

A.I.D. EVALUATION SUMMARY - PART I

FD-ABC-544  
20031

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

IDENTIFICATION DATA

A. Reporting A.I.D. Unit: Mission or AID/W Office <u>USAID/Haiti</u> (ES# <u>521-88-01</u> )		B. Was Evaluation Scheduled in Current FY Annual Evaluation Plan? Yes <input checked="" type="checkbox"/> Skipped <input type="checkbox"/> Ad Hoc <input type="checkbox"/> Evaluation Plan Submission Date: FY <u>3</u> <u>088</u>	C. Evaluation Timing Interim <input checked="" type="checkbox"/> Final <input type="checkbox"/> Ex Post <input type="checkbox"/> Other <input type="checkbox"/>
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D. Activity or Activities Evaluated (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report.)

Project No.	Project /Program Title	First PROAG or Equivalent (FY)	Most Recent PACD (Mo/Yr)	Planned LOP Cost (000)	Amount Obligated to Date (000)
521-0156	Local Resource Development I	85	7/88	1,000	1,000

ACTIONS

E. Action Decisions Approved By Mission or AID/W Office Director Action(s) Required	Name of Officer Responsible for Action	Date Action to be Completed
Following the review of the evaluation report, Mission management decided to extend the PACD for an additional year at no cost, through July 31, 1989, since about one-half of project funds still remains unexpended. Justification for this action is based on the considerable progress achieved in developing a replicable, sustainable and effective approach to watershed management, which would be lost without additional time to consolidate and refine past accomplishments.	ADO	7/88

(Attach extra sheet if necessary)

APPROVALS

F. Date Of Mission Or AID/W Office Review Of Evaluation: (Month) 4 (Day) 13 (Year) 88

G. Approvals of Evaluation Summary And Action Decisions:

Name (Typed)	Project/Program Officer	Representative of Borrower/Grantee	Evaluation Officer	Mission or AID/W Office Director
	<u>M. Fontaine</u>	Elias Tamari	Arthur Schoepfer	Gerald Zarr
Signature				
Date				

**ABSTRACT**

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

This project, implemented by the Save the Children Federation, is the cornerstone of the Mission's Agricultural Hillside Strategy to reverse the trend of environmental degradation on the hillsides of the Maissade Commune, by developing and implementing group participatory approaches to natural resource conservation. The purpose of this final evaluation is to assess the viability of the "Groupman" community groups, and their effectiveness in implementing natural resource conservation practices. Major findings and conclusions are as follows:

- The project is effective in organizing small groups and motivating peasants to apply an impressive range of new land management practices on their own land, despite the turbulent socio-political situation since project start-up. If applied on a sustained basis, these simple technologies can induce permanent and fundamental changes in peasant land management.
- The project is successful in using peasant natural self-interests - i.e., increasing agricultural production - rather than artificial inducements, such as credit, in motivating peasants.
- Agricultural extension is combined with the mobilization and accumulation of groupman member savings and investments, holding out the promise of sustainable agricultural innovation and the possibility of greater economic clout, at least at the local level, by virtue of democratic peasant groups acting in concert.
- The evaluation team questioned project focus on complete rainfall retention and absorption in the field. While acknowledging it to be a very worthwhile goal, the team nevertheless maintains that it is unrealistic in areas of tropical rainfall conditions, and it draws attention away from erosion control measures to safely convey water runoff from the field.
- The evaluation team also believes that project emphasis on tree planting is inappropriate and should remain secondary to the goal of soil and water conservation, where tree planting is considered as only one of several possible land use arrangements.

**COSTS**

**I. Evaluation Costs**

1. Evaluation Team		Contract Number OR TDY Person Days	Contract Cost OR TDY Cost (U.S. \$)	Source of Funds
Name	Affiliation			
Ronald J. Gaddis	Independent	24	8,798	Project
Glenn R. Smucker	Independent	24	11,756.59	Project

2. Mission/Office Professional Staff  
 Person-Days (Estimate)           24          

3. Borrower/Grantee Professional  
 Staff Person-Days (Estimate)           24

## A.I.D. EVALUATION SUMMARY - PART II

### SUMMARY

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

Address the following items:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Purpose of evaluation and methodology used</li> <li>• Purpose of activity(ies) evaluated</li> <li>• Findings and conclusions (relate to questions)</li> </ul> | <ul style="list-style-type: none"> <li>• Principal recommendations</li> <li>• Lessons learned</li> </ul> |
|--|--|

Mission or Office: USAID/Haiti, PPS/PME	Date This Summary Prepared:  July 1988	Title And Date Of Full Evaluation Report: Peasant Groups and Conservation Farming, June 1988
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#### A. Evaluation Purpose and Methodology

The overall purpose of the evaluation is to assess the viability status of the "groupman" community groups, and their effectiveness in implementing natural resource conservation practices. The evaluation team interviewed major project stakeholders, visited field sites, and reviewed project implementation records and reports to gather evaluative information.

#### B. Major Findings and Conclusions

##### 1. Project Accomplishments

a. The project is well on target, in terms of overall purpose and strategy, by demonstrating the validity of using increased agricultural production as the sole incentive for changes in land management. This motivational strategy has paid off in terms of peasant willingness to apply new soil and water conservation technologies in hillside farming (p. 128).

b. The newly organized peasant groups in Maissade are effective channels for agricultural extension services and have the potential to ensure that natural resource conservation technologies are sustainable. Groupman savings serve an important complementary role to the agricultural extension program by promoting peasant investment in agriculture, commerce, animal husbandry and agricultural processing (p. 128).

c. The project is in the process of developing a replicable approach to watershed management. The package of training methods, community outreach and agricultural extension needs further refinement and documentation before it can be transferred and adapted to other project sites (p. 137).

d. The cost of services per participating farmer is much lower than expected. By the end of the planned PACD, at current input levels, the project will have provided a range of agricultural extension services at a cost of \$297 per cooperating farmer. This is less than half of the projected cost, and only 40% of the cost per farmer budgeted for the PSTO Targeted Watershed Management project in the South. It also compares favorably with FAO rural development in the region of Les Cayes during the 1970s, and other AID funded projects in Haiti, such as PDAI, ADS II and FFW (p.137).

e. The project has wisely allowed peasants to organize themselves along natural social groupings, based on kinship, business and other traditional ties, rather than impose organization models foreign to the local community (p.4).

## 2. Areas in Need of Improvement

a. Growth in client demand has already surpassed the ability of project field staff to provide, supervise and monitor animation and extension services in an effective manner. New groupman are forming in the fringe areas of project activity zones, while already established groups are attaining higher levels of savings and management competence, and collaborating across groupman lines. Literally hundreds of plots have adopted improved soil and conservation measures (p.5).

b. The focus on credit as discussed in the project paper was found to be flawed. As project experience demonstrates, the peasant's natural self-interest in increasing agricultural production is sufficient incentive to motivate him to apply new conservation practices. The use of credit early in project implementation was also found to be inappropriate before peasant groups had demonstrated adequate management competence, acquired sufficient collateral from their own resources or specifically expressed a need for credit (p. 132).

c. The evaluation team found the project approach calling for tree planting on State land to be ill advised; unless there is a transfer of tree tenure and land access rights to private holders (p. 132).

d. The evaluation team also found that project focus on complete rainfall retention and absorption in the field - an unrealistic, if worthwhile, goal in areas of tropical rainfall conditions - draws attention away from the need to implement erosion control measures to safely convey water runoff from the field (p. 85).

## C. Major Recommendations

1. The project's ambitious objectives and broad geographic targets are almost certainly unattainable at the macro level, therefore calling for careful review and redefinition of watershed priorities from the top down, and an elaboration of plot based applications from the bottom up. This reorientation should take place at the following levels of activity:

- a) Macro level: goals for watershed coverage must be reduced to more manageable scales of magnitude;
- b) Micro level: local points of intervention (plot, based units) should be shifted upward and elaborated into mini-catchment basins; and
- c) Intensification: delivery of services should be focused for maximum impact as the project enters a new stage of consolidation (p. 7).

2. At the micro level, this redirection should build upon associated plots to foster the concept of critical mini-catchment basins, refocusing field staff energies in both animation and technical support, and putting emphasis on consolidating and maximizing the impact of existing groups (p. 7).

3. More precise measures of small group effectiveness should be developed, allowing for periodic and detailed assessment of each animator's portfolio. A computerized information system for registering and tracking group formation, development and viability status should also be established, and should be helpful in focusing animation efforts and future planning (p.24).

4. Soil and water conservation should take priority over tree cropping which, while important, is secondary to the goal of extending conservation technologies. Project staff should resist the temptation of getting involved in potable water activities, which take undue staff time, and place special burdens on the project's administrative system (p. 26).

5. Implementation of erosion control practices should proceed from the top down. They should start on the highest ground and work progressively toward the lower ground. Otherwise, there is a risk that unabated runoff from a large area above will descend upon the treated area and destroy the work already accomplished (pp. 86-87).

6. The project should promote the recycling of animal wastes, which will require a fundamental change in peasant attitude and behavior. Studies should be conducted to develop a practical method for peasant farmers to collect and manage animal wastes (p. 121).

#### D. Lessons Learned

Perhaps the most significant lesson learned from the implementation of this project is that the peasant's natural self-interest in increasing agricultural production is sufficient incentive to effectively motivate him to implement natural resource conservation measures, instead of relying on artificial inducements, such as credit or commodity transfer. The project also demonstrated that poor peasants can effectively mobilize and pool their meager resources to invest in local community development activities.

## ATTACHMENTS

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

1. Evaluation report
2. Evaluation Scope of Work

## COMMENTS

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

The evaluation team responded fully to the Scope of Work, thereby producing a report rich in information and constructive recommendations. However, we do feel that the report would have been more useful if it had followed AID's evaluation reporting format more closely, thereby making the presentation more organized and streamlined. Furthermore, comments and recommendations on measurement of progress in watershed treatments (pp.2, 71-74) are not accepted by the Mission for the following reasons:

1. changes in soil physical and chemical characteristics and agricultural yields can be monitored;
2. the number of hectares treated can be assessed; and
3. the measurement of hectares treated is a technically sound requirement, not to be dismissed as merely an administrative imposition (p.73).

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70632

PEASANT GROUPS AND CONSERVATION FARMING

An Evaluation of the  
Save the Children Pilot Project  
in Watershed Management,  
Local Resource Development Project I,  
with Primary Funding from USAID Haiti

Maissade, Haiti

by  
Ronald J. Gaddis  
and  
Glenn R. Smucker

June 1988

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	1
Assessment of Objectives and Funding Levels.....	1
General Findings and Recommendations.....	4
INTRODUCTION.....	9
Purpose of Evaluation .....	9
Evaluation Methodology.....	10
Key Themes .....	11
PROGRAM DESCRIPTION.....	14
Project Purpose .....	14
Strategy.....	14
Objectives.....	15
Implementing Agency.....	16
INSTITUTIONAL CONTEXT.....	17
Community Organization Strategy.....	17
Integration of SCF Program Activities .....	25
Components of Rural Development.....	26
Relations with Other Organizations.....	27
Political Constraints.....	31
MANAGEMENT ISSUES.....	37
Staffing Pattern.....	37
Consultant Support.....	41
Administrative Support.....	44
Monitoring and Evaluation.....	46
Procurement and Use of Supplies and Equipment....	49

WATERSHED MANAGEMENT PLAN.....	51
Current Status of Watershed Plan.....	51
Comprehensive Watershed Planning.....	51
Re-Definition of SCF Watershed Management.....	54
Intensification of Effort.....	59
Project Zones of Intervention.....	61
Advantage of the Mini-Catchment Basin Approach...	69
Completion of the Watershed Plan.....	70
MEASURING PROGRESS IN WATERSHED TREATMENTS.....	71
Issue of Feedback.....	71
Evaluation of Measurements.....	74
Target of 1,500 Hectares.....	77
An Alternate Measure of Success.....	78
CONSERVATION FARMING.....	82
Project Strategy for Technical Assistance.....	82
Farm Site Interventions: A Treatment Package....	83
Types of Soil Erosion.....	87
Field Layout Techniques.....	88
Structural Practices.....	95
Cultural Practices.....	105
DEMONSTRATION AND TRIAL PLOTS.....	112
Types of Plots.....	112
Project Demonstrations and Trials.....	114

AGRICULTURAL PRODUCTION AND ANIMAL HUSBANDRY.....	117
Production Practices.....	117
Animal Husbandry.....	120
School Gardens.....	122
Women's Vegetable Gardens.....	122
Appropriate Tools.....	123
Re-Vegetation Efforts.....	124
Technical Training.....	126
ASSESSMENT OF PROJECT OBJECTIVES AND FUNDING.....	128
USAID Mission Strategy.....	128
Project Purpose.....	128
Specific Objectives.....	129
End-of-Project Status and Outputs.....	131
Third Year Work Plan.....	133
Funding Levels and Long Range Planning.....	133
BIBLIOGRAPHY.....	140
ANNEX A - PARTICIPANTS IN MEETINGS AND INTERVIEWS..	142
ANNEX B - BASIC CATEGORIES OF HAITIAN LAND TENURE AND RIGHTS OF ACCESS.....	143
ANNEX C - ASSESSMENT OF TABOR SOIL SURVEY WORK PLAN	144
ANNEX D - DRAFT FORM: <u>PLOT CONSERVATION PLAN</u> ..	146
ANNEX E - DRAFT FORM: <u>MINI-CATCHMENT BASIN</u> <u>CONSERVATION PRACTICE</u> <u>ANNUAL INVENTORY SHEET</u> .....	149

## EXECUTIVE SUMMARY

### ASSESSMENT OF OBJECTIVES AND FUNDING LEVELS

The following table summarizes the project in terms of progress toward achieving grant objectives:

Percent achievement of outputs according to current project statistics (2/29/88) and estimates for end-of-project (EOP 7/31/88)

<u>Output</u>	<u>%</u>
Percent disbursement of grant	32
Elapsed time as percent of life-of-project period	72
150 peasant groups organized	78
1,200 farmers enrolled	79
6,000 direct beneficiaries	71
\$60,000 of credit disbursed	0
180,000 trees planted on private plots (EOP est.)	122
170,000 trees planted on public lands	0
1,500 hectares treated (goal revised)	--
Revision of hectare goal: 80,000 linear meters of terracing (EOP est.)	100
Watershed plan in process, est. completion 10/88	--
Environmental package developed, documentation incomplete, linked to completion of watershed plan (10/88)	--

#### Recommendations.

(1) The overall training package should be better documented. It should also have a more elaborate mix of training materials. The environmental training program should be formalized and documented as an integrated package.

(2) The scope of the watershed management plan should be revised downward to encompass the Rio Frio and Fond Bleu/Fond Gras catchment basins. It is not feasible for the project to make a plan for the vast area encompassed by the original objective. These recommendations are more fully elaborated in the technical chapter entitled "Watershed Plan."

(3) Credit should not be given during the current life-of-project. The implementation of a credit program should only be undertaken with assurance of a two year project extension. Credit should not be used as the incentive for applying conservation technologies suggested by the project. Soil and water conservation should be its own incentive, i.e., increased production, and protection of the farmer's investment in the land.

(4) The primary focus of tree planting should be private land controlled by the farmer. The output goal for planting trees on other land should be dropped. Tree planting goals should not be increased precipitously. Tree planting should be retained as an important feature of the project, but it should remain secondary to the primary goal of soil and water conservation - in which tree planting is one of several possible land use arrangements.

(5) The <sup>area</sup> target should be revised in keeping with the technical discussion in the chapter entitled "Measurement of Progress." Neither linear meters nor hectares provide adequate feedback or measures of achievement. Instead, the project should focus on appropriate conservation treatment of (a) farm plots, and (b) mini-catchment basins, in order to derive new output goals.

(6) The project should be extended for an additional two years at no extra cost. This would establish a revised end date of July 31, 1990.

(7) The project should re-direct certain of its activities and gradually build up the level of program assistance to a spending level approximately 50 percent above current levels.

(8) Given the project's purpose and its information function as a pilot project, serious consideration should be given to renewal of funding beyond the two year extension.

(a) This would serve to monitor the pilot project as it goes into crucial new stages of land management including saturation treatment of subcatchment basins and the build up of hillside terraces over time.

(b) It would serve to integrate and protect the irrigation system targeted for Bassin Cave and adjoining areas.

(c) It would promote sustainability and the long range impact of agricultural extension on the watershed.

The second cycle of funding should be considered for an additional period of three to five years at a somewhat reduced level of funding. This would maximize the information value of LORD I as a pilot project. It is an unprecedented opportunity to engage in a longitudinal study of a watershed management system

as it evolves over time. This has wide reaching programmatic implications for environmental and agricultural policy in Haiti and other regions of the world.

The justification for a two year extension includes the following points:

(1) Competence: The project has demonstrated considerable progress at achieving its fundamental objectives. It is a project that works.

(2) Pilot Project. The project is generating useful information. The value of LORD I as a pilot project would be lost if it were unable to build upon its present stage of development and further refine the emerging synthesis at a more mature stage of development.

(3) Replicability. The project is in the process of developing a replicable approach to watershed management. This package of training methods, community outreach and agricultural extension needs further refinement and full documentation before it can be transferred or adapted to other project sites.

(4) Justifiable Delays. The project was hampered by an initial delay in the flow of funds, and by the general political and social climate which prevailed throughout the entire project period up to the time of evaluation.

(5) Favorable Return on the Investment. Operating costs of the SCF project are quite low for this type of program:

(a) SCF operates with one of the lowest overhead rates available. The original overhead rate for LORD I was 10.41 percent. It later dropped to 9.63 and is now 8.46 percent.

(b) The cost of services per participating farmer is much lower than expected. By the end of the current life-of-project period, LORD I will have provided a range of agricultural extension services at a cost of \$297 per cooperating farmer. This is less than half of the projected cost.

(6) Sustainability. The project has now been able to lay the basic groundwork for sustainability and long range impact. The project's two fundamental elements - community organization and watershed management - require program continuity and the opportunity to evolve.

(7) Project Purpose. The Cooperative Agreement states that the purpose of the project is "to reverse the trends of environmental degradation on the hillsides of the Maissade Commune." This is a very ambitious goal. It is unrealistic to expect that it be accomplished within a standard three year funding cycle.

## GENERAL FINDINGS AND RECOMMENDATIONS

### Project Success

Our general impression of the project is very favorable. It is quite clear that the project has been effective at organizing small groups and motivating people to apply an impressive range of new land management practices on their own land. It has managed to do this in a turbulent political context which threatened all community outreach projects due to a heightened suspicion of outsiders, suspicion of organized movements, fear of political reprisals, polarization, factionalism, witch hunts, electoral campaigns, and facile manipulation of symbols targeted at foreign funding, Communism and peasant fear of land loss. Given the socio-political constraints, the level of peasant enthusiasm for project activities is nothing short of remarkable.

The project has demonstrated the dramatic possibilities in providing basic agricultural extension services. As a result of project interventions, literally hundreds of peasant farmers are applying improved land use technologies on hundreds of farm plots. This includes suspension of the practice of burning, better mulch management and contoured farming practices. The project achieved these successes by combining technical assistance with organizing peasant groups. The project differs from other comparable efforts in the following ways:

- Use of inherent motivation rather than artificial inducements, e.g., increased agricultural production rather than artificial employment,
- emphasis on technical assistance rather than material incentives, i.e., free advice rather than transfer of funds and commodities,
- peasant organization based on natural social groupings rather than an imposed definition of community,
- group life focused on accumulation of savings through concrete investments rather than seeking funds for construction projects or public works,
- the pooling of equal financial shares from group members' own resources rather than relying on external start-up funds.

The project has learned from trial and error. What is emerging from this first stage of project activity is a range of technical treatments with great promise for wider diffusion. If applied on a concentrated basis, these simple technologies can induce permanent and fundamental changes in peasant land management.

The agricultural extension is combined with small group investments and collective action. This holds out the promise of sustainable agricultural innovation and the possibility of

greater economic clout, at least at the local level, by virtue of democratic peasant groups acting in concert. This has important implications in key agricultural spheres:

- crop production, heretofore in decline,
- soil and water conservation, thereby reversing the trend toward environmental degradation and net impoverishment,
- grazing management in lieu of uncontrolled grazing which destroys garden perennials (including newly established living barriers and fences) during the six month slack season,
- protection from grain price fluctuations via the leverage attained by pooling savings funds, investing in grain storage, and access to reasonable terms of credit, thereby limiting the present magnitude of revenue loss to small producers due to selling cheap and buying dear,
- alternatives to usury, i.e., accumulation of savings, development of collateral and access to reasonable terms of credit.

#### Areas in Need of Improvement

Logistics. Logistical problems have been an important constraint on the project. These problems were exaggerated by the political context. Radio communications in the near future will be helpful in making better use of personnel time. Better transport arrangements should be made for project leadership to make use of time in Port-au-Prince for contact with colleague organizations, consultant recruitment and staff recruitment.

Underspending. The project has also rather consistently underspent its budgeted levels of funding. This is not surprising in view of the political climate. The project has deliberately chosen to maintain a low profile. This helps to account for the project's success and continuity during a troubled political era. Nevertheless, the sheer scale of community response to SCF outreach now threatens to overwhelm the project's ability to supply services.

Growth in client demand for services. Given the enthusiasm for groupman formation and conservation technologies, the field staff runs the risk of losing control over the project. The problem is one of properly monitoring field animation and extension services. Groupman are attaining new levels of savings and management competence. A growing number of groupman are collaborating across groupman lines. New groupman are forming in the fringe areas of project activity zones. Literally hundreds of plots are treated with various soil and water conservation

measures. The level of peasant enthusiasm has already surpassed the ability of the project to respond technically in an appropriate manner.

### Key Recommendations.

(1) The sheer range of activities tends to blur project focus and dilute the level of technical supervision and monitoring; therefore, it is necessary to establish firm priorities and monitor the program to keep it in balance. The project should not lose sight of its primary mission: agricultural extension and peasant organization.

(2) There needs to be better administrative support for the project. This includes transportation, communications, accounting, and program documentation. The field Project Director should be freed from time consuming office tasks which could be delegated to support staff.

(3) The outreach program needs written training materials and more staff time devoted to coordinating the production of training materials.

4) Technical field staff should be increased to achieve a better balance between technicians and animators.

(5) An increased cadre of field technicians will require more in-house training and technical supervision from the professional team. This will require additional professional support to complement and extend the demonstrated skills of the Project Director and Technical Advisor.

(6) Increasing the field extension team and professional staff adds up to a significant increase in program size and a somewhat heightened profile in the Maissade. This should be limited, however, to expansion in the realm of technical assistance, i.e., personnel support rather than a heightened material presence. The SCF profile will necessarily be somewhat higher in the town of Maissade, but the zones of activity will continue to be dispersed rural localities. This also implies a strengthened administrative apparatus to support the expanded outreach service. Better administrative support at the field office in Maissade should precede build up of the field extension staff.

(7) The key service offered by this project is on-site technical assistance. This means that personnel are the heart and soul of the program. Personnel recruitment should be taken very seriously. Mediocre candidates should be rejected out of hand. As a general rule several candidates should be sought for consultancies or new positions. Proper recruitment is well worth the cost in time and money. There are special difficulties in recruiting staff for this type of a project in remote rural areas such as Maissade. The project should continue to exercise the

creative option of training local candidates as appropriate. Project funds should be made available for this purpose.

(8) The project's ambitious objectives and broad scale geographic targets are almost certainly unattainable at the macro-level. Furthermore, they serve to limit project effectiveness at local levels. Goals and targeted activity zones should be carefully reviewed and refined. This calls for a re-definition of watershed priorities from the top down, and an elaboration of plot based applications from the bottom up. This re-orientation should take place at the following levels of activity:

- (a) Macro-level: Goals for watershed coverage must be shifted downward to more manageable scales of magnitude.
- (b) Micro-level: Local points of intervention (plot based units) should be shifted upward and elaborated into mini-catchment basins.
- (c) Intensification: Delivery of services should be focused for maximum impact as the project enters a new stage of consolidation.

(9) At the micro-level, this re-direction should build upon associated plots to foster the concept of critical mini-catchment basins. This will require re-focusing field staff energies in both animation and technical support. There should be a proper balance between forming new groups versus guiding and building upon the growing effectiveness of old established groupman. In this new stage of consolidation, the greater priority should be placed on maximizing the impact of existing groups. This will help to foster inter-groupman cooperation and elaboration of mini-catchment basin coverage. The priority in organizing new groups should favor the organization of a critical mass of peasant farmers rather than project extension into new areas. As a corollary, this strategy will necessarily limit the number of larger scale critical zones targeted for services.

(10) The strategy of discrete expansion of a re-focused program assumes a time extension of sufficient length to justify the effort. Both agricultural extension services and the evolution of new peasant organizations are activities which demand long term support services. Extending the project need not contradict goals of sustainability and self-motivation; rather, the proper groundwork must be carefully laid before closing such a project. Eventual staff withdrawal from the project could be a phased withdrawal over time. The primary justification for project extension is the opportunity for long term project impact on the watershed and on the land management practices of its human occupants.

(11) The low profile of the project has thus far served it well. This strategy will continue to serve the project in less troubled times; however, the philosophy of keeping a low profile should not be allowed to interfere with discrete expansion of needed personnel support. The project is at a critical juncture which coincides with the changing political environment. It has effectively laid the groundwork for a more focused program and a re-definition of geographic priorities. The project must be able to respond to the heightened expectations of its peasant clientele and build upon its success. If it does not rise to this challenge, a very special opportunity will be lost.

## INTRODUCTION

### Purpose of Evaluation

The Save the Children Federation (SCF) operates a rural development project in the Commune of Maissade. The USAID Haiti Mission provides primary funding to this project, Local Resources Development I (LORD I). The USAID grant of 900,000 dollars is administered under the terms of a Cooperative Agreement with SCF, signed on July 31, 1985, for a three year cycle of funding. The present evaluation was to have been performed midway through the life-of-project period. Since the latter part of 1985, Haiti has been in the midst of a political crisis punctuated by intermittent periods of civil disorder; consequently, the scheduled mid-term evaluation was postponed until March 1988. This timing falls near the end of the original life-of-project with nearly 90 percent of the project period already elapsed. As a result, the present evaluation reviews the SCF rural development project through the lens of a longer range time frame and invites assessment of its future prospects, sustainability and funding requirements.

The terms of reference for this evaluation draw particular attention to the following objectives:

- 1) Assessment of the "groupman" community organization methodology used by SCF, and the evolution of the small group movement in Maissade,
- 2) Assessment of the small group movement as a channel for soil and water conservation services and other rural development goals,
- 3) Assessing how well SCFs overall program activities have complemented each other,
- 4) Reviewing the impact of other organizations on project activities,
- 5) Assessing the role and status of the credit component of the project,
- 4) Assessment of project success in meeting targeted goals in view of the volatile political climate which has reigned since the beginning of the project,
- 5) Advisability of a no-cost extension of the project for a fourth year of operation.

In addition to these concerns, the highly detailed Terms of Reference for Mid-term Evaluation (USAID, circa October 1987) took note of other issues to be evaluated. These issues are also addressed in this report.

## Evaluation Methodology

This evaluation is being carried out by a team of two specialists, a cultural anthropologist and an agricultural engineer. The team's background mirrors the two major thrusts of the SCF rural development project: peasant organization, and watershed management. The time frame of the evaluation extends from mid-March to mid-April, 1988.

The basic approach has been to review project documents and to engage project personnel in ongoing dialogue focused on the evaluation topics noted earlier. The team carried out the following activities:

- farm site visits showing farmer practice of soil and water conservation technologies, mulching, alternatives to burning, contour farming, vegetal barriers and fencing, ravine control structures, new cultural practices, vegetable nurseries and tree planting sites,
- examination of trials and demonstration plots,
- examination of local nurseries belonging to individuals and groups of farmers (groupman),
- visits to groupman livestock and grain storage projects, groupman schools and social centers,
- attendance at needs identification sessions (kongre) in Madame Joie and Basin Cave attended by dozens of groupman and hundreds of peasant farmers; chaired by field animation staff,
- interviews with all project field staff including agronomists, forester, animators, veterinary nurse, agricultural technicians, voluntary monitors, administrative assistant, director of child survival program,
- participation in animator staff meetings,
- attendance at soil conservation training seminars for groupman taught by field animators,
- attendance at vaccination session held by veterinary nurse/trainer,
- interviews with agricultural and livestock monitors (volunteers) trained by project,
- attendance at weekly groupman meetings,

- interviews with groupman members and non-members in 7 of the 8 program regions,
- field intersects on foot through 6 of the project's 12 designated "critical erosion zones,"
- interviews with SCF project consultants for baseline survey, cane fungus, soil survey, and community organization,
- interviews with administrative staff of the Port-au-Prince SCF office, the Westport (Connecticut) SCF office, the USAID Mission (Port-au-Prince),
- interviews with personnel of related organizations including ODBFA (Hinche), BNDAL (Hinche), Caritas, PADF, and MARNDR (see Annex I for evaluation team itinerary, listing of agencies and interviewees).

An endeavor of this nature requires an unusual degree of patience and cooperation on the part of those interviewed. It also takes up an immense amount of project staff time during the concentrated period of field research. Furthermore, it is often bewildering, if not uncomfortable, to be the object of evaluation. As a team, we are grateful for the enthusiastic support shown for this evaluation by the SCF staff and by the client population of small peasant farmers. This evaluation has been very much a joint endeavor whereby project staff engaged in thoughtful reflection and self-evaluation in response to our pointed queries. We consider it a privilege to have carried out an evaluation of this interesting if somewhat unusual project operating in a context considered to be difficult under normal circumstances. The reality is that the project has managed to provide useful services under circumstances which have been anything but normal due to the agonizing social and political crisis sustained by this country for more than two years.

### Key Themes

A number of underlying questions and themes have emerged out of this evaluation exercise. These themes thread their way through the descriptions and assessment of various components of the project. These themes include the following:

(1) This is not a bricks-and-boards project; rather, it provides technical assistance directly to small farmers at their own farm sites. It does this in response to farmer requests and identification of needs through the groupman system. In short, the project provides non-material support to farmers; this results in material gain at the level of specific farm plots, individual households and peasant groups. How is this possible? Does it really work? What are the limitations?

(2) There is a certain dissonance in the overall objectives of the project vis-a-vis the structure of peasant landholding patterns and social relations. The notion of watershed is necessarily all encompassing, systematic, and spatially concentrated; however, peasant farm units are scattered and discontinuous. Therefore, peasant applications of new technologies tend to be piecemeal, scattered and discontinuous. Slopes, ravines and water drainage systems simply do not correspond to peasant land tenure.

The primary focus of the project's technical services is at the micro-level of the peasant farm plot - the most basic unit of land management in Haitian agriculture. How does a micro-level approach fit with the macro-level definition of the problem implied in watershed management?

(3) There are possible disharmonies between the groupman method of peasant organization and the watershed/technical imperatives noted earlier. The groupman methodology is based on voluntarism, democratic decision making, and self-direction, i.e., development from the bottom up, whereas watershed management efficiency would imply executing land management policy from the top down. Is there a socially acceptable way to deal with this dilemma?

By operating through groupman, the project is oriented to pursuing a non-directive strategy of responding to needs identified by its peasant clients. In reality, to what extent do the perceived needs correspond with scientific or donor perceptions of the ecological crisis? How much room for manoeuver do project technicians have? What is a proper balance between leading and responding? To what extent do project services fit with peasant realities?

(4) What are the appropriate units of measure to gage project success in meeting its overall objectives? Obviously, varied plot types require specific treatment responses appropriate to the plot. It seems quite clear that neither "hectares treated" nor "linear meters" of contour structures are adequate measures of project services, farmer acceptance of new soil and water conservation practices, or watershed management goals. What type of feedback system is most useful to project managers and field technicians?

(5) To what extent is LORD I a research project? How does this fit in with its character as a pilot project?

(5) Finally, to what extent are peasant farmers able and willing to take advantage of SCFs agricultural extension services? In the end, this is the vital issue for it implies nothing less than a change in behavior. What is in it for the small farmer?

The watershed management problem is both a social and technical problem. It is counterproductive to view the peasant farmer as an obstacle. The small farmer bears the primary brunt of the ecological disaster which characterizes most of rural Haiti. Therefore, the ultimate measure of this project lies necessarily in documenting verifiable changes in the agri/cultural mores of peasant smallholders, i.e.,

(a) collective action,

(b) consistent application of new practices in the realm of land management.

The challenge is to provide services which engage farmers as partners in a common enterprise with visible benefits for peasant farming.

## PROGRAM DESCRIPTION

### Project Purpose

The overall purpose of the LORD I/Save the Children Project is as follows:

...to reverse the trends of environmental degradation on the hillsides of the Maissade Commune, Central Plateau, Haiti, through developing, field-testing and deploying effective participatory approaches to soil conservation and technology transfer.

The language of the project paper and funding agreement clearly identifies this effort as a pilot project which (a) develops a methodology, (b) provides appropriate services in the region of Maissade, (c) is ultimately self-sustaining and (d) is capable of replication in other watersheds and project sites.

### Strategy

The USAID/Save the Children Cooperative Agreement provides for a synthesis of two pre-existing strategies in carrying out this mandate:

- 1) The groupman organizational methodology for motivating, mobilizing and educating poor farmers;
- 2) the income-generating, profit-oriented approach to enlisting peasant participation for environmental recuperation, most notably associated with the Agroforestry Outreach Project's tree planting campaign.

Conceptually, the project planners view the groupman method as a channel for providing hillside agricultural extension services to peasant farmers. These services are intended to foster goals of soil and water conservation.

The project is further mandated to develop a "technically and socio-economically sound watershed management plan to be implemented by peasants themselves within the Commune." With this framework the project should achieve "significant measurable and sustainable environmental rehabilitation" and create the "local absorptive capacity for potentially much greater and more comprehensive impacts in the future."

## Implementing Agency

Save the Children is a nonprofit, tax-exempt charitable development agency dedicated to "improving the quality of life and defending the rights of children." As an agency, SCF's philosophy of Community Based Integrated Rural Development (CBIRD) is in keeping with the LORD I approach using the groupman model. The CBIRD approach is based on principles of community organization, sustainability, self-reliance, and focused impact areas.

SCF also operates a Child Survival Program in Maissade with funding from the Haitian Arab Center and the Association des Oeuvres Privees de Sante (AOPS). In 1987 SCF established a Child Sponsorship Program to raise funds for its Haiti programs. Save the Children uses non-USAID funding to underwrite the cost of its small Port-au-Prince office. SCF's Haiti projects currently employ 42 people, including 19 in the Maissade rural development project, 17 in the Maissade health program, 2 in the child sponsorship program, and 4 administrative support staff in Port-au-Prince.

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## INSTITUTIONAL CONTEXT

### Community Organization Strategy

Groupman Methodology. The project's approach to outreach is based on a community organization strategy which has come to be known in Haiti as groupman formation. The Creole word groupman may be translated as "grouping" or "small group." In the Maissade project, the organization of groupman should be clearly distinguished from other methods based on community councils, or "conseils d'action communautaire." The latter organizations became inactive, for the most part, in the wake of the fall of Duvalier in February 1986. Unlike "community councils," the Maissade groupman engage in cooperative endeavors with a view to accumulating savings and investments.

The groupman are small autonomous groups with a highly personal character. They are characterized by several prominent features:

(1) Each groupman is an independent and self-directed social unit. It is organized on the basis of "natural" social units or pre-existing relationships in rural Haiti. These pre-existing relationships include special ties based on kinship, co-residence, labor exchange, friendship, neighborliness or religious activities. The membership of each new group is self-selected.

(2) The internal organization of the group is undifferentiated and non-hierarchical. It tends to function best among social and economic peers. Functional roles may be rotated. The group has no formal leader or boss. The division of labor within the group is based on accomplishing work rather than establishing patterns of authority and status. All decisions affecting the group are made together in regular meetings.

(3) The practical focus of group activity is to generate savings, and invest in revenue generating projects.

(4) The group's capital base is self-generated. This is done through dues, or pooling together equal contributions from all members. These funds are invested in profit making ventures which generate additional revenues, e.g., agriculture, animal husbandry, grain storage, or commerce. The group may engage in agricultural wage labor to increase the rate of accumulation of group savings and investment.

(5) No group member is allowed to borrow or withdraw funds from the group treasury - except by forfeiting group membership. In the short and medium term, no dividends are paid out to members from the group's profits. This is intended to impose economic discipline and force accumulation of a larger magnitude of savings for investment in larger ventures, e.g., a grinding mill or a store.

(6) The groupman has a pre-cooperative character focused on economic ventures; however, it is also a discussion group which identifies problems and seeks practical solutions. It is open to cooperating in various ways with other similar groups. This includes investments made possible by the shared contributions from several groupman. It also includes larger meetings with other groups to promote the groupman movement. These inter-group meetings are a forum for discussing common problems and possible solutions. They are also an opportunity for music, skits, and talks which inspire groupman ideals, engender enthusiasm and entertain.

(7) In the Maissade project, the groupman movement is a private sector channel enabling SCF to provide agricultural extension services and practical training. It fosters long range goals of sustainability and promotes democratic local institutions in a remote region of rural Haiti.

The Maissade groupman movement. At the time of evaluation, the Maissade program was working with a total of 117 groups and 957 groupman members. The groups had generated total assets of about 17,300 gourdes. These funds were derived almost entirely from the efforts and independent resources of the peasant farmers who comprise groupman membership. Given the self-reliant character of SCFs outreach strategy, very few of these funds are attributable to transfers of project funds.

Limitations of time and space in the present report do not permit a full description of this very interesting community movement. Table 1 below provides a quick statistical profile of the groups in Maissade. For purposes of comparison, some figures are included from another groupman project (Gros-Morne) which has served as a model for the SCF project. Comparisons with Gros-Morne are more apt for the 1979 figures than for 1983, since the Gros-Morne groupman effort had been active for a little more than two years at the time, comparable to the current figures for Maissade.

Maissade compares favorably with the 1979 Gros-Morne figures. Maissade has a smaller number of groups, but it has twice the level of assets per group, and three times the level per group member. The group size in Maissade is about the same as the average group size in Gros-Morne after 5 years of operation. Maissade has a much higher percentage of women than Gros-Morne in 1979. The percentage of women only groups is the same in Maissade as it was after 5 years in Gros-Morne. Men only groups in Maissade are much fewer than in Gros-Morne in 1979.

In terms of longevity, the average age of Maissade groups over 3 months old is higher than in Gros-Morne (1979). Maissade appears to have a lower rate of groupman dissolution than Gros-Morne. Slightly more than half of the Maissade groupman have been in existence for over a year, and the percentage of Maissade groups less than a year old is not far from the Gros-Morne figure after 5 years of operation. The average age of groups over 12

TABLE 1. STATISTICAL PROFILE OF THE MAISSADE GROUPMAN MOVEMENT, MARCH 1988, AND SELECTED COMPARISONS WITH DATA FROM THE GROS-MORNE GROUPMAN PROJECT, 1979 AND 1983

	<u>Maissade</u>	<u>Gros-Morne Project</u>	
	<u>1988</u>	<u>1979</u>	<u>1983</u>
Number of groups	117	160	459
Number of group members	947	1,760	3,488
Average size of groups	8	11	7.6
Range in size of groups	4-15	-	-
Female group membership (percent)	31	19	37
Groups composed of women only (%)	3	-	3
Groups composed of men only (%)	13	30	5
Groups composed of men and women (%)	84	-	92
Average assets per group (gourdes)	150	74	336
Average assets per member (gourdes)	18	7	44
Range in assets per group (gourdes)	0-2,600	-	-
Total estimated assets (gourdes)	17,300	11,840	154,224
Average age of groups over 3 months old (months)	14	11	20
Average age of groups over 6 months old (months)	15	-	-
Average age of groups over 12 months old (months)	19	-	-
Oldest groups (months)	28	21	64
Groups in existence 3-12 months only (percent)	49	-	44
Groups in existence for more than 6 months (percent)	80	-	-
Groups in existence for more than 12 months (percent)	51	-	-

SOURCES: For Maissade data - estimates and data from animator interviews, quarterly reports, project files, and the project director; for Gros-Morne data see Smucker 1983.

months old is about 19 months. About 80 percent of the Maissade groups are over 6 months old and have an average age of 15 months. This suggests that the rate of dissolution is closely affected by the ability of groups to survive the first few months of activity.

Table 2 illustrates the long term growth trend of the Maissade movement despite the political turbulence which marked this period. The growth line is not one of steady increase. There is a notable flattening in the line during the troubled summer of 1986 and the second half of 1987. This pattern is even more visible in Table 3 which shows the intensity of formation and dissolution of groups for each quarter since the beginning of the project. The political links to this bar graph are more fully discussed in a later section of this chapter entitled "Political Constraints.

