

F-2005 B

SUMMARY

The merit of the continuous, "in-house" evaluation decided upon by AID and PFP has been supported by the need for and use of, continuous feed-back of information leading to necessary program alterations and modifications.

Evaluation of the impact of the Aid supported experimental projects at this time will be indicative, rather than conclusive, because the experimental projects have not developed sufficiently to produce conclusive results.

F-2005 B

Specific objective (5): Provision of Experienced Direction and Guidance (Overhead)

Expenditures

PFP/USA support	$32,000

In order to maintain a consistent PFP approach to designing and managing development assistance programs in third world countries, a directing, guiding, and coordinating center is essential. This center is PFP/USA, 2311 18th St. N.W., Washington DC., USA. PFP/USA has a Board, a President and Founder, an Executive Director (Mr. Andrew Oerke) and a staff including economic analysis, accounting, recruiting, research and procurement personnel.

An evaluator in the field cannot pin point the precise use of AID/afr-G-1395 overhead funds. It can be stated, however, that the direction, guidance, and support services of PFP/USA have been essential to the operation of PFP/Liberia. These services are conducted responsibly by qualified and dedicated personnel. Four PFP/USA staff have visited PFP/Liberia for visits of one to two weeks during the grant period and made significant contributions to policy and operating decisions.

SECTION III EXHIBITS

EXHIBIT E, Section III - ACDB letter

EXHIBIT F, Section III - Farmer Training Curriculum

EXHIBIT G, Section III - Completion Certificate, Farmer Training

EXHIBIT H, Section III - Demonstration Farm Expenses

EXHIBIT I, Section III - Agricultural Extension Expenses

EXHIBIT J, Section III - Y-Craft Building Extension

EXHIBIT E
SECTION III

AGRICULTURAL AND COOPERATIVE DEVELOPMENT BANK
P. O. BOX [illegible]
MONROVIA, LIBERIA

CABLE: FARMBANK
MONROVIA
TEL. [illegible]

October 30, 1978

ACDB/MD-056-10/78

Mr. George Butler
General Manager
Partnership For Productivity
c/o Lamco
Yekepa
Nimba County.

Dear Mr. Butler:

We have reviewed the additional data submitted respecting Dunbar & Dunbar Piggery and wish to inform you about our further thoughts on the foregoing subject:-

(a) We are of the opinion that the present debt/equity ratio of 2.33:1 should be maintained in any future participation arrangement involving the Bank. Accordingly, if our Credit Committee should decide to extend a loan, we would expect a monthly equity contribution of $500/month for 18 months to be made by the proprietor. This would eventually result in a debt/equity ratio of 2.89:1, which would be considerably better than 5.78:1 without the additional equity injection.

(b) Even though we realize the urgent financial needs of this project, we do need to have <u>revised projections</u> incorporating our earlier view that there should be a moratorium on PFP's loan.

(c) We feel strongly that there should be no further <u>experimentation</u> with local feeds. We really are not in a position to finance such activity.

(d) We are not quite sure that the business is in critical need of a vehicle at this time. In other words, what is the financial justification for purchasing an $11M pick-up? Does the volume of business really justify such capital expenditure at this time, also taking into consideration the running costs involved?

As soon as we have received your revised financial projections, we shall revert to you.

Very truly yours,

Adolph W. Yancy
MANAGING DIRECTOR

cc: Dunbar & Dunbar

A SMALL FARMER TRAINING PROGRAM (PFP) - LESSON PLAN

PRACTICAL AND THEORY

1. Vegetable:

   a. Names and varieties of crops

   b. Land preparation

   c. Nursery

   d. Planting

   e. Spacing

   Maintenance

   a. Weeding, cultivation, fertilization, etc.

   b. Disease and insect control (chemical application)

   c. Harvest and storage

2. Tree Crops:

   a. Names and varieties of crops

   b. Land preparation

   c. Nursery

   d. Planting (season)

   e. Spacing

   Maintenance

   a. Disease, weeds, and insect control

   b. Fertilizer and chemical application

   c. Harvest and storage

3. Rice Culture

   a. Names and varieties

   b. Land preparation

   c. Nursery

   d. Irrigation and canal bunding

   e. Planting and spacing

   Maintenance

   a. Disease

   b. Fertilizer, chemical application

   c. Harvest and storage

LESSON PLAN 2

4. Animal Production

Introduction to Livestock

a. Poultry

b. Swine

c. Rabbits

d. Animal Feeding and Breeding

e. Animal disease

5. Farm Management

a. Farm equipment and hand tools (usage and maintenance)

b. Farm shop

c. Labor control

d. Low cost construction - Instructor: Pete Lawson

CERTIFICATE OF COMPLETION

Practical Farmer Training
PfP Farmer Training Center
NIMBA COUNTY, LIBERIA

This is to certify that _____ on _____

completed a course of practical farmer training conducted by Partnership for Productivity, Liberia, which course included both theory and practice in the production of irrigated and upland rice, other grains, tubers, vegetables, tree crops, poultry, pigs and fish, and in the harvesting, processing, and storage of these crops.

