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TERRACES, TREES, AND THE HAITIAN PEASANT: AN ASSESSMENT OF TWENTY-FIVE YEARS OF EROSION CONTROL IN RURAL HAITI

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TABLE OF CONTENTS

PART ONE: EXECUTIVE SUMMARY AND INTRODUCTION — Page

Chapter One: Conclusions and Recommendations — 2

1.1 Conclusions — 2

1.11 Major General Conclusions — 2
1.12 Organizational, Motivational, and Educational Considerations — 8
1.13 Technical and Operational Considerations — 12
1.14 Land Tenure Considerations — 13
1.15 Institutional Considerations — 16

1.2 Recommendations — 19

1.21 General Recommendations — 19
1.22 Operational Recommendations — 21
1.23 Project Design Recommendations — 24

Chapter Two: Objectives and Methodology — 26

2.1 Research Objectives — 26
2.2 The Variables Investigated — 28
2.3 Methodological Approach — 31
2.4 Guiding Hypothesis of the Presentation — 37
2.5 Structure of the Presentation — 39

PART TWO: CASE STUDIES — 41

Chapter Three: Anatomy of a Success — 42

3.1 Mountain Vegetable Gardening and Erosion Control — 43
3.2 Earlier Development Projects — 45
3.3 Fertilizer and the Evolution of Agrarian Technology — 52
3.4 Summary of Strengths and Weaknesses — 55

Chapter Four: A Composite Failure 60

4.1 A Project Begins 60
4.2 The Question of Payment 62
4.3 Establishing Initial Contact 64
4.4 The Demonstration that Failed 65
4.5 The Building of Walls 68
4.6 The Unwanted Grass 71
4.7 The Planting of Trees 75
4.8 The Systematization of Tree Pushing 78
4.9 The Problem of Recalcitrant Landowners 80
4.10 The Root of the Failure 84

PART THREE: ANALYSIS OF PROJECT ELEMENTS 88

Chapter Five: Institutional Variables 89

5.1 Institutions and Soil Conservation 90

5.11 DARNDR and ONAAC 90
5.12 International Development Agencies 93
5.13 International Relief Agencies 100
5.14 Local Missionary Groups 102
5.15 U.S. Based Contract Agencies 103

5.2 Project Task Analysis: Functions of the Implementing Agencies 106

5.3 Major Operational Shortcomings 113

Chapter Six: Organizational Variables 124

6.1 Soil Conservation and Community Groups 124

6.11 Rise of Collector-Distributors 125
6.12 The Community Council 129
6.13 The Ekip: Ephemeral Work Gang 130
6.14 Characteristics of the Ideal Group 131

6.2 Payment vs. Voluntary Participation 133
6.3 Money for Work vs. Food for Work 140
6.4 How should the Currency be Distributed? 146
6.5 Day Labor vs. Contract Labor 150

Chapter Seven: Technical Variables

7.1 Reforestation vs. the Use of Structures 154
7.2 Combining Reforestation with Wall Building and Terracing 157
7.3 Species-Selection Decisions 158

7.31 Consulting the Farmers 158
7.32 Wood Trees vs. Fruit Trees 160
7.33 Peasant Taxonomy of Wood Trees 163

7.4 Site Selection Decisions 164
7.5 Private Woodlots vs. Communal Forests 166
7.6 Nursery Decisions 168
7.7 Planting Decisions 172

7.71 Timing of the Planting 172
7.72 Spacing of the Trees 173
7.73 Selecting Ecologically Appropriate Trees 174
7.74 The Organization of Tree Planting 175

7.8 Surveillance and Protection of Newly Planted Trees 177

7.81 Livestock: Major Source of Danger 178
7.82 Other Sources of Danger 183

7.9 Project Measures Against Destruction 184
7.10 Other Erosion Control Structures 186

PART FOUR: SOCIOCULTURAL ANTECEDENTS OF EROSION CONTROL 192

Chapter Eight: Land Tenure and Soil Conservation 193

8.1 Overview of Haitian Peasant Land Tenure 193
8.2 The Issue of Land Tenure Insecurity 196
8.3 Land Tenure and Contour Mounds 200
8.4 Managers, Tenants, and Trees 201
8.5 Undivided Inheritance Land: Major Project Hindrance 202

Chapter Nine: Culture and Conservation 208

9.1 Formulation of the Question 208
9.2 Culture and Deforestation 208
9.3 Culture and Tree Planting 217
9.4 The Short-Term Future: Investment for Profits 219
9.5 The Intermediate Future: Preparation for Old Age and Death 221
9.6 The Long-Term Future: Concern for the Next Generation 223

BIBLIOGRAPHY 228

APPENDICES

A. Observations of the Costs and Benefits of Different Tree Species (Ronald Smith) 231

B. The Costs and Benefits of Different Types of Nurseries (Ronald Smith) 237

PART ONE

EXECUTIVE SUMMARY AND INTRODUCTION

CHAPTER ONE

CONCLUSIONS AND RECOMMENDATIONS

1.1 Conclusions

1.11 Major General Conclusions

1. There have been dozens of attempts--some of them local, some of them large scale-- to implement soil conservation measures in Haiti during the past twenty five years. Though some attempts have combined reforestation and the building of erosion control structures (principally terraces, rock walls, and contour canals), most have focused on only one of these two general strategies.

2. Only a small number of these projects can be said to have succeeded. By success here is meant the adoption by farmers, as part of their own agrarian practices, of measures designed to combat erosion. There are regions where virtually all farmers, even after project inputs have ceased, continue to use new techniques which successfully combat erosion.

3. The principal determinant of success or failure is the degree to which the new practices are associated with visible increases in annual domestic income for the participating farmers. When such increases have become visible, the Haitian peasant has shown himself to be extraordinarily swift to alter his traditional techniques and to adopt new behaviors.

4. Where there are substantial increases in income, the projects have been found to succeed even where there are weaknesses stemming from the implementing agencies, the organizational models employed, the choice of specific techniques, and the presence of complicating sociocultural factors. Where profits are to be had, communities have found ways around the weaknesses that would otherwise sabotage projects. Conversely, where farmers have not perceived any short term gains for themselves, even well organized projects run by strong institutions using appropriate technologies will tend to fail.

5. The most impressive successes have been in the domain of terrace and rock wall building in the Kenscoff/Furcy area. But this economically effective use of terracing has occured in communities whose altitude and whose proximity to Port-au-Prince make them the principal vegetable producers for the urban market. In general it will be difficult for projects to duplicate these specific conditions in most other regions of Haiti. That is, the money-generating potential of dry walls and terraces would appear to be at best modest for most regions.

6. Most wall building and terrace projects in other regions have attempted - with little success - to proceed on the basis of traditional crops such as corn and beans. This will not work, largely because the minor yield increases are not perceived as sufficient justification by the peasant for making the investments of time and energy required by the structures.

7. Rock wall and terracing projects are more likely to succeed if their introduction is combined with the introduction of fertilizer and/or compost. The increased yields stemming from the use of these inputs are capable, in certain circumstances, of raising benefits to the threshold where new erosion control behaviors can be introduced and sustained.

8. In general development agencies have overemphasized the theme of "protecting soil from erosion." Much more success has been achieved through the theme of "making more money from your land." The Haitian peasant is unlikely to alter his cropping behavior, to undertake time-consuming and costly innovations, in order to "protect his soil." He will, however, respond rapidly and enthusiastically to innovations which help him to increase his income, even when these innovations demand time, risk taking, and expenditure of money. In short, widespread soil conservation will occur in Haiti only as a secondary effect of innovations whose primary function from the point of view of the farmer is the generation of a higher immediate income. An intelligently planned project will embed soil conservation measures into broader economic schemes which simultaneously exert a positive impact on peasant income.

9. From the point of view of generating more income, the most promising erosion-control strategy for most of Haiti has been found in the planting of fast-growing trees. That is, as a general policy for soil conservation among Haitian peasants, project emphasis should be directed toward the reforestation, rather than the wall-building, strategy.

10. Unlike wall building, tree planting can be made worthwhile to the peasant even in the context of traditional cropping, because trees provide an independent source of income in a way that walls and terraces do not.

11. Several tree-planting projects have made the mistake of focusing on valuable but slow-growing hardwoods, especially mahogany. Trees with a quicker rotation are needed to kick-off tree planting behavior among peasants.

12. Out of discouragement with results, some foresters have been heard to advocate resettlement of peasants and the growing of true forests. But the institutional requirements for such a scheme are currently lacking in Haiti. Projects should shy away from resettlement schemes and move toward cash generating tree planting schemes to be implemented by the farmers themselves.

13. Discouraged with results, other technicians have advocated, not resettlement, but the planting of trees on agriculturally marginal, currently unoccupied lands. Such schemes would not only fail because of the maintenance and vigilance problem, but would also leave untouched the problem of erosion on farmland and the problem of searching for ways to generate more income for the small cultivators. Policy should focus at least in the beginning on devising schemes to motivate and assist the peasants to plant trees on their own land.

14. Others have begun to attempt the encouragemant of tree growing by businessmen rather than by peasants. The current market for tree products endows these plans with some hope of success, but leaves untouched the above-mentioned problems. Development agencies whose mandate is to affect positively the economic life of the rural masses should probably first attempt to assist the peasent - not the peasant's future competitors - to gain a foothold in the tree-planting economy.

15. The major feasible route to this objective would appear to lie in the concept of cash-generating <u>agroforestation</u>, a type of reforestation in which trees are chosen and planted in such a way that they mesh with, rather than interfere with, the pre-existing agrarian economy.

16. Many soil conservation projects have involved tree planting. But thus far none has carefully planned tree-growing in a way that would make it a central part of the peasant cash economy. Rather, trees are for the most part presented as a resource with certain marginal benefits (shade, nutrition, perhaps a little cash in the distant future). No project planner has as yet worked out a detailed micro-economic model of an "agroforested plot" capable of producing cash for the Haitian peasant, even though the availability of "miracle trees" such as Leucaena and akasya would make such a model now feasible.

17. Some planting of leucaena and other fast-growing trees has been attempted by several projects. But the focus has up till now been on the technical problems such as selecting the best varieties rather than on the economic problem of timing and spacing the trees in such a way that they will mesh with traditional cultivation and produce cash for the peasant.

18. Peasants in different regions have themselves begun to demonstrate the feasibility of continuing traditional cultivation on plots that have recently been planted in trees. The strategy has been to lop off lower branches during the first few years.

19. In assessing the success and failure of projects, it should be remembered that these are not categories into which an entire project can be globally lumped. Many projects which are not totally successful--i.e. in which the farmers do not spontaneously adopt as their own the behaviors brought in by project organizers--nonetheless have partial successes. Farmers may make some efforts to protect the trees that have been planted, express the desire to have more trees, demonstrate an awareness of the utility of trees and erosion control structure. Such changes in orientation constitute partial successes even though the project may not have produced sel-sustaining erosion control behavior.

1.12 Organizational, Motivational, and Educational Considerations.

20. Most projects have already found pre-existing community groups, but the larger projects have tended to override these groups to form other action units.

21. The most common type of unit to appear is the ěkip, the work-gang. These are ephemeral groups, frequently containing outsiders, organized solely for the purpose of wage labor, dissolved after the task is done.

22. The ekip is convenient from the point of view of the disbursement of food or money. But it is not an adequate organizational base for sustained development. In the case of soil conservation projects, which will entail a long maintenance phase after the hillsides have been treated, the ěkip lacks both the continuity and shared interest in common land which must serve as the base for the organization of soil conservation.