Reasons for group dissolution. The evaluators met with the animation staff and reviewed a list of 50 registered groups which eventually dissolved. This amounts to about 30 percent of all groups organized and registered with the project's animation team since the beginning of the project. The following reasons were given by animators as precipitating group dissolution in these cases:

- political threats, generalized fear of "Communists," the fallout of "dechoukaj"
- members who join for the purpose of seeking jobs
- corruption on the part of unscrupulous group treasurers
- seasonal labor migration to the Artibonite, and out migration to Port-au-Prince
- sexual politics and family quarrels
- conflicts over inheritance of land
- charges of witchcraft, i.e., feuding
- quarrels involving rural policemen
- competition from Protestant religious groups

These reasons reflect some of the important factors in rural Haiti which interfere with efforts at community organization. The traditional factionalism in rural communities has been further exaggerated by the political climate of the last three years.

TABLE 2. CUMULATIVE NUMBER OF PEASANT GROUPS (GROUPMAN) BY QUARTER, MAISSADE, 1985 - 1988

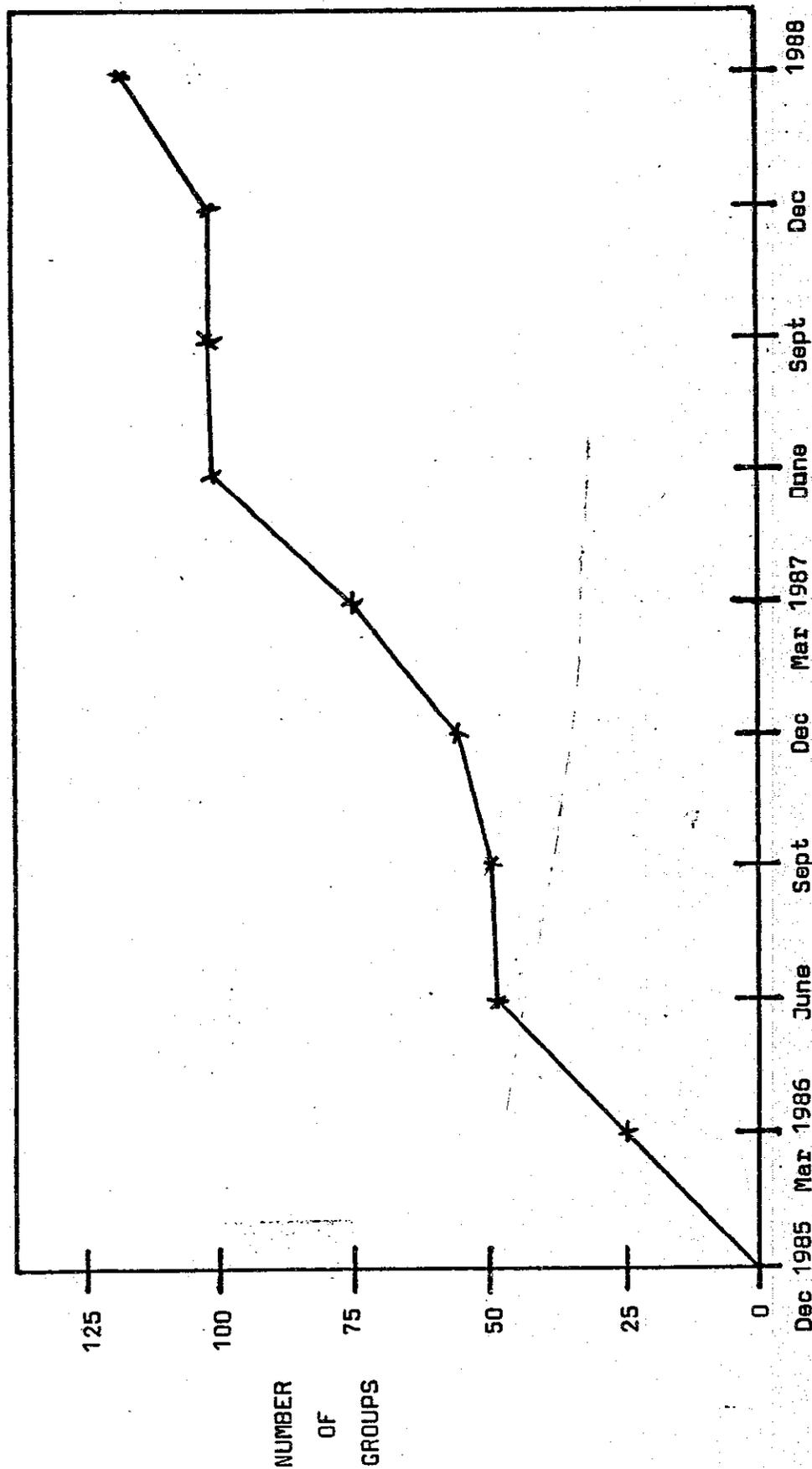
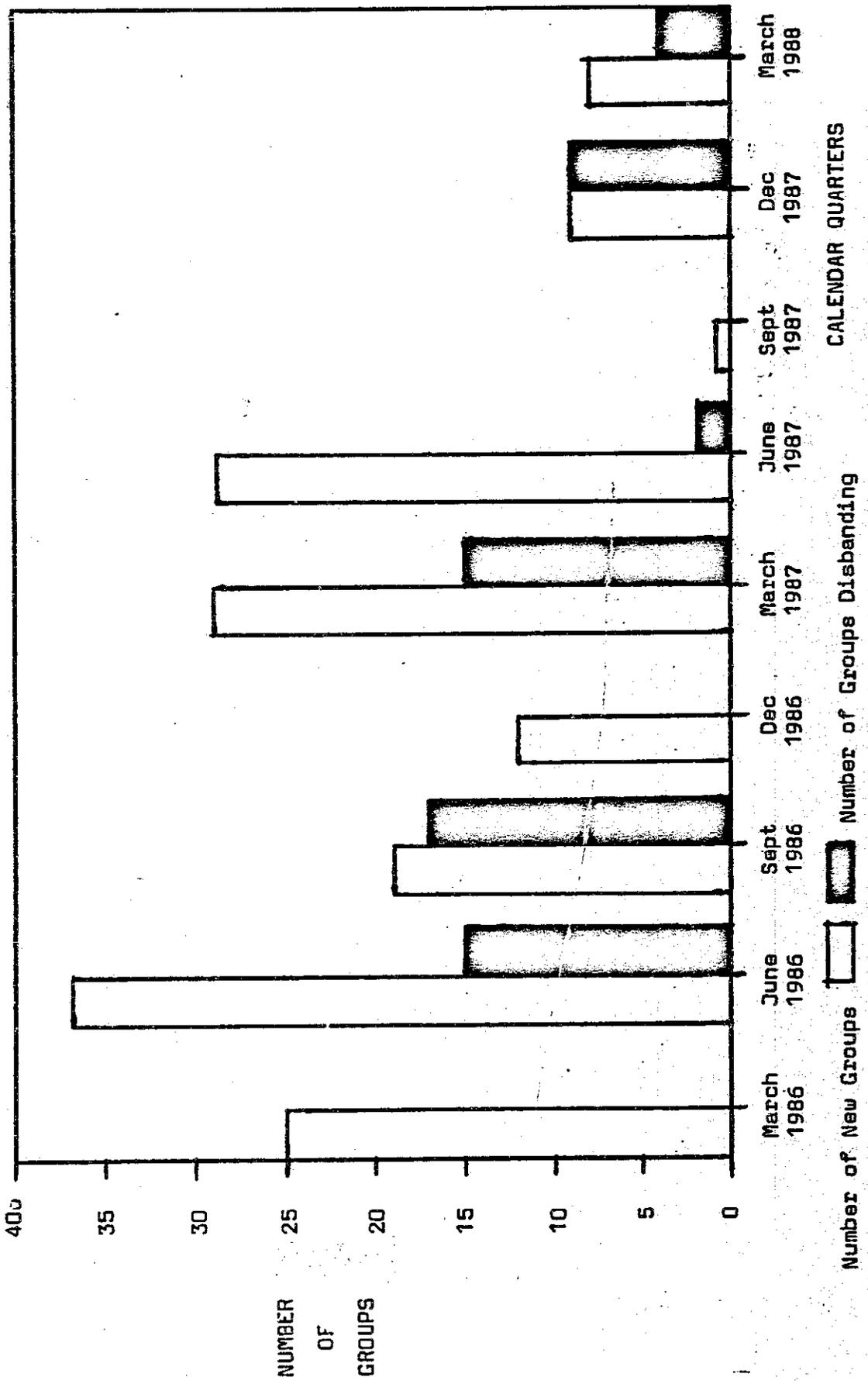


TABLE 3. GROUPMAN FORMATION AND DISSOLUTION, MAISSADE, 1985 - 1988



Social origins of Maïssade groupman. Further review with project animators elicited a sense of origins for Maïssade groups. The groupman strategy identifies pre-existing or "natural" groups as the point of entree for groupman formation. Particular group origins noted by the animators include the following:

- groups of neighbors in a locality
- friendship groups
- a working group of tailors (also farmers)
- agricultural workers (rotating labor groups)
- church related groups such as choir members and wake singers
- other religious groups linked to the practice of Voodoo, including Rara processional societies, and traditional healers
- a group of domino players

This list speaks well of the project's success in identifying traditional groups and helping them to take on new functions in a culturally appropriate fashion. This approach is inherent in the groupman method if properly used. An estimated 20 percent of the Maïssade groups presently function as labor groups as well as groupman.

Group sustainability and links to agricultural extension.  
The SCF Maïssade experiment with groupman is remarkable on several counts:

(1) It is a secular organization. Most other groupman projects in Haiti have been linked at least nominally to Caritas. There are reasons for the prior linkage of groupman to Caritas. In the past, the umbrella of the church has helped protect groupman oriented efforts from interference by authorities. In the post-Duvalier period SCFs secular status has actually helped to protect the project from political interference. This could of course change as Haitian politics continue to evolve.

(2) It has combined an environmental imperative with the groupman strategy for outreach. In principle, this was a contradiction in terms in view of the groupman philosophy of self-determination rather than outside determination of local priorities. In practice, the groupman method gives rise naturally to the identification of agricultural needs pertinent to agricultural extension services.

(3) It has been successful at providing technical assistance without linking it to transfers of funds or commodities. This is attributable in large part to the

unprecedented integration of agricultural extension services with self-reliant local networks using the groupman approach.

(4) The project has demonstrated the viability of using intrinsic incentives for farm site application of new soil and water conservation technologies. This has rarely been done in Haiti and probably never on the scale of SCF in Maissade.

(5) The groupman network is laying the foundation for some type of institutional continuity beyond the life of the project and its extension. Clearly, the process of forming new groups still requires the presence of a skilled animation team to support this new movement and help guide it into more elaborate forms of collective action. Perhaps 25 percent of the present groups are more effective than the others as groupman institutions. Future credit for groupman activities should use this nucleus as the foundation for administering credit. This core of groups is also the institutional basis for long term continuity of project related innovations. Finally, the prospects for inter-plot cooperation (mini-catchment) basins are linked at least in part to the groupman movement.

#### Recommendations.

(1) The project should develop a more precise measure of small group effectiveness. For example, the willingness to pool funds and invest them is an essential characteristic. Concrete and objective criteria would be useful for periodic and detailed assessment of each animator's portfolio.

(2) The system for registering and tracking groups should be improved and computerized if possible. The tracking system should register failed groupman, including an assessment of the reasons for failure. This data will be helpful in focusing animation efforts and future planning.

(3) The project needs to devote some special attention to the whole question of inter-groupman cooperation. This becomes a high priority issue in terms of a number of emerging groupman projects requiring a larger investment fund.

(4) The role of associated groups is also a special issue in the effort to promote inter-plot cooperation oriented to mini-catchment basins. This should be reviewed and discussed in order to develop a viable approach.

(5) The growing effort to intensify project efforts requires better information regarding relative saturation of intensive activity zones with groupman members. What is the percentage of coverage in terms of area and members in a given locality? Closely related to this is better training and encouragement of local volunteer animation effort to promote thorough coverage, and avoid the problems of diluting project impact by overly dispersed members and groups.

## Integration of SCF Program Activities

Finding. There are three distinct SCF programs in Maissade:

- (a) LORD I: Rural Development,
- (b) Community Health/Child Survival Program,
- (c) Child sponsorship (fundraising).

Coordination of these sectors rests ultimately with the Project Director in Port-au-Prince. At the field level, the Health Director and Rural Development Director maintain excellent working relations, seek each other's advice, and coordinate their respective activities on a day to day basis. Child sponsorship has thus far operated primarily through the rural schools in the area. The three SCF programs are not fully integrated in terms of working zones although all activities fall within the Maissade Commune. The health and agricultural programs tend to reinforce each other in those localities where they overlap (one rural section).

The child sponsorship program was established more recently than the other two sectors. In retrospect, it would have been more effective for the sponsorship program to precede the health and agricultural programs. As it stands, the linkage between sponsorship and the outreach programs is not clearly established in people's minds since the agricultural and health programs operated for a long time without any apparent need for funding support through sponsorship.

Recruitment of children for the sponsorship is handled separately from agricultural extension and groupman activities. Sponsorship is operated primarily through schools. This engenders expectations that schools will receive services from the project. These expectations impose a certain constraint on the program since SCFs current financial goal for sponsorship is to recover SCF administrative costs in Port-au-Prince. Another constraint on sponsorship is the need to have convenient access to children. The schools have served as a useful point of contact, but school enrollment is limited. SCF also plans to incorporate children enrolled in the community health program.

### Recommendations.

(1) As the child sponsorship program grows, the SCF Director should assure appropriate staffing and coordination so that health and agricultural components are not unduly burdened. The Project Manager for Lord I should not be in a position of de facto supervision of sponsorship. The necessity to show visible results of sponsorship may eventually require additional staffing to coordinate the child sponsorship program in Maissade.

(2) The sponsorship of children in the health program is a better long term solution than relying primarily on school children since the Child Survival program demonstrates a more

visible correlation between services and sponsorship.

### Components of Rural Development

Finding. Within the LORD I funded program, project components include the following:

- animation
- soil conservation
- agroforestry
- experiments and trials
- agricultural extension
- demonstration gardens
- agricultural education in rural schools
- introduction of new crop varieties
- animal health and production
- potable water development
- credit
- training
- watershed planning
- technical assistance

This is a large number of project components to manage. They all tend to fit generally with the primary goals of the project, but with this many activities there is a danger of losing focus.

### Recommendations.

(1) Priority should be assigned to activities which most directly benefit the goals of groupman organization and agricultural extension. Staff time is too precious a resource to invest in activities which deflect attention away from these goals.

(2) The project should stress its role as advisor and intermediary, and generally avoid direct implementation of construction projects and non-agricultural activities.

(3) Soil and water conservation should assume priority over tree cropping. It would be easy for the tree distribution program to take up more and more staff time. We feel that tree distribution is important but secondary to the more primary goal of extending soil and water conservation technologies. It is a question of keeping a proper balance.

(4) The potable water effort should not be allowed to detract from agricultural extension. Capping of springs has a tendency to take up undue staff time, and it places special burdens on the administrative support system. This component should be delegated, if possible, to another collaborating organization such as the Peace Corps.

(5) The program for agricultural education in rural

schools is not inappropriate, but it takes time away from higher priorities, especially technical supervision of field staff. The school garden project does not seem to make good use of the agronomist's time. So long as the outreach program lacks proper technical supervision, it is ill advised to maintain the school garden project.

(6) Animal health should focus exclusively on preventive measures and improved animal nutrition. This emphasis fits well with the peasant farm system and agro-sylvo-pastoral elements of project trials and re-vegetation. Improved grazing management is of fundamental importance to the project's goals - both for garden protection and animal nutrition during the dry season.

## Relations with Other Organizations

### CARITAS

Finding. The project has used consultants from two successful Caritas projects with experience in groupman methodologies for organizing peasants (Gros-Morne and Papaille). These two groupman methodologies are very similar in their basic philosophy and objectives. There are certain differences in strategy. Notably, in contrast to Gros-Morne, the Papaille strategy emphasizes a significantly greater period of training prior to the actual formation of a new groupman. Papaille also stresses agricultural production and rejects commerce on the grounds that speculation in agricultural products has an exploitative character.

These differences prevented compatible working relations between the two Caritas consultants. Consequently, SCF tended to use only one of the consultants on an ongoing basis (Gros-Morne). This resulted initially in a break between the Maissade project and the neighboring groupman movement based in Papaille. This problem caused a staff turnover on the SCF animation team in which Caritas trained animators left the project but continued to work in the Maissade region. It also threatened to destroy the fledgling groupman movement in the SCF animation region of Palowat. These conflicts were exaggerated by the volatile political climate at the time.

In the first quarter of 1987, SCF project came to an informal agreement with Papaille. As a result, the former SCF animators left the area and relations between Caritas and SCF were greatly improved. There is presently a cordial relationship between the SCF Director and the Caritas Director in Papaille. SCF is also assisting Caritas of Maissade in a school construction project. The two groupman movements do not otherwise collaborate. Relationships may be characterized as cool but correct.

Given the geographic proximity, it is to be expected that

the two movements will eventually engage in some form of cooperative tie. The Papaille movement presently works with over a thousand small groups on the Central Plateau. It is likely that Caritas will eventually take the initiative to engage the Maissade groupman movement in dialogue.

Recommendation. The project should anticipate and plan for the re-emergence of Caritas interest in the Maissade groupman movement. Dialogue with Caritas should ultimately take place on at least two levels: 1) the groupman movement (members), and 2) project management. Given the SCF philosophy of peasant organization, a maturing Maissade movement should be free to participate in this process, and decide how to respond to such an overture. The project cannot ignore the long term implications of working in proximity to similar Caritas movements without establishing ties. These ties should respect the autonomy and self-determination of the Maissade groupman movement.

#### ORGANISME DE DEVELOPPEMENT DU BASSIN DU FLEUVE ARTIBONITE (ODBFA)

Finding. During planning stages, a role in project supervision was assigned to the ODBFA, a regional agency affiliated with the Commissariat a la Promotion et a l'Administration Publique. The final Cooperative Agreement did not contain this provision, but the project was directed to collaborate with ODBFA and hold meetings on a regular basis in Hinche and Port-au-Prince.

During the first year of project implementation there were a number of such meetings. As the project evolved, there appeared to be no further justification to meet regularly. The SCF Project Director has continued to send copies of reports and planning documents to the ODBFA director.

The Project Manager maintains cordial working relationships with the ODBFA representative in Hinche. As a result, ODBFA has made 8 plows available to groups affiliated with the SCF project, and has promised assistance in the form of construction materials for social centers. ODBFA has also agreed to build a road from Maissade to Madame Joie. Finally, the ODBFA regional maps and studies funded by the Organization of American States (OAS) have proved useful to the project, especially for informing the work of technical consultants and for preparation of the watershed management plan.

#### Recommendations.

(1) The present level of collaboration with ODBFA serves the project well and should not be changed.

(2) The ODBFA road construction project should not be perceived by local people as an SCF project. SCF should carefully avoid involvement in the recruitment of salaried laborers for public works of this sort.

(3) The project should take a special interest in environmental planning for the road project. Otherwise, the construction project could seriously interfere with the watershed goals of the SCF project.

MINISTERE DE L'AGRICULTURE, DES RESSOURCES NATURELLES  
ET DU DEVELOPPEMENT RURAL (MARNDR)

Findings. The project has ties to MARNDR through three separate organs:

- (a) Ferme de Papaille and the Winrock Goat Project,
- (b) Secretariat Technique a l'Amenagement de Bassins Versants (STABV),
- (c) Service d'Extension Agricole.
- (d) Training centers

**Papaille:** Project management has amicable ties to the staff of the Papaille experimental farm near Hinche. Cooperation has focused on securing new breeds of goats for placement with farmers via the groupman movement. The project has served an intermediary function in this effort. The project's veterinary-nurse also provides ongoing support services (training, preventive medicine).

**STABV:** The project has received useful advice from STABV personnel. This office has also promised assistance in reviewing the watershed management plan. Project management is interested in an ongoing advisory relationship with STABV.

**Agricultural Extension:** This MARNDR service has seconded a Technicien Agricole to the SCF project. This arrangement has worked out well.

**Training:** The Faculty of Agronomy at Damien has trained all of the project's Agronomists and agricultural technicians. Graduates of these academic programs continue to serve as the key source of recruitment for technical personnel employed by the project. The MARNDR/FAO training center at Limbe has also been used for short term training of project animators, monitors (volunteers) and client farmers.

Recommendations. These relationships are very appropriate and should be maintained. A polished draft of the watershed management management plan should be circulated to STABV for review and comments.

PVO COLLEAGUES

Findings. The project has purchased seedlings and nursery

supplies from the Pan American Development Foundation (PADF), Operation Double Harvest (ODH) and the Societe Haitienne d'Execution de Projets Agricoles (SHEEPA). It has also held joint nursery training sessions with PADF.

SCF actively seeks contact with rural development efforts in other communities for the purpose of exchange, discussion and informal training. During the recent period of evaluation, a representative of Caritas/MCC (Mennonite Central Committee), a groupman project in Bois de Laurence, came to Maissade to arrange an exchange of visits by farmers and staff members. Other such visits have taken place in Gros-Morne, the site of a groupman movement which has served as a model for SCF; in Croix de Fer with a community organization sponsored by CHADEV, the Comite Haitien de Developpement; and the small group movement sponsored by CRWRC (Christian Reformed World Relief Committee) near Pignon. SCF plans to arrange for delegations of Maissade farmers and staff to visit CARE projects, and CECI (Centre d'Etude et Cooperation Internationale) in St. Michel de l'Atalaye.

### Findings.

(1) Purchase of seedlings from ODH, PADF and SHEEPA is an efficient use of scarce resources. There is no real justification at this point for a central SCF nursery facility. Given the overall orientation of the project, it makes sense for SCF to serve as an intermediary between Maissade farmers and existing PVO nursery suppliers, especially those located on the Plateau.

(2) SCF should acquire training materials developed by other PVOs such as Helvetas, CARE, PADF, MCC and CECI. In some cases, these materials can be used or readily adapted to the SCF program. In any case, a library of existing training materials (especially those with Creole texts) is an essential resource for SCF staff engaged in developing training aids.

(3) The continuing education of groupman members, client farmers and SCF staff members is well served by periodic visits to foster dialogue with community people and staff at other project sites. This program should certainly be continued.

### OTHER COMMUNE BASED INSTITUTIONS

Finding. SCF has excellent relations with the recently elected Magistrate of Maissade and the Conseil de la Commune. It also has good ties with the largest school in town, the Ecole Nationale de Maissade. The school has served the project well as a meeting facility for large gatherings. SCF staff have also been open to dialogue with the town based Association Jeunesse Maissade pour le Developpement.

These amical ties with townspeople are important in view of

the rural locus of SCF activities. Maissade is a small provincial town with a marked sense of social status and negative attitudes toward rural areas and peasant life. Hence, a project focused on providing services to these areas is subject to criticism. The technical orientation of this project tends to limit opportunities for employment. Its fundamental impetus stems from voluntarism and self-sufficiency. This approach opens the project to criticism by townspeople for not undertaking major building programs or large scale commodity transfers which would directly benefit the town and foster the employment of townspeople. During the period of political unrest, many young people from town pressured the project for jobs. This pressure has placed a heavy burden on the Project Manager.

### Recommendations.

(1) The project should not deviate from its rural orientation; however, it should continue to foster good ties to the town so as to protect its rural program. SCF's Child Survival program will continue to be helpful in this regard since it provides highly visible services to the town.

(2) The project should consider the possibility of forming groupman among "town peasants" who farm land in SCF animation zones.

(3) Certain other activities of the rural development program are of intrinsic interest to townspeople, e.g., efforts to combat the effects of cane smut. Project management should be alert to opportunities for discussing the cane trials and their results with interested townspeople.

### Political Constraints

The Haitian crisis. The evaluators were asked to assess the impact of the political climate on the project. This is a pertinent issue in view of the political crisis which engulfed Haiti at the time this project was just getting underway. In retrospect, the political crisis falls into several discrete stages with varied effects on SCF and other rural development organizations. These stages include the following:

(i) Early 1980s under Duvalier: growing political control over peasant councils, government pursuit of kamoken (alleged opponents of the government), arrest of community development personnel, initial 1984 revolt in Gonaives,

(ii) Popular revolt: growing disaffection, heightened state of crisis beginning in November 1985, dechoukaj (uprooting) leading to the fall of Duvalier in February 1986,

(iii) The aftermath: continued dechoukaj following Duvalier's departure, crowds pursue makout (government agents) and other authorities alleged to be abusive, including houngan

(voodoo priests); dissolution of community councils and officers linked to the Duvalier era,

(iv) Counter-reaction: the Communist scare, fear of land loss, accusations against groupman movements, especially those affiliated with Caritas,

(v) Elections and campaigns: competing candidates, conflict over electoral commissions, sabotage of November 1987 elections, popular boycott of January 1988 elections, inauguration of new president February 7, 1988.

One of the things characterizing all of these stages has been a series of witchhunts on the part of various political groups. Each of these movements defined an "enemy" and generated a pervasive climate of fear, polarization and reprisal. In the vernacular used by peasant folk, this sequence of "enemies" includes the following terms:

--Kamoken: an opponent of the Duvalier government

--Tonton Makout: abusive government henchman or agent

--Kominis: Communist, thief, land loss, slavery, foreign domination.

The presumed threat of Communism has frequently been used by the Haitian government for diplomatic leverage and domestic political control. In general, use of the word "kominis" by peasant folk is best understood in terms of traditional peasant fears of land loss and a generalized suspicion of outsiders. In certain respects, accusing someone of being "kominis" is similar to charging a person with witchcraft.

General findings. The LORD I project agreement was signed at the end of July 1985. SCF received AID funds in December and began field operations in January 1986, in the midst of the painful final months of the Jean-Claude Duvalier regime. An era of popular revolt against the government had begun in the spring of 1984. By the last quarter of 1986, widespread disaffection and economic difficulties had thoroughly undermined the government. With the fall of Duvalier on February 7, 1986, there ensued a two year period of political struggle leading to the installation of a new president on February 7, 1988, just prior to the present evaluation (March-April 1988). In short, the entire period of project implementation has been characterized by a profound societal crisis.

The Haitian political struggles affected all rural development programs. During the pre-February 1986 period, many peasant organizations had been politicized by government efforts to control them. The network of Conseils d'Action Communautaire tended to accommodate this policy (see Smucker 1986). Other peasant organizations, i.e., the pre-cooperative oriented

"groupman" - usually linked to Caritas, maintained an outward stance of neutrality and resisted these efforts at control. As a result of this stance, a number of peasant organizers ("animateurs") and agronomists were arrested by the government as "kamoken" - government opponents.

The passage of Duvalier opened up an era of free speech. After an initial period of euphoria, the hiatus in government created an atmosphere of uneasiness in which peasant folk were reluctant to embark on new forms of association or investment. As time passed, the witchhunt for "makouts" (agents of the Duvalier government) subsided and was supplanted by a new tendency, fear of Communists and the threat of land loss.

During the post-February 1986 period, the community council network fell into disarray. Many such councils lost their local base of support due to links with the former government. Some councils and council officers were targeted for dechoukaj in an effort to uproot Duvalierist supporters and institutions. Unlike the community councils, peasant groupman movements continued to be active during the post-Duvalier period. In the dechoukaj phase, the earlier groupman policy of studied neutrality paid off. The SCF groupman movement was not targeted for "uprooting" despite its primary funding from AID in an era of growing anti-American sentiment. The primary impact of the political crisis was one of intermittent disruption of transport and communications. SCF staff members were also seriously affected by morale problem stemming from uneasiness about the potential for becoming a political target.

In the latter stages of this continuing dechoukaj, a significant number of houngan and reputed witches was targeted. In some cases the pursuit of Voodoo priests was essentially political, i.e., a significant number of Voodoo priests were tonton makout with a reputation for violence, both magical and non-magical. In other cases, the campaign against Voodoo priests took the form of a religious crusade against superstition, supported by certain Catholic and Protestant elements. In the Maissade area, certain groupman composed of Voodoo adherents left the SCF groupman movement due to the threat posed by this anti-superstition campaign. The dissolution of these groups was caused by members moving away from the area. The anti-superstition crusade was not directed in any way against the SCF project or the general groupman movement.

The Maissade project showed significant growth in the second quarter of 1986, immediately after the fall of Duvalier. New groups continued to form during the turbulent third quarter, but the summer of 1986 saw emergence of the fear of Communism and a pronounced suspicion of outsiders. As a result, a significant number of groupman dissolved, and other group members left their groups (see Table 3 showing group formation and dissolution). The fear of Communists took various forms including the following: a) Mango buyers from Port-au-Prince feared competition from peasant organized mango trading, and accused the

groupman movement of being Communist; (b) the reforestation program suffered from gossip which linked tree planting to the threat of land takeovers by outsiders (Communists); (c) SCF's Child Survival Program was momentarily threatened when census takers used red ink to number houses, a practice which was interpreted by some as the first step in the takeover of people's homes by outsiders.

Membership grew during the last quarter of 1986 and the first two quarters of 1987; however, SCF turf conflicts with the Caritas groupman movement caused re-emergence of the talk of Communism and fear of property loss. This resulted in a significant loss of groups and members during the first quarter of 1987. The conflict with Caritas was later resolved, and a high rate of group formation continued through the spring of 1987 with very little incidence of group dissolution.

The turbulent final six months of 1987 were disastrous for the entire country. The summer was characterized by national boycotts, massacres, constitutional violations, conflict between rival electoral commissions, and general erosion of support for the national governing council. In July, news of the massacre of groupman members in Jean-Rabel (northeast region) had a devastating effect on the activities of Caritas, the Ti Legliz (Catholic base church or people's church movement), and groupman movements throughout Haiti. The Jean-Rabel massacre of peasants by peasants was the result of extreme polarization of community and church factions. Military authorities apparently made little or no effort to intervene. The fear of "Communism" and threat of land loss played an important role in the Jean-Rabel tragedy.

In Maissade only one new group was formed during the difficult summer months. In the final quarter, 9 new groups formed and 9 others disbanded. During this period, the SCF outreach program showed virtually no growth. Under the circumstances, the program was doing well simply by surviving.

The last quarter of the year was dominated by electoral campaigns and the aborted elections of November 29, 1987. Peasants and other citizens of Maissade showed great interest in the opportunity to vote in free and open elections. Local voters were considerably more interested in local and legislative elections than in the presidential race. The groupman movement maintained a low profile during the November electoral period and the politically uneasy months which followed. Prior to election of January 17, 1988, Caritas animators at nearby Papaye were arrested. There were no arrests of SCF staff or group members, but local political party members pressured SCF for jobs and accused the project of being Kominis when jobs were not forthcoming. The period following the February 1988 presidential inauguration was characterized by an uneasy calm which allowed SCF to expand its level of activity. New groups began to form again in the wake of the annual project-wide celebration of the Maissade groupman movement in February.

Negative impact. The turbulent political context has had a detrimental but not a fatal impact upon the SCF project. The crisis complicated every aspect of the project and affected it in the following ways:

- (1) Social turmoil placed a heavy burden on the already difficult system of logistics and communications.
- (2) Political struggles conspicuously interfered with the timetable for implementing project goals.
- (3) Politics interrupted the process of small group formation and caused loss of membership in the groupman movement.
- (4) Needed personnel were not available at the project site due to fears for personal safety. This made it difficult to recruit additional field personnel and arrange outside consulting services.
- (5) The intermittent disruptions played an important role in the underspending of budgeted funds.
- (6) ...retarded planning and implementation of the credit component.
- (7) ...interfered with the technical support system for reaching farmers with soil and water conservation measures.
- (8) ...served as an inhibiting factor in the preparation of the watershed planning document.
- (9) ...played an inhibiting role in proper documentation of the environmental package and the development of new training materials.

Factors in project success. Under the circumstances the project's evident success is quite remarkable. It has successfully maintained continuity of program and accomplished key project goals under the most difficult of social conditions. What are some of the factors in project success?

- (1) The project maintains a low physical profile and is therefore a less visible target than some other projects.
- (2) It has a strong base of community support in its activity zones. It is client oriented and therefore protected by the vested interests of the clientele, i.e., collaborating peasant farmers exercise direct control over their own small group activities and investments.
- (3) Project staff is composed primarily of Haitian personnel under Haitian leadership. This makes the project less of a target in relation to anti-foreign sentiment.

(4) Field staff live a life style in keeping with the surrounding socio-cultural milieu.

(5) The Maissade groupman movement is not affiliated with church organizations. This has served to insulate the project, to a certain extent, from problems linked to church factionalism and church-state confrontation.

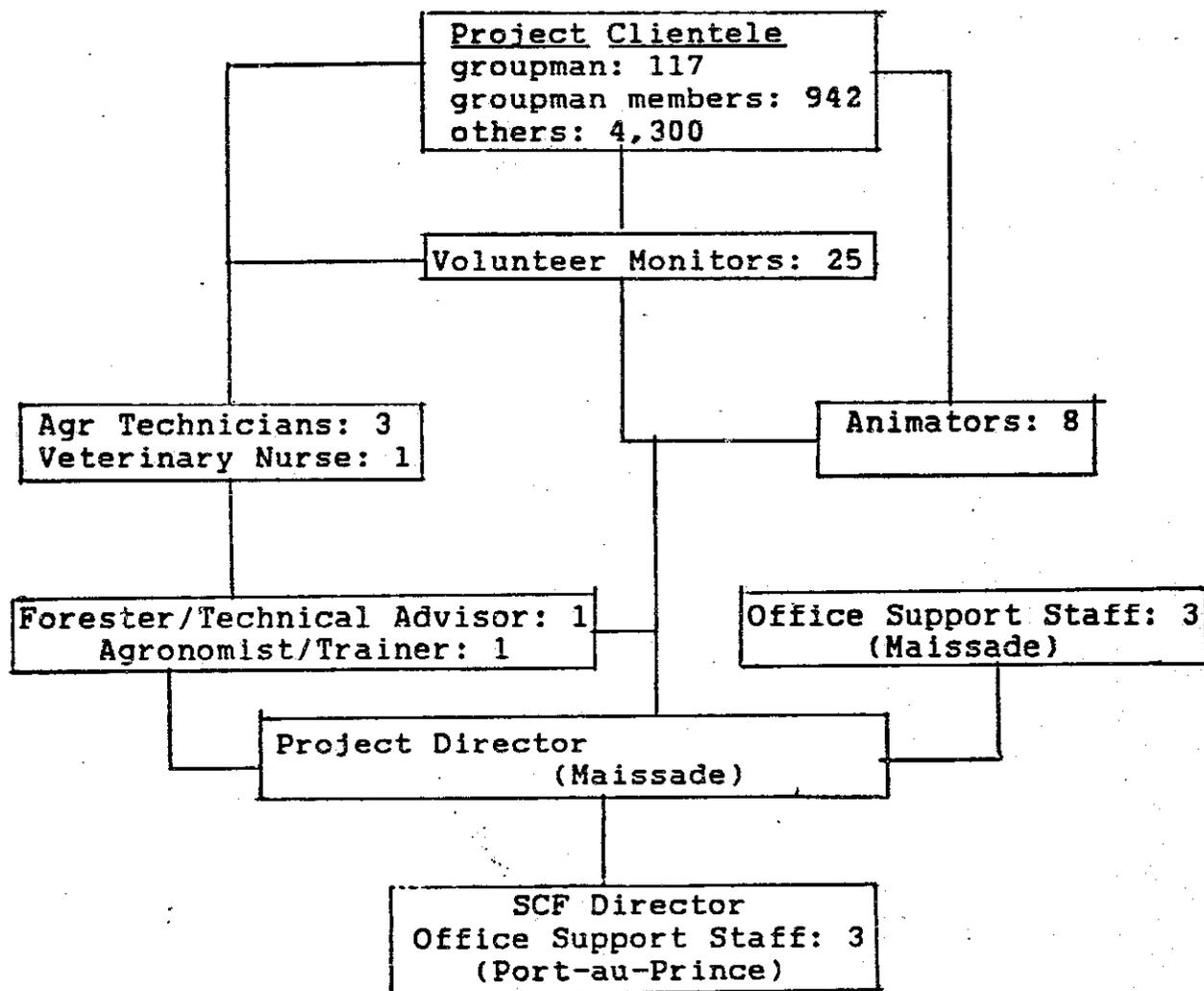
(6) When there have been conflicts with other institutions, project staff have sought to maintain open lines of communication and work out differences rather than using tactics of confrontation.

## MANAGEMENT ISSUES

### Staffing Pattern

Findings. The human resources of the project are shown in Figure 1 below. The organogram reveals certain staffing patterns: (1) the animation staff is significantly larger than the technical field staff, (2) there is an important volunteer component, and (3) the administrative support staff is unduly small relative to the program staff, the number of clients and the range of services.

FIGURE 1. SCF LORD I ORGANOGRAM, MARCH 1988



Animation versus agricultural extension. The fundamental premise of this project is community outreach. All technical support services and plot treatments stem from the ability of the project to reach farmers. The animation system provides this link. The animator is the primary intermediary between project

and peasant. In the SCF project, all current animators are young men recruited locally. A number of them were rural school teachers. On a scale of competence, 6 of animators are rated by their supervisors as adequate or excellent, and 2 of them need to acquire better skills through closer supervision and on-the-job training.

The initial task of the project in early 1986 was to establish rapport with local people and encourage groupman formation. This stage preceded the development of a full cadre of technicians. As a result, the community outreach team, presently 8 full-time animators, was recruited prior to the expansion of agricultural personnel. In 1987 the project increased the level of technical assistance to respond to local needs identified by client farmers and group members.

For most of the project period, SCF functioned with a single agricultural technician seconded to the project by the ministry of agriculture. As a result, prior to 1988 most direct services to farmers, including agricultural assistance, were provided by animators rather than trained agricultural technicians. In 1987 an agronomist was hired as a counterpart to the expatriate Technical Advisor. Two additional agricultural technicians were recruited in 1988 for a current total of three techniciens agricoles plus a veterinary nurse.

In general, the staffing for technical extension services has tended to lag behind animation. This is in keeping with a community outreach philosophy in which the formation of peasant groups was the primary initial focus. This established a basis for cooperation and a channel for agricultural extension services. Secondly, the political troubles interfered with timely execution of the implementation plan. Thirdly, the project's difficult location has proved to be a constraint to recruitment of trained technicians willing to live and work at the project site.

Animators have been recruited locally and trained on the job; however, local people with specialized technical training in agriculture have simply not been available. The project now needs to expand its technical staff to create a better balance of animators and agricultural technicians in order to achieve watershed management goals.

Community volunteers, monitors and groupman-based outreach activities all serve to multiply the efforts of field staff; however, voluntary activities also require staff support and volunteer training. The project's success at community outreach creates new demands on project staff. This momentum has to be channelled and focused in order to assure proper diffusion of new technical applications and group activities. Otherwise, the project threatens to lose control over its program, thereby diminishing its impact as a purveyor of quality services. In sum, the technical side of outreach must be brought into line with animation or the project risks diffusing mediocrity due to

staff overload.

Professional staff. The field Project Director has excellent relations with his staff, townspeople, rural client farmers and staff members assigned to other SCF program areas. The Project Director takes special responsibility for supervising the animation team. He delegates primary responsibility for technical supervision to the Technical Advisor. The director's job is already overburdened and will become more so in the future as the project enters new stages of growth. The Project Director needs better administrative support at the field office, and a more adequate professional team for technical assistance and staff supervision.

The expatriate Technical Advisor (forestry, soil and water conservation) is also overburdened with responsibility. In addition to providing technical advice, the Technical Advisor assists the director in overall project management, staff supervision and preparation of reports. This position needs to be supported by additional professional staff. Responsibility for training, practical research and technical supervision can then be more fully delegated. Ultimately, the key role of the Technical Advisor should be to train new professional staff members.

An important constraint on these functions is the time required to complete the Watershed Management Plan and to properly document the environmental education and training package. In view of the pilot character of this project, it would have been premature to complete the Watershed Plan before 1988, especially in light of the logistical and political constraints which have dogged the project since its very beginnings. At this point, the project has shown outstanding success in achieving community organization goals and in deploying a core package of improved land use practices adapted to the local environment. The time is now ripe to document this approach and integrate it into the Watershed Plan.

In terms of other professional staff, the project needs to recruit local agronomists with the requisite skills for research, training, reforestation, soil and water conservation and supervision of the technical extension personnel. The project will need additional consulting support for trials, and two full-time agronomists in addition to the Project Manager and Technical Advisor. The need to assure adequate supervision will become acute as the project enters new stages of growth, expands field staff, intensifies land management activities, and responds to growing farmer sophistication.

Administrative requirements. The field office is inadequately staffed for proper management of accounts, project statistics, and timely submission of reports. At the time of the evaluation, local administrative support consisted of a driver, office secretary and watchman. It is urgent that the project have a full-time office manager to assume responsibility for

project statistics and assist in reporting, procurement, inventories, and coordination of logistics and communications.