_____
PfP Senior Agricultural Advisor

_____
PfP General Manager

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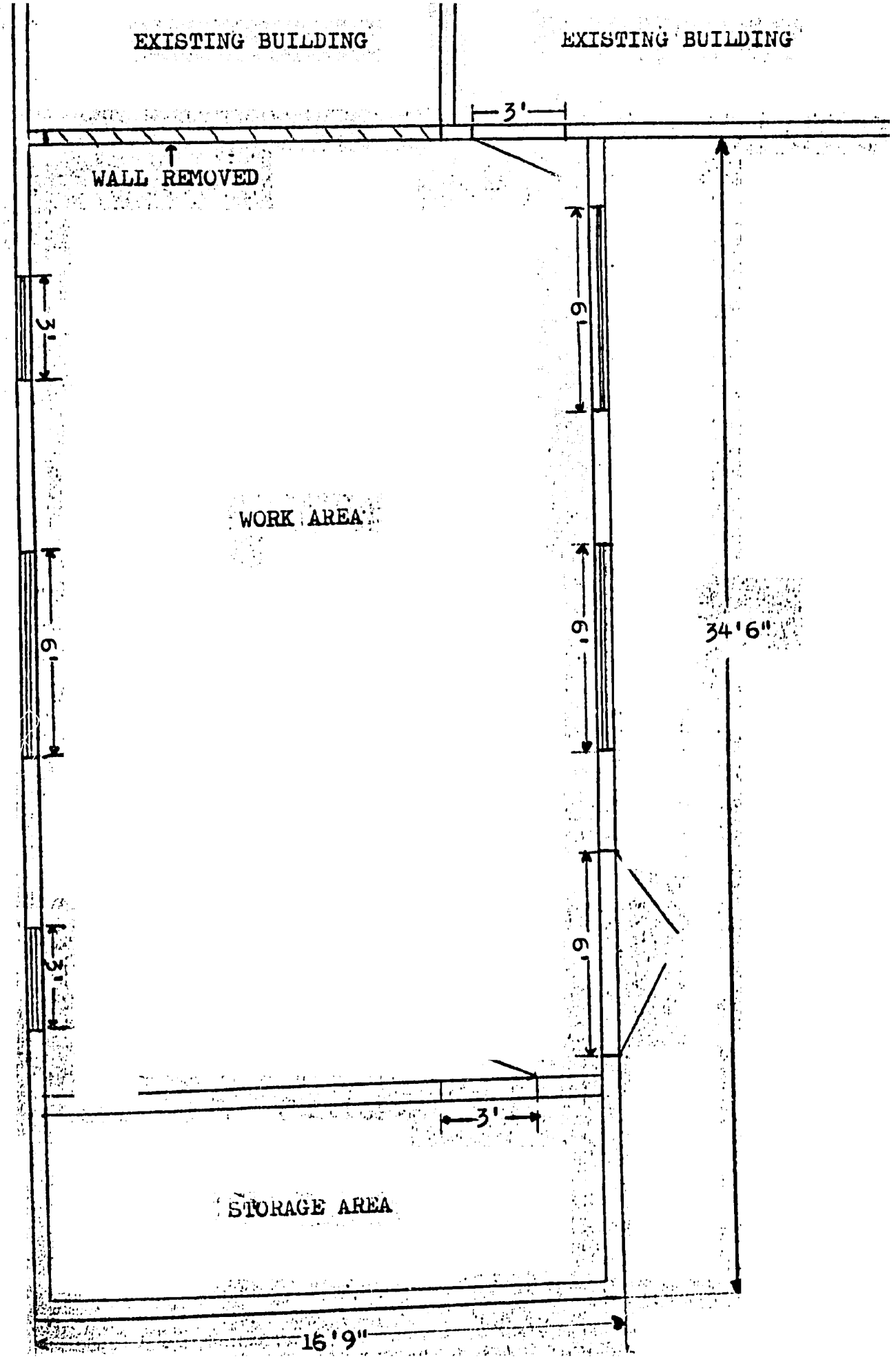
DEMONSTRATION FARM EXPENSES

	29 Jul '76 31 Dec '76	1 Jan '77 1 Mar '78	SUB-TOTAL BEFORE AID GRANT	1 Mar '78 31 Dec '79	GRAND TOTAL
Wages	985.53	7,797.37	8,782.90	5,302.43	14,085.33
Expansion	315.60		315.60		315.60
Fertilizer	374.50		374.50	158.75	533.25
Seed	50.00	584.00	634.00	105.00	739.00
Trailer repair	160.61		160.61		160.61
Tree nursery		851.96	851.96		851.96
Tools, supplies		1,224.17	1,224.17	318.21	1,541.38
955 repair, maint.		1,065.08	1,065.08	76.44	1,141.52
Fuel		583.41	583.41	27.00	610.41
Fish pond		844.06	844.06	168.50	1,012.56
Farmer training		31.00	31.00	3,175.00	3,206.00
Equipment				200.00	200.00
Water system		712.30	712.30	1,027.49	1,739.79
Poultry building				4,018.63	4,018.63
Hauling				100.00	100.00
Tractor stall				116.00	116.00
Miscellaneous		387.82	387.82	121.65	509.47
TOTAL	1,886.14	14,081.17	15,967.41	14,915.10	30,882.51

AGRICULTURAL EXTENSION

EXPENSES

	1 Jul 76 31 Dec76	1 Jan 77 1 Mar 78	SUB-TOTAL BEFORE AID GRANT	1 Mar 78 30 Apr 79	GRAND TOTAL
Wages	174.06	4,120.97	4,295.03	4,266.05	8,561.08
Tools	121.85	309.51	431.36	2,233.34	2,664.70
Fuel	98.29	3.00	101.29	60.66	161.95
Transport	441.50	82.00	523.50	835.94	1,359.44
955 repair	1,059.57	4,962.50	6,022.07	1,565.63	7,587.70
Insecticide	24.60		24.60		24.60
Supplies	483.77	140.11	623.88		623.88
Seed	271.50	733.41	1,004.91	2,130.66	3,135.57
Tiller repair		260.41	260.41		260.41
Herbicide		47.70	47.70		47.70
Tractor/attachments				17,295.90	17,295.90
Fish Pond				521.00	521.00
Fertilizer				109.50	109.50
Misc.	61.05	845.02	906.07	424.67	1,330.74
TOTAL	2,736.19	11,504.63	14,240.82	29,453.35	43,694.17