23. The traditional Community Council is also inappropriate in many aspects. Many were founded principally as collector-distributor groups to attract and disburse outside relief resources. In addition they tend to be too large and dominated by wealthy leaders whose occupational status frequently places them in a separate socio-economic category from the peasant.

24. There is no one organizational model which has been proven superior, but soil conservation appears to call for groups which are based on common residential or landowning interest, small in size, endowed with some operational decision making power, able to carry out multiple functions, and stable through time.

25. The vast majority of projects have used some sort of systematic reimbursement for project participation. Reimbursement of administrators and technicians is, of course, in cash. Reimbursement of community members, including in some cases foremen, is generally in Food for Work.

26. The issue of whether to reimburse or not is still hotly debated. The conclusion of this study, supported by arguments in the body of the report, is that systematic remuneration may be necessary, need not be counterproductive if done correctly, and need not take the form of simple wages. Certain projects have devised alternative formulas for payment.

27. Cash would be a better form of remuneration than food, especially in view of the fact that the vast majority of the food is converted by its recipients into cash anyway. But if resource constraints impose a choice between food or no payment at all, then the food can continue to be used.

28. Neither payment nor the use of a particular group structure are sufficient by themselves to insure project success. The prime determinant of success is the presence of profit-generating project objectives. Payment should be conceptualized as an interim measure designed to usher risk-taking communities through the first one or two rotations of fast growing trees. The case of the Furcy vegetable growers (to be discussed in the body) illustrates that once a practice has been proven profitable, the Haitian peasant needs no outside assistance to continue the practice.

29. Some projects have attempted to rush too quickly into tree planting and wall building, without informing the community of the project's purpose. The result has been, in several regions, openly expressed concern on the part of many peasants that the government or the foreigners were going to plant their own trees on the peasants' land. There had been widespread fears expressed, in at least three projects visited, that the entire reforestation scheme may have been a simple prelude to eventual expropriation.

30. One of the most effective initial educational strategies is to bring peasants from one region to view positive results of soil conservation in other regions. This not only facilitates the diffusion of technical skills, but also defuses possible worries about eventual loss of land.

31. It is possible to observe the degeneration of many projects through time. Lacking viable long-term objectives, the projects turn into simple wage-labor busywork, abandoning in some cases the planting of trees to do less threatening tasks such as road repair or river damming, tasks which bear little relation to soil conservation. It is in this type of simple wage-labor project that one tends to see crumbling walls and the vestiges of destroyed reforestation efforts.

1.13 Technical and Operational Considerations.

34. The most effective form of physical erosion-control structure is the bench terrace. Several have been built by different projects in different parts of Haiti. But they have not, and probably will not, catch on.

35. The bench terrace should ideally be built on the best agricultural land. But most bench terraces have been built on a demonstration basis by projects which have depended on peasants lending or renting land to build the terrace. But peasants have generally given projects the worst parts of their holdings for these "strange" experiments, with the result that most land in bench terraces is land that is good only for the grazing of livestock. One peasant even built his house on a bench terrace which a project had constructed. It is not seen as a particularly valuable agricultural strategy.

36. Questioning of peasants indicated that, whereas the sale value of land skyrockets after trees have been planted, the presence of terraces and walls does not substantially raise the value of the land in their eyes.

37. As indicated earlier, terraces take on value only when built as a central element in a complex of innovations which involves, in addition to the earthworks, profit-generating changes in the local agrarian economy.

38. Manuals on erosion control provide formulas for spacing walls and trees based on topographic or botanical considerations. But in rural Haiti the spacing of trees and structures must be done first and foremost in the light of having the innovations mesh with the local agrarian economy, leaving peasants space for their traditional pursuits.

39. The principal cause of the destruction of trees and walls stems from their interference with the local livestock economy. When trees are planted on good agricultural land and are intercropped with gardens, their survival rate is very high. When they are planted--as is more often the case--on agriculturally marginal grazing land, the livestock destroy them.

40. The most effective solution to this dilemma has been the planting of several rows of trees together to present a visually impressive unit which the peasant will be reluctant to destroy, but to space these small lots at a great enough distance as to permit tying of animals.

41. In the case of rock walls, survival is made more probable if the walls are so high as to discourage animals from attempting to ascend or descend them. Small rock barriers are generally destroyed, whereas higher walls last longer.

42. The timing of nurseries has frequently been poor. The seedlings have frequently reached a dangerously advanced state before the communities have been organized to accept and plant them. This has led to pressure from project directors on field technicians, and the result has on occasion been simple invasion of land by projects in a hurry to transplant maturing seedlings. The more common result, however, has been the simple destruction of tens of thousands of seedlings for which there have simply been no local takers.

1.14 Land Tenure Considerations

43. The above mentioned general fear of expropriation at the beginning of reforestation projects stems from a general insecurity of the Haitian peasant vis-a-vis the long range intentions of public or outside institu-

tions, not from the "deedless" land tenure situation of many plots. Peasants were every bit as concerned about their deeded plots as their undeeded plots. These general fears eventually subsided as projects remained in regions and peasants began thinning the newly planted woodlots, perceiving thus that they were the true owners of the trees.

44. The land shortage which afflicts many household is principally with respect to good cropping ground. Probably most households, however, have tracts of agriculturally marginal land that could be planted in trees. That is, there is enough land in rural Haiti under the control of peasant kin groups to render agroforestation feasible from a land tenure point of view.

45. Land tenure issues are not the major stumbling block to soil conservation. Despite general wariness, peasants are secure enough in the operation of the present land tenure system to make substantial investments in land. The most dramatic manifestation of this is the local land market. Peasants regularly disburse hundreds of dollars to acquire new plots of land. Project organizers may safely assume that, if profit-generating objectives are convincingly presented by the project, peasants will make the necessary long-term investments on plots which they own and operate themselves.

46. Paradoxically, absentee landlordism is in some cases associated with better environmental protection. Many absentee owners of mountain lands, especially those in the Kenscoff/Furcy area, prefer to keep their land in trees and to plant woodlots where trees have been cut down, than to turn their land over to peasant cultivators.

47. There are three major instances of land tenure arrangements in which peasants are not "owner operators" and which thus present some complicating factors for soil conservation projects: State land, tenants of private owners, and undivided inheritance land.

48. Peasants cropping state land as tenants will in some regions be reluctant to plant trees, being unsure that the profits from the trees will accrue to them, or fearing that the presence of trees may increase the rent. But even this generalization must be qualified. The coffee growers of Baptiste/Belladere--all of whose holdings are on State land-- appeared perfectly confident that they would continue to have access to the land and were in many cases undertaking expensive expansions of their coffee holdings.

49. In the case of the tenants of private land, or managers of private land who have cropping rights to the land, there is an additional disincentive to planting trees. In many cases tenants or managers will be given first rights to purchase if the owner has to sell land. <u>But the purchase price will be substantially higher if there are trees on the land</u>. There is thus a built-in reluctance against increasing the value of land.

50. Much agriculturally marginal land, good only for grazing, will be left undivided by kin groups. Rather than divide the land up into separate blocks, they will maintain it as an unit and simply share common grazing rights. When trees are planted on such land, under current project operations the ownership of each tree is also shared. But this creates a disincentive against allowing the tree to mature, as an indivi-

dual may attempt to make at least some money from the tree before his siblings or cousins do. In this case projects must specify the ownership of the trees clearly.

51. In general trees that have been planted on land that is owned and operated by a single owner--especially land that has been purchased by that owner--have a substantially higher survival rate than trees on land with diffuse ownership.

1.15 Institutional Considerations

52. Five distinct types of institutions have been found participating in soil conservation projects: Haitian Government agencies, international funding agencies, international and local relief agencies, local missionary groups, and U.S. based contract institutions, both academic and commercial.

53. Most projects of a large scale have involved the cooperation of more than one institution. In certain cases there has been ambiguity in defining spheres of responsibility and lines of authority.

54. In some instances the interrelationship among cooperating institutions produces top-heavy, cumbersome structures, as for example when an international funding agency contracts with a private firm which subcontracts with free-lancing technicians who work with Damien technicians who give instructions to community based foremen who finally direct the community groups which actually implement the soil conservation projects.

55. The impracticality of such arrangements is perceived by many individuals within the funding agencies, but they find themselves institutionally constrained from fielding more creative and more direct interventions.

56. At present there is no effective, soil conservation unit functioning within the Ministry of Agriculture.

57. Nonetheless Damien field technicians have been found to be playing active and important roles in several past and present soil conservation projects. They have plugged into projects supported. not by the Ministry per se, but by one or another international or private agency, and have shown themselves capable of mobilizing community action in areas where foreign technicians, unfamiliar with the language and culture, have not functioned as effectively.

58. The availability of these privately funded soil conservation projects has provided an excellent training ground for the Damien technicians involved. That is, there is no incompatibility between the objective of strengthening governmental institutions and the supporting of PVO projects. In Haiti the latter have been found in several cases to provide a training ground for government technicians.

59. The peasants perceive that the overall quality of Damien technicians has declined. The Agronomes of the late 1940's and early 1950's are remembered as giants of folk-heroes whose interventions--terrace building, the introduction of the plow, irrigation systems--helped transform entire regions. Current technicians, even active ones, are perceived by the peasants as knowing less and in general as caring less than their predecessors.

60. USAID has been involved, at least indirectly, in dozens of local soil conservation efforts by virtue of the support it gives to agencies such as HACHO, CARE, CWS, CRS, and others.

61. USAID has not in general exercised its de-facto power to encourage better soil conservation planning by recipient agencies perhaps because

USAID itself has not as yet developed a coherent policy on the matter. It is hoped that the concept of cash-generating agroforestation can provide one of the conceptual cornerstones needed to formulate a coherent approach.

62. The private relief agencies have had their attention diverted from creative developmental planning as they have found themselves dedicating large amounts of time and energy to administer and supervise the distribution of food from abroad.

63. A regular complaint heard from relief agencies and other PVO's concerned what they perceived to be USAID's burdensome paperwork requirements.

64. Most small, local PVO's contacted during research have contact with functioning community groups and seem willing to involve themselves more actively in reforestation. But they lack both resources and ideas. Their reforestation ideas tend to be limited to the concept of helping peasants plant a few fruit trees. If a more systematic and dynamic general model can be devised, USAID could supply these groups with both concepts and resources to begin implementing creative agroforestation projects in ways that could simultaneously involve the participation of Damien technicians.

65. The currently prevailing system of contracting with private U.S. firms, though it could theoretically involve the best of U.S. private enterprise in soil conservation activities, runs an equally great risk of turning into a simple employment agency for U.S. technicians and consultants who find themselves either unemployed or retired. Because of the critical importance of agroforestation and soil conservation to Haitian development, program planners should be as cautious and demanding in their choice of technicians and advisors as are employers in the private sector.

1.2 Recommendations

The preceding summary and the body of the report contain a large number of specific recommendations. This summary of recommendations will restrict itself to the major points, distinguishing among general recommendations, operational recommendations, and project design recommendations.

1.21 General Recommendations

1. The problems of erosion control and reforestation should be given highest priority in the agenda of the Agricultural Development Office of the USAID mission in Haiti.

2. General program planning should make provisions for both tree planting and other erosion control structures, but a special emphasis should be placed on the former as being more likely to result in cash payoffs for participating peasant communities than is true of wall or terrace building.