A key constraint has been the inability of the project to recruit and retain an accountant willing to live and work in Maissade. Unfortunately, there have been restrictions on using project funds to cover the cost of training a local person in the requisite skills. Introduction of a credit component in the near future will be impossible unless this position can be filled. Ideally, the project's field accountant should have competence in book keeping, financial reporting, and training. The training skills are necessary for supporting the credit component of the project. Cooperating peasant groups should be trained in the fundamentals of record keeping as a tool in financial management.

### Recommendations.

(1) The growing needs for technical supervisory personnel will require two staff agronomists: one for field trials, demonstration sites and training; and the other for reforestation, soil and water conservation and extension services.

(2) Additional consulting support should be used as needed for research trials as in the case of the Sugar Cane trials. It should be kept in mind that LORD I is not fundamentally a research project but rather a pilot project tailoring services to local needs and serving an intermediary role between service providers and grass roots clients.

(3) The field extension team of agricultural technicians should counterbalance the animation team, and assume the primary burden of technical training, farm site assistance and agricultural extension. Minimally, there should be one agricultural technician for every two animators. Ideally, there should be a one-to-one ratio of technicians to animators.

(4) Project animation will probably require two additional animators for a total team of 10 people in view of the full geographic spread of the project and an extended time frame for project operations.

(5) There should be a special staff position devoted to the development of training materials. The project has already anticipated this in the plan to recruit an artist- animator. This position would be best served by a person with good writing skills in Creole, artistic skills, and experience in developing training materials for use in rural Haiti.

(6) There should be increased office support staff in Maissade including an office manager, and an accountant capable of training staff and group members in basic book-keeping skills. Enthusiastic commitment to the basic goals of the project should be a pre-requisite of office positions as in the case of field

extension roles.

(7) The project should have the budgetary approvals necessary to recruit personnel as needed from the Maissade area, and support their training in specialized skills such as accounting, agriculture, forestry or the development of training aids. This option would help to resolve the problem of recruiting committed personnel to live and work in the area.

### Consultant Support

Findings. The following consultant reports were available to the evaluators (also see bibliography):

Chavannes Jean-Baptiste, preliminary study of community, needs identification, August 1985.

Michelet Fontaine, soil protection and restoration, April 1987.

Jerome Arledge, watershed management, May 1987.

Jack King, soils and agricultural potential, no date, circa 1987.

The evaluators also reviewed correspondence for the following consultancies planned or underway, and interviewed Clerisme, Noel and Tabor:

Noel, early staff orientation and training, groupman methodology.

Thurene, sugar cane smut, field trials underway in 1987, report pending 1988.

Stapleton, staff training in animal husbandry and disease prevention, 1987.

Tourigny, pest management - corn insects and rats, report pending in 1988.

Clerisme, socio-economic baseline study, interviews undertaken in first quarter of 1988, report pending.

Beliard, credit training, preparation of credit manual, report pending 1988.

Tabor, soil survey and laboratory analysis, site assessment and sample collection begun in April 1988, report pending July 1988. (See Annex C for evaluator assessment of this work plan).

Consultants recruited by the project appear generally to be

well qualified. It is difficult to make a full assessment of their value to the project for the following reasons:

- (a) A number of reports have not yet been submitted.
- (b) Overall timing of consultancies has been out of sync with project implementation due to postponements for political reasons.
- (c) Most consultancies undertaken were cut short or based on limited fieldwork due to political turmoil.
- (d) These circumstances have had the effect of decreasing the practical value of consultant support for the project.

#### SOIL CONSERVATION

Finding. The problem of water runoff was overlooked by the soil conservation/watershed specialists when suggesting technical interventions. The overall emphasis has been on total retention of rainfall as it falls in the field. The package of technical interventions should also include techniques for managing water runoff.

Recommendation. Given the actual working conditions of the project, erosion control planning should include methods to safely convey water runoff from the field. Recommendations regarding this problem are discussed at greater length in the chapter on Technical Interventions in the present report.

#### SOCIO-ECONOMIC BASELINE STUDY

Finding. The results of survey interviews were being written up at the time of the evaluation. The consultant, Calixte Clerisme, was very generous in sharing the preliminary findings of data gathered by survey research.

Given the timing and sample selection for this study, it is not accurate to identify it as a baseline study. This does not invalidate it as a study; rather, it gives it a different meaning. The types of data elicited by the study should be useful in identifying project beneficiaries socially and economically, and in monitoring project impact and the spread of benefits. The data base also establishes a foundation for improved feedback and better internal evaluation by project staff. The study could be used in the future as a basis for re-study and comparison of the project over time.

Given the political context, there were definite limitations to carrying out this type of survey research. This constraint was taken into account by the research methodology. Most

interviews were administered by SCF animators residing in the area, and most respondents were groupman members predisposed to cooperate. Other farmers in the area were not interviewed.

### Recommendations.

(1) The study should not be identified as a "baseline survey" since (a) it was undertaken after the project had been underway for more than two years, and (b) it was based on a sample composed of groupman members only. It would be more accurate to refer to it as a "Socio-Economic Survey of Maissade Groupman."

(2) In the future it would be useful to have comparative data on non-members as well as groupman members. The present study lacks a control sample enabling the researcher to situate groupman members in the broader context of the rural community.

(3) For various reasons, land tenure data of the sort collected in this survey are not very reliable. Accurate elicitation of land tenure data requires a system of cross-checking, on-site verification and measurement. Future land tenure research should take into account methodologies such as those used by the University of Wisconsin Land Tenure Center in Les Anglais and Camp-Perrin (cf. Maclain and Stienbarger 1988).

(4) The survey instrument for the socio-economic study does not distinguish between informally divided family land and undivided family land - an important consideration in peasant land use decisions (see Annex B for an outline of land tenure categories used in rural Haiti).

(5) In the future, information should be sought on the project's soil conservation treatments by plot rather than simply by farmer. This would be more useful information for a project focusing its efforts on mini-catchment basins. This should be combined with an ethnographic analysis of land tenure considerations in mini-catchment basin oriented extension efforts.

(6) Since this is a pilot project, it would be useful to carry out a socio-economic re-study after another two years of project activity. This would enable comparisons with the 1988 study, and with similar categories of data collected from a control sample of non-project related farm families. This would also be a means of measuring project impact.

### GENERAL RECOMMENDATIONS ON CONSULTING

(1) In general, technical consultants should spend more time at the project site than was available to Arledge and King. Both consultants spent less than two weeks on their assignments, and King spent only three days in the field. The wise use of consultants is very important for a project with limited technical personnel. This is complicated in the case of international consultants who lack local language skills. Local

staff time is then diverted to guide and translate; however, a properly chosen consultant can be used to good advantage. This requires an adequate time commitment.

(2) The project should make better use of consultant reports. To this end we offer the following suggestions:

- (a) Translate consultant reports into Creole and/or French, and make them accessible to project staff.
- (b) Use reports as a focus of study and staff discussion.
- (c) Review the report to make a determination of acceptance or rejection of findings and recommendations.
- (d) Establish a plan for implementing recommendations accepted as valid.

(3) As has been noted elsewhere, the project could benefit from additional consulting support for the following:

- (a) watershed management plan
- (b) livestock management
- (c) land tenure and mini-catchment basins
- (d) cultural analysis of groupman success and failure
- (e) socio-economic re-study after 2 years, comparison with 1988 findings, comparison with control sample of non-project related peasant farm families

#### Administrative Support

#### SAVE THE CHILDREN FEDERATION

Findings. SCF support to project staff based in Maissade originates at two levels: 1) Port-au-Prince, and 2) Westport, Connecticut.

Relationships between the Maissade team and the Port-au-Prince office are amicable. The SCF director in Port-au-Prince makes frequent trips to the field, and the field Project Director and Technical Advisor come to Port-au-Prince once or twice each month. The key constraint in these ties is the logistical problems of communicating on a day to day basis. First of all, road conditions are very difficult, especially during the rainy months, and take a heavy toll on project vehicles. Field staff

express considerable frustration with the limitations on vehicles. Secondly, telephone contact is unreliable. A system of radio communications is planned. This would be a useful alternative to the problem of inadequate telephone communications. Radio communications would also facilitate management and supervision of widely dispersed personnel within the Maissade project area.

The field office suffers from inadequate personnel support for managing accounts and procurement. This problem was noted earlier in the section on staffing patterns. This has a special bearing on occasional problems of late reports from the field. The project director in Maissade is also frustrated at the low ceiling established for disbursement of project funds without special approval from Port-au-Prince. This problem could be resolved by anticipating large expenditures and securing necessary approvals in advance, and by having access to more efficient radio communications to discuss special needs. Finally, given the project's field conditions, it also makes sense to have a policy of flexible response in the face of real emergencies.

Project relations with SCF/Westport are very positive and relatively low key. Westport covers the cost of operating the SCF Field Office in Port-au-Prince; however, day to day operations of the Field Office and LORD I tend to be more closely tied to the local USAID Mission than to SCF/Westport. This is a consequence of the type of agreement governing the USAID grant to SCF. The Cooperative Agreement puts SCF in a position of sharing administrative control with the donor rather than assuming this responsibility independently. This results in a structurally diminished role for Westport. This situation is further exaggerated by the fact that USAID funded activities in Maissade are significantly larger and preceded all other SCF operations in the community. Despite the limited administrative role exercised by Westport, the SCF/Latin America department has been very supportive of the Maissade project. Both of the key Latin America administrators have visited the project. This supportive role is very important to the morale of the Field Director and project staff.

#### Recommendations.

(1) The evaluators strongly urge the prompt installation of radio communications as planned.

(2) The Project Director and SCF Director should review vehicle support requirements and work out a mutually acceptable solution to the transport problems noted above.

(3) The Project Director and SCF Director should review disbursement procedures and work out a mutually acceptable solution to the problem noted above.

## USAID HAITI MISSION

Findings. The project has excellent ties with the USAID project coordinator. Overall, USAID personnel have been responsive to special needs raised by field staff. The overriding concern of field staff is that relationships with USAID be characterized by genuine support and understanding of the inner workings of the project.

In retrospect there have been some problems of role definition in USAID project management. This stems in large part from the relative frequency of turnover in USAID managers and coordinators between 1985 and 1987. The lack of continuity has been a constraint on good project management, and it has had a negative effect on field staff morale. Secondly, there have been communications problems linked to the language barrier erected by the use of English. This has imposed an unfair burden on the project's Technical Advisor to serve as interpreter and translator for the Project Director when dealing with USAID. In the past, the communications problems were further complicated by reliance on written communications rather than working out common understandings through personal contact and discussion. Thirdly, the complications surrounding USAID approval of the Year III Annual Plan interrupted the flow of funds and had a negative impact on project operations.

### Recommendations.

(1) USAID managers should address the issue of continuity in its long range planning for portfolio management.

(2) The Project Director, SCF Director and USAID Project Coordinator should anticipate the time requirements for preparing the annual work plan in order to avoid cash flow problems in the future.

(3) The Project Director, SCF Director and USAID Project Coordinator should make a special effort to maintain open lines of verbal communication and regular opportunities for personal contact. The USAID Project Coordinator should spend more time at the field site in order to understand the inner workings of the project. It would be best to do this while maintaining a low profile as a USAID official. This will serve the project as well as the donor. A personal understanding of the emerging extension package and outreach philosophy will serve USAID well in making broader use of the SCF experience as a pilot project.

### Monitoring and Evaluation

General Findings. There have been occasional problems with late submission of the regular sequence of financial, quarterly and annual reports and work plans. This is attributable in part to inadequate office support at the project site. Secondly,

there has been some confusion and communication problems surrounding the preparation of project documents, e.g., the annual work plan. Thirdly, there are different reporting formats for SCF and USAID. This creates an unusual amount of paperwork. Ideally, it would be best to use a single reporting format acceptable to both entities.

The research reports are as yet incomplete. This is discussed further in the technical portions of the evaluation. The watershed management plan is not yet completed, and the consulting support material for this plan are not yet available for inclusion. At the present time the project is inadequately documented in terms of its outreach strategy, extension package and training materials. There are many good reasons for the delay in completing full documentation. These reasons are discussed elsewhere.

As a pilot project, proper documentation is of paramount importance both to the project as well as other watershed oriented extension projects. LORD I was mandated to explore various approaches and technical treatments for watershed management in peasant Haiti. The project now has sufficient experience to pull together the results into a coherent statement of strategy.

Recommendation. The project has been immensely successful at developing a creative synthesis of peasant outreach and new technical applications at the farm site. It is now imperative that this working method be refined and properly documented in the remaining months of 1988.

#### STAFF MONITORING

Findings. The project has developed a series of report forms which perform the following functions:

- register and track peasant groupman,
- establish 15 day work plan and activity report for each animator and agricultural technician,
- document groupman training sessions and themes,
- document staff visits at farm sites and peasant group meetings,
- measure conservation treatments established on farm plots,
- follow-up field activities of volunteer corps of monitors,
- enroll farmers in tree planting and living barrier programs,

--quarterly and annual project reporting, monthly financial reports, annual work plan.

The project submits other special reports to SCF/Westport, including the Management Status Report and Plan, and the Representation Status Report Plan. It also prepares an evaluation form keyed to SCFs new Planning, Evaluation and Monitoring System. This includes content as well as process indicators in project implementation based on a Community Management Matrix. It is evident that project staff do not fully understand this matrix nor perceive that it has value for self-evaluation and decision-making.

As the project refines its approach to farm planning and mini-catchment basins, it will need new forms which correspond to these activities. These forms should conform to the new consensus on appropriate measurement of project outputs. (This issue is discussed at greater length in the technical chapter, "Measurement of Progress.") In general, collecting accurate program data takes an immense amount of staff time; however, it is essential for good project management and for the accountability requirements of donors.

Project monitoring also requires close supervisory relationships. The field staff handles this in part by scheduling regular staff meetings. It would also be helpful if the field management team could spend regular field time with each animator and technician in their activity zones. This is already done to a certain extent, but with a growing outreach staff the supervision will tend to be more and more difficult to arrange.

Closely related to supervision is in-service training. Some animators are clearly more skilled than others. Those with fewer skills naturally require more attention and special assistance in gaining additional skills. All staff should be encouraged to view their assignment as one of continuous education. Such an approach is very much in keeping with the idea of a pilot project seeking to adapt its services to the specific needs and characteristics of the region.

#### Recommendations.

(1) Staff should be properly trained and convinced of the value of the SCF matrix form, or else it will continue to be filled out as just another meaningless form.

(2) The present reporting system could be improved by simplifying the process of compiling project statistics for presentation in quarterly and annual reports. The office staff in Maissade should be trained to enter such data on the micro-computer.

(3) The process of measuring outputs and preparing reports should ultimately be judged according to its usefulness

to the project as a practical feedback system for monitoring and decision making. The time requirements should be kept in balance so as not to interfere with the basic mission of the project to provide services.

(4) As the field staff grows in number and responsibility, adequate supervision should be assured, including supervisory time spent in the field with each animator and technician.

(5) In-service training should be a regular feature of the supervision of the project's field animation and extension team.

## EVALUATION

Finding. In actual practice there is a close relationship between supervision and internal evaluation. Project staff set aside a two or three day block of time each year for a period of internal evaluation. This is an excellent technique and merits continuation.

A certain amount of external evaluation takes place as a result of consulting support; however, the only project-wide evaluation thus far has been the present "mid-term" evaluation. Given the political turmoil, the timing of this evaluation was repeatedly postponed. It has now taken place with less than 10 percent of the time remaining from the original life-of-project period. Consequently, the present "mid-term" evaluation is the equivalent of an end-of-project assessment.

Recommendation. The evaluators are recommending that this project be extended at no additional cost for another two years. It would be appropriate to commission another evaluation near the end of that two year period. This would be justified by the project's value as a pilot project which is (a) generating a significant amount of useful information, and (b) developing a replicable approach to watershed management.

## Procurement and Use of Supplies and Equipment

The evaluation team examined available inventories of office supplies, technical items and commodities. We found no indication of misuse of funds or loss of equipment. The items purchased are not numerous except for trees, and appear generally to be for very practical purposes.

When asked about inappropriate purchases, field staff mentioned two items:

--A soil testing kit costing approximately \$250: At the time of evaluation, the technical advisor had only used the soil ph portion in response to advice that this type of testing kit is apt to be inaccurate. Joe

Tabor, the soil scientist, planned to judge the kit's actual utility for the project during his stay (April-May 1988).

--Eight grafting knives @ \$9: Project personnel subsequently chose not to use these tools in order to avoid communicating a mis-perception to peasant clients that expensive tools are necessary for grafting. Instead, the project demonstrated a grafting technique using a razor blade and strips of bannana leaves.

These examples are indicative of the project's general approach to spending. The project is not commodity oriented. It is focused heavily on human resources and technical assistance. Staff procurement tends to be miserly and oriented to obtaining maximum use of items purchased.

## WATERSHED MANAGEMENT PLAN

### Current Status of Watershed Plan

The Cooperative Agreement defined the task as follows:

"To develop a comprehensive, technically sound, and culturally appropriate Watershed Management Plan for the Bouyaha and Canot tributaries of the Upper Artibonite River. This plan will comprise technical, economic and institutional specifications for concerted, long-term effort of watershed management and environmental rehabilitation in the area."

The watershed plan was to have been developed during the first 18 months of the 3 year project. The project is now in its 32nd month. Most of the same circumstances which delayed other aspects of the program have also affected the timing of this activity. In addition, it is virtually impossible to write a valid watershed plan without a thorough familiarity with the region. For a rural and undeveloped region such as Maissade, the prescription must be grounded in a knowledge of the people, their behavior and the possibility of motivating changes in behavior which favorably alter the people's own environment.

The sheer scope of the project's watershed goal far outweighs the internal resources of LORD I. Furthermore, the project's location and logistical problems make it difficult to coordinate inputs available from other agencies. The major issue in evaluating the watershed plan is not the specific content of the plan, but rather the appropriateness of the original targeted goal, and a suggestion for redefining this goal.

The watershed plan is now in outline form. The outline is being reviewed by project leaders, and by Luc Pierre-Jean of STABV and Parvis Koochafkan of FAO and the agricultural training center in Limbe. The evaluation team reviewed the watershed plan outline and discussed it with the SCF Technical Advisor and Project Director. The outline is not a fully detailed outline; however, it covers the topics usually included in a watershed plan.

### Comprehensive Watershed Planning

#### Recommendations.

(1) In addition to the items noted in the Cooperative Agreement, the watershed management plan should also include the following:

## Geographic Location of the Drainage Area

### Description of the Area

#### Natural Physical Features

Climate

Topography

Geology

Soils

#### People

Population

Distribution

Structure of Society

Occupation/Major Economic Activities

#### Political Jurisdictions

#### Infrastructure

Transportation

Communication

### Current Development/Use of Area's Natural Resources

#### Traditional

#### Resulting From Outside Influences

Government

Commercial

Benevolent Agencies

### Assessment of Appropriateness of Current Resource Use

Positive Aspects

Negative Aspects

### Anticipated Future Development/Use of Area Resources

#### Plan for Guiding Development...

Toward Positive Resource Use

Away From Negative Resource Use

Toward Amelioration of Past Negative Effects

(2) The watershed plan should address the issue of public works projects which will have a major impact on the watershed and its inhabitants:

--the proposed road construction to Mme Joie,

--the proposed irrigation system in Bassin Cave and adjoining areas.

Both construction projects have watershed planning implications of the highest order and must be addressed as major issues with respect to their impact on soil and water resources. Both projects will have socio-economic and technological consequences with positive and negative aspects which must be analyzed. Construction of road and irrigation works will also have a major impact on the SCF project and its extension system.

In the broadest sense, a watershed plan addresses the management of both human and natural resources of an area bounded by the natural drainage of a particular watercourse; seeks to insure appropriate, economically sound, sustainable, and long term development of the region; and promotes environmental rehabilitation of its degraded resources.

Over the years, the working concept of watershed management has become increasingly inclusive and complex. Planners realized the inter-dependency of various resources, and the long range adverse consequences of mismanaging socio-economic and environmental resources.

The obvious inter-relationship of soil and water resources resulted in the term "Soil and Water Conservation" to replace the once popular "Soil Conservation". Many other aspects have also been incorporated into watershed management: wildlife, parks and other recreation sites, forestry and reforestation, road systems, pipelines, canals, highlines and earthmoving activities such as mining and excavation of sand or gravel, etc. Watershed planning has had to address all features with the potential to change the natural surface of the area and/or affecting the natural flow of the area's waters.

For example, rural roads have often been overlooked in watershed planning, yet they contribute concentrated, high velocity runoff which dumps large quantities of sediment-bearing water onto adjacent properties and into streams. Such roads are usually placed according to the shortest distance without regard to their total disruption of natural drainage patterns. Watershed planners must cope with existing road erosion problems and attempt to guide future road planning and construction efforts. The same principles apply to other cross-country construction activity such as pipelines and canals.

Municipalities are important elements of watersheds due to domestic and industrial uses of water, and the pollution which occurs due to the wasteful practices of water users. Even small concentrations of houses and streets greatly increase the normal quantity of runoff.

Agricultural inhabitants may well have the highest potential to either protect or despoil land and water resources. Their understanding of the effects of their use or misuse of the land is often overshadowed by the economic necessity of short-term survival.

Agricultural people cannot be grouped into one single category of land and water management practices. There are those who grow coffee and beans on mountain slopes, those who are cropland farmers with only a few animals, those who concentrate on raising livestock and a little grain, and others who grow vegetables as their primary activity. The agricultural goals and activities of each are different. This diversity in use of land and water resources must be recognized and documented. It should

have a profound impact on project activities and plans for the development and rehabilitation of the watershed.

A watershed plan must start and end with the people who live in the designated area. Either they make the plan work or no one will. The plan must include as much physical data about the watershed as possible; however, in the end, it is the social and economic factors which are the key determinants of appropriate steps, organizational and technical, to alter peoples' cultural behavior with regard to land and water use.

### Redefinition of SCF Watershed Management

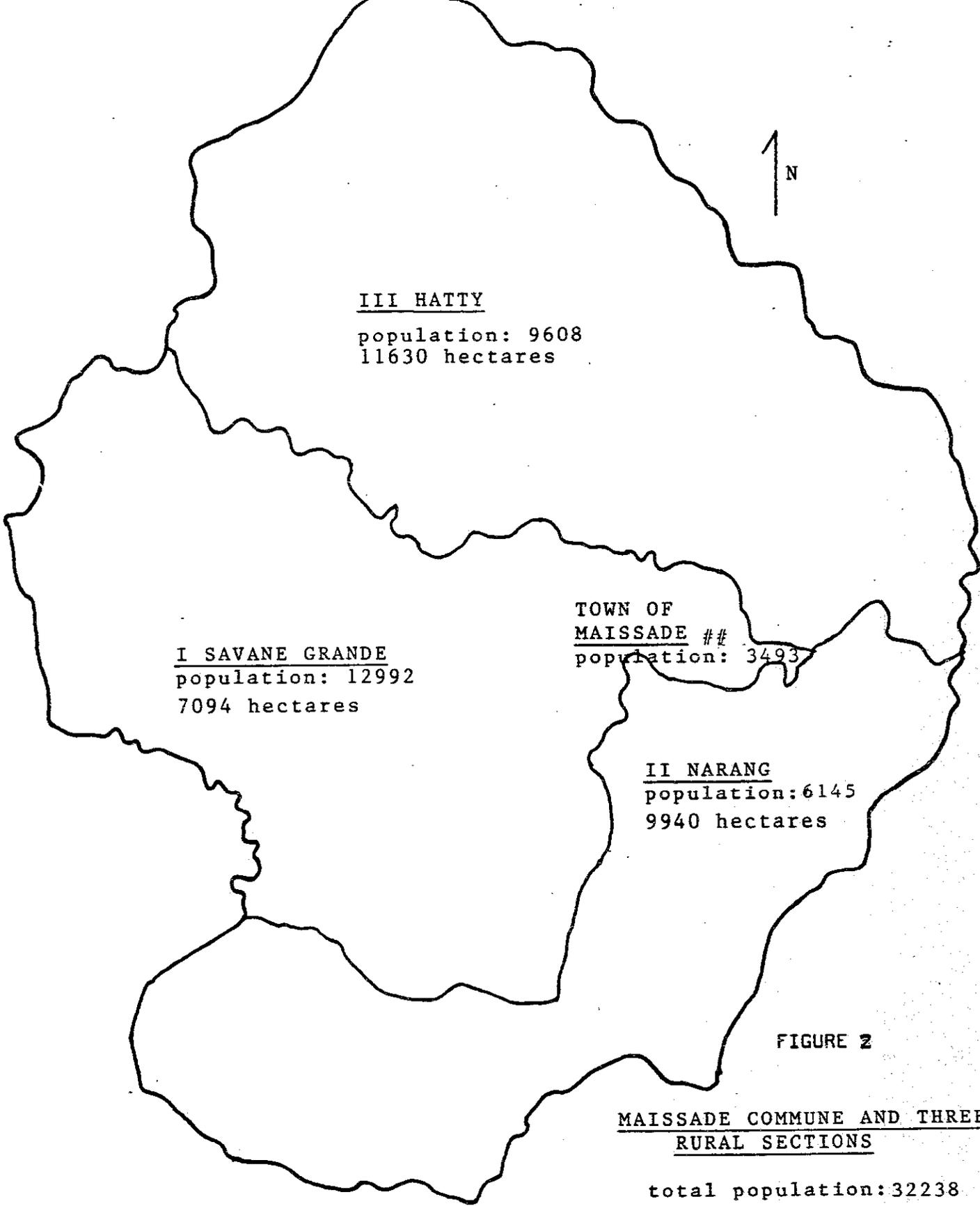
The LORD I defined project area is the Maissade Commune, including three rural sections (see Figure 2). The project staff has no experience in the Bouyaha Watershed or the upper reaches of the Canot Watershed above the Maissade Commune. See Figure 3 (Artibonite Watershed) for a map illustrating the relationship of the Maissade Commune to the Canot-Bouyaha Watersheds. Furthermore, the project has no experience in the Hatty rural section of the Commune. SCF has been working in the portion of the Commune south of the Canot River, i.e., the Sections Communales of Savane A Grande and Narang.

With the project's limited budget and personnel, it is neither logical nor desirable to develop a watershed plan for the vast region originally defined by project planners. To attempt to do so would seriously weaken project impact in its present zone of activity. The sheer scale of the larger planning unit would result in a plan inadequate and inappropriate for either the larger watershed unit or the current zone of project intervention.

Recommendation. The watershed planning and implementation goal of the project should be redefined to encompass the Rio Frio and the Fond Bleu-Fond Gras drainage areas in their entirety, plus the area between them which is drained into the Canot by the Riparadere. This re-definition includes the site of the proposed irrigation project in Bassin Cave and adjoining areas (a project site targeted by PRESI, Projet de Rehabilitation de Systemes D'Irrigation). See Figure 4, Watersheds of the Maissade Commune.

A watershed cuts across political boundaries. A watershed plan cannot properly be restricted to those portions of the watershed which fall within the jurisdiction of the Maissade Commune. A watershed plan for three tributaries of the Canot River as noted above will undoubtedly serve as a model for similar watershed plans of the future in other sectors of the Upper Arbonite.

Both the Rio Frio and the Fond Bleu-Fond Gras have been designated as high priority watersheds by ODBFA and the OAS (1984). See Figure 5. Even limiting the plan to these drainage areas will force the project to plan for areas in which they have



TOWN OF  
MAISSADE # #  
population: 3493

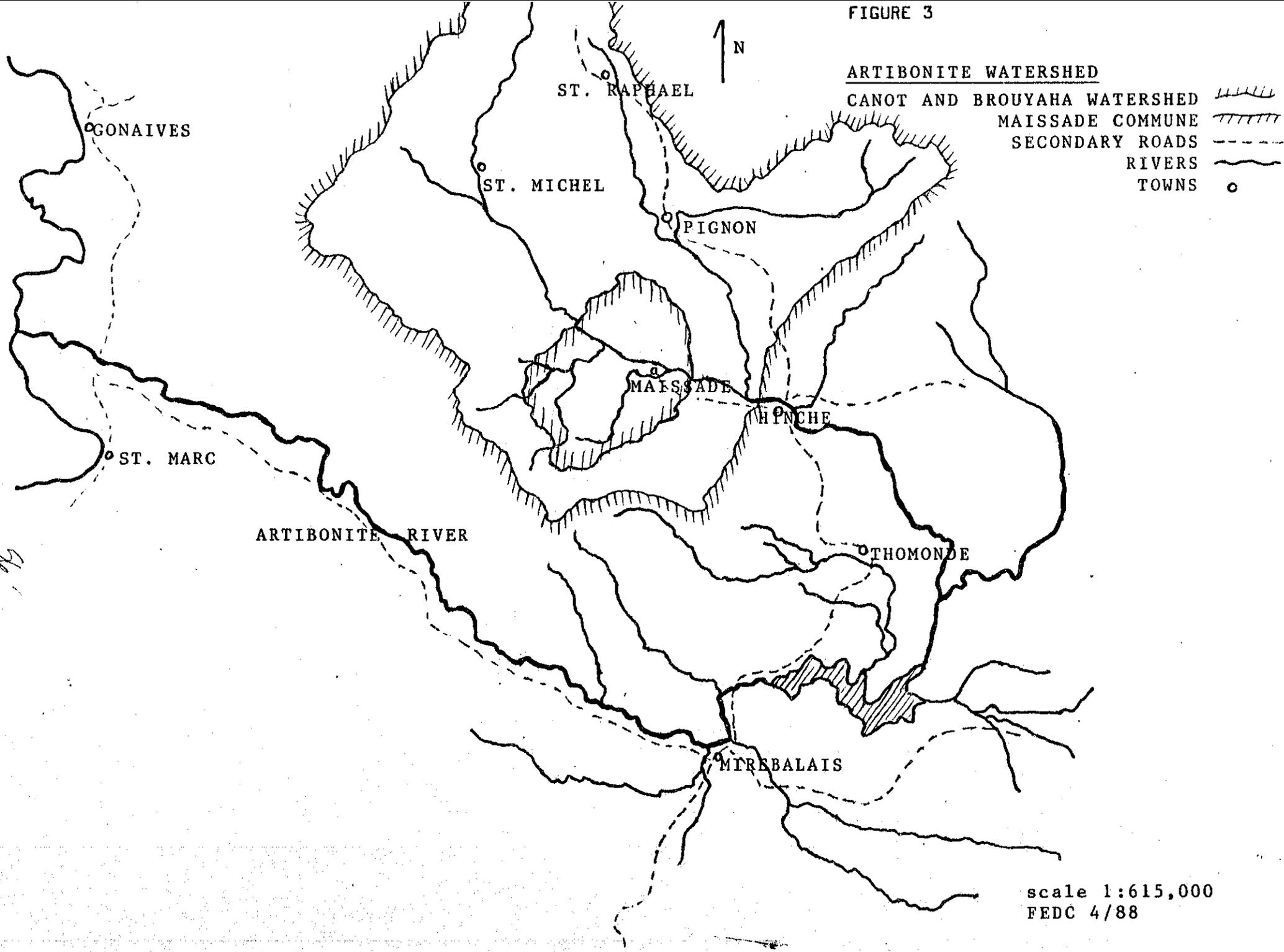
FIGURE 2

MAISSADE COMMUNE AND THREE  
RURAL SECTIONS

total population: 32238  
28664 hectares

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FIGURE 3



scale 1:615,000  
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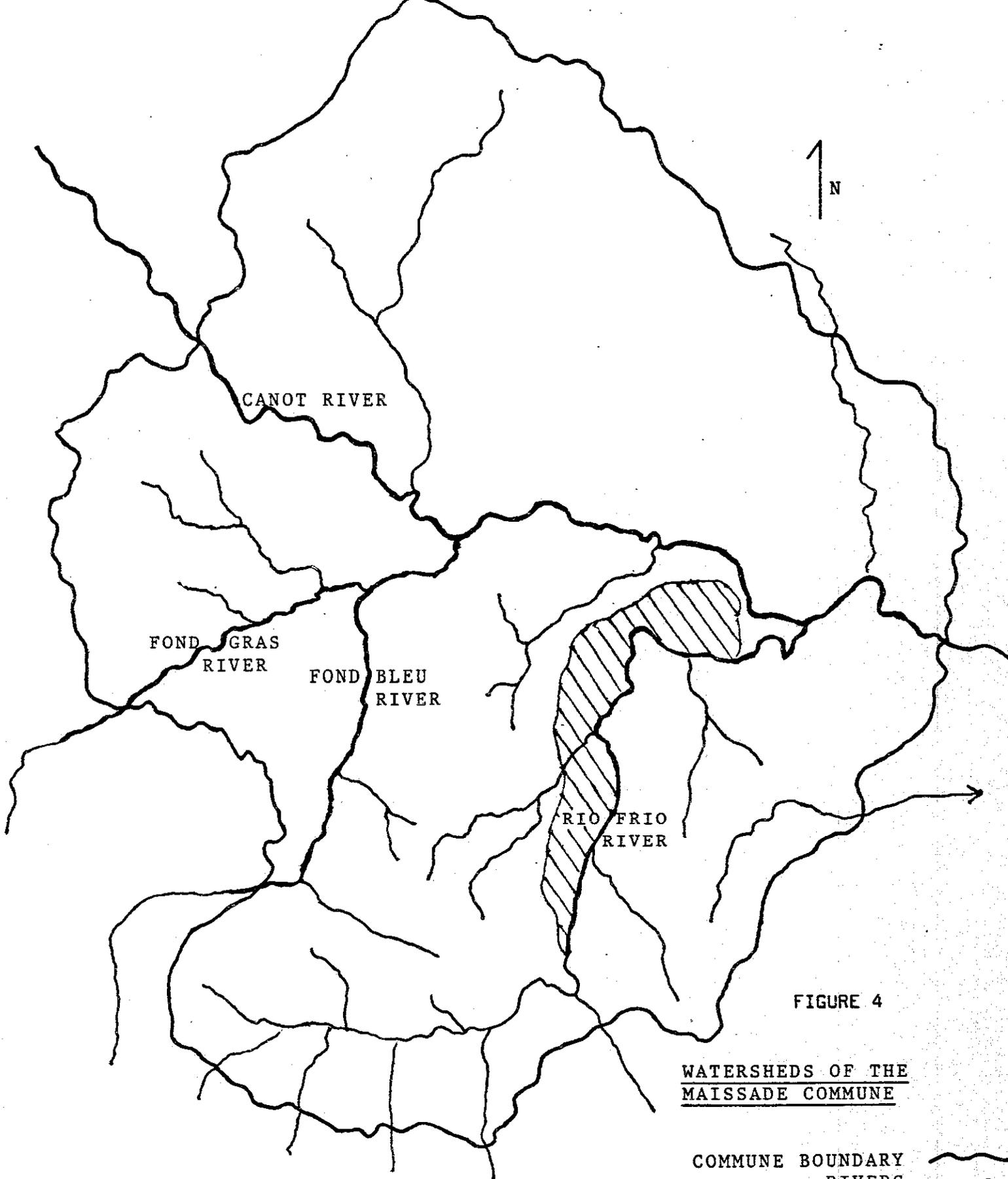


FIGURE 4

WATERSHEDS OF THE  
MAISSADE COMMUNE

COMMUNE BOUNDARY  
RIVERS  
PROPOSED IRRIGATION AREA

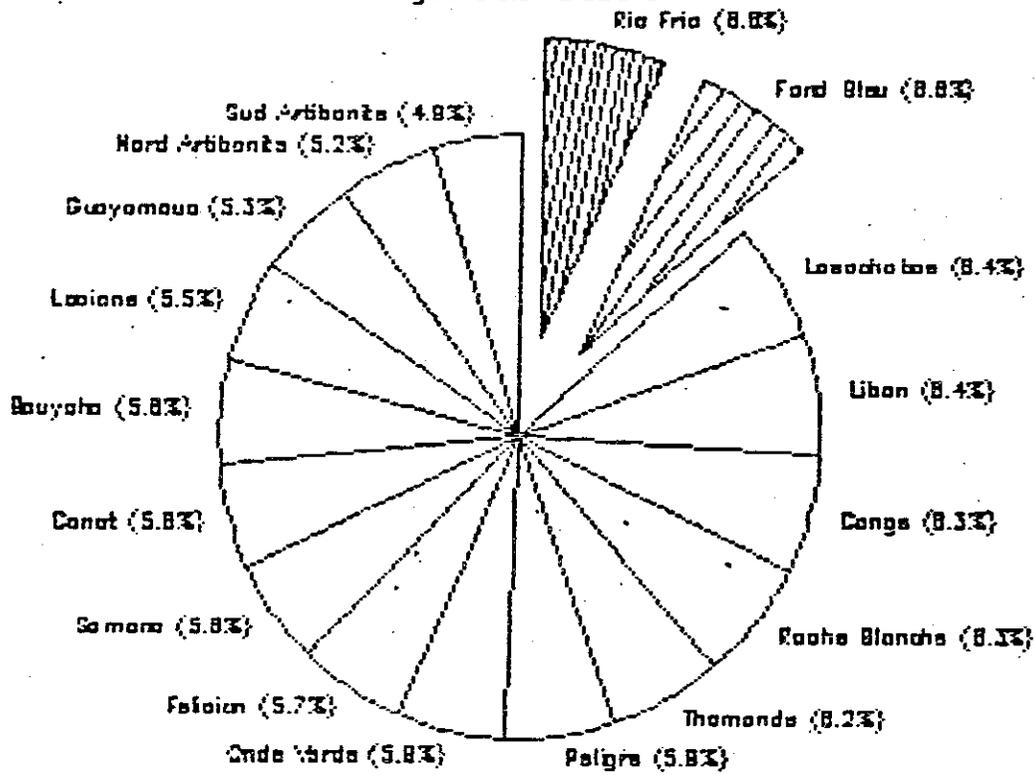


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FIGURE 5. Critical Subcatchment Priorities

Priorites Sous-Bassins Critiques

Figure B.3.2 Dites B



SOURCE: OAS 1984

insufficient experience at this time. Extension work is now concentrated in the lower reaches of these drainage areas. The upper reaches include distant mountain areas accessible only with great difficulty during the rainy season. For these regions, the watershed plan should include as much authentic information as available, and then acknowledge the absence of complete data and appropriate technical treatments for certain sub-zones.

### Intensification of Effort

Recommendation. Project personnel should concentrate on intensifying effort in those areas where work has already begun rather than spreading limited time resources more and more widely.

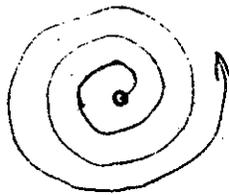
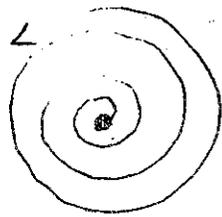
The present technical interventions have reached primarily the early or easy adopters who have partially "treated" some of their plots. The intervention sites are scattered throughout the southern two-thirds of the Maissade Commune. The priority for future efforts should focus on perfection and completion of conservation practices for these groupman members, their neighbors and others in nearby erosion target zones.

The drawings in Figure 6 are an effort to characterize the present scattered beginnings of plot treatments as well as two possible future growth patterns. It seems much wiser to intensify project efforts on plots where farmers have already begun conservation work, perfect the current practices and instigate other practices which will complete the "erosion control package". The example thus established will provide a better standard for diffusion. The diffusion which will inevitably take place should be controlled in a "directed outward spiral" - directed toward the critical erosion zones.