Y-CRAFT BUILDING EXTENSION

SECTION IV

EVALUATION OF EXPERIMENTAL PROJECT IMPACT

In this section, an effort is made, with limited and largely inconclusive data, to evaluate the impact of the experimental PFP projects (supported by AID/afr-G-1395 funds) on achievement of PFP/Liberia's overall objective. PFP's overall objective is to diversify the economic base of Yekepa and environs so that it can remain a viable community after depletion of the iron ore. The three AID supported experimental projects are:

(1) Appropriate technology center expansion,
(2) Animal feed production, farmer training, and agricultural extension
(3) Craft development

These projects have impact on the community and, to some extent, on each other. For example, power-tiller repair and maintenance has impact on agricultural extension services; vehicle maintenance has impact on all projects; and appropriate technology low cost construction techniques have impact on agricultural and craft development (i.e. farmer training center construction and Y-Craft building addition).

Evaluation will attempt to measure progress toward creation of rural agricultural industrial and commercial enterprises which are labor intensive and independently viable (i.e. not directly dependent on the iron-ore mining company).

(1) Appropriate technology center (ATC) expansion

PFP's ATC tries to develop producing small-scale enterprises by designing products to be produced, production equipment and devices used to produce the products, and by teaching the entrepreneur how to use the production equipment and devices.

The business management training element of the enterprise creation process is administered by PFP's industrial, commercial, agricultural, and building contractor advisory personnel.

ATC has produced equipment and devices which have resulted in creation of the following enterprises and potential enterprises:

- sheet metal shop
- sign painter
- charcoal production
- brick and clay product manufacture
  (so far this is experimental only)
- CINVA-ram block makers
- low cost construction contractors
- mobile vegetable sales
  (not yet in operation)

Sheet metal shop

This small-scale enterprise in Unification Town (Camp #4) was created by PFP's ATC personnel and presently employes three persons. Its bread and butter business is repair of 50 mining company garbage cans per month for which it charges the mining company $0.20 each. The repair normally consists of replacing a rusted out bottom section. The enterprise and the repair contract are only two months old.

The enterprise has also made production models of PFP designed poultry feeders and a kersone lamp heated poultry brooder for small-scale chicken farmers.

The enterprise can prosper, employ more workers, develop skills, and produce needed products. It is, however, too young for a detailed projection of its operation to be possible.

Sign painter

This embryo enterprise was furnished sign painting equipment stencils, brushes, enamels, etc) and was started in PFP's ATC. It is built around a talented sign writer who now lives, and has his shop, in Camp #4. Via PFP, he has been getting enough business to stay afloat. It is anticipated that the enterprise can grow and take over private sign painting which is currently done in the mining company's sign painting shop.

Charcoal production

In August 1977, PFP set up an entrepreneur named Ben Kaye in charcoal production. He is a retired Lamco employee. He used his retirement lump sum payment for operating capital and PFP lent him $1,068 in the form of two VITA design charcoal kilns assembled and welded at PFP's ATC out of metal parts cut and bent by the mining company's metal workshop.

These kilns were set up near the village of Bonar at a rural site 16 miles from Yekepa where Nimbaco (a logging and sawmilling company) had operated a log collection center. There was an ample supply of large limbs, stumps, and short log lengths all of which could be converted into hardwood charcoal. Hardwood charcoal is more desirable and easier to sell than soft wood charcoal.

The original idea, that charcoal would be used to fire the brick and clay product kiln, was abandoned when it was found that plain wood enabled the brick kiln to reach the required 1000° centigrade temperature cheaper than charcoal.

At the site in Bonar, Ben Kaye employed two laborers. Using a two-man saw and smaller bow saw, the laborers cut the wood into pieces no larger than two cubic feet per piece. The pieces were then stacked in the kiln and the kiln closed. The wood at the bottom,

is set afire with diesel oil and the air intakes left open until the load is well lit. Then all except 4 small air inlets are closed. The kiln is observed until hot air without moisture content (i.e. no white smoke) emerges from the four kiln stacks. Then all air intakes are sealed and the wood is carbonized into charcoal in approx 12 hours. The total process takes 28 hours.

With two kilns, Ben Kaye produced 20 kiln loads (15 tons of charcoal) per month. His monthly operating statement was projected as follows:-

Income from sales of 1000 bags of charcoal (50 bags per kiln load) at wholesale price of $1.30 per bag		$1,300
Gross monthly income		
Business expenses per month		
labor $12.60 per load	$252	
supervision $7.50 per load	150	
fuel $1.00 per load	20	
saw blades $0.50 per load	10	
transportation (hired) $15 per load	300	
1000 bags at $0.25 each	250	
total	$982	982
Gross profit		$ 318
Capital investment		
2 - charcoal kilns	$1,968	
4 - 2 man saws (extras for sharpening)	74	
3 - 55 gal drums	16	
12 - files	24	
Total investment	$2,082	

Loan repayment

Repayment to PFP was scheduled to be at the rate of $104 per month for 24 months to cover the cost of the kilns plus 10% interest on unpaid balance.