3. In approaching reforestation, projects should for the present shy away from schemes which would entail planting trees on unused public land and to turn rather toward programs which motivate peasants to begin incorporating tree planting as part of their own economic strategy on their own land. Most projects up till now have in fact followed this approach.

4. The cornerstone of erosion control in Haiti should be the con ept of agroforestation, and USAID should make this concept the central axis of its program and research plans. Models should be devised in which the use of fast growing tree species makes it possible even for the samll cultivator to incorporate trees into his traditional economy. The agroforestation model devised should contain separate provisions for two fundamentally different arrangements: the planting of trees on good cropping land and the planting of trees on privately owned but agriculturally marginal land used principally for livestock grazing. USAID should support the design of models which calculate inputs and returns, in precise dollars and cents figures, for each of these situations. Such a model would be substantially more systematic than anything which any project has thus far attempted.

5. USAID should encourage its client agencies, both GOH and private, to improve their existing soil conservation programs and to undertake new programs based on carefully thought-out agroforestation models. They should be sensitized to the superiority of the theme of increased profits over the less cogent theme of protecting soil.

6. Client agencies should in addition be strongly encouraged to move beyond a perspective which takes into account only the technical problems of erosion control into a more realistic perspective which views the organizational, motivational, and educational tasks as equally if not more problematic. In concrete terms this means that project proposals, to be acceptable, must demonstrate specific insights into the economy and social organization of the peasant communities in the intended project region and must be quite specific about the manner in which maintenance of the trees will be assured.

7. By the same token USAID should encourage Damien to include, as part of its training to its soil conservationists, training in the economic and social organization of the mountain peasant community.

1.22 Operational Recommendations

8. The educational/motivational phase of projects should not be skimped over. Projects should anticipate suspicion and fear of eventual expropriation on the part of peasants in the early stages, and the educational messages at the early stages of projects should deal with these matters.

9. Where possible, peasants should be brought to other regions of Haiti where projects have been in operation.

10. Projects should give heavy emphasis to wall building or terrace building only where these innovations are being introduced in the context of new crops or fertilizer which make increased profits possible. Otherwise these engineering structures are unlikely to catch on.

11. Even in the absence of profit-generating inputs, projects should still emphasize the building of check-dams in ravines, as these have been found to produce dramatic changes in the agricultural potential of the ravines, changes which consistently impress cultivators.

12. Detailed inventories should be prepared of the advantages of trees--soil improvement, nitrogen fixation, fodder, shade, and others--but the central message should be that the trees can be converted into a cash crop on the one hand and triple and quadruple the sale value of the land on the other.

13. The tree planting should be viewed as the function of a group, not an individual. But the landowner should always be involved, should never be a passive observer of a work gand invading his land. And the landowner should in addition have some organizational responsibility for the planting, in such a manner that he will be an actor, not a recipient observer, in the tree planting.

14. Though they are planted by a group, the trees should be assigned as the property of the individual landowner. Projects should avoid referring to the trees as the trees of the State or the trees of the foreigners.

15. The groups that are formed should not be simple work-gangs but should have the permanence and other characteristics discussed in the body of the report.

16. Peasants should be consulted as to the species of trees that will be planted. Projects should be aware, however, that the major profits will be made from wood trees, but that the planting of such trees is alien to the traditions of rural Haiti and peasants will not spontaneously request them. Projects should be determined, therefore, to educate communities as to the value of this new practice, and to make wood trees the central element in the arsenal of the agroforestation scheme. In this sense the projects must go beyond the "community development" objective of simply meeting the "felt needs" of the community.

17. Nurseries should not be planted before the communities have become to some degree committed to the project. Prematurely planted nurseries have led to either the destruction of large numbers of trees or--worse--the invasion of peasant land by impatient project directors.

18. Trees and walls should be spaced in such a fashion that ample room is left for animal grazing, if this was the prime use of the land before tree planting. In the case of newly planted garden land, such spaces need not be left, as the trees (if they are fast growing) will be large enough and out of danger by the time animals are admitted.

19. Strategies of remuneration should be employed during the organizational and planting stages of the project. If possible, money should be used, rather than food; and where possible "contract" systems--based on the number of surviving trees--should be used rather than flat day labor formulas. The remuneration should be presented, not as wages for a daily djob, but as a bonus for a group that is carrying out an important development task.

20. The practice of planting trees and abandoning them to hazard should be immediately stopped. Projects must start incorporating a maintenance phase into the project plan. If at all programmatically possible, cash inputs should be funneled into participating groups, to be withheld if the trees and other structures are not being taken care of during the maintenance phase. The maintenance incentives must be large enough to outweigh any advantages the peasant could receive by neglecting--or permitting the destruction--of young trees.

21. Projects should begin keeping records of whose land the trees were planted on, and project directors should cease leaving land tenure questions in the hands of subordinates, and at least begin to familiarize themselves with the question of whose land the trees are being planted on.

1.23 Project Design Recommendations

22. USAID should set itself a very specific planning goal: that of having helped to usher at least a dozen peasant communities in different parts of the country through one rotation of such agroforestation by the year 1985. This would entail immediate planning now, as the trees would have to be planted by the October rains of 1981. The communities would have had to have been organized by them, and the nurseries prepared.

23. These pilot communities should then be used as the model communities to which peasants from a much larger number of communities will subsequently be brought in an effort to expand the program into a much larger project. But in the beginning, it is absolutely critical that USAID focus its attention on the successful introduction of agroforestation into a small number of carefully monitored communities. Overambitious planning will sabotage the program as surely as the initial PDAI project was sabotaged. If there is pressure to move great deals of money, then ways should be sought in which project focus is not sacrificed. Planners should view this as merely the first phase of a larger process, a phase whose objective is to initiate tree-planting activities in communities which will serve as models for other communities.

24. In choosing implementing agencies, for this project, it would be unwise to lay all eggs in one basket. Some of the communities could be handled by a buttressed Soil Conservation Unit at Damien. But funds should also be made available for the participation of one or more PVO's

With a solid track record in Haiti. The outcome of those projects is too important to subject it to possible failure because of extraneous factors associated with the weakness of a single implementing agency. Like the peasant cultivator, USAID should diversify for such an effort, spreading it away several agencies.

25. Many agroforestation activities could be carried out as part of the support currently being planned for Damien. But in addition, large sums of money could usefully be set aside in the form of a special fund or project, earmarked specifically for agroforestation which could be administered by either USAID or one of the registered relief agencies, and to which other local PVO's could submit funding proposals as well. These proposals would have to adhere in general to the guidelines of the recommended agroforestation model to receive funding under this project.

26. If current planning is realized, Damien will soon receive a team of soil conservation technicians under contract from the U.S. But in addition, USAID could put together another team to serve as agroforestation advisors to PVO's who would apply for financial and technical assistance. This team could be composed at least partially of individuals who have already been living in Haiti for many years and have been directly involved in erosion control and reforestation activities. They would in effect be a mobile team which would assess the feasibility of proposals, assist in their implementation, and act as monitors for the progress of local agroforestation projects.

27. Mission management should move speedily on this matter. If a positive decision is reached, several months delay could set the project back a year or--even worse--lead to the planting of trees out of synchrony with the autumn rains of 1981.

CHAPTER TWO

OBJECTIVES AND METHODOLOGY

2.1 Research Objectives

The present report has been commissioned by USAID/Haiti as an attempt to provide a conceptual overview of the soil conservation projects that have been operating in Haiti during the past two and a half decades. Recent studies commissioned by USAID have referred in a convincing but general way to the central role which deforestation and soil erosion play in the contemporary impoverishment of the rural economy, and few persons would dispute the contention that reforestation and general soil conservation constitute a sine qua non for any serious rural development in a country which has nearly 80% of its surface in the form of slopes.

But no coherent stance or policy toward these matters has as yet coalesced in the Haiti mission. On the contrary, one senses the presence of bewilderment and hopelessness in the face of what gives every appearance of being a rapidly deteriorating ecological situation. Is there any useful assistance which a powerful funding agency can give that would stand a chance of having some positive impact?

The results of this research are optimistic, not about the current ecological crisis, but about the possibilities of making meaningful financial investments in projects that will arrest and reverse the process of ecological degradation in participating communities. The strategy for this research has been to examine as many soil conservation projects as possible in the time available, to distinguish the successful elements from the failures, and to generate a series of concrete propositions about the determinants of success and failure in these soil conservation projects.

At first there was some skepticism about whether any successes would be found. This skepticism, though understandable, proved unfounded. As will be discussed in the following chapter, under certain conditions the Haitian peasant has been found to adopt behaviors which do arrest and control erosion. These conditions are not yet widespread. But funding and implementing agencies could be instrumental in providing the inputs which would lead to these changes.

The majority of projects examined in this research fall closer to the failure pole than to the success pole, including many of those in which USAID has been involved. But there are very clear indications as to the nature of the false steps that were made, steps which could in the future be avoided.

2.2 The Variables Investigated

A major guiding hypothesis, of course, was the assumption that the success or failure of efforts to protect and reforest hillsides would not be unilaterally determined by one simple factor. Built into the very scope of work prepared by the ADO was a series of complementary hypothesis paving the way for the investigation of multiple factors and the determination, at least in an exploratory fashion, of the manner in which these separate factors interacted to determine the outcome of given projects. For purposes of this report, I will organize the hypotheses into four major groupings institutional, organizational, technical, and sociocultural.

To begin with institutional hypotheses, it is reasonable to assume that the success or failure of projects is heavily influenced by the strengths and weaknesses of the agencies which fund and/or implement the projects. All other things being equal, one would expect, for example, that a well organized institution which delivers required materials on time, which maintains its vehicles in working order, which provides regular supervision to ongoing activities, will be much more successful in its projects than an agency which is weak on the points mentioned above. Could it be that the ultimate success or failure of projects soil conservation efforts has hinged principally on these institutional variables?

An alternative set of hypotheses would look, rather, to organizational features of the project themselves. Perhaps success is determined less by the characteristics of institutions than by the particular grouping principles which are used to organize communities into action units, the educational inputs which are given to participating units before and during the project implementation; and--most importantly--the motivational strategies which are used to elicit and sustain involvement in the project. To what degree have factors such as these--which I will lump under the rubric "organizational variables"--been the principle determinants of success or failure in soil conservation efforts in Haiti?

Perhaps in focusing on institutions and on organizational models, we may be missing the boat. Perhaps success or failure is rather determined by a third sort of factor--the technical factor. Perhaps the principal element which governs the outcome of efforts to plant trees and build structures is rather the simple question of whether the trees are properly chosen and planted in view of prevailing climatic or edaphic conditions, and whether the walls or terraces are designed with a technically correct assessment of local topography and are constructed in a technically correct manner which permits them to carry out their soil-retaining function and to withstand for as long as possible the ravages of time. Perhaps we should look to these technical factors as the principal determinants of success or failure in Haitian soil conservation efforts.

But social scientists, especially those with an ethnographic bent, may incline to yet a fourth type of hypothesis, one which could perhaps best be labeled "sociocultural". Perhaps in the long run the success or failure of soil conservation projects has been most heavily determined, not by institutional, organizational, or technical factors, but rather by economic, social, and cultural factors inherent in the communities themselves. Perhaps the very nature of the local agrarian economy itself has contributed to, or militated against, the success of efforts to plant trees and build structures. Of particular importance, perhaps the very character of local land tenure is the overriding element determining the willingness of individuals to participate in projects or not. Or is there perhaps something in the local value system, e.g. in some cultural feature which affects willingness to make long-term investments, which is the principle determinant of project success or failure. To what degree, then, do such sociocultural factors influence the outcome of projects so strongly as to render any institutional, or technical consideration of secondary importance?