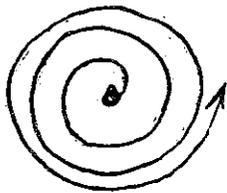
To describe the intensified effort, some new concepts and terminology will be introduced. The precise terms utilized are not important in and of themselves. They can be changed to conform to conventional terms used by regional planners, or translated into local terminology deemed most appropriate. The terms defined here are for the purposes of the evaluation only. It is the concept behind this which is of ultimate importance. The terms below begin with the smallest unit and end with the largest unit of intervention:

- (1) Individual farm plots: subdivision of a peasant farm composed of several scattered parcels of land, smallest unit of land management
- (2) Mini-Catchment Basin: mini-drainage system, may be composed of several contiguous plots belonging to several land owners or farmers
- (3) Sub-Catchment Basin: groups together more than one several mini-catchment basin

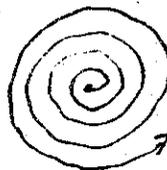
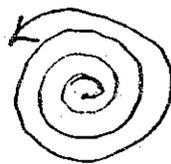
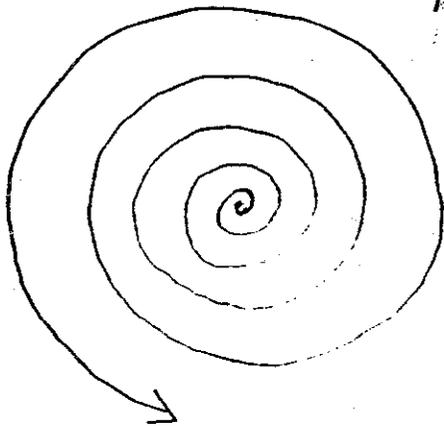
FIGURE 6. VARIOUS GROWTH PATTERNS



PRESENT



NEGATIVE FUTURE GROWTH



A) EVER INCREASING DILUTION IN GROWTH

B) MORE & MORE SHALLOW UNITS



POSITIVE FUTURE GROWTH



GOOD

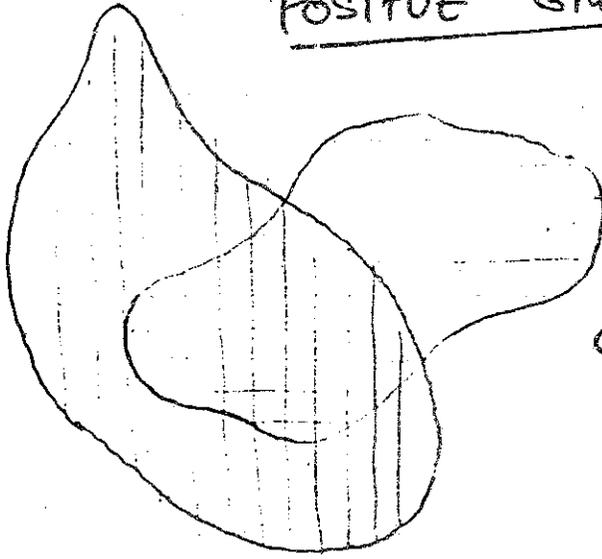


STAFF ATTENTION TO CRITICAL EROSION ZONE

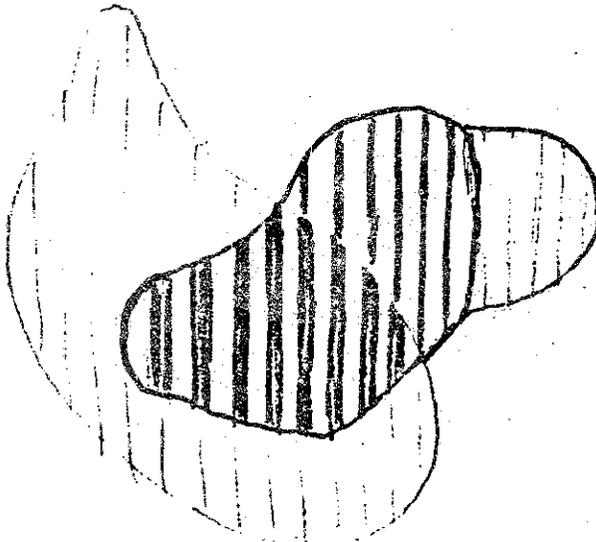
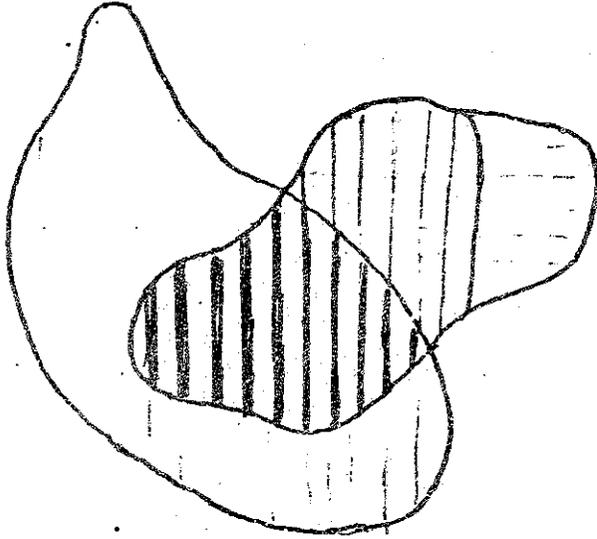
BEST

- ESTABLISHED BECOME BETTER
- DIRECTED GROWTH INTO CRITICAL EROSION ZONES

POSITIVE GROWTH



CRITICAL EROSION ZONE



DIRECTED GROWTH

60a -

- (4) Catchment Basin: Rio Frio, Fond Bleu and Fond Gras Rivers
- (5) Sub-Watershed: Canot River
- (6) Watershed: Upper Artibonite

See Figures 7, 8 and 9 below for an illustration of these concepts in a sequence which begins with the largest drainage area and ends with individual farmer plots. One farmer usually has 3 or more plots, each of which may be contained within a single mini-catchment basin (MCB), or may lie astraddle the divide between two or more MCBs. One farmer's plot may be at the top of an MCB, or it could be situated below an adjacent untreated parcel which dumps water and sediment onto the first plot. There may be several plots and parts of plots in a single MCB. There exist many MCBs in the redefined target area which consists of the Rio Frio, the Fond Bleu - Fond Gras and the Riparadere drainage areas.

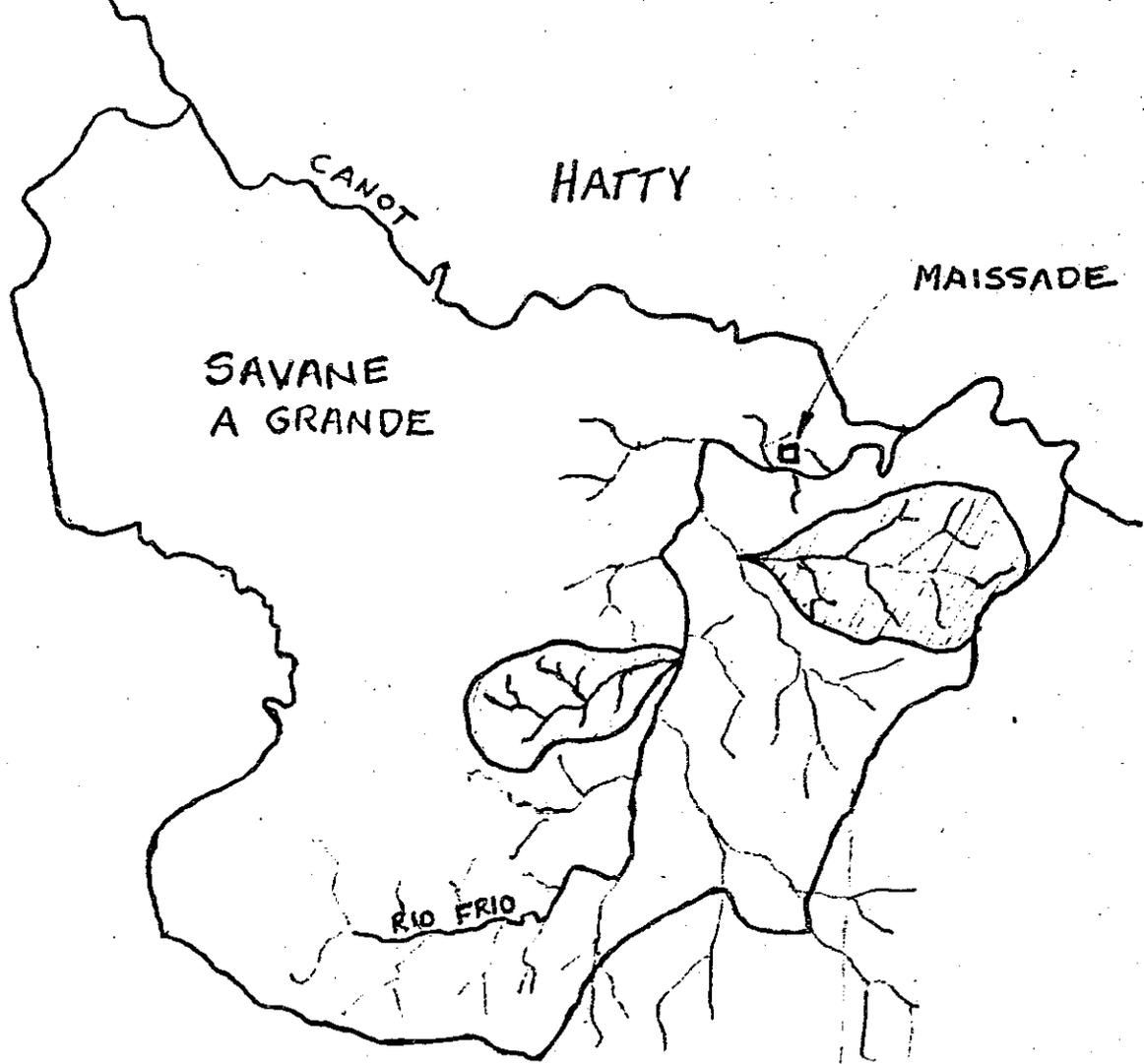
Control over the land is a key issue and one of great complexity (see Annex B for an outline of land tenure categories in rural Haiti). A given farmer often owns land close to his or her main residence, and also owns or farms land at some distance. A farmer may choose to rent out certain plots while renting other plots. The membership of a groupman multiplies this complicated land tenure situation many times over. Given the neighborhood character of most groupman, there is likely to be a certain incidence of contiguous plots controlled by members of the group; however, the disparate collection of plots controlled by the group is unlikely to correspond with a particular mini-catchment basin. This poses a special challenge to the project: to organize plot owners/managers within a particular MCB. This points up the need to inventory MCBs, and to identify those with better prospects for organizing around conservation treatments oriented to the entire MCB.

### Project Zones of Intervention

Project personnel have coined certain terms to establish priorities, define project activities, and establish a manageable division of staff responsibilities.

SCF Intensive Activity Areas. These "critical opportunity zones" are determined by combining two area concepts:

- (1) Identified Critical Erosion Zones: watershed priorities (see Figure 10 map)
- (2) Intervention Zones: project intervention by virtue of practical opportunity, i.e., links to population, accessibility, logistics (see Figure 11 map)

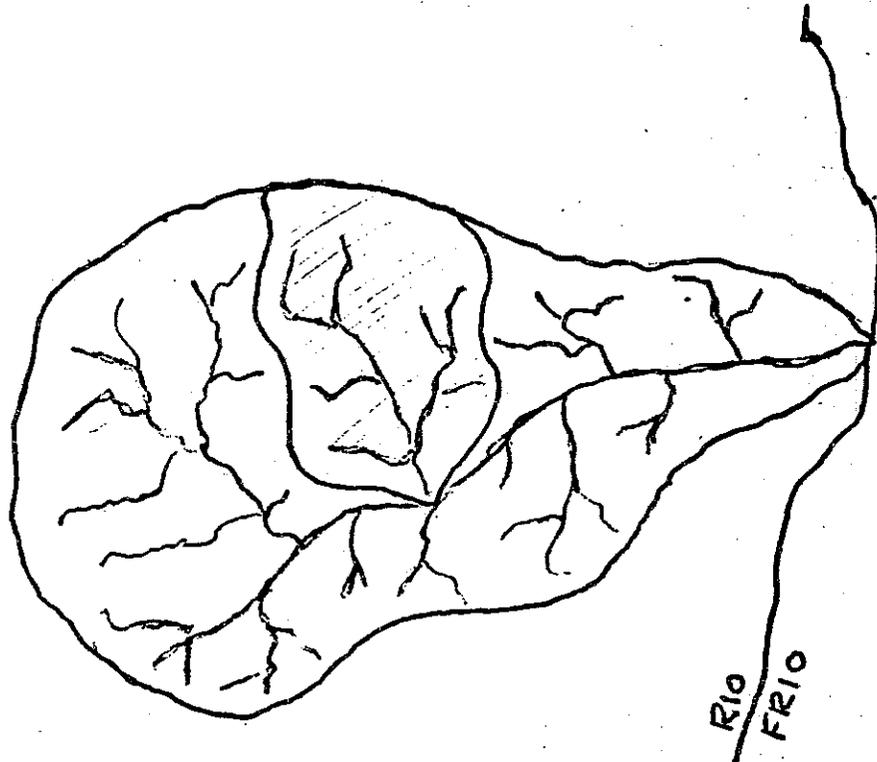


RIO FRIO CATCHMENT BASIN



SUB-CATCHMENT BASINS

FIGURE 7

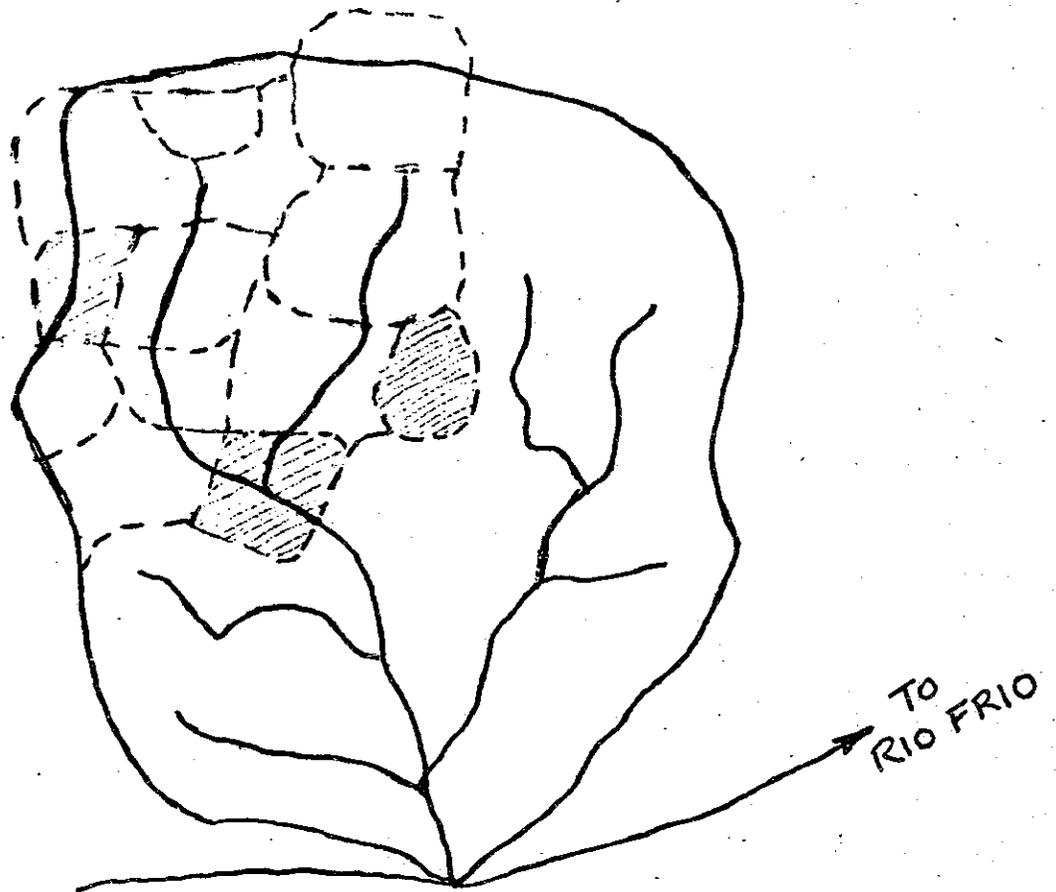


SUB-CATCHMENT BASIN  
OF RIO FRIO



MINI-CATCHMENT BASIN

FIGURE 8



MINI-CATCHMENT  
BASIN

ONE FARMER'S PLOTS

FIGURE 9

64-

F.C.E. ILLUSTRATION ONLY

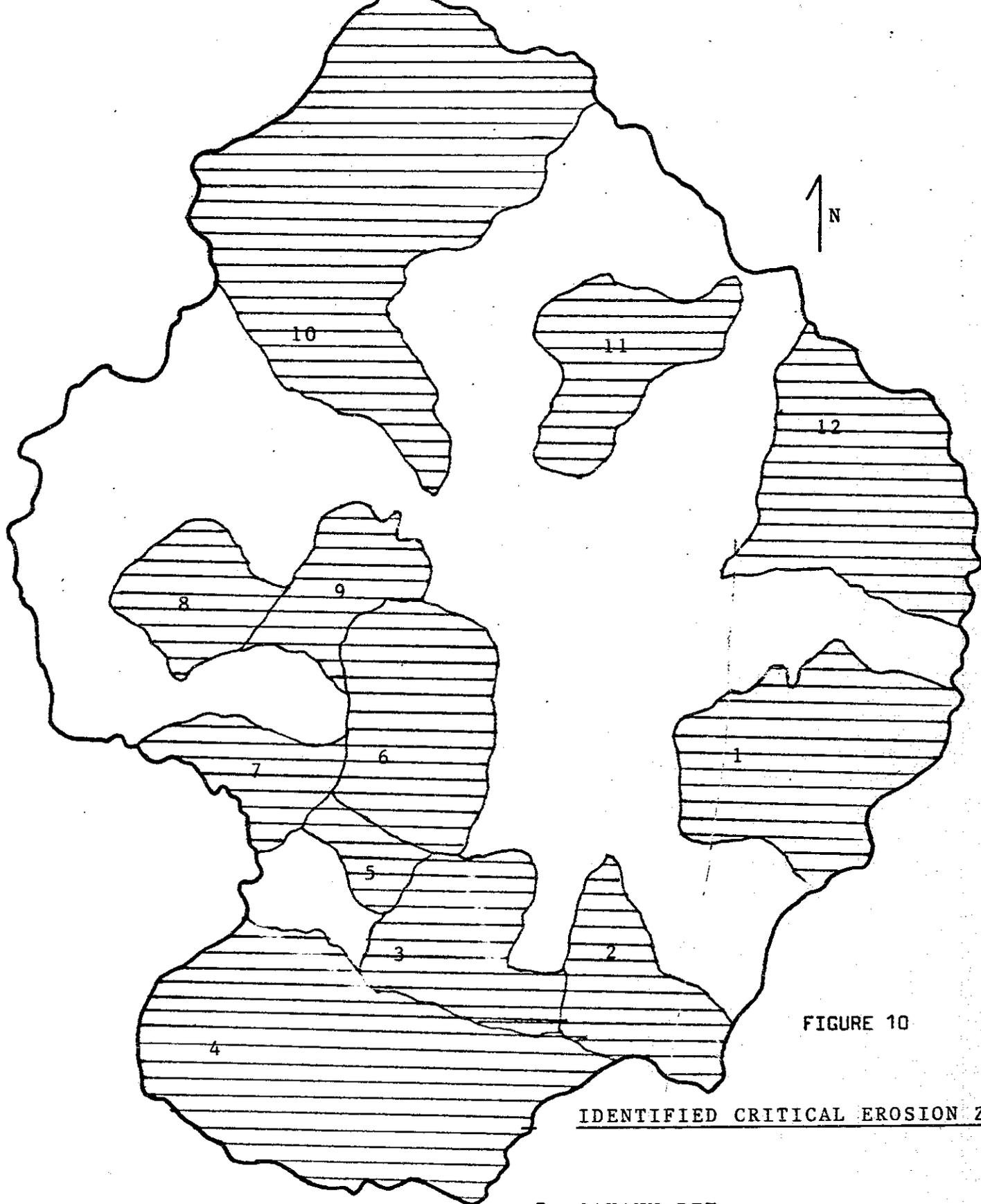


FIGURE 10

IDENTIFIED CRITICAL EROSION ZONES

- |                       |                       |
|-----------------------|-----------------------|
| 1. DO BWA PEN         | 7. SAVANN BEF         |
| 2. LASOLAB            | 8. KAYOBAL            |
| 3. PYE LETAN / SELPET | 9. DLO KONTRE / BASYA |
| 4. BWA WOUJ           | 10. PWERK             |
| 5. PERIKIT            | 11. POTOSWEL          |
| 6. LA SOU YANM        | 12. LOS PENS          |

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65

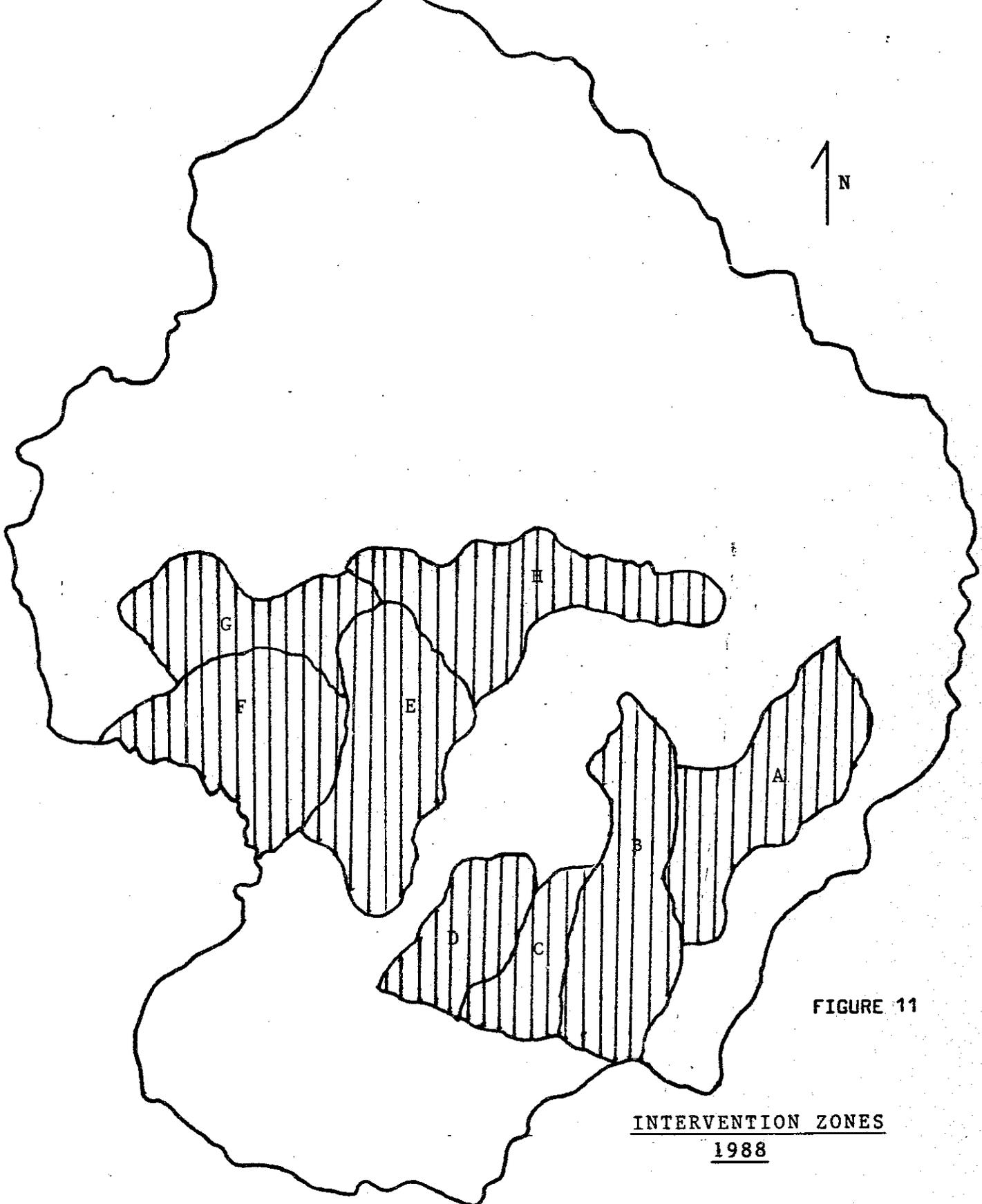


FIGURE 11

INTERVENTION ZONES  
1988

- A. DO BWA PEN
- B. SAVAN A PAL
- C. BASIN KAV
- D. NAN BANI

- E. LA SOU YANM
- F. MADAM JOA
- G. DLO KONTRE / KAYOBAL
- H. PALOAT

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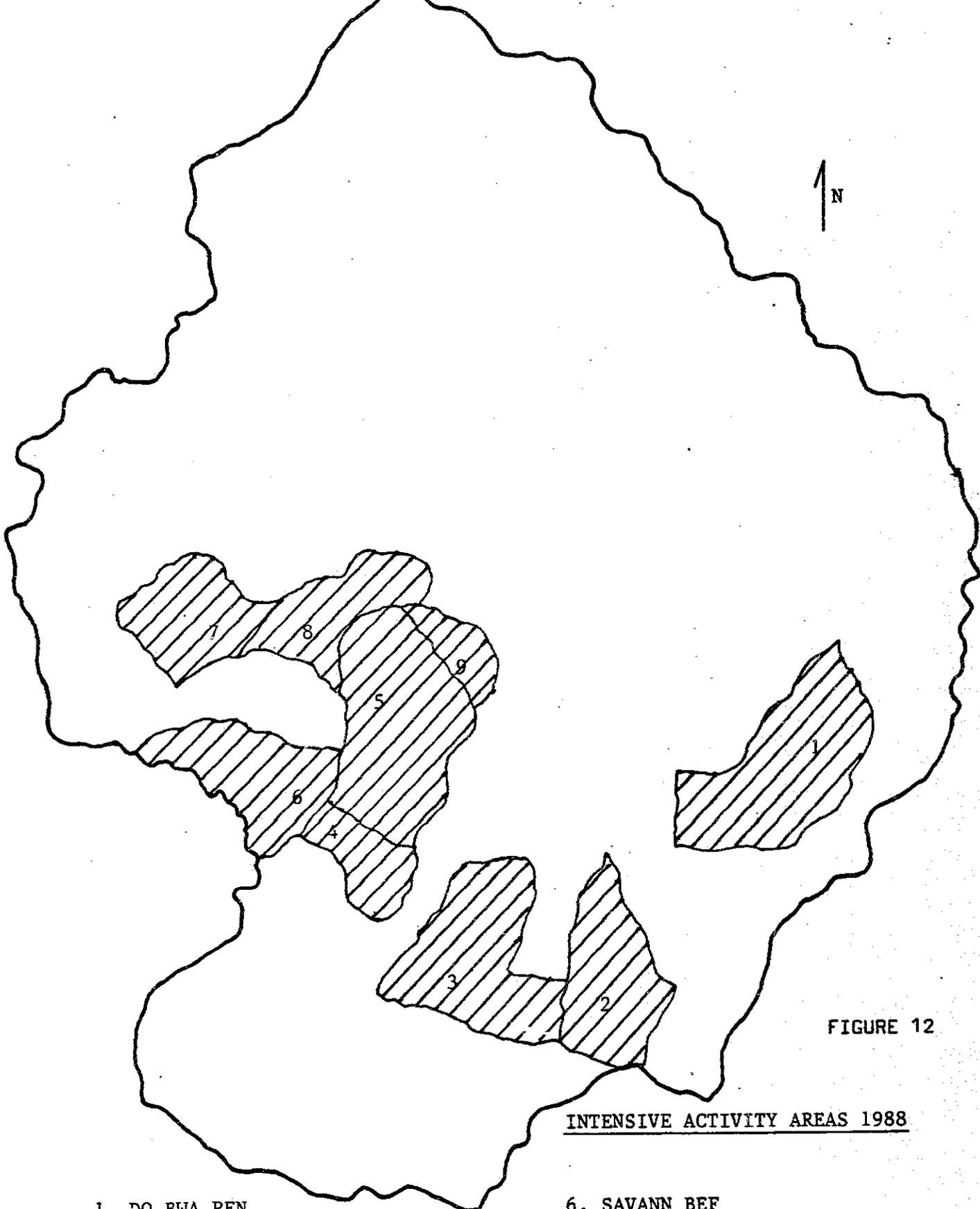


FIGURE 12

INTENSIVE ACTIVITY AREAS 1988

- 1. DO BWA PEN
- 2. LASOLAB
- 3. PYE LETAN / NAN BANI
- 4. PERIKIT
- 5. LA SOU YANM

- 6. SAVANN BEF
- 7. KAYOBAL
- 8. DLO KONTRE
- 9. SEVERIN

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- (3) Intensive Activity Areas: "critical opportunity zones," more intensive project activity (see Figure 12 map which overlays the two maps from points 1 and 2 above)

A "Critical Erosion Zone" is based upon delineation by DATPE in 1982 (see Map 5, "Maissade, Susceptibilite des sols a l'erosion," in Fontaine 1987). These maps are derived from aerial photographs in which an assessment of topography (slope) and vegetative cover results in categorizing areas as having high, medium or low erosion potential. All areas of "high" and "medium" erosion potential in the Maissade Commune were verified by field visits undertaken by the project's Technical Advisor. In addition to the areas identified by DATPE, the project added the mountainous zone of Bois Rouge as an area of "high" erosion potential. It had been designated by DATPE as "low potential" (see Critical Erosion Zone 4 in Figure 10).

Animator Activity Zones. Three types of zones are defined:

- (1) Extensive Animation Area: a region in which a project animator has less influence, areas with groupman in the beginning or early stages of formation, the frontier or fringe expansion zones.
- (2) Intensive Animation Area: a region in which the animator works with more mature or well established groupman whose activities are more advanced.
- (3) Animator Zones: zones where the 8 project animators live and work, combines "intensive" and "extensive" modes of outreach, tends to correlate with Figure 12 showing "critical opportunity" and the project's "Intensive Activity Areas."

Recommendation. The present project strategy should be revised and refocused on drainage areas defined by the concept of many mini-catchment basins.

The current project strategy is ideally suited for this recommended refocus. Critical erosion areas have already been identified by project personnel and consultants. The existing data base and additional information from the soil survey presently underway can be used as a guide in selecting critical sub-catchment basins, and critical mini-catchment basins.

This selection will in turn guide the future movement of the project's activities from the present "intensive zones" into targeted "extensive zones". The present partially treated plots can be further intensified by perfection of existing techniques, and the development of complete packages of treatments corresponding to a prescribed farm conservation plan for better management of soil and water. The growth pattern can be

described as a directed outward spiral from the present nucleus plots toward critical mini-catchment basins with an effort at complete coverage (a) of all the plots, (b) with adequate treatment packages.

### Advantage of the Mini-Catchment Basin Approach

The MCB is a visible mini-unit based on drainage area where people know each other and can more easily understand the advantages of treating the entire unit. All the benefits and all the problems of the large and more complex watershed also exist at the level of the MCB. Groupman philosophy makes a person's self-interest coincide with that of the group as a mechanism for self-improvement. In a parallel fashion the inter-relationship of neighbors and groupman members across MCBs can be used to confront and work to overcome the MCBs problems.

Land tenure and the disjuncture between groupman membership and MCB boundaries should not be viewed as insurmountable obstacles to contiguous area treatment. Shared self-interest should be promoted as the key to joint action. This approach is more feasible at the level of the MCB than at higher levels of watershed abstraction. It is highly unlikely that there will ever be public spirited "hillside-brigades" on a macro scale. The use of external and artificial "carrot" incentives are inappropriate; however, through MCB and inter-groupman action, it may be possible to motivate self-interest groups to work together to solve problems which affect two or more MCBs.

An important principle in farm plot conservation is to "work from the top down". The principle is to reduce the runoff in the upper areas of the field before investing effort to handle unabated runoff in the lower areas. This same principle applies in general for all watershed or drainage areas. The larger the drainage area, the more difficult it is to apply the principle, unless the required work is subsidized in some form. The "start at the top concept" is of greater value, and easier to achieve, at the level of the MCB. This will be the challenge as people concentrate their efforts to complete coverage of an MCB.

How can people solve the problems of treating rented plots? How will absentee owners be approached? Whose vested interest is most at stake in tree planting and living barriers? Are there cases where it is in the interest of both renter and owner? How might costs be shared? These and other problems must be confronted with the groupman method of discussion, and joint action based on enlightened self-interest.

## Completion of the Watershed Plan

The evaluation team feels that the redefined task will result in a valid comprehensive watershed plan which will serve as a model for other project sites in Haiti. The next step in the actual writing of the plan is to expand the outline into a rough draft.

### Recommendations.

(1) The plan should not be written using "committee methods" or it will be endlessly delayed. The plan is the responsibility of the SCF project, and the project should be in a position to finish it without endless delays. The final draft should be submitted to STABV for comments, and the Technical Advisor could then incorporate suggestions as appropriate.

(2) Two possibilities for completion of the plan should be considered:

OPTION A: The project Technical Advisor will write the plan. During the spring season, the Advisor will be extremely busy with the agricultural extension program during the peak period of activity. He will also be closely involved in the soil survey consultancy. In order to write the plan, the Advisor should be relieved of all other duties and concentrate solely on preparing the watershed plan between July and October.

OPTION B: Given the present work load in Maissade, it is unlikely that the Technical Advisor can reasonably be relieved of all present responsibilities to focus attention on the watershed plan. Unless additional staff support is recruited in the near future, it would be difficult to delegate the advisor's present work load to others. Under the circumstances it is appropriate to recruit a consultant to assist in writing the watershed plan under the Technical Advisor's supervision.

## MEASURING PROGRESS IN WATERSHED TREATMENTS

The Cooperative Agreement specifies a land treatment goal to be accomplished over the lifetime of the project:

The treatment of 1500 hectares of fragile hillside lands within the target area, through the construction of soil conservation structures and/or contour plantings of trees and other stabilizing vegetation.

This has proved to be a controversial issue in project implementation. Field staff have requested that this targeted output be revised and converted from area measurements (hectares) to linear measurements (meters) of conservation structures. Field staff have also established a revised life-of-project goal of 80,000 linear meters of contour soil structures. Donor representatives have raised questions regarding the adequacy of linear measures in a watershed project focused on area coverage. What are the underlying issues in this controversy, and what is an appropriate strategy for measuring outputs in this project?

### Issue of Feedback

Accurate feedback is essential to rational program management and donor accountability. Tangible results are also essential for client support and sustainability at the level of the peasant farm. What are the legitimate vested interests of the key actors in project implementation?

#### (1) The donor view:

- Are project funds achieving targeted goals and the purpose intended?
- How do project results compare with other projects? Are these funds better spent in other ways?
- How can project strategies and successes be adapted to other projects?

#### (2) The view of project managers:

- Are project efforts effective?
- Are field personnel doing their jobs properly?
- Are the funds being spent efficiently?

(3) The view of peasant clients:

- What's in it for me? Is my investment in time consuming meetings, land and labor costs going to pay off in the form of increased production and a better livelihood for my family?

An effective feedback system should fulfill the needs of the donor, guide the project, and avoid diverting precious staff time from the primary task - providing services to the client. In short, the feedback system must be useful to all parties concerned or it will not succeed.

Peasant accomplishments - the item to be measured. Peasant farmers invest family labor to establish conservation treatments on several different parcels. The work on these parcels is in various stages of "completion." Much of it falls into the temporary category; it must be completely redone each year. Some of the work done is permanent, but must still be maintained each year. Portions of the work are done properly, and other portions require more learning and better supervision to be done correctly.

Much of the work is in the form of "on-contour line treatments". Collaborating farmers have not yet integrated the general cultural treatments between line treatments. They have experimented with some of these techniques. Some of the work is a result of unsupervised diffusion of certain practices. People observe the dramatic results of a gully structure and copy the technique without treating the adjoining slopes.

Farmers in the area have already seen results from their conservation efforts. Parcels which were barren last year now support some of the less demanding crops. Other sites planted in less demanding crops can now support the more demanding crops. With new techniques, production of the same crop on the same area has increased. These increases are not always dramatic but they are visible.

People are continuing the practice of not burning because it shows results. They recognize that to reinstate burning would destroy the results of their work time already invested, e.g., newly planted trees and living barriers. Farmers in Maissade are quick to note that in just one year it has become almost universally unpopular to clear the land by burning. They express concern that insects and rats may increase, but burning is definitely out.

Client behavior is an indication of project success. This shows itself in client perception of advantage, the diffusion of practices, and continuation of new practices from one year to another. There is an aura of excitement surrounding small group activities and large meetings which bring together hundreds of groupman members. Perhaps the best indicator of client interest is the continuing effort, the farm planning for the coming year.

Project staff's measure of effectiveness. The project staff knows it is getting through. Its methods have caught on. People are practicing soil and water conservation as a result of the motivational efforts, groupman formation and technical assistance. The people are spontaneously creating slogans, posters, songs and dances about protecting their soil.

The farmers are offered no artificial incentives. Yet they are adopting soil and water conservation practices at a pace that outruns the project's ability to respond. Time is a constraint because there are only a few months to work in the field, and most conservation practices are carried out at the same time as other crop work. This is especially true of the cultural conservation practices which are difficult to "count". To do so a staff person would have to determine the area treated. This is extremely difficult to do in odd shaped fields which are hard to measure. Farmers could be asked to estimate plot size, or portions devoted to cultural practices, but most farmers do not have an accurate sense of the size of their fields.

The project needs to evaluate what has been done in order to plan. It needs good feedback to adjust the training program, to emphasize techniques not carried out properly, and to determine which new practices to introduce. It would be useful for project planners to know the rate of diffusion, or the dropout rate for certain practices from one year to another. But how? There is already too much work to be done. It seems more important to actually do the work than to count it.

SCF and USAID managers want to know how the project is doing. The real results are scattered over a large area. What donor has the time to walk miles to look at fields and talk to the peasants? People who read reports want numbers. These numbers should reflect what is real, including the good things that are happening, and show reasonable progress toward achievement of targeted outputs.

Donor's measure. The donors are represented by administrators who are responsible for insuring that funds are spent wisely. They may or may not be professional technicians, or have any personal familiarity with the project. Some administrators may have negative feelings toward the project. In any case, the donor's administrators are responsible for judging whether continuing financial support of the project is justified. They must assess whether the stated goals and outputs are being met.

The project personnel are charged with program execution as described in the mutual agreement. They have the primary responsibility to show that goals and outputs are being achieved according to contract. The project's goals are subject to evaluation along with actual project execution. Donors and project staff may arrive at a consensus that certain goals are unrealistic when viewed in the light of project experience. It is then possible to redefine those goals.

## Evaluation of Measurements

The donors wish to know how many hectares of fragile hillside land have been treated in order to assess progress toward the original target of 1,500 hectares. The project can measure linear meters of on-contour treatments rather easily. It is a tangible measure of work accomplished. The animators can pace the lengths and record them quickly.

The project can multiply the length measured by an estimated average distance between line treatments and obtain an area figure. This figure is relatively meaningless, however, because the interval between the line treatments varies according to the plot slope. Furthermore, the interval may or may not be treated.

Conclusion. Neither linear meters nor hectares provide an adequate measure of the project's soil conservation achievements. Neither method corresponds with field realities.

Meaning of "treated". What is a "treated" hectare? The C.A. offers some guidance as to the original idea of the two agencies who signed the agreement. The hectares that are already adequately protected without project intervention are clearly eliminated by the wording which states that treatment should take place as a result of the project. The untreated hectare is in a "fragile hillside area" and is to be treated "through the construction of soil conservation structures and/or contour plantings of trees and other stabilizing vegetation."

Judging by the project proposal, the authors considered two major practices to constitute "treatment". These were the level bench terrace and tree planting. The C.A. modifies these to construction of "soil conservation structures and/or contour plantings of trees and other stabilizing vegetation." The original proposal held out the offer of credit as an incentive to build soil conservation structures; however, the C.A. simply has a credit component. Both use the terminology "hillside brigades".

Attention is drawn to this progression in thinking because the project is not relying, and cannot rely, solely upon the two practices mentioned. The wording suggests bench terraces which are very costly in terms of labor, or the rock walls built in many other parts of the country. Neither of these are presently practical for the Maissade region.

Everyone values trees, but an individual tree is not a highly effective soil and water conservation treatment. It must be used in a barrier of some sort to control wind, animal movement, etc. The farmer may need to cut down trees in order to plant food crops. Adding "other stabilizing vegetation" does not contribute greatly to the completeness of the definition of treatment.

The original goals for treating 1,500 hectares of fragile hillsides are too narrow and too limited to be useful for judging today's project. The specific goals may even be harmful for they do not encompass the appropriate techniques. The original objectives do reveal the clear intention that the project should determine appropriate soil conservation methods, teach people how to protect and rehabilitate fragile lands, and motivate them to carry out the work.

Valid appropriate treatment. Appropriate treatment does not consist solely of structures built along a contour line nor simple revegetation with trees and grass. Adequate treatment consists of all the appropriate practices required to limit soil erosion to an acceptable level on a given parcel of land.

Acceptable level of erosion. An acceptable level of erosion implies that topsoil is lost at a lower rate than the rate at which topsoil is created from subsoil - by the transformation of natural processes, mainly weather. Acceptable loss in the U.S. is generally figured as 5 tons per acre per year, or approximately 1/120th of an inch per year across the surface of one acre. For the metric system, this is equal to approximately 11 ton per year per hectare, or 1/5th of a millimeter in thickness over the surface of a hectare per year.

These are average figures. The acceptable level of soil loss for a given location actually depends upon the thickness of the layer of topsoil, the nature of the subsoil undergoing weathering, and the local climate. Tropical regions lack the extreme temperature differences which contribute to weathering by freezing and thawing. It is not at all uncommon to find that the rate of topsoil formation is considerably less than 11 metric tons per hectare per year. This suggests that the "acceptable" rate of soil loss due to water erosion should also be lower.

Actual erosion loss. The actual loss for a given location depends upon the following factors expressed as the universal soil loss equation which is used for the purpose of estimation:

$$\text{SOIL LOSS} = R \times K \times L \times S \times C \times P$$

R - a rainfall factor derived from the long term average of annual summations of the product of two rainstorm characteristics; the total kinetic energy of a storm times its maximum thirty minute intensity.