Ben Kaye was unable to realize this projection. He encountered a number of problems. He could not hire reliable transportation. A rural bridge washed out. A four month shut-down was ordered by the Liberian Forest Development Authority (FDA) during negotiations between PFP and FDA to prove to the FDA that stumpage fees on wood converted into charcoal had already been paid by the logging and sawmilling company.

Ben Kaye was just able to break even on his first years production without managing any loan repayment at all.

After the bridge washed out closing the road to his charcoal production site, and after PFP obtained assurance from FDA that the enterprise would not be shut down if it made charcoal from waste sawmill logs, PFP and Ben Kaye moved the charcoal production into the Nimbaco Sawmill in Yekepa. There it is presently making charcoal from waste logs brought into the sawmill from the forest more than four years ago. Because Nimbaco had mechanical difficulties in 1979, these logs were not cut into lumber. Their age makes them unusable for lumber and usable only for charcoal production.

In July, 1979, a sales agreement between Ben Kaye and a Monrovia charcoal retailer was signed by both parties and approved by PFP. According to this agreement Ben Kaye will rail ship 300 bags of charcoal to Buchanan every 2 weeks where they will be paid for by the buyer and trucked to Monrovia for retail sales. One such load has been shipped. This agreement should result in a monthly financial projection for Ben Kaye as follows:

Income from sales 600 bags (15 kiln loads) of charcoal at $1.57 each		$942
Business expenses		
Purchase of wood from Nimbaco cut to kiln size by Nimbaco chain sawyers	$200	
labor $12.60 per load (15 kiln loads)	189	
supervision $7.50 per load	113	
fuel $1.00 per load	15	
transportation (truck to railroad)	20	
rail transport (Yokepa to Buchanan)	40	
Ben Kaye travel allowance	20	
600 bags @ 25¢ ea.	150	
allowance for loss & theft	32	
total		779
Gross profit		$163
Loan repayments to PFI for kilns		$100
Net profit		$ 63

This projection is more realistic than the original one. It allows for production difficulties, unforseen losses from thefts which occur in the sawmill yard, at the railhead and in Buchanan despite precautions such as watchmen and containerization of rail shipments.

So far, this evaluator believes that the charcoal enterprise, after a difficult start-up period, will become viable and replicabl because the going price for charcoal in Monrovia and other Liberian towns is increasing and the market appears to be insatiable.

A promising experiment underway at PFI's Appropriate Technology Center (ATC) is design and production of prototype devices which will make it possible to mass produce charcoal briquettes using locally available cassava starch as a binder

Experimental briquettes made in the ATC press indicate that a bag of briquettes will produce 60% more BTUs (British Thermal Units- units of heat) than a bag of hardwood charcoal chunks. Tests conducted by PFP in Yekepa and Unification Town indicate that a preference for briquettes will not be difficult to create. Tests also show that all charcoal, even charcoal dust which is presently wasted and softwood charcoal, can be made into briquettes which have a far greater heat producing, and therefor cooking, efficiency per unit of volume than the presently produced charcoal chunks.

Brick and clay product manufacture

PFP started this experimental enterprise in November, 1977, because Lamco, the iron ore mining concessionaire, wanted to build an "own your own home" project of 300 employee dwellings out of fired clay brick. Lamco presented this idea to PFP as an opportunity to create a local rural industry with a guaranteed market for its output for one to two years. Lamco was in a hurry to start the project for apparently political reasons and pushed PFP's Approp. Tech. Center into rapid design and construction of clay mixing devices, hand operated brick extruders, and a hastily built firing kiln (oven). All were installed at a site, which Lamco geologists assured PFP, "contains a mountain of suitable clay for brick and other ceramic product manufacture". (see Exhibit K, Section IV). Exhibit K shows that the clay available at the selected site near the village of New Gbapa three miles from Yekepa is similar in content to clay which Firestone Company uses to make brick, and therefore that the New Gbapa clay should make good quality fired red building bricks.

PFP decided the operation was technically too complex and experimental to warrant immediate establishment of an independent Liberian brick making entrepreneur. Instead PFP hired Mr. Edwin Venn and a crew of 7 workers to put up work and drying sheds, build a kiln, install the extruders, extract the clay, and start production of bricks measuring 9 cm. x 7 cm. x 23 cm. long. The size was selected to enable production of single brick walls 9 cm. thick. The project was supervised by Peace Corps Volunteer, Pete Larson construction specialist assigned to PFP.

The first experimental kiln load, 4000 bricks, were fired in August '76 and proved that the extruded clay made a satisfactory, vitrified building brick if fired over a 2 week period with kiln heat rising slowly for 10 days to a minimum firing temperature of 1000° centigrade after which 4 days of cooling is needed before unloading the kiln.

The experiment also indicated that bricks made in this kiln would be too expensive (19¢ to 20¢ per brick) to compete with cem blocks and become an economic construction material for Lasco's "own your own home" project. Project homes were estimated on the basis of a cost of 10¢ per brick. Another shortcoming of the initially produced bricks was that some were too fragile because the clay had not been fully homogenized before passing through the extruders. This meant that some bricks contained lumps of unmixed lateritic clay which created flaws in the fired bricks. Other production problems related to the discovery that the site was misplaced because the presumed "mountain of suitable clay" turned out to be a small deposit adjacent to a larger one approx ½ mile away. Finally, in an effort to relate the charcoal and brick

enterprises, PFP tried to fire the brick kiln with charcoal. This experiment revealed that charcoal not only failed to produce the required 1000° centigrade temperature but also was more expensive as a fuel than wood.