These alternative factors were built into the scope of work prepared by USAID/Haiti, not as mutually exclusive hypotheses, but as complementary variables which are probably exerting simultaneous impact on the course of soil conservation interventions. It was

realized from the outset that not only time constraints, but the very complex character of the variables themselves, as well as the small number of discrete projects that were available for examination, would preclude resolution of the hypotheses in any statistical sense. The factors have been formulated as "hypotheses", not as a prelude to statistical investigation, but as a means of identifying and separating discrete issues, and of imbuing the investigation with sufficiently precise questions so as to ensure that the descriptive information gathered is relevant enough to provide USAID and GOH program planners with concrete insights into the most promising routes to follow in future soil conservation projects.

2.3 Methodological Approach

Having clarified some of the major questions to be posed, the task was to select the specific projects that would be examined. As a preliminary to the work, a thorough review was made of the relevant literature available in Haiti. (A bibliography is provided at the end of the report). In conjunction with the ADO, I selected the regions that were to be visited and the projects whose progress and/or outcomes would be examined. It was considered essential to include several past projects which included soil conservation measures but which have now ended. Success and failure of projects, after all, is best assessed when the project itself has long since stopped. But it was felt to be unnecessarily restrictive and counterproductive to limit investigation only to projects of a distant past,

where information on the project itself would be strictly retrospective. Some of the most promising soil conservation efforts are still in progress; and though the success or failure of these efforts is still a moot point the strengths and weaknesses of certain project features can be perceived even when the project is still in progress. The information on certain projects was to be fairly thorough, including several days residence in villages where the projects took place. Information on other projects had to be more cursory in nature, restricted to interviews with persons involved in the project. The conclusions drawn in this paper stem from information gathered on a total of nineteen projects, fifteen of which I was able to visit personally. This fieldwork phase of the research lasted from early July to mid September of 1979.

Information was gathered on the following projects (not in the order listed):

In the Kenscoff Area

1. An erosion control project in Furcy which began in the 1940's under the direction of a Haitian agronomist working out of Damien. The project emphasized the use of small terrach-like structures in conjunction with vegetable planting.

2. A reforestation project run by the U.N. in Furcy. The project consisted mostly of the planting of two experimental wood lots to compare the suitability of different varieties of eucalyptus and other lumber trees.

3. A reforestation project currently headed by two Damien agronomists operating out of Kenscoff, who use Food for Work supplied by CARE and who receive most of their seedlings from the private Baptist Mission nursery at Fermath, run by Wallace Turnbull, Jr.

4. Terracing and reforestation activities which began in the Fort Jacques area in the early fifties. Special attention was given to assessing the role of Food for Work, much of which was supplied by Church World Service.

5. Reforestation activities done voluntarily by the Community Council of Madlen, a community across the ridge from the Baptist Mission at Fermath.

In the aux Cayes Area

6. A general soil conservation project run by the U.N .and the FAO in the hills between Maniche and Laborde. The project entailed the planting of several varieties of both lumber and fruit trees and the construction of a broad variety of erosion control sturctures.

7. Reforestation activities supported by Catholic Relief Service, administered by an Oblate missionary priest in aux Cayes.

8. The USAID supported restoration of the Acul watershed above Ducis, involving the collaboration of independently contracted foreign technicians and the Damien-based Projet de Developpement Agricole Integre.

In the Limbe Area

9. The reforestation activities of Ronald Smith, who operates a nursery on the grounds of the Hopital Bon Samaritain, and who has devised a scheme for selling seedlings at subsidized prices to interested local landowners.

10. A general reforestation and erosion control project supported by FAO in the Limbe area involving an experimental farm for the demonstration of different erosion control structures. In its earlier phases this project emphasized the construction of vegetative barriers.

11. A project supervised by the Oriental Mission Society outside of Cap Haitien, involving the establishing of contractual relationships between peasants and a cooperative for planting and maintaining trees on what is in effect a sharecropping basis.

In the Belladere Area

12. The agricultural colony that was established by presidential decree in the late 40's and which involved some tree planting and erosion control.

13. An ongoing BCA coffee project involving the use of credit and fertilizer, one of whose objectives is the motivation of peasants to expand their coffee farms using modern techniques.

14. An irrigation project in the Croix de Fer area, visited in order to observe the operation of a contract system of labor, different from the more conventional daily wage systems.

In the Northwest

15. A now defunct reforestation project in the community of Ma-Rouj (beyond Jean Rabel) whose central element entailed the establishment of a community based nursery.

16. The HACHO sponsored reforestation and erosion control activities in and around Jean Rabel. (The Ma-Rouj project was an earlier phase of this project).

17. A number of HACHO wall building activities outside of Gonaive and in and around Anse Rouge.

18. The reforestation projects operated by the German funded Fonds Agricoles in the Northwest.

19. In addition, information was also gathered on the Pilot project of Marbial, in the mountains of the south near Jacmel. This was one of the first development project funded by the U.N. (UNESCO) in Haiti and entailed both reforestation and erosion control.

To permit both freedom of movement and accessibility to hard-to-reach areas, I rented a four-wheel drive vehicle. In each of the areas of Furcy, Belladere, and aux Cayes I was able to spend several days living in rural communities doing brief village fieldwork among farmers involved in the projects, in addition to the standard interviewing which I did of project technicians and administrators. In the North I stayed in Cap Haitien and in the Jean Rabel area stayed with foreign technicians involved in HACHO projects. But in every region I attempted not only to visit the sites that had been reforested and terraced, but also to interview

individuals at both the "delivery" and the "receiving" end of project interventions. An attempt was made, in short, to view projects not only from the vantage point of the project technicians, but also from the perspective of the participating farmers and their local agrarian economy.

2.4 Guiding Hypothesis of the Presentation

The basic hypothesis of this presentation posits the operation of an energetic profit-motive that has governed the behavior of Haitian peasants with respect to their participation in soil conservation activities, and indeed in most other developmental activities. The tenacity and depth of this profit motive must be viewed in the dual context, firstly, of a profound, historically derived market orientation which has characterized Haitian peasant society from its 19th century inception and, secondly, from the unparalleled material poverty which continues to afflict the vast majority of Haitian peasant households. The success or failure of soil conservation efforts has hinged largely on the manner in which these projects have intertwined with, meshed with, and addressed themselves to this profit motive.

But there are two major ways in which this profit-motive has been able to work itself out in the context of reforestation and terracing activities. In the case of a small-number of spectacular success stories, in which the projects have provided them with the opportunity to substantially increase their cash income, the peasants have incorporated innovative and dramatically effective erosion control measures into their economic repertoire. But in other projects which have attempted to peddle measures of little immediate economic value to the peasants, the profit motive has expressed itself in a fundamentally different, substantially less productive fashion. In this latter type of project the peasants have participated for the sole purpose of plugging into the flow of Food for Work and cash wages that foreign development agencies have been pumping into Haiti since the late forties and early fifties. In these cases,

tree planting and wall building have been performed out of mechanical compliance to the conditions of temporary employment, but have in no way become incorporated into the economic repertoire of the peasants.

My argument will be this: the Haitian peasant is too impoverished to afford the luxury of being seriously concerned with "soil conservation" as a long term objective. Soil conservation is possible and has been achieved--but only as a secondary result of innovative activities whose primary function from the peasant's point of view is the generation of a higher cash income.

2.5 Structure of the Presentation

The presentation will be structured as follows. Chapter three will identify and describe the factors which have led to self-sustained erosion control behavior among the peasants of a particularly favorable region of Haiti. Chapter Four, in contrast, will trace the evolution, transformation, and degeneration of certain less successful projects into collective charades whose prime function is the collecting of food and cash from the ubiquitous foreign development agencies.

The following three chapters will focus in on specific aspects of projects. Chapter Five will examine the institutions which have played a role in soil conservation and will identify the points at which their interventions have been weak. Chapter Six will deal with questions of the organization and motivation of the community groups which actually carry out the projects. Chapter Seven will examine a number of technical decisions which each project has confronted, with a view to choosing those alternatives which have seemed more successful.

The final two chapters will deal with certain key aspects of the economy and culture of the Haitian peasant. Chapter Eight will deal with the role which land tenure factors have played in the success or failure of soil conservation efforts. And Chapter Nine will examine briefly certain dimensions of the culcural underpinnings of Haitian peasant life as they relate to the participation of the peasant in soil conservation projects.

A guiding theme which will inform the entire report is the conclusion that the failure of many soil conservation projects stems from the failure

of project planners to demonstrate convincingly and to exploit the economic potential of certain fast growing tree species, from their failure to devise detailed microeconomic models of a transformed peasant economy based on agroforestation, the integration of profit-generating tree planting with traditional cultivation.

In line with this general conclusion, two appendices have been included, discussing the costs and benefits of various project alternatives. The task is seen as devising and implementing an approach to reforestation which departs from the conventional project stance that defines trees as a useful but minor supplement to the peasant economy. What will be called for, rather, is a reconceptualization of trees as a central weapon in the economic strategy of the mountain peasant capable of doubling and tripling not only the annual income generated by a given plot but also the cash value of the plot itself. It is envisioned here that the objective of "soil conservation projects" could be redefined as that of creating for the first time in Haitian history communities of peasants who are making a profit from the planting (as opposed to the simple cutting) of trees.

PART TWO

CASE STUDIES

CHAPTER THREE

ANATOMY OF A SUCCESS

The history of soil conservation projects reads like the history of development projects in general a depressing list of well intentioned schemes that for the most part have not worked. But the dynamics of failure stand more clearly outlined when viewed in juxtaposition to those rare projects to which the tentative label of "overall success" can be applied. There have been a small number of such soil conservation projects in rural Haiti. The project to be described here ended over twenty years ago, but its central erosion control lessons have been incorporated into, have become a permanent part of, the agrarian technology of the communities where the project functioned.

On the road leading from Kenscoff to Furcy, there is a crossroads at which the road to Furcy swings briefly westward. A vehicle which ignores the turn and continues southward will find itself on a recently constructed penetration road that for several kilometers follows the crest of a ridge affording overviews of the hills and valleys to the east and the west. The contrast between the view on the right and the view on the left provides one of the most dramatic studies in comparative erosion control visible in Haiti.

On the right is a valley that could have been modeled from a brochure on mountain erosion control. Most of the hillsides are lined and covered with rows of terrace-like structures obviously built to resist the effects of rainfall on cultivated plots that in some cases have slopes of over fifty degrees. The mountain crests are largely covered with stands of pine. On the left, in contrast, one sees the denuded mountains of traditional Haiti. With the exception of an occasional terrace-like structure, or the remains of such a structure, the cultivation in this western valley is done without the aid of erosion-resisting earthworks. The land rather is simply cleared of its vegetation and the corn and beans are sown directly into the ground. The panorama is one of land devastated by erosion. The contrast between the two valleys is visually striking. And the student of soil conservation practices finds himself challenged to explain why the cultivators of the western valley protect their land while their neighbors in the valley east of the road do not.

3.1 Mountain Vegetable Gardening and Erosion Control

I lived for several days in the house of a cultivator on the eastern slope, familiarizing myself with local agrarian technology and the history of any development project which may have helped shape this technology. To achieve this latter objective, I talked with as many older cultivators as possible.