K - an experimentally determined soil erodibility factor which indicates a soil's lack of resistance to erosion forces. This factor is largely influenced by a soil's water infiltration rate at the surface, the soil's permeability once water is infiltrated, the soil's total water storage capacity, and finally, its cohesive physical properties. For the latter, the very properties which contribute to excellent physical

condition (loose and granular) also render a soil very vulnerable to erosive water forces.

- L - slope-length factor, determined by the physical length of overland flow from the point of flow origin, to the point where the slope-gradient decreases so that sediment deposition occurs, or to the point where the runoff enters a well-defined channel. The longer the slope, the higher the soil loss per unit area.
- S - slope-gradient factor determined by the steepness of the slope and expressed as a percentage. An S factor of 10% indicates 10 meters vertical drop over a horizontal distance of 100 meters. The greater the slope, the higher the velocity of the runoff water and the greater its capacity to detach, suspend and carry soil particles.
- C - cropping management factor is the ratio of soil loss from land cropped under specific conditions, to the corresponding loss from the same land when continuously fallowed but tilled. The C factor reflects the combined effect of all the interrelated crop cover and crop management factors.

Note that the four-factor product, RKLS, indicates the soil loss that would occur from a particular field if it were continuously in bare fallow condition - no cover and no conservation practices. The nearest example would be a field receiving heavy rainfall immediately after being burned. The C factor evaluates the reduction in erosion due to the crop management techniques and the possible amelioration resulting from crop cover, crop residue management (on the surface and incorporated into the soil profile), crop rotation, soil fertility improvement and the type of tillage used.

- P - erosion control practice factor evaluates the supporting soil and water conservation practices that slow the runoff water, and thus reduce the amount of soil that it can carry. The most important of these practices are contour tillage, contour strip-cropping and terrace systems.

The distinction between practices falling into either the C or the P categories is sometimes unclear. In general, the C practices are able to be applied without regard to the contours of the land, while the P practices are executed or constructed along the contours.

Clearly, the rainfall characteristics are not under the farmer's control. For the most part the physical characteristics of the soil are not alterable, with the exception that the infiltration of rainfall, the internal permeability, the water holding capacity, and even the natural fertility, can be improved by increasing the amount of humus in the soil.

Altering the slope can be accomplished by expensive surface reshaping. The length of the slope can be altered through the use of physical interventions such as terracing.

It is largely the C and P categories which are used to alter soil loss. The determination of these and the K factor is rather complex and requires base data that is normally only partially available in the tropics. For various tropical regions, there are several suggested modifications of the basic soil loss equation ( $Loss = RKLSCP$ ) developed in the U.S.

Practicality of attaining acceptable level of erosion. For a tropical hillside region such as Maissade, the acceptable erosion level is unattainable, and the goal therefore is to minimize erosion loss by employing every method which is acceptable to the farmers. In regions where high-value crops are grown on scarce land, even poor peasants have instigated vast systems of bench terraces, but this is unlikely to be the case in Maissade.

A common watershed management practice is to develop a plot conservation plan wherein a prescription is worked out for the plot by a technician with the cooperation of the farmer. Together they review a list of approved practices, and select those which are appropriate and acceptable to the farmer. The farmer then agrees to carry out the practices, both "structural" (terracing) and "cultural" (mulch farming). Several practices are combined to make up an appropriate "package of treatments".

In the case of hillside farmers in Maissade, the "package" should consist of all known practices which the farmers can be motivated to use and maintain. In reality, this refers to practices which the farmer believes will increase production or halt its decline, and only require a "reasonable" level of investment in labor.

### Target of 1500 Hectares

The figure of 1500 hectares in the C.A. came from the original project proposal. Each groupman member was assumed to be the head of a family of 4 other persons, and it was assumed that each member would treat 1.25 hectares. A total of 6000 people were expected to treat 1500 hectares, or 0.25 hectares each.

In the actual project, groupman members are not necessarily family heads who represent 4 other people. The groups are often composed of several members of a single household. Therefore the original target of 1.25 hectares per member is not realistic. To achieve 1500 treated hectares would require many more than 1200 groupman members. Nevertheless, the treatments carried out by groupman members influence other farmers to use the same techniques. The project has no formal contact with these other farmers and no means of measuring this effect.

It may be helpful to look at this issue in light of the area magnitude of zones targeted for project intervention:

Maissade Commune	29000	hectares
South of Canot	17000	"
Rio Frio	10000	"
Fond Bleu-Fond Gras	19000	"
Riparadere Region	1000	" (estimated)
Rio Frio, and Fond Bleu-Fond Gras Outside the Commune	12000	"

Whether considering the original target area or the recommended redefined area, the 1500 hectares represent 5% (1500/29000) of the area targeted for services. Obviously, 5 percent coverage is not a solution to the erosion problems of the region. The target of 1500 hectares should not be considered sacrosanct. Much more significant is the impact LORD I can have as a pilot project developing a replicable model for soil and water conservation. In this role, the project can serve as the fundamental nucleus for agricultural extension in the region, and duplication elsewhere with appropriate modifications.

#### An Alternative Measure of Success

Recommendation. An important key to project achievement is the number of plots enrolled in conservation treatments by farmers who commit themselves to carrying out maximum appropriate efforts to limit soil erosion.

Maximum appropriate effort should be defined as the use of all structural and cultural treatments appropriate to each plot. This will require a plot conservation plan or prescription for each plot - to be worked out by the farmer and a project technician. See Annex D, "Plot Conservation Plan," for a draft version of such a planning document. The plot plan could be shown on a general form for all the plots of a given region. The form would be completed according to the following criteria: (a) prescription of appropriate treatments for the plot, (b) commitment by the farmer, (c) follow-up by project staff. The key to this approach is the farmer's enthusiastic commitment to carrying out treatments with technical assistance from the project.

The plot conservation plan and related treatments would be different for a coffee and bean farmer in Bois Rouge, than for a cane, corn and hog farmer down on the plateau. A brief sketch of the plot would show its shape and drainage, and the general location of treatments. The type of farming operation would be noted on the plan along with the estimated plot size. The exact size of the plot is of secondary importance. Of primary

importance is project registration of the farmer, the plot, the prescribed package of treatments, and a verifiable commitment to achieve these treatments. Once a plot conservation plan is prepared, the farmer's achievements can be recorded annually using the lower portion of the conservation plan as an inventory sheet for monitoring the conservation practices.

Mini-catchment basins. The project's technical efforts and measurement/feedback system should also reflect the project's refocused activities with respect to selected MCBs. At the level of individual farm plots, there should be a concentration of efforts toward perfection and completion of conservation efforts; however, this is only the first step in a guided expansion toward contiguous coverage of plots linked to critical MCBs.

In view of the numerous MCBs in the redefined project area, a priority system is needed to determine where to concentrate the limited technical assistance of the project. Building upon current project terminology, three categories of MCBs may be identified in the project work area (see Figure 13 below):

- (1) Priority MCBs of Critical Opportunity
- (2) Targeted MCBs of Critical Opportunity
- (3) Other Mini-Catchment Basins and scattered plots

Certain catchments will be identified by the project as high priority MCBs for intensive technical effort due (a) to their location in critical erosion zones, and (b) the opportunity to work by virtue of contact with groupman members and related networks. High priority MCBs would be intensively monitored through an inventory of all plots in the basin, including those controlled by non-groupman farmers. This will require a feedback system for all constituent plots. See Annex E, "Mini-Catchment Basin Conservation Practice Annual Inventory Sheet," for a draft inventory form. These plots would include the following types:

- groupman plots directly influenced by conservation plans, and practice inventory records,
- non-groupman plots influenced indirectly, without plot prescriptions, but including diffusion of certain practices and other spillover effects,
- unaffected plots.

For groupman members, the annual inventory sheets by plot would be totaled to obtain data on the practices used and the percentage of coverage. Other plots ("influenced" and "unaffected") could simply be listed as such. MCB area estimates would be estimated from maps.

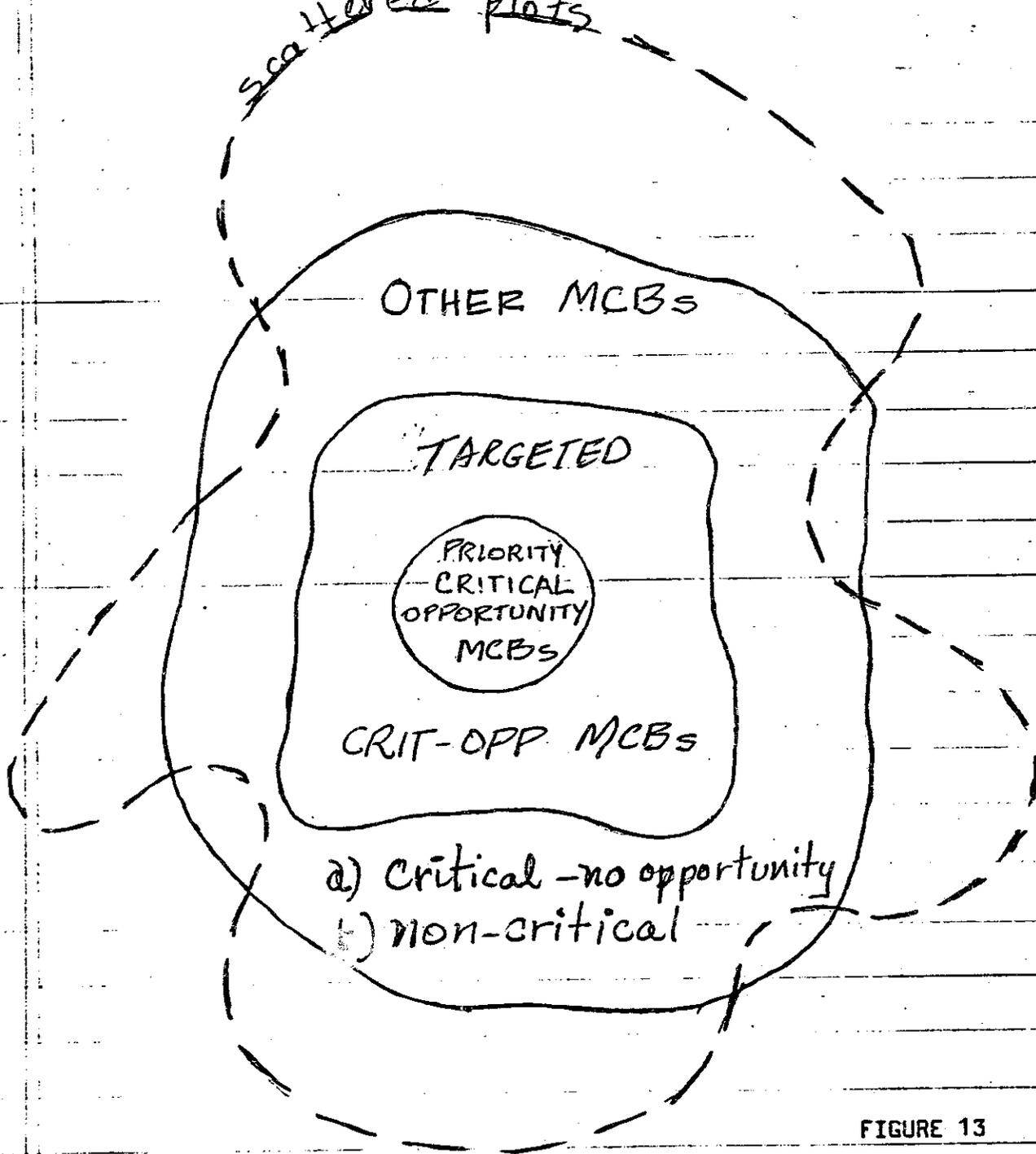


FIGURE 13

PRIORITY CRIT-OPP MCBs

100% technical effort

100% inventory / maximum feedback

TARGETED CRIT-OPP MCBs

Identification of Plots

Guiding Technical Effort

OTHER MCBs

SCATTERED PLOTS

Other critical opportunity sites will be categorized as Targeted MCBs (refer back to Figure 13). Due to staff constraints, these areas will not have access to the same level of services as the priority MCBs, but they will be targeted for intensive treatment in the future. In the interim they will receive some technical assistance, and all constituent plots will be identified.

Other MCBs will be identified in the less intensive zones of project intervention. They may be critical MCBs lacking current opportunity for project staff, or they may be zones of opportunity lying outside of the critical erosion zones. In addition, other scattered plots will receive limited technical assistance, but monitoring will be limited so as to focus staff time on the high priority areas.

Notes and queries. The primary goal of the monitoring system is to assist the project in providing services. It should not be an administrative nightmare nor should it interfere in any way with agricultural activities. It should be a slack season activity in terms of the agricultural calendar.

There are of course a number of unanswered questions in the general approach discussed here. Project staff should work through the implications of these suggestions, determine their feasibility and select what seem appropriate for the project. The primary idea is to stimulate creative alternatives of some practical use.

Unanswered questions include the following:

How will rented plots in the MCBs be handled? Ultimately this may simply be a question of opportunity. Some will benefit from complete treatment. Others will simply be classified as "influenced" or "unaffected" plots.

How will plot areas be estimated? Accurate physical measurement of parcels is out of the question. It should not be required as it would be much too time consuming. Technicians and animators should be carefully trained to make reasonable efforts. This can be done by doing actual measurements of demonstration sites and comparing this with staff and farmer estimates.

If the burden of statistical reporting becomes too great, the project could move to a system of accurate random sample counts rather than 100 percent plot inventories

The best plots and MCBs could receive special recognition, or be entered in competitions along the lines of current project practice with monitors and the A-Frame levels.

## CONSERVATION FARMING

### Project Strategy for Technical Assistance

The project's technical assistance, or agricultural extension, features low profile intervention with an emphasis on appropriate technology which is attainable and sustainable. Often this technology is based upon amelioration of existing practices. The project is not one of "bricks and boards"; rather, it is "people oriented" and low budget with the majority of funds going directly into technical advice and guidance.

Technical interventions are directed toward conservation of soil and water resources. The form this takes is shaped by peasant agricultural needs as expressed in groupman meetings. Participation in the groupman program is entirely voluntary. Therefore, the project's technical interventions are limited by the opportunity thus provided to work with groupman members. There is a visible trickle-out or dispersion of benefits to other farmers who are not members of a groupman.

No subsidy of a monetary nature is provided to facilitate the adoption of soil conservation measures or building of conservation structures. The project strategy is to avoid "give away" programs. One exception to this is the tree planting program where seedlings are furnished at no cost to groupman members and other farmers. The farmer's primary incentive to adopt soil and water conservation practices is increased agricultural production. The practices being promoted are basically "self-reliant" in nature, as opposed to expecting the government or another agency to solve problems and pay for solutions.

Conservation farming. It is important that soil conservation not be defined narrowly. Nearly every decision a farmer makes has consequences for the way soil resources are managed or mismanaged. The daily needs and activities of peasant farmers have immediate and profound consequences on the land upon which they depend for their very livelihood. An ecologically balanced farm includes animals as well as crops. The farmer's best interests are served by project attention to both crop and livestock management practices which favor sustainable, long-term use of farm resources.

A farm combining trees, food crops and livestock to good advantage will produce more. This is the type of farm targeted by the project for services. The project promotes "conservation farming" and "sustainable agriculture." Diversified peasant farmers have a relatively greater incentive to adopt these practices as promoted by the project.

## Farm Site Interventions: A Treatment Package

An important concept, mentioned earlier, is the linkage of water conservation to soil conservation. Simply stated, the goal of both is to keep the rainfall where it lands in order to minimize the damage which ensues from the "runoff" of excess water.

The notion of a "package" of conservation practices includes all effective cultural and structural practices or treatments which are acceptable to local farmers. There are several categories of soil and water conservation practices. For the most part the distinction is clear, but there are some practices which share aspects of more than one category:

- (1) Cultural vs. structural practices
- (2) Temporary vs. permanent practices
- (3) Between contours vs. on contour treatments

In general, one group of practices is defined as cultural, temporary and between contours; the other group links practices which are structural, permanent and on contour.

Cultural practices are generally adopted into normal farming operations and renewed annually. They are considered temporary because the practice can usually be accepted or rejected each year, e.g., the choice of "not burning," or composting, or the use of animal manure. Cultural treatments and practices involve farming methods. These practices are almost always applied in the space, or interval, "on or along contour line treatments."

Structural practices involve more permanent changes to the landscape and must be "built", usually "on contour." This includes such structures as terraces, trees planted along contour lines, and gully structures. Structural practices are relatively more permanent, but all require an annual commitment to maintenance.

Windbreaks are built perpendicular to the direction of the prevailing winds. They are similar to living fences in that both are considered structures, but they are often not planted along a contour line. Grassed waterways are used to lead water safely downhill across contour lines, but they are considered to be a structural practice since they must be "built".

Contour oriented practices include contour farming, contour strip-cropping and the contour ridge/furrow system of tillage; however, these are considered to be cultural practices rather than structural. Crop rotation alternates plants that contribute to soil fertility with those that deplete. This practice takes place over a period of several years; therefore, it is not exactly temporary, but it is still considered a cultural practice.

General findings. The timing of the evaluation team's visit did not correspond with the peak period of technical activities. Two of the three current technicians are new and still learning their role. The first year of the project's technical intervention was 1987.

The technical accomplishments of 1987 and early 1988 are impressive. This was achieved by a very limited technical staff consisting of 1 technician, 1 forester and 1 agronomist, supported by the animation team. The extent to which farmers have adopted conservation techniques is remarkable. Many farmers were influenced directly by contact with project staff; however, others adopted the practices on their own with only limited exposure to technical supervision. The primary incentive in the adoption of new conservation practices was clearly their value for increasing agricultural production.

The staff concentrated on a limited number of basic concepts in order to maintain control and avoid confusion. Several of the practices literally took off. The most popular were the following:

- (1) Rampay: Staked stubble barriers on contour
- (2) Pa bwile: Cessation of the practice of burning off fields prior to planting
- (3) Fe payaj: Mulching
- (4) Kleyonaj: Staked, woven, gully control structures
- (5) Barye vivan: Living barriers of trees on contour

Others, while growing in popularity, were not yet extensively used:

- (6) Biyon and siyon: Contour ridges and furrows
- (7) Pike te: Deep hole punching
- (8) Kompos: Compost

#### Recommendations.

(1) Project extension would be served by a more precise system of individual plot conservation plans requiring a farmer's commitment to several conservation practices or techniques on the plot.

(2) The erosion control plan should place more emphasis on methods to safely convey runoff from the field.

A Technical Flaw? One technical problem seems to have been overlooked by the soil conservation/watershed consultants who have periodically assessed the project's technical intervention plan. The current emphasis of the soil and water conservation program is to retain all rainfall in the field where it falls. This is a valid objective since the moisture would then be available for plant growth, and with no runoff there would be no erosion.

Conservation treatments which contribute to complete infiltration of rainfall are those effected in the open areas of the field. This includes mulching, incorporation of organic matter into the soil, promoting a proper environment for earthworms, and creating scooped basins or blocked furrows between cultivated ridges. These general practices are evenly distributed across the field surface to increase the soil's ability to soak up the rainfall, or to retain it where it falls until it can be absorbed by the soil.

The problem with the goal of total absorption is that it is only rarely attainable - generally under arid circumstances, and not in regions of tropical rainfall. Techniques for complete infiltration are very valuable and should be utilized to the maximum extent possible; however, there will be runoff and often! Consequently, an erosion control plan should include methods to safely convey runoff from the field.

These methods are usually "line treatments" effected in the direction of the topographical contour lines, with the horizontal distance between them bearing a direct relationship to the ground slope of the field. Their purpose is to intercept runoff and conduct it sideways, slowly, to a point where it can safely be discharged into a natural drainageway (see Figure 14 below).

Dead level "line contour treatments" do not conduct water. They create an artificial obstacle to its flow downhill. When combined with a parallel trench uphill, further artificial storage is created. This structure is called a level terrace. If the interval between two terraces is leveled, then a level bench terrace is created. All dead level structures on the contour can overflow or overtop if rainfall overwhelms the infiltration capability of the soil, and the storage capacity of the structure. A planned escape valve is needed.

This is accomplished by not building dead level structures "on the contour." Rather, the treatments should be sloped slightly to lead away excess runoff. Runoff is led safely in a sideways direction into a natural drainageway with controlled access. Otherwise, overtopping can suddenly overload the system, starting at the top of the field, and progressively wash out the structures all the way to the bottom of the slope.

Recommendation. Construction or implementation of erosion control practices should procede from the top down"

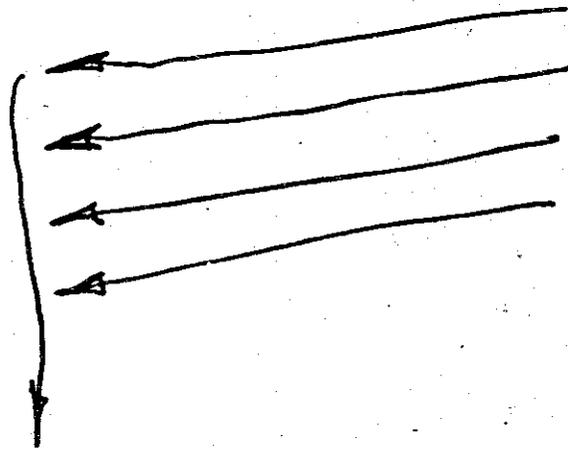
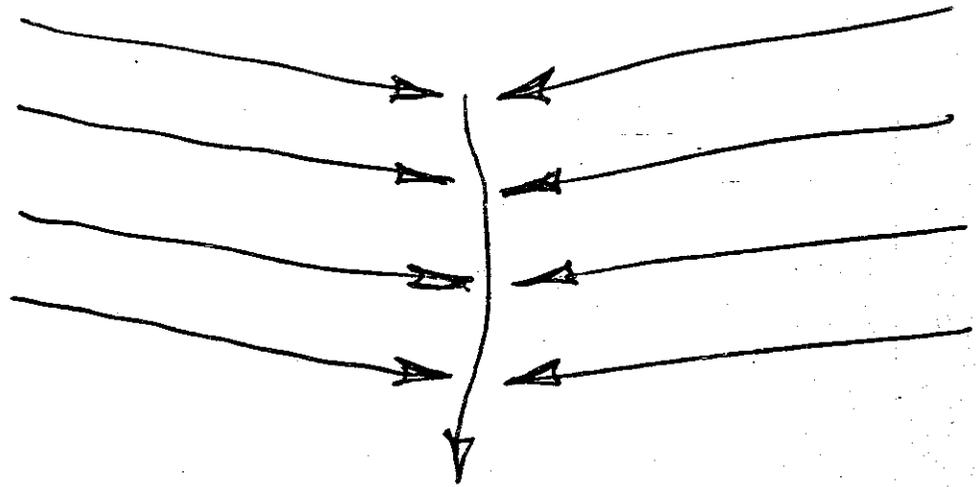


FIGURE 14 System of Contour Treatments  
With a Planned Drainage  
Of Excess Water

Ideally, any erosion control effort should start on the highest ground and work progressively toward the lower elevations. Otherwise, there is a risk that unabated runoff from a large area above will descend upon the treated area and destroy the work accomplished. This principle is especially pertinent to fields and plots. There are often untreated areas above the treated plot of a cooperating farmer. In this case a diversion ditch may be required. The ditch intercepts runoff from above and safely leads it to a natural drainageway, thus protecting the plot to be treated.

## TYPES OF SOIL EROSION

Recommendation. Training materials should be developed to promote a better understanding of the process of erosion and the use of particular erosion control methods introduced by the project.

Heavy rainfall causes loss of topsoil when it falls in excess of the soil's ability to absorb it. What happens can be described in terms of several related processes. Understanding these processes will enable farmers to better realize the importance of the various erosion control methods and practices.

Raindrop Splash. The raindrop literally bombards the unprotected soil surface and dislodges soil particles which are scattered in all directions. Particles can be thrown as high as one meter into the air and nearly two meters sideways. The raindrops also compact the surface of the soil which is not dislodged. Once dislodged, the soil particles cause the water to become "muddy." The infiltration of the muddy water seals the small soil passages which initially allowed the water to penetrate the soil surface.

Other small particles are suspended in the surface water and carried along with it. If the velocity of the water moving over the surface of the soil is sufficient, even large soil particles can also be suspended and carried. Otherwise, these larger particles are rolled along the surface by the moving water, and in turn can dislodge still more of the soil.

The rain strikes the surface of a hillside at a angle which is rarely perpendicular to it. More of the splash occurs on the downhill side of the raindrop, and those dislodged particles move further than the particles on the uphill side. The result is that an unprotected hillside is continually being worn down by every raindrop splash.

Sheet Erosion. A very thin layer or sheet of soil erodes almost equally across the entire field surface as a result of raindrop splash and surface runoff. It causes removal of the smaller particles, organic matter and the water soluble soil nutrients needed by growing plants. It is a serious detriment to soil fertility and productivity. Worse, it is often undetected

until the entire layer of topsoil is eroded, and the unproductive subsoil begins to show through the topsoil. For this reason, many consider it to be the most serious form of soil erosion.

Rill Erosion. As the flow of surface runoff concentrates in depressions of the field surface, sufficient soil erosion may occur to cause small channels or rills. These rills may go unnoticed due to normal tillage of the field, but each year they become worse.

Gully Erosion. As the small rills become deeper and join together, the next stage of deeper and wider gullies begins to form. At this stage, the results of erosion are easily seen and either cause alarm or acceptance of "inevitable erosion" - which of course is not at all inevitable.

Streambank or Channel Erosion. The final destructive stage in the erosive process occurs in the stream itself as the banks cave in and destroy what is often the most productive bottomland.

Sedimentation. The erosive action of water described above is unfortunately not the final damage which results from soil erosion. The deposition of the eroded soil occurs wherever the flow velocity of the water decreases. The resulting sedimentation can cover up small plants, choke natural and manmade drainage ways and fill up lakes and reservoirs.

### Field Layout Techniques

Two field layout techniques were employed by the project in 1987:

- (1) Nivo-A: The A-frame level used for finding contour lines,
- (2) Met Bra: Use of the extended arm for determining the vertical and horizontal interval, or spacing, between contour treatments.

A-Frame Level. This is a clever technique for establishing a level line (contour) through a field. The A-frame is a simple device which can easily be built with local materials: three sticks, some twine and a rock. The only tool needed is a cane knife (machet). The evaluation team observed construction and use of these instruments by peasant farmers in the field.

## Recommendations

(1) During the fabrication, less emphasis should be placed on non-essential aspects of the level, and more time should be spent on final calibration and marking. The length and exact placement of the legs and cross piece are not critical. The A-frame sketched in Figure 15 below, with unequal legs, is equally as valid as one of equilateral proportions.

The three joints must be firmly fixed together in such a way that the relationship of the three wooden pieces does not change. Beyond that, it is the calibration and marking which is crucial. The process of marking the center piece is simple. The A-frame is placed on sloping ground and the center piece is marked exactly where the weighted string hangs. The A-frame is then turned end for end (reversed), and the center piece is again marked where the string hangs. The level mark is halfway between the first two marks.

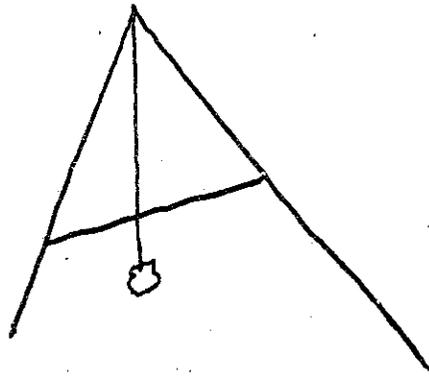
If the legs of the A-frame, when turned end for end, are not fixed in exactly the same places as before, the results will be unsatisfactory. Great emphasis should be placed on this fact when teaching people how to build the A-frame. They should be able to verify the marking in two or three minutes, and should be taught to do this often when working with the level.

The marking should be carefully verified in 2 or 3 different positions before the final center mark is carved. When the rock on the string hangs at the center mark, the bottoms of the two legs are level.

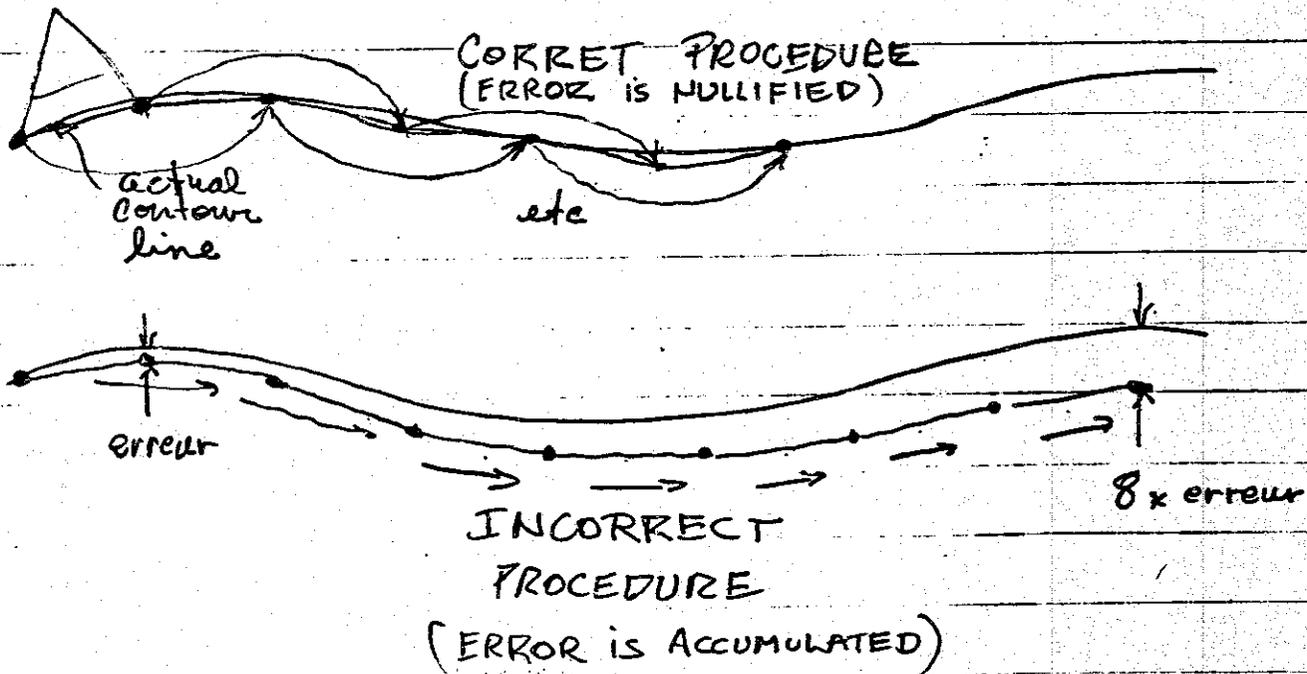
(2) The second suggestion involves the use of the A-frame in the field. The level is at best a rather imprecise instrument, though adequate when built and used properly. Despite all efforts to the contrary, the instrument may still be "off." To compensate for error, the A-Frame should be turned end for end each time instead of picking it up and moving it in the same orientation across the field. Any error in the level will then be nullified. On the other hand, error will be accumulated if the faulty A-Frame is simply carried forward across the field, and the line thus traced will angle either uphill or downhill. Refer to back to Figure 15.

Future Possibilities of the water tube level. At some point, introduction of the water tube level should be considered. It is not appropriate at present since it requires a piece of clear plastic tubing at least 2 1/2 meters long (it could also be much longer). The apparatus is quite simple, easily made, quite accurate and not at all difficult to master. See Figure 16.

Although some expense would be incurred to purchase tubing for the level, some groupman may be interested in pooling their funds to build one as they become financially able. The tube



# A-FRAME LEVEL unequal legs

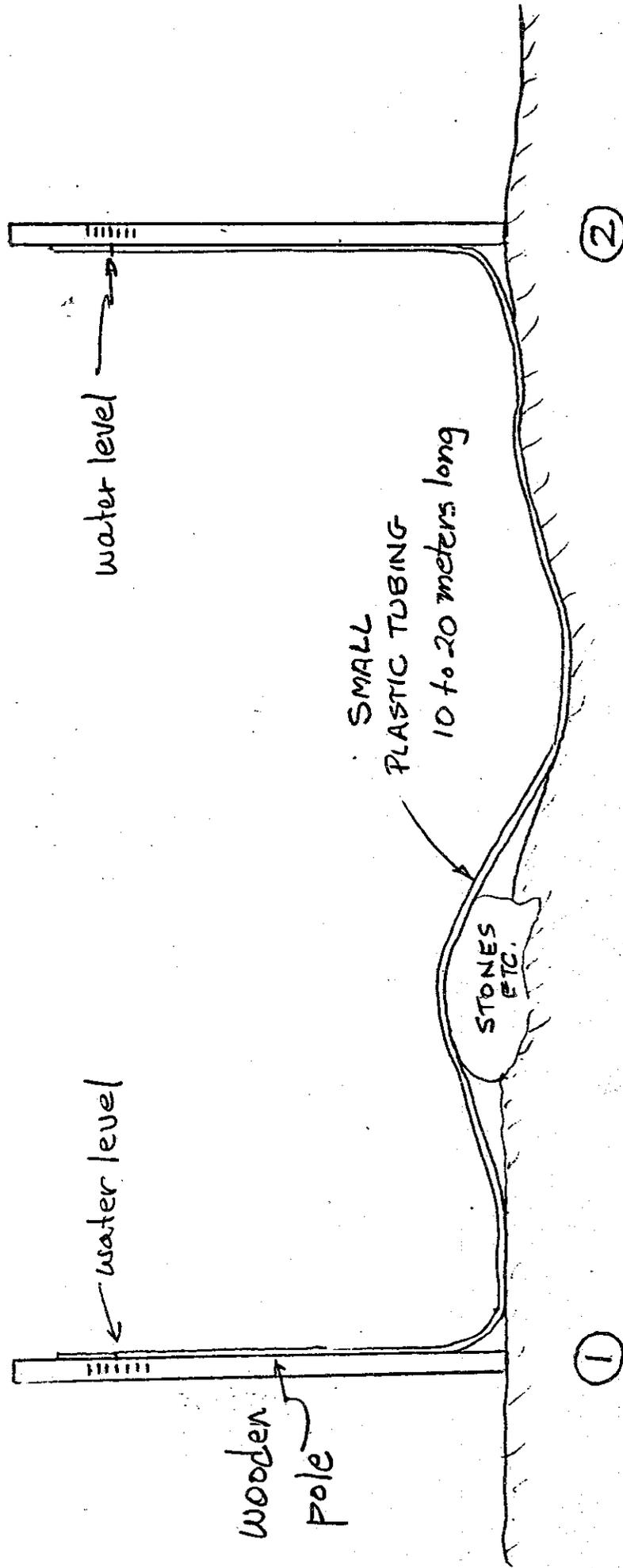


USE OF A-FRAME LEVEL

level could be used by a number of people since it can be used to trace a contour line very rapidly. It could also be used in place of the extended arm technique (met bra). The present advantage of the A-frame is obvious. It costs virtually nothing and is made entirely from local materials.

Extended arm technique (met bra). The method is illustrated in the sketch shown in Figure 17. The technician or farmer stands with his back to a previously staked contour line. He raises his arm to a point at eye level and sights the ground uphill to find the beginning location of the next contour line to be traced with the A-frame level. The technique is very simple, but the results can vary greatly depending upon individual skill. In spite of the variations which result, the technique solves a difficult technical problem which would otherwise be beyond the capability of peasant farmers. It also solves a time consuming problem for technicians.

THE TWO POLES & MARKS ARE IDENTICAL



same elevation as point ① when water is at same mark as pole ①

FIGURE 16 WATER TUBING LEVEL MADE LOCALLY IN BURKINA-FASO FOR ABOUT \$6 COST

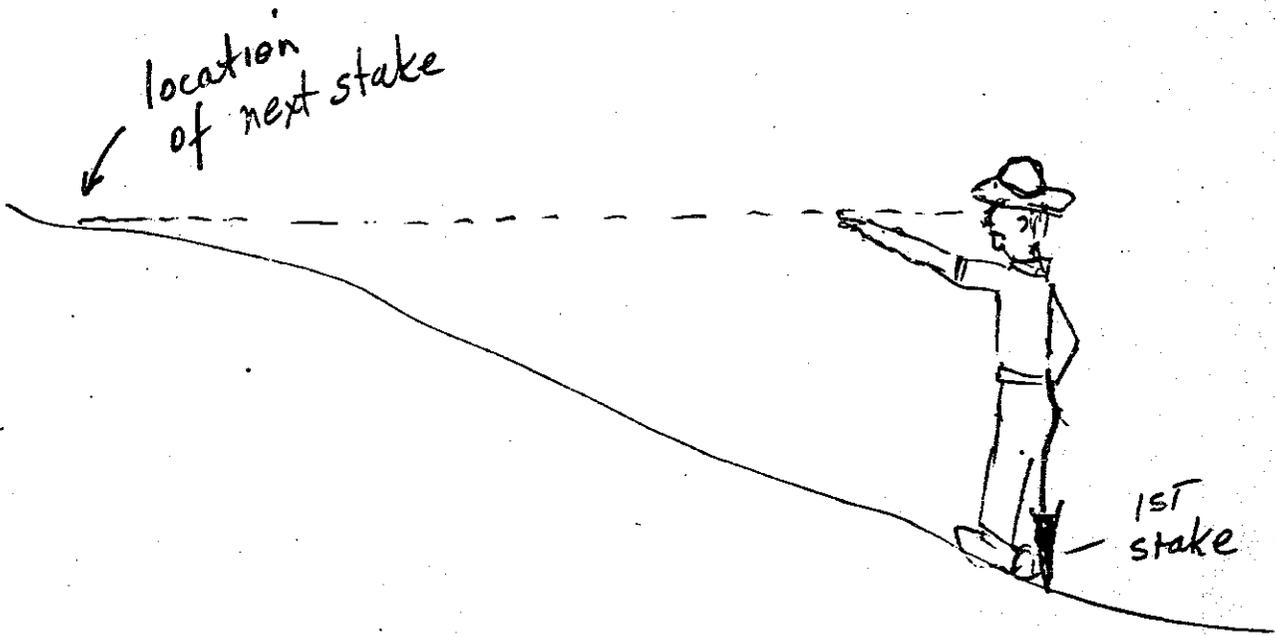


FIGURE 17 Extended Arm Technique:

"MET BRA"

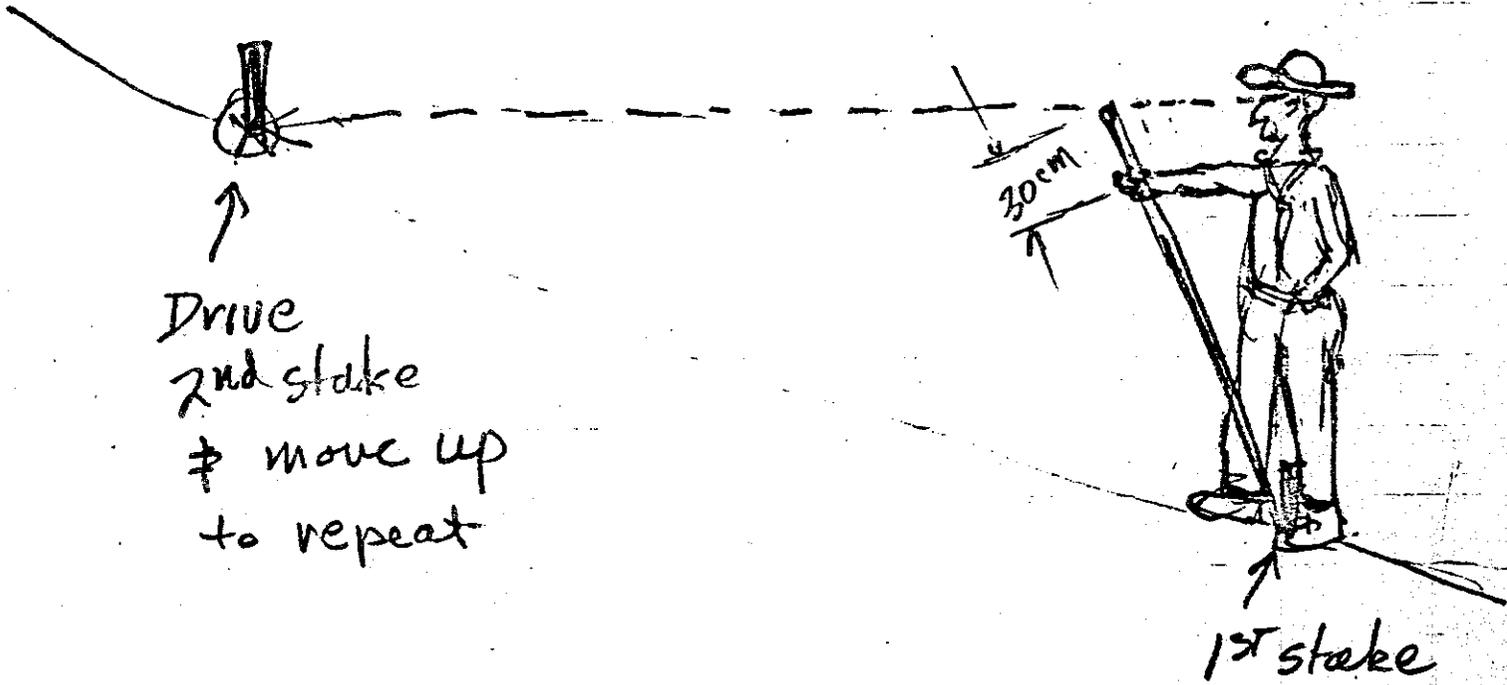


FIGURE 18

# Modified Extended Arm Technique

Recommendations. Use of the net bra extended arm technique can be improved with the following modifications:

(1) Add the use of a pole to the method. Cut a pole that reaches from the ground to the top of the forehead, or slightly above eye level.