Although in one sense the experiment has been successful and proven that good quality bricks can be produced; in another sense the experiment has been too costly and indicative of a weakness in PFP. This is PFP's tendency to allow itself to be pushed into activities by Lamco without conducting the necessary technical analysis and economic feasibility study. In cases like this one, PFP should be willing and able to obtain short-term expert technical consultation before jumping into an experiment which ended up by costing PFP approximately $18,000. In the opinion of this evaluator, the experiment should not have exceeded $9,000 in total cost including consultation.

Nevertheless, PFP is now in position to proceed with the task of setting up a brick and clay product manufacturing enterprise. The extruders and kiln accessories made at PFP's ATC can be used. The experiment to date has proven that such an enterprise is technically feasible. The "own your own project", which Lamco has temporarily suspended during renegotiation of company housing policy with the Mineworkers Union, and other private construction planned for the concession area should assure the economic feasibility of a brick clay product manufacturing enterprise, provided it is designed to produce efficiently and is not made too large in production capacity and related capital investment. For maximum beneficial impact on area development, this project must produce bricks which will be within the purchasing power of rural families who want to replace impermanent wattle and mud brick dwellings and

storage structures with permanent, fired brick buildings.

CINVA-ram block makers

In 1974 PFP had 2 CINVA-ram building block presses made at the mining company workshop according to a design obtained from Volunteers in Technical Assistance (VITA). Blocks made of 90% lateritic clay and 10% cement were used to construct a warehouse on PFP's demonstration rice farm. When these blocks showed no erosion damage after 3 yrs., PFP decided to use CINVA-ram blocks in all low-cost rural construction and to set up block making contractors. PFP's Appropriate Technology Center produced 4 more CINVA-ram presses and sold them to two block making contractors for $200 each.

The contractors, Isaac Toe and Johnny Johnson, employ 3 helpers and make 300 blocks a day at the building sites where the blocks will be used. They charge the general contractor using the blocks 12¢ each. Their monthly operating statements are approx. as follows:

Income from sales of 7,800 blocks @ 12¢ ea.		$936
Operating expenses		
labor 78 man days @ $2 per day	$156	
supervision 26 man days @ $4 per da.	104	
cement (1 bag per 100 blocks) 78 bags @ $6 per bag	468	
hand tools, wire mesh, grease	10	
block machine amortization and repair	20	
contractor license	15	
personnel transportation ($2 per da.)	52	
rejected blocks 5%	47	
total		872
net profit per month		$ 64

Two block making contractors have been working solidly since March 1978 making blocks for the Better Homes Project (24 low-cost dwellings), the Bulay Village project (39 village houses) and many other building projects including poultry houses, piggeries, grain storage buildings, village schools etc.

Employment has been full-time for 8 persons during the 17 months of grant period covered by this report. These 8 persons have produced over $30,000 of product and earned over $1000 net profit each for 2 contractors.

Low cost construction contractors

Establishing low cost construction general contractors has been a function of PFP's construction Specialist, Peace Corps Volunteer, Pete Lawson. He has been successful in getting two general contractors performing large-scale contracts (between $80,000 and $120,000) with less and less supervision as the contractors develop more independence. These contractors, Steven Lamin and Edwin Venu, have been employing an aggregate of 36 workers during the grant period.

The role of PFP's Appropriate Technology Center is supportive. The contractors come to PFP's ATC for items and work such as:

- forms for tie beams
- reinforcing rods bent and welded to specifications
- reinforcing mesh, cut to specifications
- repair of equipment, hand operated cement mixers, water pumps, ore-sand screens, mesh etc.
- maintenance and repair of the contractor's vehicles

Mobile vegetable sales

PFP's ATC has equipped a used Toyota pick up truck with bins, sign boards, and scales. This vehicle will become the basis for a fresh vegetable sales entrepreneur who will buy from PFP's demo-

nstration/training farm and other PFP assisted farmers and sell to housewives in the Yekepa and Grassfields area according to a regular schedule of daily stops at central locations. The vehicle is ready but the enterprise will not start operation until November 1979 when vegetables planted in the rainy season are harvested.

General Appropriate Technology Center (ATC) Services

PFP's ATC services and repairs vehicles, motorcycles, machines, and equipment for the Agricultural program. Power Tiller repair is a major activity as is Agricultural Extension Aid motorcycle repair. The ATC also repairs Y-Craft sewing machines and woodworking machinery operated by PFP assisted enterprises. The ATC performs a wide variety of mechanical and electrical repair services for all PFP program elements and assisted clients. When clients are well enough establishe to pay for services, PFP charges for ATC work at cost. During the grant period, ATC services to PFP clients totalling $2,550 have been rendered of which $1050 has been paid in to PFP and $1,500 is still due for two charcoal kilns.

Summary

PFP's Appropriate Technology Center has played an essential role in creating employment during the grant period for 7 working entrepreneurs employing 47 full-time workers.

These enterprises have a current aggregate sales volume of $15,000 per month. Production rate in the enterprises is approx. $276 per man month. Worker income ranges from a low of $52 per month up to $104 per month for semi-skilled carpenters, masons, and other artisans.

One low cost construction contractor, Steven Lamin, has earned over $11,000 in net profit during the grant period and reinvests $5000 of that in vehicles and equipment

Brick and clay product manufacture is not included in the figures above. This effort so far is purely experimental and has not become a viable enterprise. Charcoal production is included. While the charcoal entrepreneur has not realized enough profit to start paying for his kilns, he has supported himself and his workers on income from sales.