Seen from close up, the protected, western valley began to look somewhat different. In the first place, there is some cultivation occuring there without the aid of any terrace-like protection. A sharp dichotomy exists between technology used in the cultivation of vegetables (the major species being cabbage and potatoes in this community) and that which is employed in the cultivation of more traditional crops such as corn and beans. The terrace-like structures were used only for the former. The latter crops continue to be cultivated in their traditional manner. If the hills in this valley are covered with protective earthworks, it is simply because most of the land there is allocated to vegetables. The eastern valley lacked the soil conservation measures, not because the people were different, but because the general eastern exposure of the valley created less favorable moisture conditions (called by the peasants "hot land") under which vegetables failed there with higher frequency.

Secondly, it became clear that for the vegetable economy there are two quite distinct types of earth structures being employed, each with its own history and function. And thirdly it turned out that neither of these structures can properly be called "terraces" or "mini-terraces".

The most prevalent structure is the one on which the cabbage and potatoes are directly planted. It is this structure, referred to as a tram by the cultivators of the region, which visually dominates the valley and which accounts for most of the land surface there. The tram is in fact a long, extended mound which, despite occasional departures from contour, in general follows the contour of the hill on which it is constructed. Despite initial impressions, it is not a terrace or mini-terrace; its design principle is fundamentally different. Rather than having a flat surface--the defining criterion of the true terrace--the tram is purposely constructed with a convex surface. A terrace system would produce a series of descending "steps". The tram system instead produces a series of descending structures more similar to the letter "S". Each unit in the structure has two components: the elevated convex part which the peasants call the bit (mound), and the lower, concave part, formed where the descending front of one tram meets the descending back of the tram immediately below it, to form a ditch (called the kanal) which serves to capture the water and--if the tram is slightly off contour--to conduct the water off to the side of the garden. I shall refer to the tram henceforth as a "contour mound" since it is, as will be shown, an adaptation and elaboration of the traditional mound on which the peasants of the region have always grown sweet-potatoes.

The second type of structure found on the protected hillsides is similar to a terrace, in that its surface is flat. But the surface unlike most terrace surfaces, is constructed on a marked downward incline, not as sharp as the incline of the slope on which it is located, but certainly on a greater incline than that of the standard terrace or mini-terrace. The inhabitants call this structure by the term plat-bann ("flat strip"). The plat-bann is also used only in conjunction with the vegetable economy. Its major function in the research community is that of seedbeds. Cabbage is first sown, for example, on a plat-bann. Only at transplanting will it be transferred to the larger contour mound. Other vegetables, for example carrots, are restricted in their entire cycle to the plat-bann, and are thus never transplanted onto contour mounds.

The all pervading presence of the contour mound and the plat-bann, their universal adoption by the cultivators--even the poorer cultivators--in the researched community, is an impressive phenomenon in view of the substantial investments of time, labor, and/or money which must be made to construct them. The contour mounds, in the days following their completion, are quite large. Individual cultivators vary in their techniques, but the vertical distance from the top of a mound to the canal behind it may be a foot. The width of the convex part of the mound may be two feet. But most impressively the drop from the top of a mound to the bottom of the canal belonging to the mound immediately below it may be as great as three feet. These structures are built entirely with the hoe.

A pick may be used initially to loosen the earth on land that is particularly difficult, but the structures themselves are given their final shape with the traditional long-handled hoe, a process that entails the expenditure of a great deal of labor.

To be more precise, using as the land unit a quarter of a carreau, which would be slightly larger than a quarter of a hectare, cultivators estimate that it takes a team of six men about two weeks to raise the contour mounds on a plot (the work week having six days). This would be land that has no trees or brush on it, but that merely has grass or low scrub. To clear the same plot of ground for the traditional planting of beans or millet, the same work team of six men would take less than two days, and might even finish it in a day. The use of erosion control measures is thus extremely expensive in comparison with traditional technology which does not use these measures.

But the matter becomes even more startling when it is pointed out that these erosion control structures must be created anew at the beginning of each cropping cycle. The process of harvesting the vegetables entails the destruction of the mounds (kraze bit). But more importantly, vegetable gardening itself entails a deep turning up of the earth for each new cropping cycle, a process which the peasants refer to as rahoure té, to distinguish it from the lighter ground preparation affecting only the first few inches of soil necessary for traditional grains. (This letter is

called saklé tè--literally "weed" the earth--in the case of mountain agriculture, since the ordinary tool is a long curved knife called the kouto digo). That is, the erosion control measures practiced by these cultivators are not simple one-shot investments which subsequently need only occasional maintenance; they rather entail a time-consuming technology in which the investment must be renewed each cropping cycle.

Two soil conservation technicians who visited the region in connection with this research--Robert Flannery and Michael Stapleton --concluded that the contour mounds built by the peasants had an above-average "erosion control efficiency", when compared with the rock walls which have been promoted as soil conservation devices in other communities of this region and in other parts of the country. But even though they are efficient from the point of view of erosion control, could no higher efficiency be achieved in terms of investments if more permanent structures could be built? This is an important question, one which will be touched upon when bench terraces are discussed--but it is the type of technical question which diverts attention from the critical issue which is: what has led the peasants of this region to incorporate these costly erosion-control measures into their agrarian technology?

Independent information gathered from numerous peasants in the region makes it clear that these erosion control practices first made their appearance fewer than twenty five years ago. We are dealing then with an analytically critical case of the spread of effective soil conservation practices among small cultivators. Is there any replicable "secret" which other projects might latch on to?

3.2 Earlier Development Projects

The older cultivators have very precise recollections of the arrival of development activities in the region. Some versions of events--including some published reports--would have it that the development of the entire region was spearheaded by the now well documented transformation of the Fort-Jacques/Fermath area during the fifties. Spurred by the damages of Hurricane Hazel, missionary groups and relief agencies began pouring in new types of assistance, including the sending of technicians to teach new production and soil conservation techniques. These techniques, carried out in the context of a good road to Port-au-Prince, a climate favorable to growing vegetables, and a ready market waiting for these vegetables, caught on, spread, and eventually transformed certain aspects of the local agrarian economy.

The older cultivators of the Furcy region have memories that go back even further, however. In this region the first stirrings of change came long before Hurricane Hazel, perhaps 10 years earlier. The changes are associated with the name of a Haitian agronomist working out of Damien, Agronome Roger Victor, and with that of his assistant, Pierre Fils, whose activities in the region go back to the presidency of Lescot in the forties.

Agronome Victor arrived in the region and proceeded to organize a "cooperative". He gathered a group of the leading farmers, rented land from one of the more prominent among them, and began a demonstration farm. Some reports claim that potatoes and other vegetables were introduced via Fort-Jacques in the fifties. This is not true. Potatoes had already been grown in the Furcy region, having been first introduced by the American occupation forces. But Agronome Victor introduced a superior variety of potato, as well as other vegetables that had not yet been grown in the region. He also introduced the concept of the seedbed and of transplanting, techniques that were as yet alien to the repertoire of local cultivators.

But most importantly he introduced the concept of soil conservation. The peasants of course had always known that water was washing down soil (dlo-a konn lavé tè). Many peasants believed—and still believe--that the presence of more rocks in their land in recent years stems from the fact that rocks can grow (roch konn grandi) and even have children (roch konn fè pitit). But at the same time they were aware of the erosive effects of water.

In local terms, dépi lontan dlo-a konn lavé grès tè-a. "Even way back water used to wash down the best part of the soil." But they had never been exposed to ideas or practices which would have permitted small cultivators to resist this process. Agronome Victor's solution was to introduce the construction of flat hillside beds--the plat-bann described above. He urged the peasants to use them not only their seedbeds, but also for the vegetables themselves when these were ready for transplanting. He introduced the use of the A-frame, urging peasants to take the time to stake out the contours of their hills, thus insuring that the horizontal axis of the beds would be as level as possible.

When he and his project left the region, the demonstration farm reverted to its owner, and the cooperative quietly disbanded. But a handful of the better off farmers began planting, as part of their regular cropping cycle, the improved variety of potatoes and the cabbage and other vegetables which the Agronome had introduced into the region. They kept the plat-bann, but they abandoned the A-frame, preferring the shortcut of trusting their own eyes over the more time-consuming procedure of staking out the contour with string. But the yields of the vegetables were not yet impressive enough to have this vegetable gardening become a central part of the local economy. The idea, the varieties, and the erosion control techniques had been introduced. But a critical stimulus was still lacking.

3.3 Fertilizer and the Evolution of Agrarian Technology

The stimulus came in the form of commercial fertilizer. The conditions of its earliest introduction into the Kenscoff region are still not clear. But it began being used on a large scale by the peasants of the Furcy region in the late 1950's. The use of this input tripled and quadrupled the yields of vegetables, more than amply justifying the investment that the farmer had to make. Unlike later projects, the fertilizer here was not subsidized. Peasants bought it on the market at going prices, but they bought it willingly because of the increased yields; and the entire community turned to the full-scale growing of vegetables, relagating their traditional crops to the less favorable land which could not produce these profitable new cash crops, for which there was a growing, and apparently inexhaustible, near by urban demand.

But some technical problems quickly arose. The plat-bann, introduced by the Agronome, was suitable for the seedbeds and for small vegetables such as carrots. But for the planting of larger vegetables, the plat-bann proved unsuitable as a final resting place. Its downward slant was seen as only a minor problem. More importantly its bed was too shallow to give the vegetables the depth of soil needed.

The peasants began turning to a traditional structure which they had learned from their fathers and grandfathers: the bit patat, the sweet-potato mound. For grains such as corn and beans, peasants have never turned up the ground deeply. But for root crops, the peasants had been used to building small mounds, separated from each other, created by a deeper turning over of the soil with the hoe. These small mounds were viewed as more appropriate than the plat-bann for the growing of potatoes and the planting of cabbage after the seedbed stage.

But at this point a disastrous process set in. Those farmers who used the small mound began seeing their dearly purchased fertilizer slowly wash down the slopes, wiping out a substantial part of what for them was an unusual new type of heavy cash investment. The response was rapid, and it spread like wildfire.

Some unknown peasant or peasants in the region hit upon an improved form of mound, one which was deeper, but--most importantly--was constructed, not as a series of discrete mounds with intervals permitting the escape of fertilizer, but was constructed across the hillside as one elongated furrow. The mound-like design was retained, but the connecting of the mounds into the form of a long furrow created in effect a ditch behind the mound which stopped or slowed the flow of descending water. The vegetables and their fertilizer were planted on the higher inside portion of the mound. With this structural innovation, the runoff of the expensive white powder was effectively halted.

This new structure is, of course, the countour mound, the locally devised tram, described in a preceding section of this chapter. It is thus a local innovation. Though older informants remember well the Agronomes who introduced the plat-bann, nobody could recall which local cultivator had first experimented with the contour mound. The local inventor--if there was a single inventor--has been lost in history. But his invention spread rapidly, as peasants of the region began copying each others earth-building techniques, until the process has become fairly standardized and deeply embedded in the repertoire of local cultivators as a normal practice which fathers now teach to their sons.

But paradoxically the peasants have adopted this effective erosion control device, not to protect their soil, but to protect their investment in fertilizer. And they have done it in a fashion which has entailed the selective acceptance of some techniques and practices introduced by project, the rejection of others, and the elaboration and improvement of techniques which have always been part of their own agrarian repertoire.

3.4 Summary of Strength and Weaknesses

In labelling the Furcy case a "success," no implication is meant that the best possible techniques were employed or that life's problems have been solved for the peasants of the region. Success is being defined here in a very specific sense: the incorporation into the repertoire of a peasant community of techniques which effectively combat soil erosion. In this sense the case of Furcy presents a multi-dimensional success story.