(2) Make a mark on the pole approximately 30 cm down from the top end. Face uphill with one foot on either side of the stake for the first contour line. Place the lower end of the pole against the stake and grasp the pole with the right hand at the 30 cm mark. Fully extend the right arm. Sight through (past) the upper end of the pole to the ground uphill where the next stake will be driven marking the next contour line. Move to that stake and repeat. Refer to Figure 18.

(3) In a given field, always use the same pole and the same person to set the stakes.

(4) Proper guidance is needed at the field site in order to use the modified method and obtain a valid system of contour lines in a given field. No two contour lines of different elevations can meet or cross each other.

(5) Set only one stake in each contour line using this method. The other stakes on the contour line should be set with an A-frame.

(6) When using this method, a single series or set of stakes should be placed up and down the slope in the middle of the field. The A-frame should then be used to trace the contour in both directions from the each center stake to the edges of the field.

### Structural Practices

Staked stubble barriers on contour (rampay). Certain types of crop stubble barriers existed prior to the project, but they were not built along contour lines. This excellent modification is due to project intervention.

The contour line is staked out with the A-frame level. The ground distance between the two legs of the A-frame is approximately 1.5 meters, so stakes are driven into the ground at this interval along the contour line. Crop stubble is gathered and placed on the uphill side of the stakes to form a barrier which traps/slow runoff from above, thereby causing the transported soil to be deposited. The resulting buildup of sediment, and retention of moisture, provide a good growing environment for crops planted along the barrier.

The major disadvantage of this treatment is its temporary nature. The barriers must be rebuilt each year due to deterioration of the crop stubble.

Recommendations. The following suggestions may serve to improve this technique:

(1) A middle stake should be added to those presently set at each end of the A-frame. This would better reinforce the barrier.

(2) Whenever possible the stakes should be "live stakes" capable of rooting and growing. During the end of the dry season this is difficult to achieve because of the lack of soil moisture. If the middle stake were added after the rains began, it would more easily take root. If two or three stakes took root, then the stubble barrier would only require the addition of new stubble each year.

(3) Since the stubble barriers are constructed along contour lines, a correctly built system should proceed progressively from the top of the plot toward the lower elevations - with no one structure connected to another. .

(4) The structures should all follow the contour lines at dead level or with some uniform slope or grade. Any significant error in layout with the A-frame will create a portion of the structure which is lower than the rest. Water will concentrate there and break through the structure.

Living barrier of trees/vegetation on contour. The vegetation can be fast-growing trees, tall forage grass or even sugar cane. The 1987 extension effort consisted mainly of trees seeded in various row patterns oriented along the contour lines as established with the A-frame level. Proper seed preparation varies by species and intended use. Several seeding patterns are possible in terms of the following:

- number of rows,
- distance between rows,
- staggering of rows,
- seed spacing within the rows, etc.

The vegetation is planted with a view to harvest. Species selection is based upon the anticipated needs of the farmer for firewood, compost, animal forage, etc. The use of sugar cane as a living barrier is interesting because of its food and market value.

More often than not, the practice is used in combination with the staked crop stubble barrier. The crop stubble would be stacked on the uphill side, against the trees. The spacing between living barriers is usually less than 15 meters. It is necessary to prune or harvest the vegetation in order to avoid excess shading of crops grown in the interval, and to prevent the seeds produced from reaching maturity.

It is desirable to use tree species capable of fixing nitrogen from the air, and capable of "pumping" nutrients and

trace elements to the surface for use by the crops. In the latter case, the composting of the leaves and small stems is required in order not to lose the benefits.

The project is studying these practices in trial plots. Some experimentation is taking place with respect to mixing varieties within a barrier - intermingling within the row or alternating row varieties.

Earth Terraces. Earth terraces are not used by farmers in the area nor promoted by project personnel; however, some form of the earth terrace will undoubtedly evolve from present practices. Terraces can be categorized in different ways. All should be built as contour terraces. For the present purpose, it is helpful to distinguish between an ordinary terrace and a bench terrace, and a drainage terrace versus a storage terrace.

(1) Ordinary contour terraces utilize an earth ridge built along a contour line. The system of terraces consists of a series of earth ridges along the hillside. Each terrace is built with some vertical interval, as determined by the "Met Bra" (Extended Arm) technique between it and the terrace immediately above and below. The ground slope in the interval between any two terraces has a pronounced downhill slope. Refer to Figure 19.

(2) Bench terraces differ from ordinary terraces in that the hillside is converted into a series of steps or "benches." The slope between terraces is level, or nearly so (illustrated in Figure 19).

The ridge for either type of terrace can be dead level - in which case the terrace is a storage terrace with the function of retaining and storing water. Or, the ridge can slope slightly downhill - in which case the terrace is a drainage terrace. The latter's primary function is to lead the runoff to a point where it can be safely discharged into a natural drainageway.

The soil to build the ridge comes from two possible locations. The first source is from a trench immediately above the ridge. Water intercepted is either stored and/or conducted in the trench (terrace channel). One result of digging a channel is that some water storage is easily obtained, but the resulting trench causes the interval between the terraces to become steeper with the passing of time.

A primitive form of this terrace was being demonstrated during the evaluation team's visit. Using a pick, soil was excavated immediately above a staked crop stubble barrier and pulled up on top of the stubble. One advantage of this is increased infiltration and storage; however, for terrace construction, it is preferable to avoid placing grass, stubble, sticks and pieces of tree roots in the earth fill of the ridge. If such fill is used, the purpose is no longer simply to slow down the runoff, but rather to completely stop its descent by holding it on the upper side of the ridge.

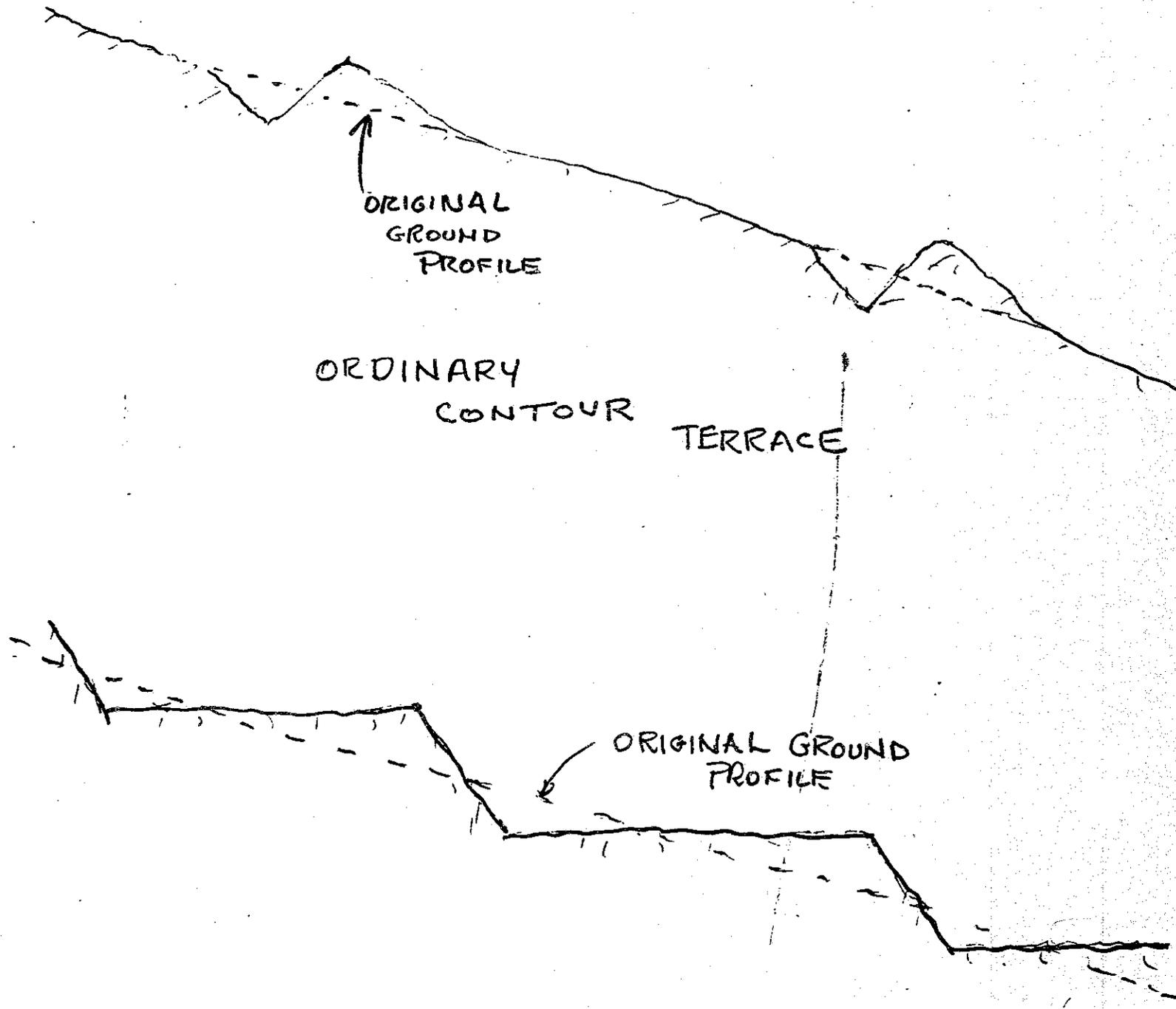


FIGURE 19 BENCH TYPE TERRACE

The second source for the soil used to build the ridge is from immediately below the ridge. Excavation there tends in time to cause the interval to become less steep. Another possibility is to utilize soil from both above and below the ridge. Finally, in building a terrace, it has been proven that, from the production standpoint, it pays to avoid covering up the better topsoil with the poorer subsoil. Refer to Figure 20 for ideas on how this might be achieved.

Rock walls on contour (mi sek). This type of structure is not strictly a terrace because it does not store water nor conduct it to a place of safe discharge. Its purpose is rather to slow down the water which descends the hillside. The spaces between the rocks allow water to pass through the wall, although the erosive energy of the water is dissipated somewhat as its velocity is decreased. This can also result in sedimentation which blocks the space between the rocks. If modified, the rock wall could easily become a terrace. See Figure 21.

The rock wall also has the advantage of providing a useful site for disposal of rocks which are quite plentiful in some locations. In the project area, there are numerous farm plots where few or no rocks are to be found.

Ravine plugs/gully structures. The purpose of these structures are the same, but several techniques or methods can be used to achieve the same goal. Some of the most common are the following:

- (1) Staked and Woven Structures (Kleonaj)
- (2) Log Structures
- (3) Rock Drop Structures, an of the Mi Sek

Fundamentally, the goal of a "drop structure" is to flatten the channel slope of a natural watercourse in order to decrease the water velocity. Technically, they are drop structures in that the water is slowed horizontally and dropped vertically to the next level. The structures also serve as sediment traps.

Recommendations. In constructing ravine plugs, the following characteristics should be carefully noted (see Figure 22):

- (1) The center section should always be lower in elevation than the ends in order to control the location of water flow over the structure.
- (2) The ends of the structure should always tie into the earth bank of the ravine well above the anticipated high waterline. The structure should never be built in such a way as to permit water to flow around the vulnerable end portions.

# METHOD A

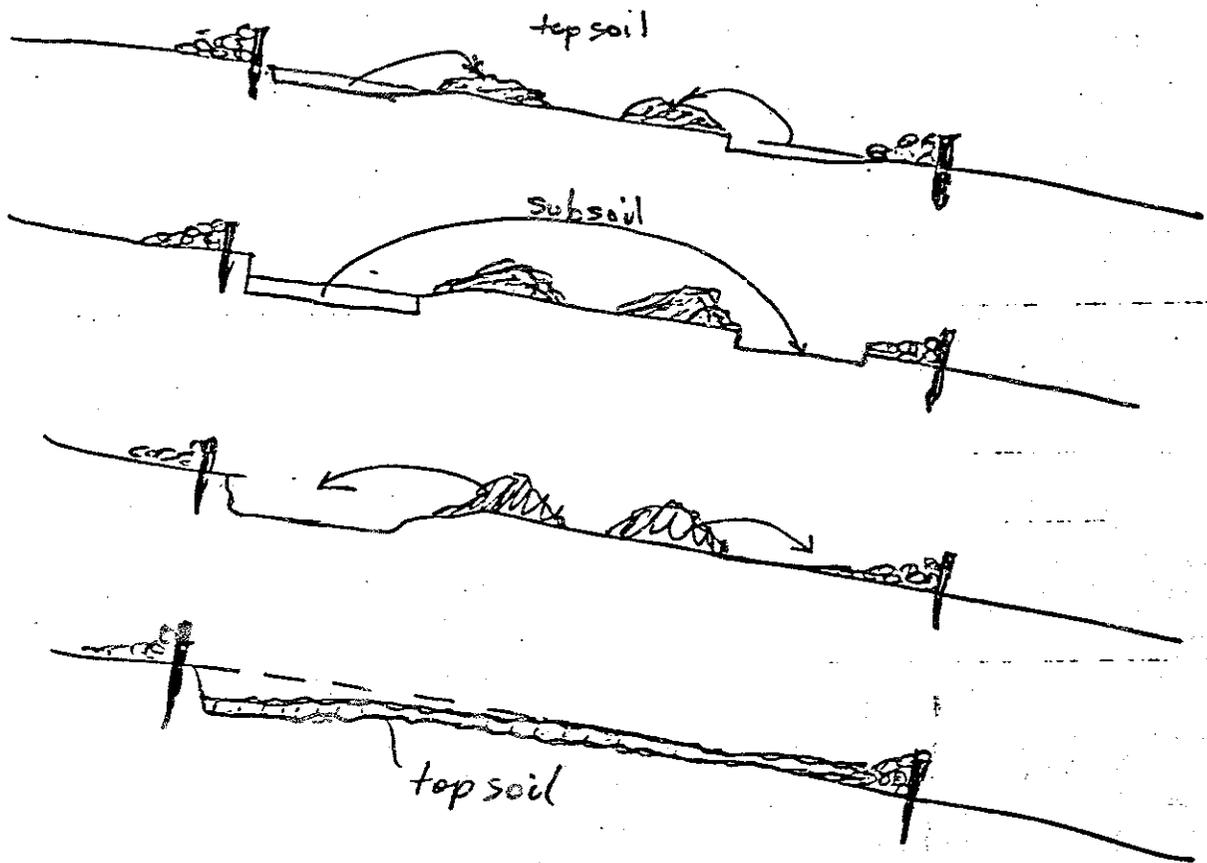
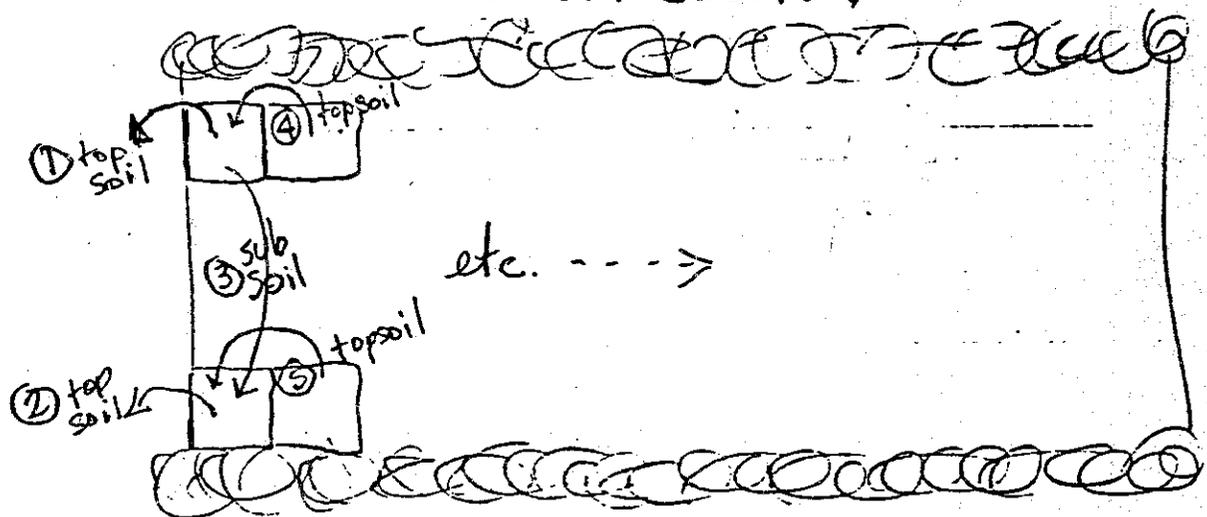
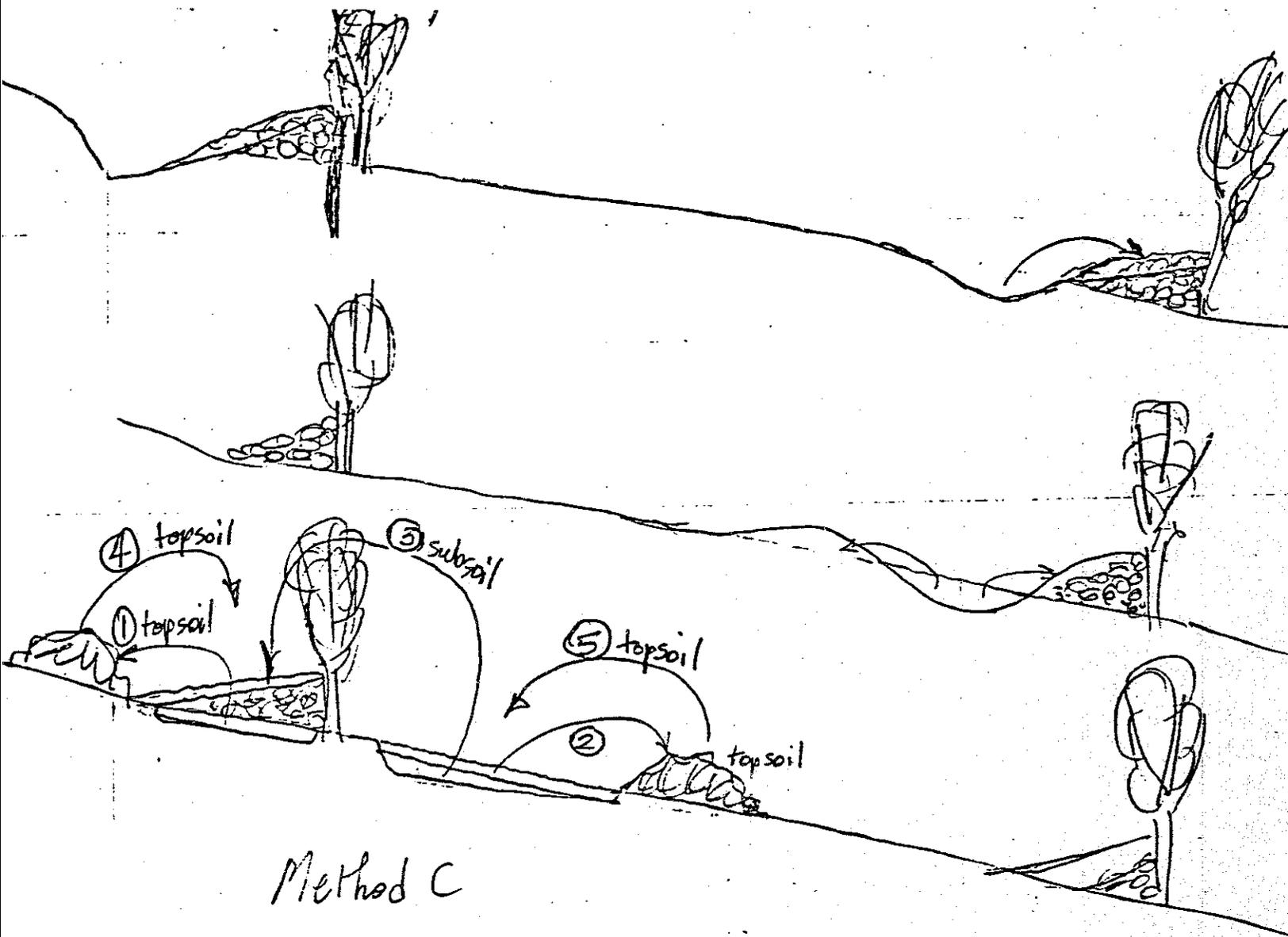


FIGURE 20

## METHODS USED TO AVOID BURYING TOPSOIL DURING TERRACE CONSTRUCTION



# METHOD B



### Method C

Ideal:

- Make interval between flater
- Do not cover up top soil with sub soil

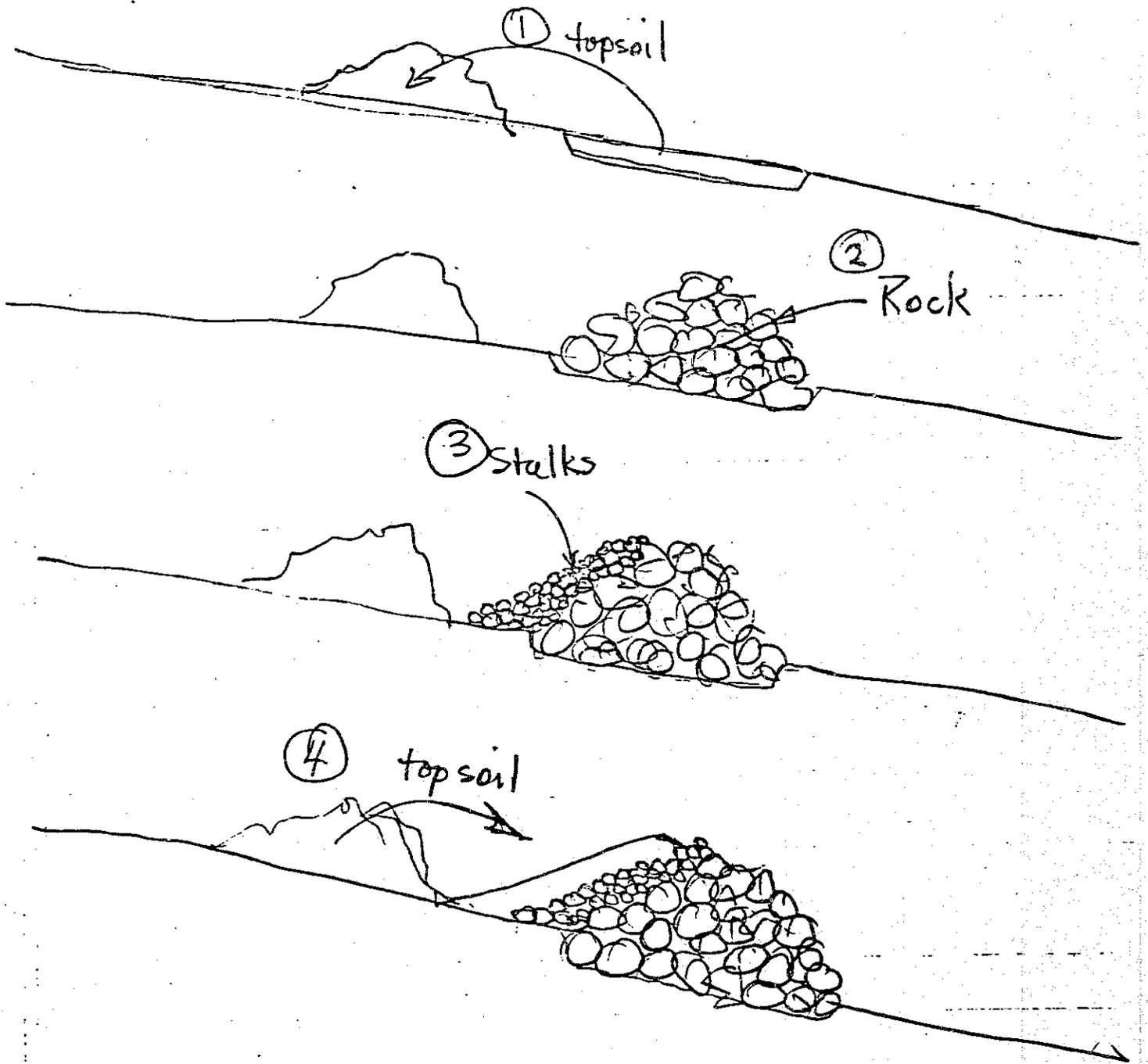


FIGURE 21  
ROCK WALL TERRACE

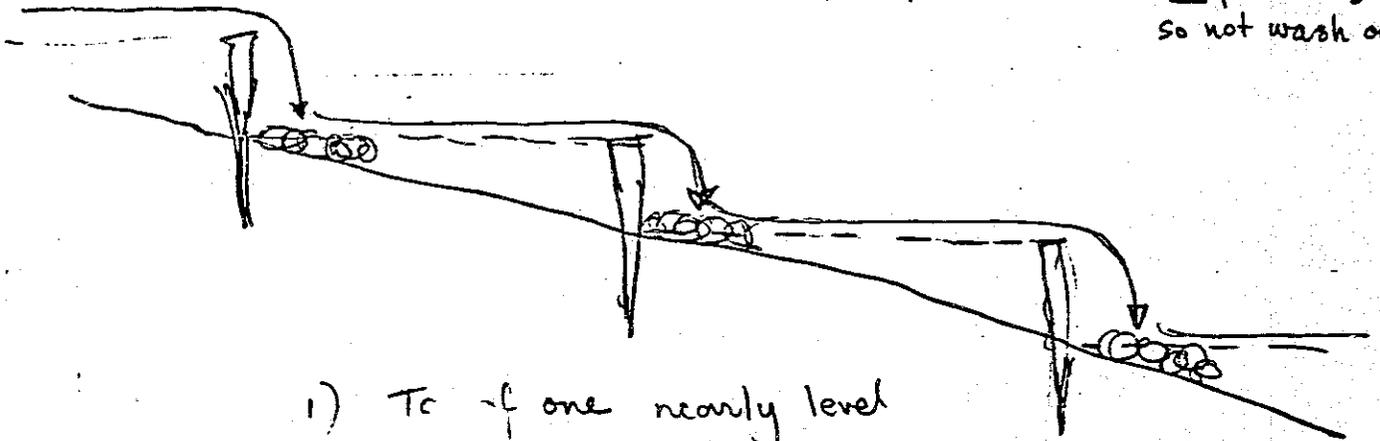
FIGURE 22

# Ravine plugs / Gully Structures

Cléonage

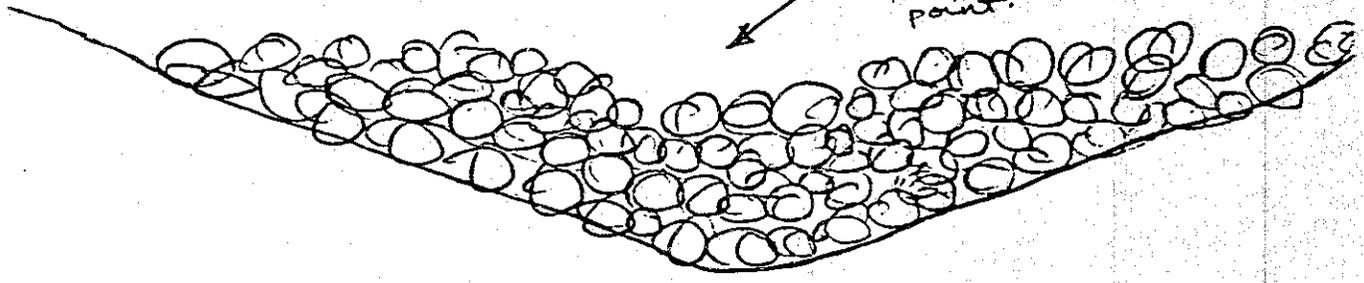
Low place to control overflow

Deep stakes so not wash out



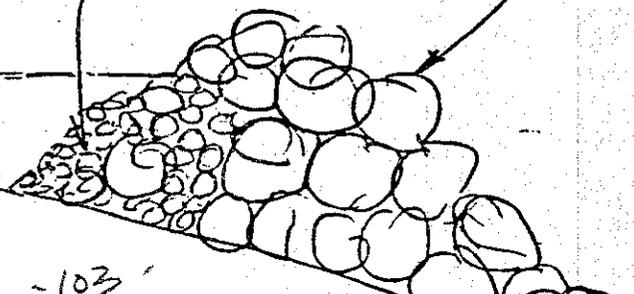
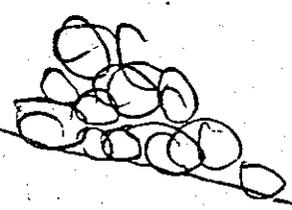
- 1) Top of one nearly level with bottom of next one
- 2) Rocks/grass at bottom of overfall (in middle) so not wash out with falling water
- 3) use live stakes if possible

Low area in middle to control the overflow point.



Small rock

larger rock



(3) At the center (low) point of the structure, where flow is concentrated, the overflow should not fall on bare ground. Instead, rocks, woven mats, or growing plants should be used to protect the ground surface from the erosive force of the falling water. If water is allowed to undercut the base of a structure, it will be destroyed.

(4) When constructing gully structures, it is crucial to control the location of concentrated flow, and take the necessary steps to protect the soil and the structure at that location.

(5) Before undertaking gully structures, every attempt possible should be made to reduce the water flowing in the ravine by treating the plots in the contributing watershed. This will greatly reduce the quantity of runoff in the ravine.

(6) Start construction at the top of the ravine or gully, and build down. Never start with the lower end of the ravine and proceed toward the top or higher elevations.

(7) The ideal relationship between structures along a watercourse results when the top of the lower structure is only slightly lower, or even at the same elevation, as the bottom of the structure above.

In the project area, several farmers have built ravine structures prior to completing treatments in the surrounding plots. Normally, this is not a wise policy; however, it does provide a dramatic demonstration of the sheer quantity of soil being eroded from farmers' fields - proof which can be used advantageously by the project.

The staked and woven structures are not permanent. They should be rebuilt, or extensively repaired, each year in order to maintain the benefits. The addition of "live stakes" will enhance the structure's permanence.

The rock drop structure is ordinarily considered to be permanent, but it also requires maintenance to insure its continued function. Two methods are commonly used:

(1) The first method allows water to leak through the rocks. No attempt is made to seal the rock bed on the upstream side.

(2) In the second method, small rocks are placed in the gaps between large rocks, and then clay is packed against the uphill slope of the rock bed.

The proper choice of the two methods depends on what seems to work best in a given locality. If the second is selected, the water is forced over the top, and all but the large, heavy rocks may be moved by the energy of the concentrated water flow.

Grassed Waterways. The grassed waterway is ordinarily an improvement applied to a natural watercourse within a field or fields. Water flow in a grassed waterway is intermittent - never continuous. Due to concentrated water flow, a trench is often smoothed and widened 4 or 5 meters in order to spread the water and decrease its velocity.

Rather than build drop structures, a carpet of protective vegetation is used to protect the waterway from excessive erosion. The grade of the channel bottom is ordinarily less steep than that of a ravine, and there is usually less of a water flow than in the gullies discussed above. It would be appropriate to lessen the grade of the waterway by using a drop structure from time to time, but in grassed waterways the major emphasis should not be drop structures.

The type of vegetation employed is usually grass. In general a low grass which spreads is better than clumps which tend to concentrate water flow around them. Perennial vegetation is preferred to annuals because of the protection afforded during the early part of the rainy season, and the lower labor requirement.

In the U.S. the grassed waterway is usually lost to crop production with the exception of hay under carefully controlled conditions. This makes it less interesting from the standpoint of production incentives; however, under certain conditions sugar cane could be planted in portions of the field where water is drained through a wide and gently sloping area. The intervals between drop structures could also be put into sugar cane.

Another adaptation might be to establish cane in dense 50 cm wide strips across the waterway and up the sides every 4 or 5 meters. Some annual food crop could be planted in the alleys between the perennial cane. This would be a hybrid treatment combining the drop structure with the vegetative waterway.

## Cultural Practices

Cessation of burning off. It is extremely important to "not burn." The practice has been widely adopted throughout all animator zones. This is perhaps the single most important innovation precipitated by the project.

The protective cover offered by the residues of former living plants is extremely valuable in reducing soil erosion. It protects the soil from the bombardment of the raindrop. It soaks up water that would otherwise run off. It slows the runoff which does occur and causes suspended soil particles to settle.

Perhaps even more important, soil should be alive. Earthworms, insects of all kinds (most are not harmful to humans or crops), humus (the best of all fertilizers), along with billions of micro-organisms all contribute to a "living fertile

soil" with good structure. The residue of former living plants is the primary source of the elements required to provide a conducive environment for living organisms.

One of the primary problems in burning is the resulting lack of soil fertility. Virtually nothing is returned to the soil when all crop and weed residues are burned. All the soil nutrients which went into the production of the burned vegetation are reduced to ashes and lost. Farmers cannot take and take from the land, never putting anything back, without severely depleting the soil.

A severely depleted soil is highly subject to erosion. There is insufficient vegetation to protect the soil, and the organic content of the soil is very low. A primary improvement takes place when the organic content of the soil is augmented. The soil's ability to infiltrate and store moisture is increased.

If the crop residue is incorporated directly into the soil, there is a temporary tie-up of available nitrogen needed to decompose the organic matter. If, on the other hand, the crop residues are composted or used as mulch, this temporary disadvantage can be overcome.

Mulching and management of crop residue. Not burning makes crop and weed residue available for management. Mulching is a technique used to benefit from that availability. The advantages of mulch farming are the following:

- protection from drying, crusting and cracking by the sun,
- hindrance of weed growth,
- conditions conducive to earthworm propagation.

Earthworms improve the permeability of the soil by virtue of the holes they create. The excrement of the earthworm is several times more fertile than the surrounding soil. The worms are capable of "eating" smaller bits of crop residue on the surface of the soil, thereby incorporating it into the soil. Straw placed on the surface of soil containing earthworms can disappear in a short period of time. If there is nothing to eat, there will be no earthworms.

Compost. Compost produces humus, renowned as the best form of fertilizer in existence. Everything that was once alive is eligible for the compost pile. The composting action takes place much more quickly if the ingredients are in the form of small pieces. The process requires a carbon to nitrogen ratio of 25 to 30 in order to produce ideal compost. Fortunately, this translates to approximately equal layers of dry material and green plant material. Four to six inch layers of the two materials are alternated in the pile. Garbage can be mixed in so long as there is no glass, plastic or metal. Ashes, crushed bones and manure are all excellent components. The leaves from trees contribute scarce nutrients pumped from deep in the soil

through the roots, trunk and stems.

There are those who advise adding a thin layer of soil along with the dry and green layers. Others say no soil should be used. From personal experience, it seems that if soil is added, it should be in very small quantities. Too much soil inhibits decomposition. It should also be the richest soil available. Sand, for example, does nothing for the compost except make it heavier.

As the material is put down in layers, it needs to be watered. Water should be added every few days to be sure the material maintains a damp condition (but not wet or soaked). Piles on the surface are preferred to pits in the ground since compost should be well drained.

It is best to build up the compost pile one layer at a time, or the whole pile at once, rather than to add small quantities daily; however, this principle should not be allowed to interfere with reclaiming all eligible material for composting. Ideally, the size of the pile should be at least 1 cubic meter - the bigger the better, within reason. Small piles have too little "core volume" where the vigorous decomposition takes place.

Decomposition is due to aerobic bacteria when oxygen is present, so aeration is important. Turning the compost pile speeds up decomposition. Turning every 2 to 3 days is optimal but not absolutely essential. The turning process can decrease decomposition time from a year or so to a month if properly done. The action of aerobic bacteria causes the pile to heat up to a temperature of 60 to 70 degrees centigrade - high enough to kill harmful pathogens or parasites if maintained for at least a week. After turning or mixing, water should be added to the material if it is too dry. After turning the pile, it will heat up again within a few hours.

Some experimentation is required to find exactly what works best for each farmer's situation. If there is too much dry matter, the process takes place far too slowly or does not completely decompose. If there is too much green material, the process can turn anaerobic and produce spoilage. If flies are drawn to the pile and/or it has an offensive odor, the pile needs more dry matter.

The compost is ready for use when it has an earthy odor and is dark brown in color. Individual components will no longer be distinguishable. The best use of the compost is obtained when it is incorporated by spreading it evenly on the surface and spading it into the soil. It should not simply be spread over the surface like mulch. Alternatively, the compost can be mixed into the soil around individual plants or trees. It is essential in soil mix used in tree or vegetable nurseries.

Why is it that farmers fail to take advantage of the technique of composting? First, many do not realize the

importance of returning all unusable plant and animal material to the soil. They simply fail to recognize that failure to do so causes the soil to progressively degrade. The groupman and kongre meetings provide excellent forums for the education and motivation needed to overcome this problem. Secondly, farmers may be discouraged when comparing the quantity of compost easily produced with the amount needed to significantly alter conditions on several plots of land.

Material for composting is available year round in great quantities. The only thing required is the labor to gather it. At certain times of the year, enormous quantities of compost can be produced. During the dry season the predominant material is dry, and during the rainy season the predominant material is green; however, cane residue is wasted during the dry season and it could be substituted for the green material. It is difficult to stock green material for the dry season, but it should not be difficult to stockpile dry material for later use during the rainy season.

Recommendation. The project must motivate farmers to fit composting into farm conservation planning. It is absolutely essential to feed the land. The cost of commercial fertilizers is prohibitive for most peasant farmers. Composting is therefore imperative.

Manure. Some animal manures have more value than others, but all are free sources of fertilizer. Manure is best utilized as fertilizer when passed through the composting process. Many of the benefits are lost when it is simply left on the surface to dry and decompose. It can be used as a partial substitute for the green component of composting (both contribute nitrogen).

Recommendation. In the project area, manure is a precious resource which is going to waste. It would be useful to undertake a study of local livestock management habits in order to develop an approach to manure reclamation.

Green Manure. Green manure usually consists of soil-building, leguminous plants which can be turned under during the crop year, most often with a plow, in order to bury the succulent leafy portion of the plant. Alfalfa or one of the clovers are commonly used. The turn under phase must take place early (a month or so) before planting another crop, so the material can decompose without causing problems for the new crop.

Peasant farmers do not have the luxury of investing scarce labor and capital for such an endeavor. It may be useful to encourage farmers to bury peanut, cowpea and bean vines while they are still green and succulent immediately after harvest.

Cover crops and conservation tillage. Green manure crops are often used as cover crops to protect the soil from wind erosion before being plowed under. In other circumstances, rye grass is used to provide late fall, winter and early spring

cover. The new crop to be planted is seeded directly into the rye by cultivating a strip ahead of the planter furrow opener, or by spraying with a herbicide to stunt or kill the rye.

In rural Haiti, a parallel practice might build upon native grasses or non-noxious weeds which spring up early. The grass would offer some protection to the soil surface during the intense and violent rains which characterize the beginning of the rainy season. Instead of hoeing the grass in preparation for planting, the farmer could just hoe/till the spot or strip where a hill or row is to be seeded. Later, when the seeded crop is established, the grass could be removed to prevent competition.

This illustrates a viable application of "conservation tillage" in which a major emphasis is maintaining/managing cover (living or dead) on the surface of the ground during the early stages of planting a crop. The contrasting approach is "bare ground, clean tillage." Conservation tillage was sometimes called "trash farming" a few years ago because of the effort to retain and utilize the residue of a previous crop.

Contour farming and contour strip farming. On gently rolling terrain, contour farming alone can sometimes control erosion. (Its opposite is known as "farming up and down the hill.") In its simplest form, this involves orienting the rows planted in the same direction as the contours. The water collected between the rows of plants is encouraged to stay in the field rather than rush headlong downhill. Contour farming has now become a basic principle employed for all types of terrain.

Strip farming utilizes alternating bands of tall and short crops oriented perpendicular to the direction of the prevailing wind in order to prevent wind erosion. Contour strip cropping is a modification of this used for control of water erosion. The alternating bands are planted in crops which are closely spaced, develop surface cover rapidly, and/or have a dense root system. The result is a band which is resistant to water erosion. The alternating band often contains a crop which is less resistant to erosion and may be a higher value crop.