AID/afr-G-1393 grant funds have enabled PFP to increase productive use of appropriate technologies by several local entrepreneurs. Perhaps more important, PFP is in position now to expand its appropriate technology services substantially and to train more small-scale, Liberian, rural industrialists.

(2) <u>Animal feed production, farmer training, and agricultural extension</u>

PFP's major objective in operating a training and demonstration farm and an agricultural extension service is to get Liberian farmers, especially small-scale subsistence farmers, to plant higher yielding varieties, to diversify their crop production, to prepare and plant more acreage, and to use better farming methods. All this is in order that the farmers produce more for both human and animal consumption and thereby earn more income while improving the nutrition of local population.

The impact of PFP's AID supported agricultural activities will be measured in terms of the forementioned objectives.

PFP employs a Senior Agricultural Advisor, Mr. Buxton Cooper, two Agricultural Extension Aids, Hosera Dolo Cooper and Alvin Jallah, two all-around equipment operators (both can operate the Caterpillar Front Loader, the farm tractor, and roto-tillers), one farm supervisor, and eight farm workers. Also assigned to PFP for housing and transportation are two Gov't of Liberia, Ministry of Agriculture employees, a vegetable specialist and a cooperative field officer. PFP functions as headquarters address and advisory body to the Wala Laakeh Multi-Purpose Farmer's Cooperative (90 members) which has been organized, registered, and started in business by PFP during the grant period.

PFP's agricultural section operates a Caterpillar 955 track front loader, a Massey Ferguson 135 farm tractor with attachments, two Yanmar YZ 12 Power tillers, a Toyota jeep, a Toyota pick-up, 3 Yamaha Ag 100 motorcycles, and the Senior Advisor's VW sedan.

Training and demonstration farm

PFP has added 6.2 acres to the training and demonstration farm using the AID financed farm tractor. Increased acreage includes paddy rice, 20 vegetable varieties, irish potatoes, cassava, edo, corn, and ground nuts. The farm also has 3 fish ponds stocked with Talapia, a chicken house for up to 2000 birds, a tool and tractor shed, and a training center lodging for ten farmers with classroom, kitchen, and latrine.

Formal, live-in, training started in June 1979 with 10 trainees coming in for two weeks, going home for two weeks, and returning for one week in July. This process will be repeated in September with 10 new trainees. Prior to the formal training, PFP had brought in to its demonstration farm in groups approx 50 farmers and 100 students

a year for a single day of learning by observation. The University of Liberia, Cuttington College, and several high schools sent a tot. of 55 vacation students to PFP for 5 weeks of practical training an employment during 1978 and 1979. The training impact of the farm during the grant period has provided 2000 trainee days of learning-by-doing-and-observing to approx 30 farmers and 155 students. In 19 the sharp increase in the number of rural farmers coming to PFP for assistance indicates that exposure to the PFP farm serves as a stimulus toward farm improvement.

Extension services

PFP extension aids are presently visiting 16 farmers and 12 school agricultural clubs regularly. These 16 farmers have PFP sponsored farm improvement programs of various sizes and in various stages of development. In aggregate, these add up to 52 acres of paddy rice, 23 acres of coffee and cocoa, 19 acres of vegetables. PFP's Senior Ag Advisor, an animal husbandry specialist, regularly visits and advises 3 poultry farmers and 2 piggeries. (see Exhibit L, Section IV - Intensively assisted farmers by name, crops, and acreage). Extension assistance directly and indirectly reaches more than a hundred additional farmers via the Cooperative (PFP personne attend all meetings) and via irregular visits by extension aids.

After visiting the farms, and talking with the farmers and extension aids, this evaluator estimates that PFP assistance during the grant period resulted in 20 additional acres of paddy rice, 40 acres of upland rice planted with L&C 23 (a high yielding variety recommended by the Gov't and distributed in Upper Nimba County by PF 8 acres of vegetable and grain crops, 15 acres of cocoa and coffee, 2 fish ponds, 2 new poultry farms raising an aggregate of 750 table

birds per month, one piggery expansion and one new piggery resulting in an addition of 150 animals being raised, and 5 additional rural school agricultural clubs, each with small rice, vegetable and tree plots and demonstration poultry raising experiments.

The process of converting additional rice paddies, acreage planted with improved upland rice seed, vegetable plot yields, tree crop growth, and new or increased fish, poultry and pig production into estimated dollars of increased farm income would be too inaccurate for this evaluation to attempt at this time. Newly created rice paddies tend to have uneven first harvests because topsoil has been disturbed by earth moving. Yields improve with each planting as soil conditions stabilize. Therefore extrapolating yields on the basis of PFP's demonstration farm experience would not be reliable. PFP Extension Aids are setting up a record system for monitoring yields and increased income of assisted farmers. Only three farmers, John Flomo, Jacob Lakpor, and Daniel Kiokpain have produced reliable harvest records so far. It is PFP's plan to introduce farm record keeping via the existing Vala Lankeh Cooperative and a proposed Zor clan cooperative.