1. The erosion control is relatively effective on treated plots.

2. The techniques have been completely incorporated into the community's behavior.

3. There is no artificial dependence on outside inputs. That is, nobody is paying the peasants either cash or Food for Work to build the contour mounds. They do it on their own out of economic self-interest. They even purchase the fertilizer on the open market, unlike the coffee farmers of Belladere who receive their fertilizer at subsidized prices and with credit as well.

4. The innovation has spread to all levels of the community. The well-to-do of course use fertilizer, and pay others to construct their contour mounds and plat-bann. But the poorer sectors also grow at least small quantities of vegetables, and when they do so they also purchase fertilizer and construct contour mounds. Paradoxically, or perhaps not so paradoxically, they will use the money they earn building mounds for others to purchase the fertilizer which they will use on their own fields.

5. The innovation is consistent with, and in fact partially arose from, pre-existing cultural traits. As was pointed out, the contour-mound is basically an elaboration of the traditional bit patat. Several peasants proudly indicated the fact that the contour mound was of their own making. (Tram-nan soti nan lidé pa nou)

6. The handful of "heroes" are Haitian, not foreign. When peasants talk of the agronomes of the forties and fifties they talk of legendary giants whose presence helped transform a region. This is different from what I observed, for example, in the Northwest, where peasants sing the praises of PACHO and doubt the capacity of the Haitian government to duplicate the achievements of what they perceive to be a foreign operation. With the exception of "Monsieur Wynn," an American who has built terraces and has operated a fertilizer and seed store in the region, the blan are generally absent from this particular erosion-control drama in Furcy.

But by the same token, the results of this project contain many weaknesses.

1. There has been created a total dependence on commercial fertilizer which at least some observers would consider dangerous.

2. The soil conservation techniques have in general not included the replanting of trees. It is only in the past few years that a few better-off farmers have started planting orchards intercropped with fields where they plant vegetables. It remains to be seen whether this promising innovation will be profitable enough for it to catch on.

3. In accepting certain types of innovations, the community has jettisoned other developmental innovations considered desirable by project organizers. There have been, for example, no special groups arising in Furcy around the issue of the contour mounds. The early cooperative, which entailed some hopes of collective farming and collective marketing, has totally disappeared. The peasants have retained, not only their own private cropping system, but also the traditional market system in which the prime actor is, not the cooperative, but the traditional madam sara. The new developmental movements in the region--the Community Councils and developmental organization called Afe Neg Konbit--have arisen around matters extraneous to the erosion control innovations.

This simply means that there is room for much more development in the region, that erosion control is merely a start, not the final answer. But in Haiti it would appear to be a necessary start without which most other developmental innovations especially those of an agricultural nature, lack ultimate meaning.

The major lesson to be drawn from the Furcy project is dramatically underlined by the paradoxical fact that the costly the contour mounds are built to conserve, not the soil, but the fertilizer. Stated more abstractly, it would appear to illustrate that erosion control has occured as the secondary result of an innovation whose primary function, from the peasant's viewpoint, is the immediate enhancement of their cash profits.

This is a critical dimension of the whole process. Most of the projects examined in this research have unsuccessfully attempted to teach the construction of terraces or walls in the context of traditional crops. But the erosion-control innovations of Furcy have arisen and spread only in the context of a transformed cropping economy offering formerly unavailable levels of profits to the peasants. This may sound like a depressing conclusion, since it means that projects must not only provide technically sound soil conservation measures, but must simultaneously open up convincing avenues of new profits if the measures are ever to be adopted.

But there is no reason for this to be taken as a depressing conclusion. It is true that the absence of roads and distance from markets will hinder the development of the Furcy drama in most other regions of Haiti. But recent demonstrations and experiments have shown that there is a new type of cash crop which could transform rural Haiti, a cash crop whose promotion will require more institutional support, but whose successful propagation could directly affect the economic life of even isolated mountain peasants, and whose planting would substantially alleviate the erosion control problem in project regions. I am referring now to the introduction of fast-growing trees as a cash crop, trees which would permit the continuation of cultivation during the first few years.

It is in the domain of trees, rather than terrace or wall-building, that the most promising avenue of general erosion control will be found throughout Haiti. For this reason, it will be important at this point to examine the fate of some projects which have tried to promote the planting of trees.

CHAPTER FOUR

A COMPOSITE FAILURE

If the Furcy and Fort-Jacques experiences constitute examples of encouraging success, I have also encountered other projects which msut qualify as general failures. Rather than provide a humdrum account of several different projects which ran into different sorts of technical and organizational problems, I will present a composite picture in the form of a single project reconstructed from the details of several projects. Each of the events described in this composite was actually found to have occured on one or another project. The important dynamics concern, not terraces, but trees.

4.1 A Project Begins

The foreign technicians contracted by the Organization arrive in country. In addition to a general administrator and field chief of project, there is a soils specialist, an agronomist, a livestock specialist, a nursery and forestry specialist, and a soil conservation specialist. At the same time a search is being made for a community development specialist. The team is charged with the task of collaborating with Ministry of Agriculture counterparts on a general rural development project in the Region, placing special emphasis on the problem of soil conservation in the watershed surrounding the river that irrigates the Plain.

The first question to be resolved concerns the lodging of the foreign team. It was part of their workscope that they should live, not in Port-au-Prince, but in the Region where the project will occur. Apart from this stipulation, they are free to choose their own lodging arrangements.

The project is to occur in the rural areas of a small town some 20 kilometers from a larger provincial capital. The two most logical choices of residence, from the point of view of project efficiency, would be to live either in one of the major rural communities to be serviced by the project, or to live in the small town which is the administrative center for those rural regions. But other factors intrude, including the question of general living standards. The team of foreign technicians agree that they should live in close proximity to each other. But two of them have their families with them, including small children; and one of the wives, on seeing the town, flatly declares that she refuses to live there. Thus the decision is tilted toward residence, neither in the town, nor in any of the project villages, but in the provincial capital.

But their Haitian counterparts had been instructed by the Ministry of Agriculture that they were to live, not in the provincial capital, but in the project town. Thus a split living arrangement occurs, in which the Haitian technicians are living in the project community and the foreign technicians are commuting every day from the provincial capital.

A project office had been set up in the town. But the residence of the foreign technicians in the provincial capital makes it convenient for the project to have an office there as well. At first the town office was the central office, the capital office a subsidiary. Within half a year, however, the weight had shifted. The office located in the provincial capital now became the central office of the project.

In the meantime the project begins. Several activities are undertaken simultaneously: demonstration plots, livestock improvement, nursery planting, and soil conservation.

4.2 The Question of Payment

For all of these projects the question arises as to how cooperation will be elicited and sustained among the rural population. But a program decision had already been taken long before the arrival of the foreign experts and their Haitian counterparts: huge quantities of food would be made available.

The salaries of the foreign technicians came, of course, in the form, not of food, but of dollars. The Haitian technicians were paid monthly checks which made their way through several Ministries. A small amount of funding would be made available to pay occasional salaries of field assistants as the need arose. But in principle the labor provided by the peasants was to be paid in the form of food.

Everyone concerned realized that the peasants would simply convert this food into money, and some of the foreign technicians wondered whether it might not be simpler, and certainly less demeaning, to pay in the form of cash wages. But the decision to import massive quantities of food for work as remuneration was one which was made at higher administrative levels beyond the reach of the contracted technicians and under the impulse of overseas pressures and lobbies of which the project personnel had only the dimmest awareness. The team was presented with a fait accompli: peasant wages were to be paid in food.

A few of the foreign technicians had had original misgivings about paying <u>any</u> wages to the peasants for their participation in this sort of development project. The project was for their own benefit. The payment of wages was in strict violation of the voluntaristic, self-help community development principles which they had learned about in their own developmental training. But their Haitian counterparts, at least some of whom had been working for Damien on other projects, assured them that the Haitian peasant would respond only under the stimulus of some such incentive. As to the issue of whether the use of food might not be demeaning, it was pointed out that-- although there would be virtually unanimous preference for cash wages--the poverty of the countryside was such that many peasants would vie for the privilege of working even for a few pounds of cornmeal and a bit of cooking oil every day. Don't worry: the food for work will elicit the necessary cooperation.

4.3 Establishing Initial Contact

The initial contacts between project personnel and peasants were, at least superficially, cordial in character. Since none of the foreigners yet spoke Creole, the initial contacts were made by the Damien technicians, who explained to the peasants that a large foreign organization had chosen their region as a target for several types of help. In their conversations with peasants of the mountain communities of the watershed, the technicians explained that the main problem that the blan were concerned about was the problem of soil erosion. All the trees had been cut down, explained the technicians, and as a result rich soil had been washed downstream into the river, causing problems in the lowland irrigation system. What the blan wanted to do now was to help the peasants fill the hillsides with trees again and to show them how to build walls on their land which would prevent the soil from washing down in the future.

The peasants were courteous. They were well aware of the decline in soil fertility which had come over the decades and were not totally unaware of the fact that this decline was not unrelated to the water "washing" soil down the slopes. In response to their explanations, the project technicians would invariably receive a courteous,collective "Sé sa. Lap bon anpil" from their peasant audience. ("That's fine. It's a great idea.") But in their conversations among themselves, many of the peasants expressed deep concern about the notion of the blan coming to plant trees on their land. This particular region had had not so pleasant experiences with an American-run SHADA rubber project back in the forties. Stated in a blunt fashing, there was

an openly expressed concern that the blan, with the cooperation of the Haitian Government, might have as their final objective the eventual expropriation of the land in this particular region. The planting of the trees was seen as a possible first step in the assertion of proprietary rights.

But this was a suspicion, a fear, not a conviction. When the Damien technicians indicated that as part of the project there would be regular payment of ti-nouriti for those who participated with their time and labor, genuine enthusiasm began to be felt for the project. The situation appeared to be imbued with ambivalence. On the one hand was the suspicion surrounding outsiders bearing gifts of trees: on the other hand, there was fear that, by resisting, the communities in the region might drive away the project, causing the Food for Work benefits to go to some other region.

What is important, however, and what was to determine the course of the project, was the fact that the peasants saw as the principal benefit not the content of the project itself but the food which would be paid as an incidental adjunct to the project. It is this characteristic which paves the way for project disaster.

4.4 The Demonstration that Failed

The work began on many fronts. The foreign and Haitian agronomists had as part of their mandate the establishing of demonstration gardens in which they would prove to the peasants that they could obtain higher yields from their traditional crops if they would simply change their cropping technology. Unlike earlier projects in the Fort-Jacques

area, which had taught peasants to grow new cash crops, the project here emphasized the extraction of greater yields from their traditional crops.

The first task was to identify a body of peasants who could be said to be part of the project. Those willing to cooperate were formed into a groupman agrikol. As has so often happened, the better off farmers tended to be the ones who took the risk of participating. The next task was to secure land where the gardens could be grown. In one community a number of farmers with contiguous plots combined part of their plots into a temporary "communal garden." In another community, the project had to rent land.