Obvious applications for the Maissade area are alley cropping between trees (living barriers). The resistant band need not be trees. Bands of sugar cane are also effective.

Contour ridges and furrows (biyon/siyon). This practice is a natural extension of contour farming. A conscious effort is made to form moderately high ridges separated by moderately deep furrows - all oriented in the direction of the contour. A system of "mini-terraces" covers the field. The spacing between ridges is approximately 60 to 100 cm. For some crops and conditions seeding is done in the furrows, and for others the top of the ridge is planted. Water is trapped or retarded in the field due to surface storage in the furrows, and the lack of a direct path straight down the slope.

Tied ridge system on contour. A further modification of the ridge and furrow system occurs when furrows are blocked or dammed to trap the water in miniature basins (see Figure 23). The practice can greatly reduce runoff during early stages of the rainy season when the bare soil is exposed to violent rainfall. The water which would otherwise runoff is retained until it soaks into the soil or evaporates. The tied ridge system is sometime called "artificial surface storage."

The distance between the ridge ties, or furrow blocking, can be as little as 1 meter or as far as 3 meters. As the season progresses, the ridges become less pronounced and the furrows fill in with sediment, but a major achievement has already been accomplished. It is necessary to reform the ridges and furrows the following year, but it is not necessary to take out the system and completely reestablish it. It can simply be rebuilt.

Recommendation. The practice of tied ridges on the contour is absolutely essential for the project.

Scoop Holes and hole punching (pike te). These two related practices fall into the category of creating "artificial surface storage" for potential runoff. A wash basin size hole is scooped out of the ground; the soil is placed around the downhill portion of the hole. It is best to stagger the holes across the slope so that when one hole is filled with water, it does not dump its excess directly into another hole downhill. This site preparation is used prior to planting trees on a hillside. The method has been employed on hard, barren, flat terrain in order to trap water, residue and weed seeds. This creates small evenly distributed cells of plant growth. The practice can be used in conjunction with many of the other practices.

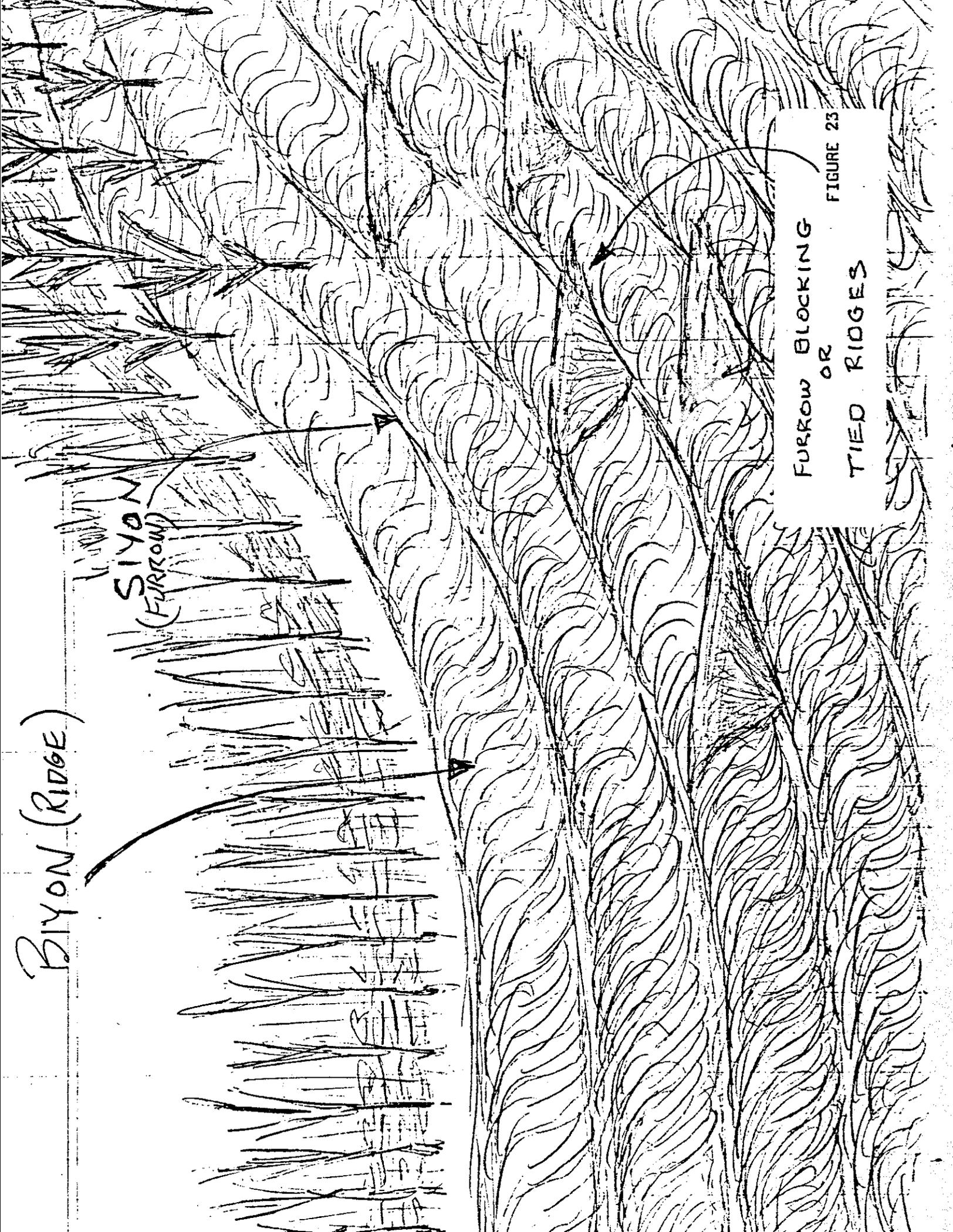
Hole punching (pike te) is occasionally practiced in the project area. Hole punching achieves essentially the same purpose as scooping, but consists of many small holes punched with a pick axe, iron bar or wooden pole. The holes, whether scooped or punched, tend to fill up over the course of the rainy season. The scoop holes can sometimes be improved, enlarged or maintained the second year, but the punch hole process must be repeated annually.

BIYON (RIDGE)

SIYON  
(FURROW)

FURROW BLOCKING  
OR  
TIED RIDGES

FIGURE 23



## DEMONSTRATION AND TRIAL PLOTS

According to the terms of reference for evaluation, demonstration plots are to be evaluated as to "the technical soundness of the techniques exhibited, and for their presentation vis-a-vis technology transfer to the local peasant farmers". Experimental plots are to be considered in the following terms:

- the appropriateness of on-going experimentations,
- whether these experiments are focused on generating data pertinent to project objectives,
- whether the experimental design generates statistically valid results.

Review of project correspondence indicates a degree of controversy and confusion regarding the project's experimental plots. Criticisms center mainly around inadequate experimental design which renders the results invalid from a statistical standpoint.

For the evaluators the key question is the following: Why is an extension oriented project attempting to conduct an experimental research program? Nothing specific was found in the Cooperative Agreement which mandated any type of experimental or trial plots as a part of the project's responsibility.

The agreement does address the following information role of the project:

...generating a wealth of empirical information, both quantitative and qualitative, concerning the basic feasibility of the major innovative aspect of the program, i.e., unifying, in a single project, a 'bottom-up', participatory approach to community mobilization and institution-building, on the one hand, and the pursuit of externally identified ecological objectives, on the other.

The primary thrust of this statement is the merging of two sets of objectives, one ecological and the other institutional. The project purpose makes reference to "...field-testing and deploying effective participatory approaches to soil conservation and technology transfer." This statement also does not refer to experimental research, but rather to developing better methods for extending soil conservation practices.

### Types of Plots

There are at least 5 types of plots which could play a role in assisting the project to achieve its objectives:

- (1) Experimental Research Plots
- (2) Project Trial Plots
- (3) On Farm Trial Plots
- (4) Project Demonstration Plots
- (5) On Farm Demonstration Plots

Experimental research. Experimental research is oriented to statistical proofs and levels of probability. It identifies variables which may affect the results, controls for selected variables, and attempts to eliminate the effects of other variables. A valid experimental design is required prior to conducting the experiment. The researcher determines randomized plot location of replications for all treatments. Monitoring and data collection are followed by analysis to determine at what level of treatment the experiment failed or succeeded, and why."

Finding. For the SCF project, experimental research plots are out of the question. The project has neither the time, the location, the budget nor the personnel to carry out formal experimental research. To suggest, as some have, that little additional time would be required to do so is very unrealistic.

Project trial plots. Project trial plots have a much simpler purpose. They are meant to indicate, qualitatively or quantitatively, which varieties or techniques are valid or promising for a given location and objective.

Project trials are meant to find out what works and what does not work. The main purpose is to avoid failure in the farmer's field. It is important to find out what works best. Will a species be able to adapt to local climate and cultural practices? It is a valid finding to conclude that two or three trials appear to be the best ones. If it is possible to control the more important variables, this is desirable. If this is not possible, the results are not necessarily invalid. If measurements can verify judgements made, so much the better, but qualitative evaluations are also valid.

Two important distinctions are often made regarding field trials. Elimination trials determine varieties and techniques which do not succeed and should be dropped from future efforts. Adaptation trials attempt to determine the conditions under which promising varieties perform best. Even the latter type of trials require more personnel and resources than are available to the project, so any such efforts must necessarily be limited.

On-farm trials. On-farm trials are a different story. Only varieties or practices already judged to produce good results are considered for use. People assume that some improvement will result. Failures are to be avoided in the public eye. For farm trials the conditions can not and

should not be controlled to the same extent as other trials. This is acceptable because the goal is to learn if the farmer, in his real world, can obtain similar favorable results.

There is always some risk; therefore, the farmer needs some insurance against reduction of his meager income. First, the portion of his farm used for the trial should be kept small in relation to the land farmed in the traditional way. Secondly, it is normal that the project reimburse the farmer for losses to be determined with reference to farming in the usual manner.

Project demonstration plots. All demonstration plots are essentially show places. Demonstration plots under the direct control of the project are paid for by project funds in order to show others what should be done and how it should be carried out. The project demonstration plot is used for training purposes. Any harvest is sold by the project to offset its plot cost.

On-farm demonstration plot. The on-farm demonstration plot is also for show, but it is established on a farmer's land at the farmer's request or voluntary agreement. The farmer carries out the demonstration with the project's help at no cost to the project other than technical assistance and perhaps the use of special tools or seeds. The farmer accepts any risk involved. Any benefits of the trial should go to the farmer.

#### Recommendations.

(1) Any of the last 4 types of plots are appropriate for the SCF project, but experimental research should not be undertaken. The words "experimental" and "research" should be dropped from all future reference to the project related trial or demonstration plots.

(2) The plots carried out by the project should be clearly identified by single category. The various types of plots should not be mixed except under very unusual circumstances. Everyone involved should be very certain of the nature of the plots undertaken, the responsibilities thus incurred, the supervision required and the results expected.

#### Project Demonstrations and Trials

Project demonstration plots. In 1987 demonstration plots were assigned to the 8 animators and 16 Limbe trainees (volunteer monitors and local farmers). One of the animator plots was a reasonably good demonstration site. The Limbe trainees applied the techniques they learned in field gardens but did not establish formal demonstration plots. The 1988 work plan calls for 15 demonstration plots; however, the plan appears to confuse on-farm trials with on-farm demonstrations.

Recommendation. Project staff should re-assess the demonstration site program and develop a new approach. Demonstration sites should be carefully planned, supervised and distinguished from other types of plots. They should be integrated into the training program and reflect the range of treatments emphasized by the project.

Project trial plots. Four trial sites were established in 1987: Nan Glasi, Savanne a Pal, Madame Joie, and Bassin Cave. A fifth trial site is planned for 1988 at Dos Bois Pin. The two best trial gardens were those established at Nan Glasi and Savanne a Pale. The following trials were carried out at project trial sites:

- varieties of sugar cane resistant to smut
- corn
- sorghum
- pigeon peas
- forest species, both native and exotic, planted for the following purposes:
  - live borders,
  - perimeter plantings,
  - construction purposes,
  - livestock forage,
  - fuel.
- living barriers utilizing several species,
- direct seeding germination studies using various treatments:
  - seed preparation,
  - planting depths,
  - row configurations.
- contour ridges and furrows,
- inter-cropping,
  - companion crops,
  - forage grass propagation,
- on-contour practices:
  - rampay,
  - living barriers.

Findings. The trials are appropriate. The studies are central to the issues being addressed by the project and responsive to the needs expressed by the peasants. The trials were effective -- even very effective -- including those with apparent negative results. For example, at Bassin Cave a variety of short season sorghum matured early as expected and was destroyed by birds because it was the only grain ripening at the time. At Mme Joie, the living barriers did not survive, suggesting that the circumstances and choice of species were not appropriate. All the trial work would have been more beneficial with closer supervision from beginning to end. It has proved difficult to supervise distant trials due to travel conditions.

### Recommendations.

- (1) An experienced agronomist is needed to supervise project trials and demonstration plots. These plots need to be more closely supervised.
- (2) The results of the 1987 trials should be reported as soon as possible. Both failures and successes are significant.
- (3) Fertilizer trials should be planned and carried out. The project should determine if the use of commercial fertilizers will be profitable. Trials at the 125%, 100%, 75%, 50%, 25% and 0% levels would be ideal for the 2 or 3 most important crops. In the absence of soil tests and fertilizer recommendations, the best estimation should be used. It is important to start these trials as a means of informing the credit program regarding use of credit for purchase of fertilizer.
- (4) Use of natural fertilizers such as manure and compost should be the subject of trials. The primary cost is labor. The use of natural fertilizers offers one of the few chances to recycle the by-products of agricultural production. The project should find the best ways to obtain quick, high quality compost in order give the best possible advice to farmers. This should include composting of tree leaves in order to benefit from nutrient pumping by the taproots of trees.
- (5) Eliminate the cost/benefits study of various erosion control structures as noted in the 1988 trial plan. This is the realm of economists. Peasant farmers will not necessarily be convinced by a favorable cost/benefit ratio. Work instead with manure/compost as this will yield helpful information.
- (6) Caution is advised on trials of open-pollinated corn varieties which are planted side by side. They will cross-pollinate and can produce very uncharacteristic results.

## AGRICULTURAL PRODUCTION AND ANIMAL HUSBANDRY

Conservation farming does not consist of isolated practices, nor is the concept fully defined by a package of conservation practices. The SCF project emphasizes conservation farming as an integrated system of production in which the peasant household is the basic economic unit. The project provides agricultural extension services to protect the soil and water resource base of this system. An important part of this task is technical assistance in the area of agricultural production and animal husbandry.

### Production Practices

Companion planting and inter-cropping. These practices are important to the project because of their value for erosion control and their ability to increase overall farm production. The two practices are similar, but there are notable differences.

(1) Inter-cropping consists of one of the following:

- planting alternating rows of two or more crops,
- alternating plants within the same row,
- planting two or more crops in the same hill.

In general, the mixing of crops, or inter-cropping, should result in higher production per unit of land. Each of the crops may yield less than if the entire field had been planted with it alone, but when the yields of the two crops are added together, the production from the two should be more valuable.

The two crops need not be planted at the same time nor mature at the same time. There will be an overlap in growing cycles. One crop may mature far earlier than the other even if they are planted at the same time. One crop may be seeded a few weeks before the other is harvested.

(2) The mixing of crops is companion planting at its best when both crops have a mutually beneficial effect on each other. At least one of the crops derives a benefit from the presence of the other. Examples of companion planting include the following:

- Climbing beans able to fix nitrogen from the air, planted with corn as a pole for the bean vine.
- Horseradish planted among potatoes, increases potato growth.
- Beans and cabbage together, increases the production of both.

- Tomatoes thrive when planted with carrots, cucumbers, onions, parsley, peppers and chives; however, corn, cabbage and potatoes are enemies of tomatoes.
- Dandelions and plantains are companion plants.
- Tall leafy plants (especially corn) provide shade for other crops which do not tolerate intense sunlight.
- Many herbs and flowers give off an odor which is capable of repelling or confusing insects. Basil (herb) repels flies and mosquitoes. Pot marigold (flower) deters the tomato worm and several other insects.
- At least two flowers are known to exude products from their roots which help crops and trees. Marigold (flower) deters nematodes within a 1 meter radius of the plant. The nasturtium acts to repel certain insects, and is planted with various vegetable crops. In the case of other insects, it attracts them to itself and away from crops. When used as a trap plan, the insects are picked off and killed.

Plants that "give" and plants that "take." Different crops make different demands upon the soil. Food crops may be divided into "givers" and "takers":

(1) The takers are heavy feeders which draw a relatively high amount of nutrients from the soil. Grain crops are heavy feeders. There are also light feeders which draw nutrients from the soil in lesser quantities. Most of the root crops are light feeders.

(2) The givers are crops able to help by building up soil fertility. Members of the legume family are in this category: peas, beans, alfalfa, clover, peanuts and soybeans. While growing these plants are able to fix nitrogen from the air with the help of soil bacteria found in small nodules attached to the roots. the fixation process results in nitrogen forms which are able to be used as fertilizer by the plant itself, and made available for other plants growing at the same time or later. In a region where commercial fertilizer is scarce, or expensive the farmers should utilize the givers to the utmost extent possible.

Crop rotation and crop succession. There are a number of reasons for annual crop rotation on a given parcel of land. Some of the major reasons are discussed below:

(1) Alternating "givers" with "takers" allows the land to rest and rebuild on a regular basis. This is especially

important where farmers do not have the luxury of leaving land idle (fallow) for several years to recuperate. When used along with the applications of compost and manure, crop rotation can maintain the fertility of the soil.

(2) Insect control and plant diseases are much less of a problem when the same crops are not planted in the same place each year. A particular species of insect or disease tends to become more and more of a problem when the host crop is grown continuously on the same plot. If the crop is changed, the pest's cycle is broken.

(3) Weed control can be enhanced by crop rotation. The cycle of going to seed, dormancy and germination can often be disrupted by changes in planting schedule, tillage and competition. When certain weeds are allowed to grow in the same field year after year, it is possible for them to host diseases and insects which attack the same crop year after year.

Rotation of crops from one plot to another on an annual or seasonal basis assists nature in keeping the natural forces in balance. Rotation should take place over a period of three to four years, with a change each year. Succession interplanting is implemented during the same growing season when an early crop follows another late crop on the same plot. Combining annual crop rotation with succession interplanting is the most productive long-term use of the land. It also provide the best protection for crops and soil.

Perennial vs. annual crops. The advantage of perennial crops is that the ground does not have to be prepared each year. The loosening of the soil in preparation for planting, although very necessary, can render a soil vulnerable to being washed away. When planting annual crops this risk must be taken each year: The soil goes through a period when the planted crop's foliage is too sparse to protect the soil surface, and the roots are not yet sufficiently developed to hold the soil in place. This problem is largely eliminated with perennial crops.

The disadvantage of perennial crops is that they remain in the same location for several years and are thus subject to many of the pest problems mentioned earlier. One solution is to employ bands or strips of perennial crops along the contour in place of covering entire plots with perennials.

Improved Varieties. Where local traditions and climatic conditions dictate the planting of large areas in a single crop, the use of improved resistant varieties is an effective means of pest control. Such is the case with sugar cane in the Maissade region. The smut disease appears to be transmitted by air born spores. It would be extremely difficult to prevent its spread throughout the area. Finding a resistant variety is virtually the only hope. The project's efforts to assist in this quest are entirely appropriate. Even when a resistant variety is discovered, it will take some years to distribute it. This

effort should be given high priority.

### Recommendations.

(1) Corn: Improved varieties of corn would be appropriate. The local variety is not a high producer, but it is resistant to many pests and liked by the people. The project should not undertake a corn breeding program, but it would be appropriate to seek contact with other corn improvement projects. Two types of improved varieties may be advisable:

a) A fast developing (ultra short season) variety would provide quick food during the hungriest part of the year.

b) There is a need for a longer season, higher yielding variety in keeping with the local taste preferences but resistant to the local pests.

(2) Pigeon peas and other members of the pea-bean family: The present project efforts with pigeon peas should be continued. Whatever can be accomplished with the pea-bean family, including soybeans, will strengthen the ability of the people to plant members of the "giver" category of plants. This is one of the few economical tools at hand for carrying out the companion planting, intercropping and rotation suggested above, and is therefore very important for the project.

(3) In order to make significant progress in variety improvement for corn, peas and beans, it will be necessary to seek outside assistance similar to the present arrangement for sugar cane trials.

### Animal Husbandry

Recommendation. Project efforts in this area should continue. The strengthening of animal husbandry is vital to achieving "sustainable" agriculture on the peasant farm.

The people readily express need for more livestock. Animals are in a real sense the bank account of Haitian peasants. Goats and pigs are in demand. Horses, mules and donkeys are valued as beasts of burden and for breeding. Back ulcers due to saddle abrasion are a major health problem for these animals. Since open range grazing was abolished in 1962 the quantity of cattle has diminished due to limited access to forage. Cattle are an important source of animal traction for sugar grinding mills, ox carts and plows. ODBFA has given 8 plows to project related groupman.

Animal health program. The project's animal health program is focused entirely on disease prevention, vaccination and training. This is very appropriate and should be continued. The primary animal health problem is malnutrition. Malnutrition weakens the animals and makes them vulnerable to disease. There

is a great need for nutritious feed and forage, especially during the lengthy dry season.

Grazing and containment. Animals are tied individually to a stake or tree with a rope long enough to permit grazing. The tied animals are generally moved twice each day. Much less control is exerted after the crops are harvested. The animals are left to graze in harvested fields during the dry season. An important source of local disputes is the problem of animals breaking loose and damaging crops in the period prior to harvest. Fencing consists almost entirely of living hedgerows using spiny types of vegetation unpalatable to animals.

Manure and waste management. Manure is a valuable resource produced from the land. It should be utilized for increasing soil fertility and food production. The manure or waste from all animals is utilizable, especially if composted. This resource is conspicuously underutilized in the project zone.

Recommendation. The project should promote the re-cycling of animal wastes. A fundamental change in peasant attitude and behavior is required. This is partly a social and partly a technical problem. Studies should be undertaken to develop a practical method for peasant farmers to collect and manage animal wastes.

Livestock improvement. The project has only a limited capacity to improve livestock breeds. The project has used Winrock goats and improved breeds of hogs as prizes for project sponsored activities. A number of groupman have also pooled their resources to acquire improved breeding stock. The project should respond to groupman needs while maintaining its current low key approach to animal improvement. The most important project role should be a mediating role - linking farmers with existing programs for animal distribution and livestock improvement.

Animal care. The project sponsors training in animal care, especially swine husbandry. The feedback from training recipients encountered by the evaluators suggests that the short-term training courses have been very successful. This type of agricultural extension training should by all means be continued for new participants and for follow-up of those already trained. Such training should help to alleviate problems of animal malnutrition. It should enable individuals to more profitably care for their livestock, and increase the survival rate of adult and infant animals.

Recommendation. A consultant competent in livestock forage and pasture management should be engaged to assist the project in developing a systematic approach to sustainable, year-round livestock production. Major aspects of the consultant's work should be the dry season nutrition problem, live fencing, and pasture management which protects the soil.

## School Gardens

Overall, the project works primarily with adults through the groupman system. In contrast, the school garden program works with the schoolchildren of 4 primary schools. The major activity is planting and caring for school based vegetable gardens. The program had no tangible results in 1987 due to political unrest and the disruption of school activities.

The school program is supervised by one of three professional staff persons employed by the project in Maissade. This agronomist is also responsible for other training programs, and assists in supervising animators and technicians. All three of these program areas have inadequate levels of supervision and personnel support.

### Recommendation.

(1) In the broader scheme of the project, the school garden program should have a lower priority rating than groupman outreach, agricultural extension, training, field supervision, and re-orientation of the project as it enters a new phase of extension and development. Given this situation, the school program should be dropped until such a time as the other more pivotal program areas can be properly staffed.

(2) As an alternative to the school garden program, the project could assist rural schools in finding suitable educational materials concerned with agriculture and the environment. Rural school teachers could also be sent for short term sessions at the Limbe training center.

## Women's Vegetable Gardens

In terms of the overall thrust of the project, women's gardens should have a higher priority than school gardens. The peasant farm system in Haiti treats vegetation of the house-and-yard in special ways. Field gardens near residential compounds have food crops more closely linked to supervision or harvest by women. Some peasant women actively manage field gardens, a domain of activity which is generally dominated by men. All of this suggests a special role for project extension focused on kitchen gardens and women's production roles in agriculture. The problem with carrying out such a program at present is two-fold: 1) inadequate staffing, 2) need for program revisions.

### Recommendations.

(1) Adequate staffing of primary field extension activities should be implemented before continuing the women's vegetable garden program.

(2) In the interim, this program should be re-studied, revised and properly staffed with a view to expanding its scope.

(3) The project should recruit at least one qualified female animator and/or agricultural technician to focus on program efforts devoted to women's agricultural activities. agriculture.

(4) Consulting support should be sought to study the agricultural production roles of women in rural Maissade, and to assist the project in developing an appropriate outreach strategy.

(5) The thrust of activities in this program area should be broader than vegetable gardening. It should take into account the specialized roles of kitchen gardens, the botany of the house-and-yard, and nearby field gardens.

(6) Some thought should be given to specialized vegetable gardening (for the internal market, probably not for export) as a cash crop in the context of the proposed irrigation works of Bassin Cave and adjoining areas. This should be assessed in light of onion and shallot production on irrigated lands in other plateau areas such as St. Raphael.

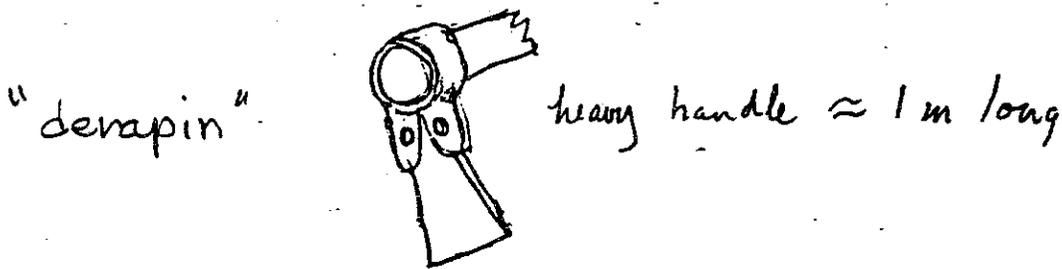
#### Appropriate Tools

The long handled hoe traditionally used in Maissade is well suited to shaving weeds from the soil surface, but poorly suited for any significant digging tasks. A number of recommended conservation practices require loosening and moving soil from one location to another, i.e., pick and shovel work. Both of these tools are hard to find and difficult to purchase because of the high cost.

With the help of a blacksmith in the area, project personnel designed a way to rivet a worn-out hoe to a cast off truck spring in order to make a digging tool called the "derapin". The tool is pictured in Figure 24 below. It is an excellent example of solving a problem (access to tools for conservation structures) with appropriate technology.

The derapin is a reasonably heavy tool with a wooden handle about 1 meter long. At the time of the evaluation, 25 had been made and distributed to project animators for trial and demonstration. A number of groupman members encountered seemed interested in the tool. It sells for 7.50 gourdes (\$1.50), a fraction of the cost of a pick. It can be employed to loosen and move the soil for a short distance using a chopping and pulling motion.

FIGURE 24. PROJECT DESIGNED CONSERVATION TOOL: THE "DERAPIN"



### Re-Vegetation Efforts

Trees. Project trees are planted by cooperating farmers for a range of objectives including household consumption as well as sale on the market; for polewood and planks, forage, firewood, charcoal, live fencing, and fruit production. All of these are important to peasant farmers. Trees planting is an important tool in the range of land use practices promoted by the project.

Enrollment and follow-up of tree planters is a very time consuming activity. The tree extension program is also demanding of staff time during critical periods in the agricultural cycle. Tree planting goals doubled between 1987 and 1988 (from 70,000 to 150,000 trees). This suggests a tendency for tree planting activities to outstrip the basic watershed management goals of the project. Due to its land management and technical assistance orientation, the project is in a special position to do careful species/site matching and tree follow-up. This capacity is threatened if the numbers of trees and farmers grow too rapidly. The project should use its scarce human resources for optimizing each farmer's use of the land, soil and water conservation, and careful site planning rather than for maximizing the numbers of trees planted. This approach should have the added benefit of maximizing tree survival.

### Recommendations.

(1) The project should carefully monitor the role of tree propagation efforts in order to maintain a proper balance in the agricultural extension program. The primary role of LORD I trees should be to serve overall project goals of conservation farming and watershed management.

(2) The project should carefully prioritize sites and zones where trees are the optimal mode of treatment, and assure proper matching of species to site.

(3) LORD I tree planting goals should be revised. The primary focus of tree planting should be privately owned land. Trees planting goals for public land should be dropped entirely. At present levels of operation, the project should set planting

goals of no more than 75,000 to 100,000 trees per year. This guideline refers to project trees distributed to farmers formally enrolled in the program.

(4) Trees should be planted on land which is securely held or controlled by the tree planter. Project staff should keep abreast of forest legislation and law enforcement practices in order to monitor tree tenure, and protect peasant rights to harvest the trees they plant.

Forage grasses. The project has established grass trials. The major grass species used in the extension program is napier grass ("zeb elefan"). This program should be augmented due to poor livestock nutrition, especially during the dry season.

Tree nursery program. The project distributes seedlings from a number of different sources: (1) Purchase from non-project nurseries, (2) purchase from groupman nurseries, (3) small project nursery used for demonstration purposes and trials, (4) un-subsidized backyard nurseries belonging to individuals and to groupman.

#### Recommendations.

(1) The project should continue to procure the majority of tree seedlings from outside sources, i.e., PADF and ODH (hardwood trees) and SHEEPA (fruit trees).

(2) The project should continue the staff's nursery program which serves as a trial site and demonstration site for training in nursery techniques.

(3) The purchase of seedlings from groupman nurseries should be dropped. This arrangement involves the transfer of funds. This tends to subvert the emphasis on natural or intrinsic incentives, and runs the risk of interfering with the project's philosophy of self-reliance.

(4) The project should further encourage the privately owned backyard nurseries. According to current plans, these nurseries will be subsidized only by furnishing bags. The project will not purchase trees from these nurseries.

(5) There should be a training program in simple nursery technologies, including propagation of vegetables, trees and living fence species.

## Technical Training

The project's overall training program is effective. The evaluators raised technical questions with a number of farmers and groupman members chosen at random. The general tenor of answers revealed that there had been a transfer of considerable information and a strong degree of enthusiasm for additional training.

Training is directed at animators, agricultural technicians, volunteer "monitors," groupman members and other neighbors and interested farmers. Responsibility for the overall training program is shared among the three professional staff members. A definite schedule for training is part of the annual work plan. Animators and technicians carry out many training sessions on technical topics when meeting with groupman at their regular meetings. The primary form of disseminating technical skills and information is in meetings with individual groupman in a member's yard or field plot.

Recommendations. The primary theme of the present evaluation is to focus and intensify current project activities in order to have a greater long term impact. In this context, the training program should continue as in the past, but its goals should be realigned to conform with this new emphasis as the project is extended.

(1) The training material used for all levels, should be edited and compiled into a syllabus. This material is now in the form of individual outlines filed away under the various topics.

(2) Training materials are an important feature of the environmental education and outreach "package" emerging from project activities. The edited materials should be viewed as a working syllabus and revised from time to time. Compiling, editing and revising this material takes time. The task of coordinating documentation of this training package should be given priority by one of the professional staff.

(3) By the end of 1988, a notebook should exist for every level of training undertaken, with sections devoted to all training subjects present and planned. This notebook should include all materials, texts and illustrations used and planned. Some of these materials should be available for popular distribution as "fiches techniques" or "guides groupman." All training materials created by the project should be written in Creole.

(4) The project should develop a technical library consisting of local and international reference books. The staff should assemble a collection of training materials available from other agencies such as PADF, CARE, Helvetas, Caritas, etc.

(5) The project should employ a qualified artist to illustrate technical pamphlets and posters. The project artist should be sensitive to the subtle issues of pictorial literacy in a non-literate setting. This involves a willingness to test sketches for comprehension, and carry out revisions and further testing with members of the target audience. The artist should have the capacity to work together with other staff members as a team member in the process of developing training materials.

(6) The artist will need supplies, equipment and an adequate work space. Access to a camera would be helpful in preparing visual aids and developing technical drawings.

(7) New personnel should be carefully trained in project methodology. They should demonstrate commitment to the project's philosophy of outreach, and sympathy to peasant farm clients before they are expected to perform. Completion of the syllabus noted in point 1 above will be helpful in orienting new staff and assuring continuity of training materials.

## ASSESSMENT OF PROJECT OBJECTIVES AND FUNDING

### USAID Mission Strategy

A review of the Mission strategy statement shows that the LORD I project directly addresses the most fundamental agricultural objectives:

- to increase agricultural production,
- to preserve and manage natural resources.

The SCF project is a particularly good example of the Mission strategy for watershed protection and hillside farming:

Watershed protection is therefore inseparable from the issue of appropriate hillside farming systems. Any hillside farming system, to be truly viable in the mountains of Haiti, must solve two general types of problems: protecting and restoring the fertility of the land, as well as augmenting farm income of the population living on that land

### Project Purpose

...to reverse the trends of environmental degradation on the hillsides of the Maissade Commune...through developing, field-testing and deploying effective participative approaches to soil conservation and technology transfer.

In terms of overall purpose and strategy, this project is well on target.

- (1) It is successfully fulfilling its purpose as a pilot project.
- (2) The project has demonstrated the validity of using increased agricultural production as the sole incentive for changes in land management. This motivational strategy has paid off in terms of peasant willingness to apply new soil and water conservation technologies in hillside farming.
- (3) Group participation: (a) The newly organized peasant groups in Maissade are effective channels for agricultural extension services. (b) They serve the goal of sustainability at the level of local institutions and individual farm practice. (c) Groupman savings serve an important complementary role to the agricultural extension program by promoting peasant investment in agriculture, commerce, animal husbandry and agricultural processing.

It is not feasible to reverse environmental degradation within a short period of time. This is by definition a long range process which is difficult to measure at the macro level; however, the project is able to demonstrate, in concrete terms, the diffusion of behavioral techniques which serve the long range purpose of reversing environmental degradation. Evidence of peasant acceptance of these techniques is a more tangible indicator of project success than direct measurement of environmental degradation.

### Specific Objectives

Table 4 summarizes the project in terms of progress toward achieving grant objectives at the time of the evaluation. The findings for each general objective and specific output are then discussed on a point by point basis as stated in the Cooperative Agreement.

TABLE 4. Percent achievement of outputs according to current project statistics (2/29/88) and estimates for the end-of-project date (EOP 7/31/88)

Output	%
Percent disbursement of grant	32
Elapsed time as percent of life-of-project period	72
150 peasant groups organized	78
1,200 farmers enrolled	79
6,000 direct beneficiaries	71
\$60,000 of credit disbursed	0
180,000 trees planted on private plots (EOP est.)	122
170,000 trees planted on public lands	0
1,500 hectares treated: goal revised	--
Revision of hectare goal: 80,000 linear meters of terracing (EOP est.)	100
Watershed plan in process, est. completion 10/88	--
Environmental package developed, documentation incomplete, linked to completion of watershed plan (10/88)	--

Objective 1: To organize 1,200 farmers and 150 voluntary associations. At the time of the evaluation, the project had organized 942 farmers into 117 small peasant groups, thereby attaining 78 percent of the groups and 79 percent of the farmers targeted. The political events during the second six months of 1987 extracted a heavy toll on peasant organizations throughout the country. The Maissade project was no exception, and the pace of group formation plummeted during this period. If the rate of increase now returns to early 1987 levels, the project should come very close to reaching its original life-of-project objective.

Objective 2: To design and execute a program of environmental education. It seems clear that this objective is being met through the regional congresses held annually in eight project regions, and through the groupman training program in soil and water conservation. The evaluation team witnessed ample discussion of environmental issues in two regional congresses and in group training sessions. The content of regional congresses has been well documented by the project. This documentation shows clear identification of environmental problems by peasant group members. Formalization of the environmental education program depends in part on completion of the watershed management plan. Given the need for additional data to be generated by consultants, it is not feasible to complete this plan before October 1988.

Recommendation. The overall training package should be better documented. It should also have a more elaborate mix of training materials. The environmental training program should be formalized and documented as an integrated package.

Objective 3: To develop a comprehensive watershed management plan for the Bouyaha and Canot Rivers. This plan is not complete. There have been justifiable delays in developing the basic data base. The project staff has produced a draft outline of the plan. Technical consultancies have generated material which is pertinent for incorporation into the watershed document. Other essential information from consultants is not yet available. It is not feasible at this point to complete the watershed plan prior to the end of the original life-of-project period. With project extension, the plan could be finished by October 1988.

Recommendation. The scope of the watershed management plan should be revised downward to encompass the Rio Frio and Fond Bleu/Fond Gras catchment basins. It is not feasible for the project to make a plan for the vast area encompassed by the original objective. These recommendations are more fully elaborated in the technical chapter entitled "Watershed Plan.

Objective 4: To initiate the execution of the Watershed Management Plan in the last 18 months of the project. In effect it has required the first 32 months of the 36 month project to generate the experience necessary to determine a practical

approach to changing farm practice. A treatment package for improved land management is presently used in the project's zones of activity. These technologies conform to the language of the project purpose: to field-test and deploy participatory approaches to soil conservation. Delays may be attributed to the time required to adequately test these approaches, and to the social turmoil which interfered with completion of baseline documents dependent on consultants. Completion of the requisite Watershed Plan will require project extension. It appears feasible to complete this plan by October 1988.

Objective 4 also makes mention of higher order hillside farmer brigades for catchment basin management. The evaluation team has made recommendations regarding this approach. With a slight re-orientation of animation priorities, the project is now ready to undertake this effort on a selective basis. The groupman have evolved to the point where inter-group associations of various types are already in place. The plot based conservation treatments have demonstrated their possibilities. A more concentrated application of the new practices is now feasible. This will require identification of critical mini-catchment basins where the social opportunity is present for inter-parcel treatment.

#### End of Project Status and Outputs

Output 1: to organize 150 groupman averaging 8 members each, reaching 1,200 direct participants and 6,000 direct beneficiaries. The goal of 150 groups has already been discussed (Objective 1 above). The average membership for current groups is around 8 people. Unlike the household assumptions in the original goal, these 8 people per group are not necessarily members of different households with an average of 4 additional household beneficiaries per member. According to preliminary data from the socio-economic survey (by Calixte Clerisme), about 56 percent of all groupman members live in households with one or more additional members. These households may average 3 groupman members per household. This suggests that about 71 percent of the "direct beneficiaries" goal will be reached in the life-of-project period. The number would be significantly higher if one counted non-members who plant project trees, apply conservation technologies, cease burn-off practices and attend training seminars and congresses. There are no reliable statistics on this broader diffusion of the various components of the project's technical package.

Output 2: development of a minimum of 60,000 dollars in credit. The project has not yet given out credit to peasant groups or their members. Some progress has been made in planning a credit program and preparing a manual. There has been delay in credit planning and training due to the unavailability of the key consultant during the political troubles. The delay in implementing the credit program should not be considered a problem. Other credit programs in Haiti ceased to function

altogether during the political hiatus. The focus of credit as discussed in the project proposal is flawed. It would be inappropriate to use credit as the primary incentive for applying new conservation practices. Finally, it would have been inappropriate to introduce credit before peasant groups had (a) demonstrated adequate management competence, (b) acquired sufficient collateral from their own resources, and (c) expressed a need for credit.

Recommendation. Credit should not be given during the current life-of-project. The implementation of a credit program should only be undertaken with assurance of a two year project extension. Credit should not be used as the incentive for applying conservation technologies suggested by the project. Soil and water conservation should be its own incentive, i.e., increased production, and protection of the farmer's investment in the land.

Output 3: planting 350,000 trees on private holdings and other land. Given current planting levels, the project will have planted about 122 percent of the targeted goal for private plots. The output as stated in the Agreement also requires that about half of the trees be planted on land not belonging to project participants. This implies land that is not privately owned or controlled. Virtually none of the project trees will be planted in this way, thus the project will meet about 63 percent of the overall tree planting goal by the end of the current project period. As evaluators, we feel that it is ill advised to plant trees on state land unless there is a transfer of tree tenure and land access rights to private holders.

Recommendation. The primary focus of tree planting should be private land controlled by the farmer. The output goal for planting trees on other land should be dropped. Tree planting goals should not be increased precipitously. Tree planting should be retained as an important feature of the project, but it should remain secondary to the primary goal of soil and water conservation - in which tree planting is one of several possible land use arrangements.

Output 4: treatment of 1,500 hectares of fragile lands. This project goal will not be achieved. This is due to problems of (a) accurate measurement, and (b) defining what constitutes treatment. Area measures are important but virtually impossible to achieve with accuracy in this type of project. Linear measures suggested by the project are also incomplete indicators. At present levels of activity, the project will have achieved 100 percent of its revised goal - establishment of 80,000 linear meters of contoured terraces by the end of the life-of-project period. It is not clear how many hectares will be treated.