Agricultural mechanization vs. labor

PFP management decided in 1974 to use earth-moving, plowing, and power tilling machinery to accelerate farm development and increased regional agricultural output. Other projects in Liberia such as the Lofa County Agricultural Development Project (LCADP), have decided to use contract labor to perform the same tasks which PFP performs with machinery. There are reasons for the different choices. PFP is in a concession area dominated by a mining company which has machinery repair capacity as well as skilled mechanics and operator

LCADB works in an area where it is traditional for labor contractors from Guinea to seek land preparation contracts in Liberia in order to earn dollars. The topography of LCADB's project area incorporates many large natural swamps. Upper Nimba County is a mountainous and hilly region in which the majority of swamps are small and narrow and located between steep slopes. Nimba County does not import labor from Guinea. In fact, PFP has been in serious difficulty several times with Liberian immigration authorities for unintentionally allowing Guineans to be employed on farm projects financed with PFP small farmer loans. Upper Nimba County has a shortage of available farm labor. While there is underemployment and unemployment in Yekepa, Unification Town, and Sanniquellie, this does not translate into available farm labor

This evaluator's observation is that mechanical equipment operated by PFP performs the land preparation work quickly and efficiently but that the equipment requires frequent and costly repair. Repairs are rapidly and well performed now, and probably will continue to be as long as the mining company is operating. After the mining company departs, Nimba County farmers will not be able to replicate PFP's mechanical land preparation services. PFP management is aware of this but believes that the mining company will be here long enough to enable farmers to prepare the acreage of irrigated and cleared land needed for Upper Nimba County to become a surplus food production area.

It is bound to be constructive that different land development techniques are being tried. The value of comparative results should be sufficient to offset the risk of employing a development technique which may not be replicable in the distant future.

Summary

In using AID funds, PFP departed somewhat from the emphasis on animal feed production in the grant agreement. Funds were used instead to develop a diversified demonstration/training farm and an agricultural extension service including cooperative organization. Both the farm and extension service are equipped with motorized and mechanized implements which are costly to keep running and require the services of PFP's Appropriate Technology Center and sometimes the more sophisticated services of the mining company's workshops.

PFP is staffed agricuturally by qualified employees and Gov't of Liberia specialists assigned to PFP. AID funds resulted in an increased number of vacation student learning programs and a wider and more intensive extension outreach to more farmers and school agricultural clubs. Formal farmer training is underway at the demonstration farm. PFP has organized and obtained registration for one clan cooperative with 90 farmer members. During the grant period approximately 81 new acres have been planted by extension clients with improved varieties of rice, tree crops, grains and vegetables. Extension services to poultry keepers and piggeries have resulted in the creation of profitable animal husbandry enterprises.

It will be useful to monitor the agricultural development progress of PFP using mechanization and compare it with the progress of other projects using labor intensive land development methods. Now it is too early to produce any reliable statistics to use in such a comparison.

(3) Craft development

The impact of PFP's program on craft development is channeled entirely through Y-Craft, a division of Yekepa YMCA. The objectives of Y-Craft, stated in its 1973 charter, are:

- to train Liberian women in handcrafts
- to create income earning employment for unmarried mothers
- to develop design, production, and sales managerial skills in Liberian women
- to operate a workshop producing handcrafts and a retail sales outlet for them
- to earn a small profit for use by the YMCA in financing other, non-income-generating activities

Since its start-up in late 1973, 47 women have received an average of 20 months each of training in silk-screen cloth printing, dressmaking, and general sewing. Of these, twelve were trained during the grant period.

Two managerial counterparts, Tina Arkonah who came to Y-Craft already skilled in dressmaking and sewing, and Jane Saye, learning retail sales and bookkeeping, have been added to the Y-Craft staff as a result of AID support. Both are performing well.

Y-Craft has sold an average of $25,000 of craft items per year starting in 1974. Approximately 60% are produced at the Y-Craft workshop; 20% made by local artisans; and 15% made by African artisans in neighboring countries to Liberia. Local artisans stimulated by this marketing facility include 2 "cane" furniture makers; three independent carvers and the Ganta Leprosorium carving cooperative; 1 Sanniquellie ivory carver; one Gbapa goldsmith; one Gbapa sandal maker; 7 ex-

Y-Craft trainees doing piece work sewing at home; 2 macrome weavers; 4 country cloth weavers; 3 basket weavers; and, to a larger extent than any, a Liberian traditional craft group in Bomi Hills managed by Mr. George Gray and producing a wide variety of handcrafts.

Since its inception, Y-Craft has sold $138,000 of craft items. The combined cost of production, sales, and training has been $166,00 Y-Craft has $12,400 of assets including cash, receivables, a vehicle, sewing machines and equipment, and an inventory of saleable items valued at cost of approx. $7,000.

The $166,000 spent by Y-Craft during its 6 years of operation has been received and spent as follows:

Received	
Income from sales	$138,000
Grants to Y-Craft	
Swedish YM & YWCA	10,500
USAID	17,000
Bertil Tronet gift	500
Total	166,000
Spent	
Cost of goods production	131,000
Cost of assets on hand	12,400
Cost of training	22,300
Total	166,000

The cost of training per trainee/month has averaged $24. This low cost reflects that a Swedish training supervisor is provided free of charge by an organization in Sweden called Afro-Arts, and that a trainee month is a month of half-days which total only 13 full work days. The training money, up until July, 1979, has been spent per trainee month as follows:

Materials and supplies (for training only)	$ 5.00
Stipend for trainee	8.00
Liberian trainers (overseas are volunteers)	10.00
Overhead	1.00
Total	$ 24.00

As of July 1, 1979, the Y-Craft Board decided to discontinue to stipends to trainees and to provide trainees with the opportunity to earn income equal to former stipends by giving trainees sewing piece work to do at home, or after working hours in the shop, depending on the individual trainee's circumstances.