The experimental corn gardens did not fare very well. The young Haitian agronomist in charge had actually had very little field experience. He was the son of a well-to-do Port-au-Prince family who had originally wanted to be a physician but who, on being unable to enter medical school, took advantage of a favor and entered Damien to pursue the career of agronomy, though he had never held a hoe in his life. The book learning which formed the basis of the counsels which he and his foreign counterpart gave to the peasants was based for the most part on lowland agriculture in industrialized settings. In addition to introducing fertilizer, they tried to teach the peasants two other "improvements." One was to plant the corn on the top of furrows, rather than beneath ground level, as the mountain peasants fo. The second was to discontinue intercropping their corn with other crops and to grow instead pure stands of corn.

The results of these "improvements" introduced by the experts earned for them the stifled laughter of many of the peasants behind their backs. The hillside corn grown on furrows suffered from lack of moisture. On irrigated lowlands, it makes sense to raise the corn to prevent exposure to excessive moisture. But on mountain slopes the problem is the opposite: water quickly drains off, and the task is to plant the corn as low as possible to secure for it the maximum amount of quickly vanishing moisture. And as for monocropping the peasants continue to be correctly convinced that the benefits they extract from a garden where corn, millet, manioc, sweet potatoes, and congo peas are intercropped far exceeds the income and food they can generate from a monocropped corn plot. As for the fertilizer, the ears of corn were larger. But the technicians had neglected some simple calculations which the peasants implicitly make in deciding whether to invest in fertilizer or not. Only in certain very special cash crops--such as vegetables or coffee--will the income from fertilizer-augmented yields justify the investment. In a traditional crop such as corn, increased local yields will simply produce a post-harvest glut which knocks the bottom out of the market, making it difficult for the peasant to recoup his investment. The demonstration plots merely demonstrated to the peasants that not all agronom were so clever after all. Within a short time the communal gardens were disbanded, the groupman agrikol ceased to function, and the entire matter passed into silent oblivion.

4.5 The Building of Walls

Not so the soil conservation element of the project. As in the case of agricultural extension, the soil conservationists first had to teach the techniques, and the teaching was to be done in the context of a demonstration field. The first task, after forming a groupman of local peasants interested in participating, was to secure a plot of ground on which they could erect bench terraces, retaining walls, contour canals, mini-terraces, vegetal barriers, ravine check-dams, and other elements in the armament of soil conservationists. (Reforestation was to come only later.) But nobody was willing at first to subject any of their plots of ground to these bizarre, probably irreversible manipulations. The technicians were chagrined. Their understanding was that they were offering free land-improvement services and that peasants would vie with each other for the privilege of having their land treated. The peasants viewed it quite differently. They were exposing their land to risks. They were eager for the project--with its Food for Work and its promise of other inputs-- to favor and focus upon their communities; but they would have preferred that it be done without directly risking their land.

Eventually the president of the groupman, a relatively well-to-do farmer, acceded to the wishes of the project technicians and turned over a plot of agriculturally marginal ground to be treated with bench terraces, miniterraces, vegetal barriers, and other erosion control devices. This followed a paradoxical pattern that was to dominate numerous soil conservation projects. The protective structures

should logically be placed on land that is still worth protecting--i.e. on the best agricultural land. But because early treatments tend to be done on land reluctantly granted by peasants, these treatments will be given to parts of what are the worst land in the community, providing an eloquent symbol of the gap between project rhetoric and project reality.

The work began. The first task was to construct bench terraces and dry walls. Nobody in this region had ever seen or heard of such structures. But after the second or third day, a devastating secret (embarrassing or hilarious, depending on one's point of view) was revealed. None of the technicians, Haitian or foreign, knew anything about terrace or wall building either. It was at this point that the Haitian conservation specialist, eager to learn, found out that his foreign counterpart was in fact a Sociologist, with a degree from the Sorbonne, who couldn't tell a terrace from a sand dune. The walls were falling down as soon as they were put up.

The project director, when informed of this fact, hastily organized an expedition to the Fort-Jacques area. The technicians and about a half dozen local peasant leaders spent several weeks learning soil conservation techniques from the now proficient peasant wall builders of Fort Jacques. On returning to their home region, they resumed the terracing, now with a great deal more technical competence.

There were motivational problems right from the outset. In theory different groups of peasants from surrounding communities would rotate their labor, maximizing the training experience throughout the region. But at this point the foreign project directors were being very parsimonious in the quantities of food that they were giving for participation. The peasants, in calculating the worth of the reward, computed the market value of their daily food ration. At the then prevailing payment rate, they would be receiving less than two gourdes a day--a not attractive sum even for rural Haiti. Furthermore, the Food for Work option is attractive to the peasant only if he is allowed to work in month long stretches, at the end of which he will receive perhaps 100 pounds of wheat or cornmeal and a large quantity of oil and sardines. But the practice of rotating labor on these early demonstration plots combined with the already low daily rate to seriously reduce the attractiveness of the entire endeavour to the peasant participants. The result was a discouraging absenteeism rate.

Once again we see a gap between the technician's focus and that of the peasants. The project technicians saw themselves as bringing a needed message of soil conservation; the community saw them as bringing Food for Work, and--at least initially--was willing to tolerate the messages and the strange lessons to see where all this might lead to in terms of project inputs.

4.6 The Unwanted Grass

Eventually the time for demonstrations had ceased, and the time for serious action on the region's hillsides began. Different communities were subjected to different types of interventions. Of particular interest is the sequence of events that unfolded in the community that had been earmarked for coverage by vegetative barriers. This community was characterized by the absence of rocks, rendering it unsuitalbe for wall-building treatments. For reasons that are now buried in an unretrievable past (the decision-making technicians have now departed), the project decided to cover the hillsides of this region with carefully spaced rows of citronel, an oil producing grass, as barriers against soil erosion.

The peasants of the community, as far as can be determined through retrospective interviews, had absolutely no say in this matter. Few or them had ever even heard of citronel and even fewer knew of its commercial use. The technicians assured the peasants that citronel was a popular source of manufacturing oil for airplane lubrication--all that was needed was a factory in the region, and they would have a ready market for the grass that was now to be placed on their land.

The sequence of events that followed is one of the more disturbing patterns that was found to occur in several soil conservation projects studied during this research.

The project began by asking permission of the local residents to begin the planting. In the beginning the project organizers met with flat refusals. Eventually they found a few willing households in one community, and the work began. Now the task was to organize the planting itself. In these matters the foreign technicians were for the most part helpless and had to turn matters over to their Haitian counterparts. But even the Haitian technicians themselves were outsiders to the communities, with no real insights into local social organization.

One would have thought that the question of the organization of the project would have been considered essential, that efforts would have been made to create coherent local groups on the basis of some community principle, either common residence or contiguous landholdings, or some such. But the time-consuming steps necessary to achieve this were never taken. The project rather opted for the formation of simple work-gangs (ékip).

The composition of the work gangs was one of the most resented aspects of the project. Though lip service was given to the principle of employing community labor, in fact a substantial percentage of each work gang was composed of total outsiders who had managed to work themselves onto the payroll. In a large number of cases the very peasant whose land was being covered by the undesirable citronel was refused employment. And we are left then with the following

vignette of community development in its most bizarre form: the picture of an angry peasant watching a gang of paid outsiders invading his land to plant a grass of whose marketability he was justifiably dubious and toward whose erosion-control utility he was both skeptical and indifferent.

The term "invade" is by no means an overstatement. The principle of asking permission was quickly abandoned as the work got under way and the food started flowing. Early project timidity about offending peasants was quickly abandoned, and local foremen began walking and speaking as though bolstered by the authority of the State, threatening imprisonment to any farmer who attempted to prevent the planting of his land in citronel, and threatening with fines the farmer who pulled it up, burnt it off, or let his animals consume it. In the face of a massive flow of Food for Work and the commitment of enthusiastic laborers who would have been willing to plant the entire nation in citronel, the peasant was helpless to object.

Not all of the peasants wanted to resist; many reportedly saw the value of the citronel, at least in terms of its erosion control function. But the important point is that this was irrelevant to the progress of the project. Once matters got rolling and the payrolls collected, the project lost any pretence of being a community development project. It was more in the nature of a public works project mandated by State authority.

To this day many peasants in the region still refer to the grass as citronel léta (the Government's citronel) or citronel blan (the foreigner's citronel). Many, probably most, have by now lost their fear that the foreigners will come in and take away the land. But remarks I overheard indicate that at least some peasants still suspect that one day an airplane oil factory will be set up in the region and the blan will come back at long last to claim and harvest their now flourishing citronel.

Were the foreign technicians aware of the coercive nature of much of what was occuring, or of the land tenure anxieties which dominated the conversations of many of the peasants? I seriously doubt it. My impression is that, with a number of fortunate exceptions, the average foreign technician or administrator in Haiti generally remains unaware of such dynamics, is content rather to restrict his attention to the technical matter at hand--e.g. finding the best variety of citronel--leaving these messy social and organizational problems in the hands of his Haitian subordinates. The success of his work in Haiti will be judged first and foremost by the number of linear kilometers of citronel which he has planted. As long as the citronel continues to be planted, there will be an understandable tendency on his part to not probe too deeply into the organizational tactics being employed to achieve this end.

4.7 Enter the Trees

Other communities in the Region had been earmarked for a different treatment, one whose principal element was the planting, not of vegetative barriers, but of different species of trees, in combination with dry walls (in the case of rocky land) or mini-terraces of one meter's breadth (in the case of land with no rocks)

As the project was originally conceived, the tree planting element of the project would be the shared responsibility of both the forester, who would be responsible for the nursery, and the community development specialist, who would be responsible for preparing the community for the reception of the trees. But the community development specialist was more than six months late in his arrival.

The late arrival of his colleague did not in the least deter the forester, whose scope of work indicated that he was to prepare a nursery. Soon after his arrival in Haiti, the nursery was underway. Roads up into the watershed were either poor or non-existent and the programmatically most sensible procedure would have been to locate the nursery in as close a proximity as possible to the watershed where they were eventually to be planted, reducing thus the transportation problem. But in this matter the forester's hands were tied. A decision had been taken to locate the nursery on a governmentally owned farm that was several hours away from the watershed itself.

The forester did not make too much of a fuss about this. His task was to produce a good nursery; this could be done just as easily on the government farm as on a plot of ground more convenient to the watershed. The problem of transportation would be somebody else's. His task was to get a nursery started, and that's what he would do.

He was also unconcerned about the absence of his community development colleague who was supposed to be organizing the communities for the reception of the trees. His job as a forester was to produce a nursery. The organization of the community was somebody else's responsibility. He himself had been brought to Haiti to produce a nursery, and that's what he would do.

An that's what he did. Within two years after his arrival in Haiti, his well organized nursery had over 100,000 seedlings, most of them fruit trees, most of them planted in bags. His choice of species had been determined very casually. Since his task was the nursery, his visits to the watershed were rare and his knowledge of local agriculture, local and tenure, and even local tree preferences was at best spotty.

By the time the community development specialist arrived, the nursery was already advanced, and the trees would soon have to be planted. The newly arrived technician quickly learned Creole and spent most of his time in the watershed, trying to familiarize himself with local peasant agriculture, and trying to prepare the way for the imminent planting of the trees. The peasants showed a

courteous interest when hearing of the trees, but the technician nervously suspected that he and his colleague were going to have trouble unloading 100,000 trees.

But he had not anticipated the extent of the difficulty. A date was set for the delivery of the first batch of trees. The president of a previously formed local Community Council was asked to call a meeting for that day. The two technicians would have several thousand trees transported into the watershed and would give demonstrations as to the proper techniques for planting them.