Recommendation. This target should be revised in keeping with the technical discussion in the chapter entitled "Measurement of Progress." Neither linear meters nor hectares provide adequate feedback or measures of achievement. Instead,

the project should focus on appropriate conservation treatment of (a) farm plots, and (b) mini-catchment basins, in order to derive new output goals.

Output 5: Haiti's first comprehensive Watershed Management Plan. This output has already been discussed in Objective 3 above. It will not be completed within the current life-of-project period. The estimated completion date is October 1988.

Output 6: An environmental education program and technology transfer package. See Objective 2 above. This goal has been achieved in good part although it is not adequately documented nor does it include sufficient training materials. The goal as stated is somewhat misleading since the approach must be tailored to particular sites and regions of activity. The general methodology for such a package is certainly transferable.

### Third Year Work Plan

The scope of work for this evaluation was written shortly after the third year work plan was accepted. At that time the evaluators were asked to review the third year work plan; however, the evaluation actually took place some months later when this request was less timely. The third year of operation is now close to completion. In any case, the work plan has proved to be very helpful to the evaluation process.

The project has proceeded generally according to the implementation plan for Year 3. Most of the goals and program areas mentioned in the third year plan are covered in other sections of this report. Goals not achieved at the time of evaluation include the following:

- (1) Certain training seminars, visits and festivals did not take place as scheduled due to turbulent political conditions.
- (2) Field trial data on cereals were not written up as planned.
- (3) The plan to select certain groupman for training as "local animators" has not been implemented.

Recommendation. The project should not attempt to measure erosion nor undertake a formal cost/benefit study of soil conservation structures as noted in the annual plan.

### Funding Levels and Long Range Planning

Findings. The effective date for the \$900,000 LORD I grant to SCF was July 27, 1985; however, the first AID voucher was not signed until 10/23/85, and project funds were first deposited

into the SCF account on 12/19/85, just prior to the end of year holidays. For all practical purposes the project began operations in January 1986, about 5 months after the effective date noted on the Cooperative Agreement. By February 29, 1988, the project had completed 72 percent of its allotted operational time with 31 months of field operations out of the 36 months calculated in the grant agreement.

By the end of February 1988, the project had disbursed a total of \$283,266, about 32 percent of the \$900,000 grant. See Table 5 below for a bar graph of SCF monthly disbursements. Since December 1986, the project has been spending at a rate of about \$14,000 per month. If the spending rate continues at this level through July 31, 1988 - the end of the contractual project period - the project will have spent no more than 40 percent of its grant (see Table 6 showing cumulative expenditures).

The project's spending rate is less than expected. It has disbursed only 32 percent of its funds during 72 percent of its allotted time frame. This suggests a number of possible spending options:

- Option A: Continue spending at present levels through the end of the current life of project period; return the balance of undisbursed grant funds, 60 percent of the grant, on July 31, 1988.
- Option B: Continue spending at current levels for another 44 months beyond 2/29/88, exhausting the grant by October 31, 1991.
- Option C: Extend the project for one year at current spending levels; return 42 percent of the grant on July 31, 1989.
- Option D: Extend the project for one year, increasing the rate of disbursement by 257 percent, spending the balance of the grant by July 31, 1989.
- Option E: Extend the project for two years at no extra cost, completing the current cycle of funding on July 31, 1990, with an average monthly expenditure of \$22,666 per month - a 58 percent increase over current spending levels.

Given the project's performance and untapped potential, the evaluators unhesitatingly recommend the Option E - extension of the project for another two years at no extra cost.

# TABLE 5. SCF MONTHLY DISBURSEMENTS

(LORD I) 1985 - 1988

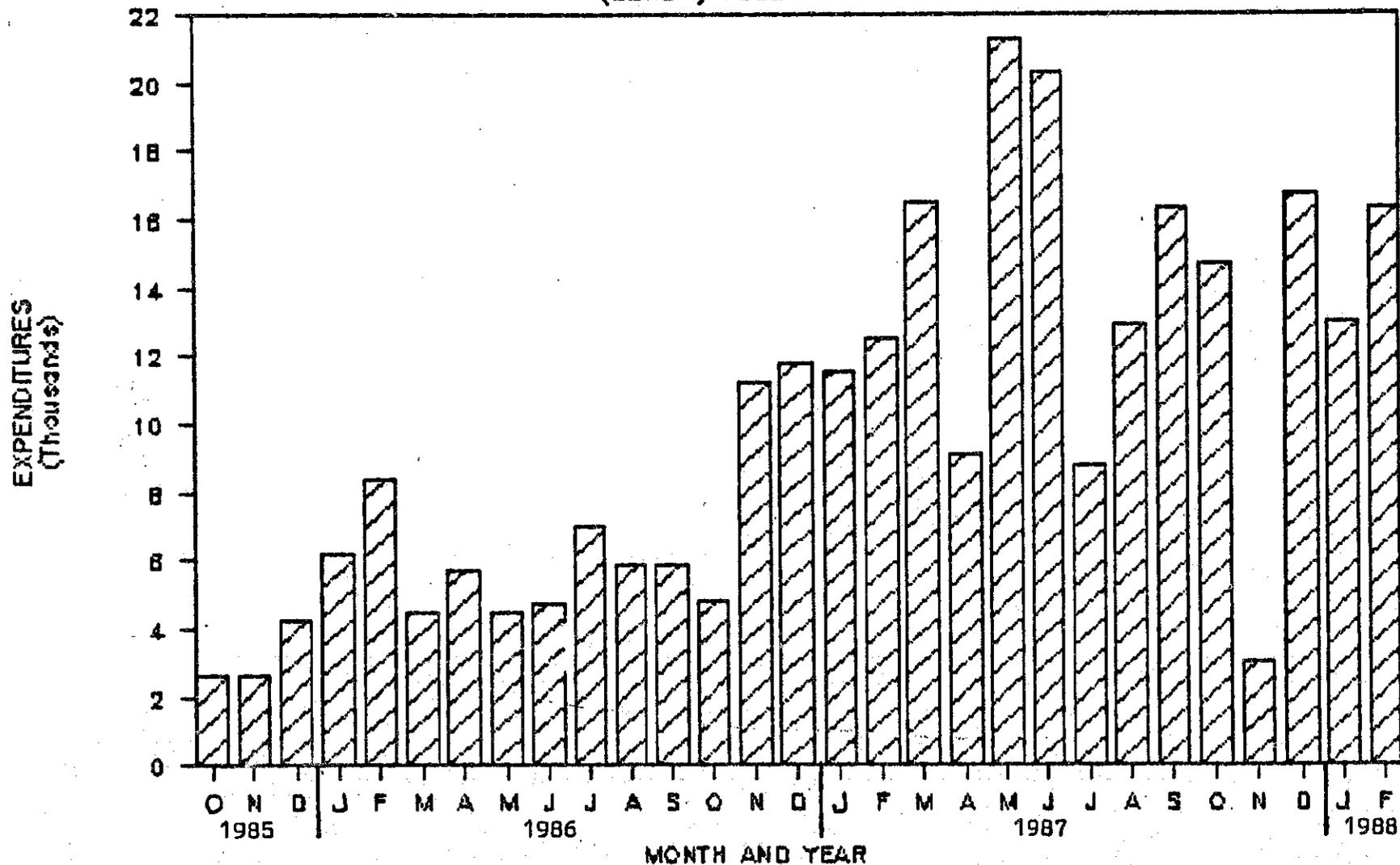
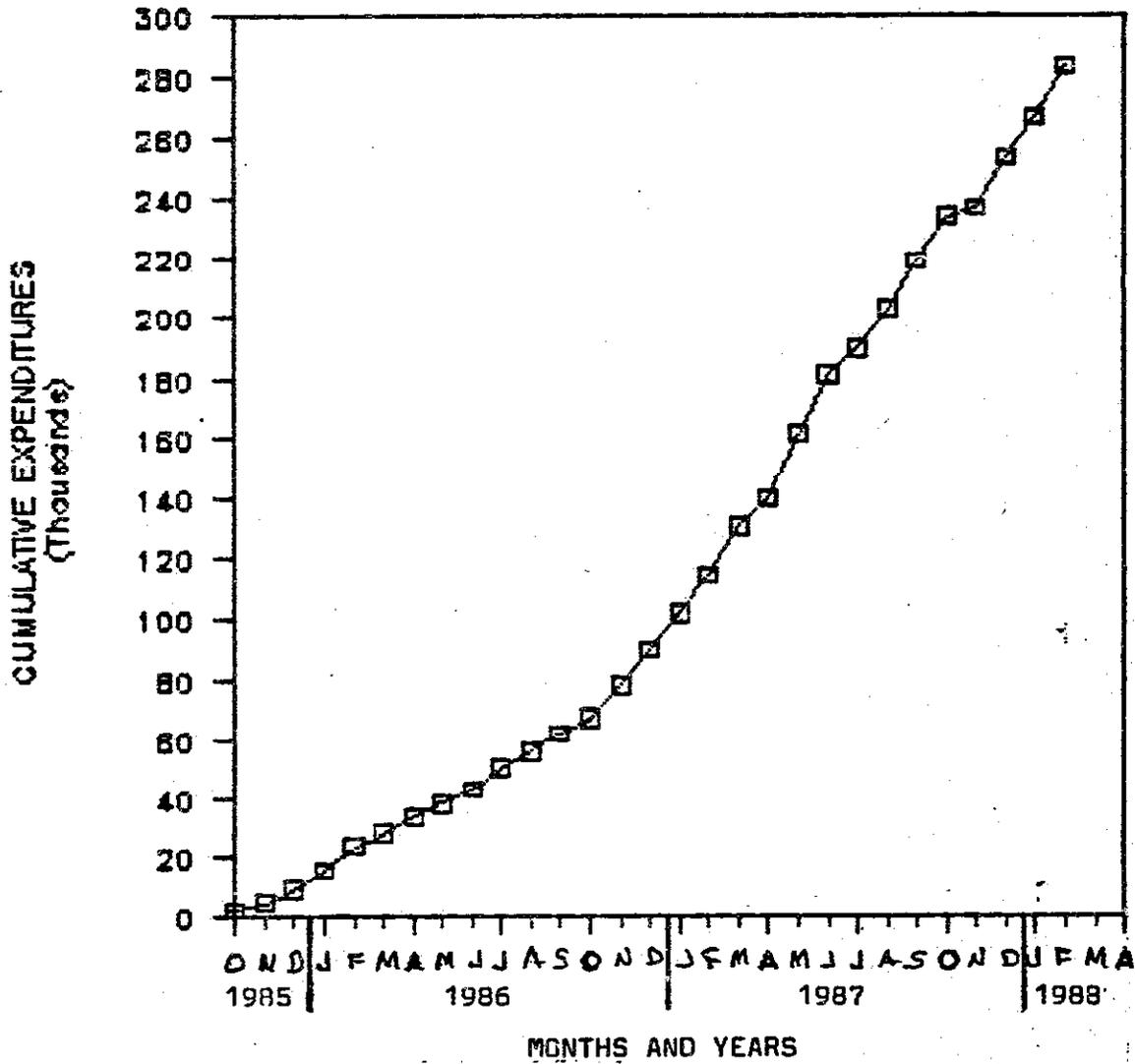


TABLE 6. CUMULATIVE SCF DISBURSEMENTS BY MONTH (LORD I),

1985 - 1988



The justification for a two year extension includes the following points:

(1) Competence: The project has demonstrated considerable progress at achieving its fundamental objectives. It is a project that works.

(2) Pilot Project. The project is generating useful information. This is a complicated learning process involving trial and error. In terms of the information goal, even failures must be counted as success. The value of LORD I as a pilot project would be lost if it were unable to build upon its present stage of development and further refine the emerging synthesis at a more mature stage of development. It would be futile to implement technical recommendations from the present evaluation unless the project were extended.

(3) Replicability. The project is in the process of developing a replicable approach to watershed management. This package of training methods, community outreach and agricultural extension needs further refinement and full documentation before it can be transferred or adapted to other project sites.

(4) Justifiable Delays. The project was hampered by an initial delay in the flow of funds, and by the general political and social climate which prevailed throughout the entire project period up to the time of evaluation. It is remarkable that this project was able to survive and maintain continuity of program during the past two years, the most turbulent period of Haitian history in 30 years.

(5) Favorable Return on the Investment. Operating costs of the SCF project are quite low for this type of program:

(a) SCF operates with one of the lowest overhead rates available. The original overhead rate for LORD I was 10.41 percent. It later dropped to 9.63 and is now 8.46 percent.

(b) The cost of services per participating farmer is much lower than expected. By the end of the current life-of-project period (at present levels of input and output), LORD I will have provided a range of agricultural extension services at a cost of \$297 per cooperating farmer. This is less than half of the projected cost, and only 40 percent of the cost per farmer budgeted for the PSTO targeted watershed management project in the South. (It also compares favorably with FAO rural development in the region of Cayes during the 1970s, and other AID funded projects in Haiti such as PDAI, ADS II, and PL 480 Food for Work.)

(6) Sustainability. The project has now been able to lay the basic groundwork for sustainability and long range impact. The project's two fundamental elements - community organization and watershed management - require program continuity and the opportunity to evolve. This is unquestionably

a time consuming process. An extended time frame is in the very nature of the enterprise:

- (a) to precipitate basic changes in human behavior,
- (b) which are self-sustaining due to peasant self-interest in the short term,
- (c) resulting in a change in peasant land use strategies,
- (d) with a long term impact on the environment.

(7) Project Purpose. The Cooperative Agreement states that the purpose of the project is "to reverse the trends of environmental degradation on the hillsides of the Maissade Commune." This is a very ambitious goal. It is unrealistic to expect that it be accomplished within a standard three year funding cycle. The present time frame for funding reflects the political realities of the donor rather than a realistic assessment of what it takes to fulfill the project's purpose.

#### Recommendations.

(1) The project should be extended for an additional two years at no extra cost. This would establish a revised end date of July 31, 1990.

(2) The project should re-direct certain of its activities and gradually build up the level of program assistance to a spending level approximately 50 percent above current levels.

(3) Given the project's purpose and its information function as a pilot project, serious consideration should be given to renewal of funding beyond the two year extension.

(a) This would serve to monitor the pilot project as it goes into crucial new stages of land management including saturation treatment of subcatchment basins and the build up of hillside terraces over time.

(b) It would serve to integrate and protect the irrigation system targeted for Basin Cave and adjoining areas.

(c) It would promote sustainability and the long range impact of agricultural extension on the watershed.

The second cycle of funding should be considered for an additional period of three to five years at a somewhat reduced level of funding. This would maximize the information value of LORD I as a pilot project. It is an unprecedented opportunity to engage in a longitudinal study of a watershed management system

as it evolves over time. This has wide reaching programmatic implications for environmental and agricultural policy in Haiti and other regions of the world.

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ANNEXES

ANNEX A - PARTICIPANTS IN MEETINGS AND INTERVIEWS

ANNEX B - BASIC CATEGORIES OF HAITIAN LAND TENURE  
AND RIGHTS OF ACCESS

ANNEX C - ASSESSMENT OF TABOR SOIL SURVEY WORK PLAN

ANNEX D - DRAFT FORM: PLOT CONSERVATION PLAN

ANNEX E - DRAFT FORM: MINI-CATCHMENT BASIN  
CONSERVATION PRACTICE ANNUAL INVENTORY SHEET

ANNEX A

PARTICIPANTS IN MEETINGS AND INTERVIEWS

The evaluators interviewed or met with the following people while carrying out the evaluation:

SCF/WESTPORT

Mark Schomer  
Jim Worstel  
Phil Davies  
Paul Macleary  
Warren Berggren

USAID HAITI

Michelet Fontaine  
Daniel Cesar  
Larry Harms  
Lance Jipson  
Ira Lowenthal  
Kat Macintire  
Jerry Zarr

SCF Consultants

Agr. Thurene  
Calixte Clerisme  
Joseph Tabor

Other Organizations

Agr. Pericles Beauge, BNDAI Hinche  
Agr. Renard, ODBFA Hinche  
Agr. Marc-Antoine Noel, Caritas  
John Craig, ARD, PSTO Director

SCF Haiti - LORD I

Elias A. Tamari, SCF Director  
Alix Wilner, Project Director  
Andy White, Technical Advisor  
Henry Menager, Community Health Director  
Karinne Ulysses, Agronomist  
Gaetan Theodore, Veterinary Nurse  
Eddy Fameux, Agricultural Technician (MARNDR)  
Victor Jean-Baptiste, Agricultural Technician  
Saintoleme Dieulin, Agricultural Technician  
Pierre-Louis Anselme, Animator  
Hyppolite Francois, Animator  
Walner, Animator  
Jean-Claude, Animator  
Pierre Jean Ravel, Animator  
Joselin Sajous, Animator  
Joseph Fernand, Animator  
Maxen Manase, Animator  
Sec. Lamercie, Office Assistant



## ANNEX C

### ASSESSMENT OF TABOR SOIL SURVEY WORK PLAN

The evaluation team was asked to assess the status of soil survey and laboratory analysis (physical baseline information) needed to implement sound soil and water conservation, and to augment agricultural production; reasons for delay of this activity; and alternatives for accomplishing all or part of the work considered essential.

The consultant, Joseph A. Tabor, arrived in Port-au-Prince on April 8, 1988. The evaluation team met with him on April 9th and discussed his scope of work and plan of action. The discussion focused on the types of information needed, and the purpose and methods to be used. Mr. Tabor showed himself to be knowledgeable in his field and displayed a professional and practical attitude toward his assignment.

Schedule. The consultant planned to go to Maissade on the 10th of April for 10 days of general soil reconnaissance to determine priorities for locations, activities and the timetable required to achieve the work plan. When the timetable is accepted by the Project Director, the consultant will do the field survey over an 8 week period (40 days). The consultant will then have 4 working days in Port-au-Prince to prepare and present a topographic map and site descriptions showing the soil sample locations. He will also prepare an English manual containing preliminary descriptions and land use recommendations for each land capability unit.

Upon his return to the United States, the consultant will have approximately 75 soil samples analyzed out of approximately 200 to be taken in the field. The results of soil analysis will be incorporated into the earlier land capability information to produce detailed and final descriptions, and land use recommendations for each land capability unit.

If all goes according to plan, the final product should be available in July 1988 in keeping with the following schedule:

54 days in Haiti  
7 days to travel & send samples  
7 days to analyze samples  
14 days to incorporate and send to Haiti  
82 days total from April 11, 1988

Reasons for delay. The soil survey work has been greatly delayed. The end of July 1988 is the termination date of the original 3 year project. Some of the reasons for delay are fairly clear:

(1) Initial project activities were delayed for a number of months due to the unavailability of funds for project operations. The Cooperative Agreement was signed in July 1985,

and funds first became available to the project in December 1985.

(2) Political turmoil from the last quarter of 1985 through the first quarter of 1988 made planning and recruitment of consultants extremely difficult. All project activities were disrupted and delayed at least intermittently during this troubled period, including the present "mid-term" evaluation.

(3) Some delay was incurred to find the right consultant for this crucial task.

(4) Some effort was made to coordinate this activity with other agencies doing related work in the same area. OAS has furnished copies of aerial maps for small sections of the project area in lieu of the still uncompleted mosaic of the aerial mapping. These sheet maps should be of help to the consultant in carrying out his work. Field verification by the consultant will determine to what extent he can rely on the maps.

Results of the delay. The soil survey is no longer useful for planning the beginning stages of project activities; however, the soil survey will now be easier to carry out since project personnel can be more realistic in identifying the areas important for their work. Furthermore, extension of the project beyond the initial 3 year period will enable the project to make valuable use of the soil survey data during the next stages of project operation.

#### Recommendations.

(1) Mr. Tabor's scope of work was defined by the original area description for the project. The present evaluation is recommending a narrower and re-focused area definition. The consultant should take into account this re-definition in the soil survey. For example, the evaluation team recommends (a) that the Hatty region no longer be considered a primary target of project activity, and (b) that portions of the Rio Frio and Fond Gras drainage areas lying outside the Maissade Commune should be included in the watershed plan.

(2) It is possible that work time allotted for the soil survey will not suffice given that travel is very difficult during the rainy period of the next two months. Secondly, work time will be lost due to inclement weather.

(3) To attain maximum benefit from the consultant's work, appropriate portions of the written report should be translated into French and Creole immediately.

(4) To gain maximum training value from the consultant's work, we recommend that a staff technician be assigned to the consultant as a permanent assistant, or that a rotating schedule be established so that each of the project's agricultural technicians can work with the consultant for part of the time.

ANNEX D

PLOT CONSERVATION PLAN

IDENTIFICATION/DESCRIPTION

OVERALL TYPE OF FARMING FOR ALL PLOTS

FARMER \_\_\_\_\_  
 GROUPMAN \_\_\_\_\_  
 MINI-CATCHMENT BASIN \_\_\_\_\_  
 PLOT NUMBER \_\_\_\_\_  
 SIZE \_\_\_\_\_ hectares  
 \_\_\_\_\_ carreaux  
 ESTIMATED \_\_\_\_\_ MEASURED \_\_\_\_\_  
 BY \_\_\_\_\_  
 DATE \_\_\_\_\_

CROPS	ANIMALS	TREES
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

PURPOSE OF THIS PLOT

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

PRACTICES:

1987                  1988                  1989                  1990                  1991                  1992

A. STRUCTURAL PRACTICES (measured in meters)

_____	<input type="checkbox"/>					
_____	<input type="checkbox"/>					
_____	<input type="checkbox"/>					
_____	<input type="checkbox"/>					
_____	<input type="checkbox"/>					
_____	<input type="checkbox"/>					
_____	<input type="checkbox"/>					

B. CULTURAL PRACTICES (estimate none, 1/4, 1/2, 3/4, or all)

_____	<input type="checkbox"/>					
_____	<input type="checkbox"/>					



NONE

$\frac{1}{4}$  25%

$\frac{1}{2}$  50%

$\frac{3}{4}$  75%

ALL 100%







## Specific Objectives of the Evaluation

- 1) Assess the procedures and methodology used by the project for groupement formation; the status of the groupements vis-a-vis their maturity as defined by previous studies of groupements in Haiti; and evaluate to the extent possible at this stage of the project the appropriateness of pursuing this peasant organizational methodology to achieve soil conservation or other rural development activities.
- 2) Assess the status of the project vis-a-vis the End-of-Project Outputs as stated in the C-A, keeping in mind certain extenuating circumstances which have prevailed in Haiti during 1986-87, and the validity of the project as originally conceived.
- 3) Determine whether or not a no-cost extension of the project for a fourth year will significantly assist towards achieving the specific objectives of the project.

Discussions between USAID and SCF have concluded that two disciplinary specialists should be included on the evaluation team. Qualifications for these positions are as follows:

- 1) Rural Sociologist/Anthropologist.

Since the primary approach of the project centers on the organization of individual farmers into a local institutional framework with capability to undertake their own rural development activities, this social science position is mandatory. Qualifications should include:

- a) Minimum of five years experience working with different peasant-based rural development programs in Haiti. In particular, this individual must be knowledgeable of the groupement methodology.
- b) Fluency in Haitian Creole, and at least an R3 in French.
- c) PhD. level training in rural sociology or anthropology.

- 2) Watershed Management Specialist

Since a major objective of the project is to develop a technically sound watershed management plan and to implement this plan within the target locality, it is logical that this discipline be represented on the evaluation team. Qualifications for this position should include the following:

- a) Minimum of five years experience working with watershed management and/or mountain land soil conservation programs. This experience should include activities in regional or sub-regional watershed management planning; mixed farming land utilization; design and construction of physical structures (e.g., dry walls, terraces, etc.); use of vegetative materials for soil and water conservation (including grasses and herbaceous legumes as well as trees and shrubs); composting techniques; and rural extension methodologies. Experience in participatory soil conservation programs is highly desirable.

- b) Knowledge of French at the R3/S3 level; cognizance of Haitian Creole desirable.
- c) PhD. level training or greater than ten years practical field experience, including at least five in developing countries, with an appropriate lower degree. Academic training should be directly in the field of watershed management or soil conservation, or be hydrology, forestry or range management, or other natural resources management field. Some background in agronomy would be desirable.
- 3) As required, all SCF personnel involved in the project will be available for participation. Mr. Elias Tamari (SCF Country Director) and Agronome Alix Wilner (the resident Project Director in Maissade) will be the primary contacts.
- 4) For USAID, Michelet Fontaine, who has been appointed as the Project Coordinator and has a background in watershed management, will be made available by the Mission. However, since Agr. Fontaine undertook a short-term consultancy for SCF on this project before being hired by USAID, the Mission will appoint another representative to supervise the evaluation exercise. At this time, it is anticipated that Mr. Larry Harms, who will join the USAID Mission as the Deputy Agricultural Development Officer in 1988, will perform this role. The division of participation by Fontaine and Harms will be finalized when the Evaluation Team prepares their work plan, but at least 2-person weeks will be allocated.

### Roles & Responsibilities

The Social Scientist will serve as Team Leader for the Evaluation Team, and will report directly to the Supervisory Agricultural Development Officer, Mr. Lance Jepson, or his designee. Mr. Elias Tamari, the SCF Haiti Field Office Director will be the principle contact with the Grantee for all administrative matters, and Agronome Alix Wilner will be the principle contact for project related technical and community organizational activities. The Team Leader will develop the evaluation work plan and schedule, and notify USAID concerning debriefing meetings. The Team Leader is also responsible for submitting both draft and final reports on or before the dates mutually agreed to. SCF will provide all necessary logistical support, including, but not limited to, arrangements for international and local travel; overnight accommodations and per diem payments; secretarial and other office support and all other reasonable services.

## Scope of Work for Contract Team Members.

### 1. Team Leader/Rural Sociologist or Anthropologist.

In the role of Team Leader, this individual will have the responsibility of preparing an outline for the report based on USAID Project Evaluation Guidelines and the specific scopes of work itemized below (in consultation with the representatives from USAID and SCF); arranging for debriefing; and editing the draft and final versions of the Evaluation Report. In consultation with other participants, the Team Leader will also finalize the work schedule. The Report Outline and Work Schedule will be the first tasks undertaken. Specific technical components of the project to be evaluated by the Rural Sociologist/Antropologist include the following:

- a. Assess the formation and development of the groupements, and make specific recommendations if any changes in strategy are deemed necessary. In particular, this assessment will identify those attributes which characterize the better groupements and the extent to which this knowledge can be used to improve groupement formation; and evaluate the reasons that a number of groups have disbanded (i.e., whether this is in line with the expected attrition rate, the current socio-political climate in Haiti, or some other factor). One possible approach to a quantitative assessment of this aspect of the project would be to compare the ratio of animator contact/groupement formation experienced by SCF with other groupement formation programs in Haiti. Limited inquiries will also be made of non-member farmers in the same localities where groupements are active to ascertain their perception of the project's methodology and their reasons for not joining. The role of women in groupements and their degree of participation will also be assessed. Some of the questions which should be answered in the course of this evaluation are: (1) to what extent have peasants adopted the program goals as their own; (2) how sustainable are the groups which have been formed; and (3) how much of their personal income have the farmers pooled, and what proportion of this income is due to program expenditures such as the purchase of seedlings from farmer groups?
- b) Relative to the assessment of groupements as required in a), above, the performance of all eight animators will be assessed, including their level of training, motivational abilities and comparative successes in undertaking their work assignments. This evaluation will result in recommendations to improve the system, if necessary, and the advisability of expanding the number of animators or instigating the "local animator" approach to expand the project within the target area.
- c) The value and usage of the International Evaluations conducted by SCF as per the C-A will be reviewed, with particular attention given to the degree to which problems noted have been resolved and recommendations made have been implemented.

- d) The status of the socioeconomic "baseline" survey will be evaluated in a twofold manner. First, an assessment will be made to determine whether there are justifiable reasons that this activity has been delayed. Second, at this date, a determination must be made as to the merit of commencing a survey, and specifically what nature of survey should be undertaken since it is no longer possible to conduct a survey of baseline conditions. The Report should include specific guidelines and schedules which are mutually agreeable to all parties. Since there has been no economic data collected, both Team members will assess what other types of measurable data have been generated by the project which can be used for before/after comparative purposes.
- e) The status of the credit component of the project will also be evaluated in a twofold manner. First, it should be determined why the preparation of the operational guidelines for the credit program, which is independent from actually implementing the program (i.e., dispersing money) was delayed. Second, the matter of the groupements' "readiness" to receive credit should be addressed, with specific attention as to whether lack of access to project funded credit has hindered the attainment of project objectives, or not.
- f) The level and impact of interference to project activities which have derived from CARITAS and/or the generic label that groupements are communist organizations will be analysed to the extent possible. An assessment of SCF's response to these two recurrent problems, and any specific recommendations which can be made, should be included in the report.
- g) SCF will provide an inventory list of all procurements made with project funds, and the Team Leader will be responsible for an adequate inspection of such commodities to be able to report to USAID their condition and appropriate use. This part of the report will also include a general assessment of procurements (both actual items and timeliness) made by this project, and provide specific recommendations for improvements, if necessary. Procurements related to technical interventions, including but not limited to seeds and plant materials, will be addressed by the Watershed Management Specialist.
- h) As provided for in the C-A, page 2 of Attachment I, 3(c), how well have SCF's overall activities in the Maissade area complemented each other? Have groupement formation, reforestation, soil conservation, water systems development, primary health care, assistance to schools, and child sponsorship been well integrated? Do peasants feel that the SCF program meets their priority needs, and what changes can be made to make the program more responsive?

i) Notwithstanding the specific issues addressed above, the Rural Sociologist/Anthropologist will review the C-A and after initial consultations with USAID and SCF identify any other salient topics which should be included in this evaluation, and incorporate these into the Work Plan and Report Outline.

2) Watershed Management Specialist

- a) Assess the technical capabilities of the animators and other technical assistants in terms of the activities they are currently charged with implementing (the degree of direct supervision provided by the Project Director and the expatriate advisor should be taken into consideration). Recommend specific areas for improved training if required and not already scheduled by the project.
- b) Review the technical reports submitted by project consultants, comment on the technical content of these reports, and evaluate the extent to which the recommendations have been incorporated into project activities. (Note these reports are identified under Attachments and References, below.) Some of the questions which should be answered include: (1) to what extent has the project benefitted from short-term technical consultancies; (2) have the costs been commensurate with these benefits; (3) should budgetary provisions for future consultancies be modified; and (4) how can technical assistance be improved?
- c) Evaluate the technical soundness and actual extension of the individual components of the revegetation, soil conservation, agricultural production, and animal husbandry program including:
  - (1) revegetation - species selected; planting techniques; extension training; survival; groupement nursery systems; etc.
  - (2) soil conservation - A-Frame level; "ramp pay" contour windrows technique; terrace demonstrations; ravine plugs; hedgerows; etc.
  - (3) agricultural production - sugar cane variety testing; introduction of other corn, sorghum and pigeon pea varieties; composting techniques; planting patterns; etc.
  - (4) animal husbandry program - forage development; animal health methodologies; extension training in animal husbandry; proposed genetic improvement program; etc.

Assess the manner in which these components are coordinated towards contributing to a holistic watershed management plan (and the actual state of the plan as called for in the C-A) and how this program will be able to achieve the stated objectives of the C-A. Specific recommendations should be included for improving the watershed management plan, if necessary.

152

- d) Evaluate the demonstration and experimental plots established by the project. The Demonstration plots should be viewed both for the technical soundness of the techniques exhibited, and for their presentation vis-a-vis technology transfer to the local peasant farmers. The Experimental Plots should be considered in terms of both the appropriateness of on-going experimentations, and whether these include the studies most central to providing the necessary data to achieve the objectives of the projects. The Experimental Plots should also be assessed in terms of their experimental design and ability to generate statistically valid results that can be extended with confidence. Specific recommendations should be made where necessary.
- e) The status of the soil survey and laboratory analysis will be assessed in terms of the need for this physical baseline information for implementing sound soil conservation and augmenting agricultural production; reasons for the delay of this activity; and alternatives for accomplishing all or part of the work that is considered essential.
- f) Address the recommendation made in a previous consultant report that commercial fertilizers should be used due to the significant infertility of the soils. Recommend whether the project should explore this possibility, recognizing the cost and delivery hurdles, and/or whether fertilizers should be employed in selected experimental plots to ascertain the magnitude of potential benefits.
- g) Notwithstanding the specific issues addressed above, the Watershed Management Specialist will review the C-A and after initial consultations with USAID and SCF, identify any other salient topics which should be included in this evaluation, and incorporate these into the Work Plan and Report Outline.

3) Other Tasks to be Addressed (by Both Team Members)

- a) The team will consider the reasons and impacts of the various delays in implementation of certain project activities, and make recommendations for corrective actions and/or alternative directions that might be in the best interest of achieving overall project objectives. A determination will also be made by the Team as to whether the slow rate of expenditure of funds allocated to the project has been advantageous or disadvantageous.
- b) The content, format and timeliness of periodic reporting submissions should be evaluated in terms of its usefulness for the transfer of information and project management decision making.

- c) The overall staffing pattern should be reviewed with particular reference to the adequacy and qualifications of personnel for meeting the specified objectives of the project. If inadequacies are identified, the Team should make specific recommendations as to how such shortfalls can be resolved.
- d) The quantity and quality of training activities conducted by the project will be evaluated, including materials prepared; syllabi or lecture outlines; and repetition. This evaluation will include not only project staff, but will query representative farmers as to their perception and understanding of the content (the latter can be measured by recall of selected topics). The number of farmers trained will also be reported. The overall usefulness and impact of project funded training will be assessed, and specific recommendations made for additions to the curricula or other improvements if necessary.
- e) The degree of functional collaboration with other development agencies and programs (either located within the Central Plateau or involved in activities which especially pertinent to the objectives of the SCF project) will be assessed. In particular, the relationship between SCF and ODBFA will be considered in the terms specified in the C-A, and the Team, in consultation with USAID and SCF, will make specific recommendations.
- f) The role of USAID project management performance, i.e., support from the Project Officer and the Project Coordinator (the latter having been funded by the project) should be evaluated.
- g) The Team will evaluate the support provided to the Maissade field staff by the SCF Port-au-Prince office and the home office in Westport, Conn., in terms of procurement requests; identification of expatriate consultants; and other backstopping activities, and make specific recommendations for improvements if necessary.
- h) The Team will review the 3rd Year Annual Work Plan and Budget, and indicate whether the plan can realistically be implemented, and whether the major activities and effort are well directed towards achieving the objectives of the project as stated in the C-A. In the event that particular flaws are identified, the Team, in consultation with both USAID and SCF will make specific recommendations to remedy such problems to the extent possible. If necessary, new directions for the project can be proposed. In particular, the End-of-Project output of 1,500 hectares of land treated with soil conserving interventions will be assessed, and an alternative proposed if required.

- i) The Team will consider the request made by SCF to extend the project for an additional year at no additional cost (i.e., using non-expended funds already provided in the C-A). This consideration should review the extent to which the project has, or will be able, to meet the End-of-Project outputs as specified in the C-A by the current PACD of July 31, 1988, and whether or not such an extension will indeed allow the project to realize the specified objectives and outputs.
- j) The C-A (p.2, Attachment I) asks SCF "to develop a comprehensive, technically sound, and culturally appropriate Watershed Management Plan..." with specifications for a "concerted, long term effort ....." It also specifies (p.1, Attachment 2) that the project will "...have created the local absorptive capacity for potentially much greater and more comprehensive impacts in the future, under AID's Hillside Farming Outreach effort." The Team should ascertain how committed USAID is to this approach, and the likelihood that additional funding will be available to SCF following the expiration of the present project agreement. What specific recommendations can the team make to ensure the usefulness of such a comprehensive watershed management plan, and the availability of funds to implement it? If it does not appear that additional resources will be available from USAID, what should be done to maximize the institutional capacities developed thus far under this project?

#### Reports.

- 1) The content and format of the reports submitted under this evaluation will follow the Evaluation Guidelines hereto attached, and will respond to the issues identified above in the Scopes of Work.
- 2) The report will be written in a constructive manner, i.e., constraints and problems will be identified, but specific, detailed, and implementable recommendations will also be included to either correct or improve various project activities as necessary. The Team can, at its discretion, also suggest new directions for the program or changes that the Team believes are required and in the best interest of achieving the overall objectives of the project.
- 3) The team will submit a first draft of the Executive Summary and Recommendations parts of the report to USAID and SCF three days prior to the scheduled debriefings. At the respective debriefings, both SCF and USAID personnel will provide written comments on these draft sections to the team. The final report will incorporate the comments and viewpoints expressed in the written documents received by the team, plus any additional comments or questions raised during the USAID and SCF debriefing. In the event there are opposing viewpoints pertaining to critical issues, such views will be faithfully reported, and the Team Leader can provide his recommendation for resolution.
- 4) A complete final report in English will be submitted prior to the departure of the contracted team members. Three copies will be provided to SCF, and three copies will be provided for USAID. SCF will be responsible to arrange for a French translation of the evaluation report within 25 working days of receipt of a USAID approved final version. Two copies will be provided for USAID.

Budget -

A. (Social Scientist - Team Leader) February 15 through March 24, 1988

Consultant Fees: \$250 X 29 days:	\$ 7,250.00
Per Diem West Port	86.00
Per Diem Port-au-Prince \$86. p/d/12 days	1,032.00
Per Diem Maissade 15 days \$10/day	150.00
International Per Diem 2 days x 6	12.00
Air Fare	850.00
Air Taxi	15.00
Transport (Taxi)	75.00
Insurance	150.00
Miscellaneous	10.00
Secretarial	750.00
Rental of Vehicle - 7 days @ \$100/day	700.00
	-----
	\$11,080.00

B. (Watershed Specialist) February 16 through March 17, 1988

Consultant Fees \$250 x 24	\$ 6,000.00
Per Diem Port-au-Prince \$86 x 13 days	1,118.00
Per Diem Maissade \$10 x 9 days	900.00
International Per Diem 2 days X \$6 p/d/	12.00
Air Fare	500.00
Transport (Taxi)	75.00
Insurance	150.00
Miscellaneous	100.00
	-----
	\$ 8,855.00

TOTAL \$19,935.00

Attachments

Mission Evaluation Reporting Format

References

Cooperative Agreement No. 521-0156-A-00-5038-00

Project Quarterly Reports

FY 86 - File No. 20

FY 87 - File No. 31

Project Annual Reports

FY 86 - File No. 9

FY 87 -

Consultant Reports

Soil Conservaiton - J. King - File No. 23

Watershed Management - M. Fontaine - File No. 27

Senior Soil Conservation Consultant - J. Arledge - File No. 28

Insect/Rodent Damage/Sugar Cane - File No. 30

160

## Other Relevant Project Files

Project Implementation Letters - File No. 5  
Second SCF Proposal - File No. 7  
Baseline Survey - File No. 10  
Commodities/Procurement - File No. 11  
Internal Evaluation FY 87 - File No. 12  
General Correspondence FY 87 - File No. 15  
General Correspondence FY 85-86 - File No. 16  
Implementation Plans/Meetings - File No. 17  
ODBFA/SCF Coordination FY 87 - File No. 18  
Second Year Work Plan - File No. 21  
Soil Survey - File No. 29  
Radio Communication System - File No. 33  
Credit Program - File No. 34  
Project Files...  
List of Consultant Reports  
List of Quarterly & Annual Reports  
Cooperative Agreement.

MISSION EVALUATION REPORTING FORMAT  
(TABLE OF CONTENTS)

I. EXECUTIVE SUMMARY

A. Purpose of Evaluation

B. Summary of Project Description

- 1) Implementation History (Project Purpose/LOP Amount/Duration/Sequence)
- 2) Implementation Arrangements (Implementing Agency/Other Donors)
- 3) Implementation Actions (Extensions/Amendments)

C. Summary of Recommendations

D. Summary of Major Findings

E. Summary of Major Lessons Learned

F. Evaluation Methodology

- 1) Objectives & Organization of Data Gathering Instruments
- 2) Itinerary & Other Logistical Details
- 3) Composition of Evaluation Team

G. Comment on Evaluation Scope of Work

II. RECOMMENDATIONS

A. Evaluation Report Recommendations

B. Review & Implementation Status of Past Evaluation Recommendations

III. FINDINGS

A. Project Findings

B. Linkage between Project & Mission Strategy Objectives

C. Cross-Cutting Issues (If Applicable)

- 1) Women in Development
- 2) Sustainability/Replicability
- 3) Environmental Impact
- 4) Privatization (Private Sector/PVOs)
- 5) Democratization (Community Mobilization/Organization)

IV. LESSONS LEARNED

V. PROJECT DESCRIPTION

A. Development Problem

B. Project Goal & Purpose

C. Project Outputs & Inputs

D. Project Assumptions

VI. TABLES

VII. ANNEXES

A. Evaluation Scope of Work

B. Project Logical Framework

C. Project Implementation Plan(s)

D. TA Contracts