Recently Y-Craft has retained the services of a Liberian basket weaving trainer and started a separate group of 6 weaving trainees.

The Swedish, Afro-Art provided, craft trainer, Maj. Adolfsson, appears to be a strong organizer and leader as well as a qualified craft trainer with years of overseas experience in countries like India which are rich in traditional crafts. The Y-Craft operation expects to grow, improve, and increase the number of skills taught under her leadership.

Summary

Y-Craft has needed grant money to cover its purely training costs since its inception. It has recently started to formalize its training courses, increase the number of skills taught, and include more trainees. Further improvements are expected under the leadership of the highly qualified Swedish craft trainer.

Y-Craft did not achieve its objective of increasing the number of trainees from 10 to 30. Trainees will probably reach this number in the second half of 1980.

AID/afr-G-1395 funds were used for their intended purposes and used to good advantage. These funds enabled Y-Craft to augment its impact on skill training and production of crafts for sale. Y-Craft deals with humanitarian problems and is not expected to make a major contribution to PFP's overall, community viability objective.

SECTION IV EXHIBITS

Exhibit K, Section IV - local clay analysis

Exhibit L, Section IV - Agricultural extension clients

MINE OPERATING CO.

Lab	Sample	Description	ORE	%Fe	%P	SiO_2	Al_2O_3	%LOI	%MnO	TiO_2	%Ca	Mg	K_2O	%	%FeO	%S	TOTAL
493	A Clay	Clay Samples		3.3	0.018	72.9	13.8	7.4		0.80		0.13	0.19		0.0		100.0
494	B "			4.9	0.016	46.4	30.4	12.6		2.81		0.32	0.22		0.2		99.9
495	C "			7.2	0.020	51.9	24.0	11.0		2.17		0.24	0.10		0.0		99.8
496	D "			2.0	0.014	77.0	11.9	6.5		0.95		0.17	0.28		0.0		99.8
497	Slay "			3.3	0.011	81.1	7.9	4.8		0.48		0.18	0.33		0.0		99.7
498	White "			0.8	0.008	72.3	18.6	7.0		0.33			0.22		0.0		99.8
499	Y "			2.8	0.007	66.7	20.1	7.4		0.49		0.18	0.65		0.0		99.7

Al_2O_3 SiO_2

STRUCTURE:

Geologist
Surveyor
Length of Face
Nob. of Samples
Plotted on Map

Report No: 507

: Jan. 27, 1978

Sign (LA)

Area
Level
Date
Period :

K. KILN

Lab	Sample Description	ORI.	%Fe	%P	SiO_2	Al_2O_3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
875/78	Firestone Clay Sample		6.8	0.095	43.9	28.6	14.7	0.10	2.06		0.25	0.40		0.0
	AVERAGE OF		6.05	0.018	49.15	17.2	11.8		1.44		[illegible]			
	our B+C clay													

STRUCTURE:	Geologist	Report No: 563	Area :
	Surveyor		Lot :
	Length of Face	Date: Feb. 16, 1978	
	Nos. of Sample Plotted on Map	Sign [illegible]	

PARTICIPATING SCHOOLS

School	Town/ Village	Clan	Type of Crop	Acerage	Girls	Boys	Total Enrollment	
olo Elementary School	Kanlah	Yarmien	Vegetables	1/2	4	28	32	
ibeleye Public School	Gbeleyee	Yarmien	Paddy Rice	1/4	25	50	75	
			Vegetables	1/4				
ugbayee Public School	Lugbayee	Yarmien	Paddy Rice	1	50	100	150	
			Vegetables					
Gaye Musah Elementary	Yew Yekepa	Yarmien	Vegetables	1	20	40	60	
T School	Yekepa	Yarmien	Vegetables	3	301	364	665	
Gbapa Public School	Gbapa	Yarmien	Vegetable	4	175	210	385	+Poultry
			Tree crops	7				
Zorlowee Public School	Zorlowee	Zor	Vegetables	2	95	114	209	
			Paddy Rice	1.5				
Zortapa	Zortapa	Zor	Paddy Rice	1.5	60	95	155	
			Vegetables					
Zorgowee	Zorgowee	Zor	Vegetables	2	195	309	504	
			Paddy Rice	3				
Zorwalay	Zorwalay	Zor	Vegetables	2.5	152	210	362	
			Paddy Rice	1.5				TOTAL ACREAS
Ganglay	Ganglay	Zor	Vegetable	1.0	72	123	195	Vegetable 17.25
			Paddy Rice	2.0				Rice (Paddy) 10.75
Kinon Elementary School	Kinon	Yarmien	Vegetables	1.0	60	90	150	Tree crops 7.0
					1209	1733	2943	

PRIVATE FARMERS
Corps - Acreage

NAME	Paddy Rice	Coffee	Cocoa	Banana	Vegetables	Rubber	Mixed Tree Crops
Jacob Lakpor	12.0	6	9		1.5		
John Flomo	4.5	9	1.5				
Daniel Kpayan*	11.5			7			
Mr. Karwilling	3.0						
Bobor Wright	1.5						
Robsen Outland					5.0		
Mr. Walker	3.0						
Anthony Flomo							
Joseph Gbatu					4.0		10.0
Moses Marcor					3.5		
Peter Gaye	3.0						
Mr. Kamara	7.0						
Josaid Dolopai	4.5				5.0	20.0	
Thomas Flomo		11	4				
Milton Tabla	2.0				.75		
	52.0	26	16.3	7	19.75	20.0	10.0

8 undergoing development: 14 available to clear