On the appointed day, the trees and technicians arrived. But the audience consisted of some half dozen peasants, at least three of whom had been nervously collared by the president at the last minute to show up at the meeting. Stifling any disappointment they might have felt, the technicians gave their demonstration. The young trees, still in their sacks, were deposited by the roadside. After the demonstration, one of the technicians, with a gesture of his arm, said to the peasants, "They're all yours now. You and your neighbors can take them and plant them wherever you want." The peasants thanked them, waved goodbye as the technicians drove off, and returned to their homes.

The community development technician returned to the community several weeks later. (The forester never returned to see the fate of his trees. His job had been to grow them in the nursery. It was someone else's job to see that they were planted.) The technician

had not expected a mad rush on the trees. But he was crushed to learn that virtually all of the trees were still by the roadside exactly where he had left them. The roots of many of the plants had already started to burst through the sacks. Somewhat flustered he asked some bystanders why they hadn't planted the trees. The man hemmed and hawed, pointing out that the farmers were waiting for further instructions, weren't really interested in these varieties of trees, didn't really need that many trees, maybe just one or two per household, and in general couldn't afford to fill their cropping land with trees. The denouement to this was the ultimate destruction of some 60,000 nursery trees which were soon to pass the stages of possible transplanting.

4.8 The Systematization of Tree Pushing

In the context of Haitian soil conservation projects, this situation --that of a nursery filled with trees whose ultimate destination is somewhat in question--was distressingly common. But the strategy employed here by this project to move the trees--that of simply leaving it up to individual peasants to come and take trees as they wished reforestation--was somewhat unusual. The vast majority of reforestation programs in rural Haiti have made tree planting the responsibility, not of individual farmers, but of organized community groups.

In view of the resounding failure to move the trees by offering them to individual farmers, the Project quickly changed its tactics. Trees would henceforth be planted by teams of paid workers. The wages, of course, would be in the form of the Food for Work that had already made possible certain earlier phases of the project.

The offer of Food for Work, as was to be expected, elicited the enthusiastic approval of hundreds of local peasants,quite eager to labor for a marketable commodity which they would, with little trouble, be able to convert into cash. Some of the peasants commented among themselves that they would rather be paid in cash--and indeed it was reported that another community in the region, in the context of another project, had insisted that payment be made, not in food, but in money. But no such movement caught hold among these peasants. Project technicians appointed certain local leaders as foremen, responsible for organizing the teams.

Unlike the teams that had been formed for the planting of the citronel, these teams tended to be composed only of local residents, the main concession being that, for training purposes, members of other communities that would eventually be involved in the project could send one or two individuals to participate in the work.

An unusual feature of this project was the tactic of systematically combining of tree planting with the building of walls, terraces, and other structures. Most earlier projects had separated the two activities. Much of the tree planting being done in Haiti involves simply that, with no systematic attempt to treat the reforested

hillsides with other types of erosion control structures. And conversely, the famous terrace-building projects of Fort-Jacques restricted treatment of land to these earth works. The small bit of reforestation that was done there was done on a separate block of State land. The Project here, however, would carry out both types of activities more or less simultaneously, depending of course on the availability of rain and the availability of trees from the nursery.

4.9 The Problem of Reluctant Land Owners

The promise of Food for Work completely removed the problem of finding labor to plant the trees. But the question of where the trees would be planted had still not been solved. Even individuals who were willing to work in the teams would have preferred that the trees be planted on land other than their own. Certain apparently contradictory messages they were receiving from project animators made them uneasy about the entire endeavour. For example the farmers were told, on the one hand, that the trees were theirs, to use as they wished. But they were warned on the other hand to protect the trees, to avoid tying animals near the trees, under pain of having the animal impounded to be rescued only on payment of a fine. An ambiguous arrangement such as this created the impression in the minds of at least some farmers that in fact the trees were not theirs, that they belonged to, and would continue to belong to, the Project, and that the entire project might conceivably be a mere prelude to a plan

on the part of the blan and the State to eventually take the land away from the peasants.

In the course of my research, I was impressed at the frequency with which I heard this fear in different parts of the country. The genuineness of the fear is supported by another pattern--the practice of referring to the development organization as the Company. It would have surprised at least some of the idealistic foreign technicians to learn that the peasants taxonomically lumped their development organization into the same category with private, profit-making companies. This simple but revealing linguistic pattern buttresses the frequently expressed fears of the peasants about eventually losing their land. Certain peasants who were willing to cooperate with the blan in the beginning of the tree planting activities came under verbal attack from some of their neighbors. Pinga ou mete blan nan peyi-a. Kounyea yo mandé-ou. Min pi ta yo anik maché-pran. Don't help the foreigners get a foothold here. Now they're asking your permission. Later on they'll just take what they want.

But local community leaders, who had been placed in various leadership positions within the project, assuaged the fears of their more timorous neighbors, and the project proceeded.

To play it safe, the first trees were planted, not on private property, but along the roads and paths. The survival rate of the trees was virtually zero; roadsides and pathways are the only place

that peasants with little land to spare can pasture their livestock. But since the Food for Work was given on the basis, not of trees that survive, but of trees that are planted, the work went on.

But the capacity of the roadsides to absorb trees is very low; the forester running the nursery was urging the project director to order the planting of more trees; and the soil conservation component of the program was lagging. The demonstration plot had been filled with bench terraces, rock walls, contour canals, vegetative barriers, and mini-terraces. It was time to begin passing from demonstration to action.

Thus a number of strong executive directives came down ordering quicker progress. By this time the Haitian field technicians were in effective charge of the project, the foreign technicians restricting their involvement to occasional site visits. The order to move more quickly came from the foreign project director. The Haitian technicians were puzzled as to how to proceed, since community members, though generally eager to participate in the Food for Work activities, were on the whole reluctant to have their own land treated by the project. The project director had no practical suggestions to make on the matter; this was the problem of the field technicians.

As might be expected the problem was solved in a manner not unlike that of the citronel affair: the technicians simply pointed to a

block of land and the work teams moved in. Most of the landowners eventually capitulated, since most of them were employed on the project. One landowner who tried to obstruct entry into his land was actually brought before a judge. The prevailing project stance was: this is a government project for the common good and no individual has the right to block it.

As a result the walls were built and the trees were planted. The project employed local watchmen (gadyin) to patrol the treated hillsides and to report on any cases of animals being allowed to destroy the walls or trees. Their work was not effective against the pressure created by the need to pasture livestock. And in fact no farmer was prosecuted for the destruction of walls or trees. The economic logic of this is patent. Farmers who refused initial entry into their fields were in effect partially blocking the flow of Food for Work. Hence the stimulus for strong action. But there were no collective payoffs arranged to preserve the trees or structures. The group payoffs were for constructing and planting, not for maintaining. Thus the hiring of a handful of watchmen proved to be an ineffective measure, within several months the walls had succumbed to the livestock and the hillsides of certain communities were as treeless as they had been before the project ever started.

4.10 The Root of the Failure

Few developmental professionals would hesitate in describing the above project as a failure. Disagreement would arise, however, as to the precise nature of the malady. Some individuals with whom I have discussed these projects interpret the failure as a dramatic illustration of the disasters created by using wage labor or Food for Work as the basis for development projects.

This is not a straw argument; many concerned professionals would adhere to it. But I must vigorously disagree. The project described above is ridden with a number of defects; but its most devastating weakness is not the presence of remuneration but the absence of project objectives from which the peasants perceive a genuine short-term economic payoff for themselves. The problem of fear of expropriation adds a complicating element. But I have seen projects founder even where I found no evidence of this particular fear. The major weakness in this project, the central difference between this fiasco and the successful erosion control innovations of the Furcy farmers, hinges around the presence or absence of self-sustaining profit generating opportunities in the project's offerings.

The project described above emphasized the goal of "protecting soil." Even the trees were conceptualized in that light. The economic utility of the trees to the farmers was pointed out, but it was clearly a secondary theme in a concert dominated by the theme of preventing erosion as the central project objective. But this theme has simply not proven sufficiently cogent to elicit and sustain

profound, long term changes in the peasant's economic behavior. The case of Furcy demonstrates that the Haitian peasant is fully capable of such changes--but further suggests that it takes the incentive of profits to motivate the requisite investments of time, labor, and money.

I will discuss the pro's and con's of payment in a later section of the report. Here it will suffice to point out that the absence of payment in the above project would certainly not have made the project succeed. On the contrary, a case can be made to the effect that under certain circumstances payment can help convert what would otherwise be total fiascoes into at least modest successes.

To illustrate, it should be recalled that the above project was a reconstructed composite of several projects studied during the research. One of the actual projects was fortunate in having the services of a dynamic Haitian animator, skilled in both agronomy and soil conservation techniques, who had been a longstanding resident of the rural area where he was eventually employed by the project.

The project in question followed the outline of the project described here, including initial coercion, fear of expropriation, and Food for Work. But the animator in question experimented and persisted in a way that his counterparts in other projects did not. Of particular importance, he introduced into the project a number of fast growing wood trees such as bwa blan, bwa ple, and tcha tcha

already known to the peasants as handy sources of cash to the proprietor fortunate enough to have a few growing wild on his land. He furthermore--behind the back of the project director--started a local nursery of these trees, reducing dependence on the project nursery. And most importantly, he experimented with several different spacing strategies, eventually hitting on one which made tree planting compatible with simultaneous livestock grazing on a plot of ground. All of this was done on his own.

The result was that some seven or eight years after the project has initiated, while it was still in progress, the wood trees were getting impressively large, a handful of peasants had started making money on them, and other communities in the area asked him to begin the project in their area as well. Resistance to trees had virtually disappeared in the area. The project was not a total success. That is, the peasants are still not independently planting trees on their own as a cash crop, and the invitation from the other community had a large element of Food for Work interest involved in addition to interest in trees. But the changed attitude toward trees and the new openness of the peasants toward participation in the project must be counted as a partial success. In fact some of the most vehement early resistors are now among the most vehement advocates of a return of the project.

It must be pointed out that, this partial success occurred only because the project first barreled in cajoling and paying its way to completion. But the lesson from this is not that initial coercion

might be justifiable--I will su. .est below that there are better ways of beginning--but that even a poorly run project will have some hopes of success if the peasants are convinced that they will make a profit from learning the behaviors (in this case tree planting) which the project is teaching.

The remainder of the report will thus assume that the major determinant of the success or failure of soil conservation is the presence or absence of convincing profit incentives, not in terms of the project wages or Food for Work, but in terms of the very behaviors which the project seeks to impart. The report will further attempt to argue that, with proper planning of a type that no project in Haiti has yet done, the trees themselves can serve as the required source of impressive short-term profits. But it would be a gross oversimplification to let the matter rest there.

The profit dimension is the major determinant of success or failure. But by no means is it the sole determinant. We still have to assess the impact of the institutional, organizational, technical, and sociocultural factors alluded to in the introduction to this report. The following four sections of this report will discuss, in as succinct a fashion as possible, the manner in which each of these four types of variables exerts its own impact on the outcome of soil conservation efforts.

PART THREE

ANALYSIS OF PROJECT ELEMENTS

CHAPTER FIVE

INSTITUTIONAL VARIABLES

The preceding two chapters have presented descriptive accounts of successes and failures in erosion control projects. The next chapters will be more analytic in nature, each featuring upon one particular dimension of projects or one aspect of community reality.

The present chapter will examine the institutional context in which projects unfold. In the best of all worlds, this chapter would not be necessary. That is, communities would spontaneously organize themselves, take measures to supply themselves with the necessary tools, seedlings, and other materials, and simply go about the tasks of planting and protecting trees, and building and maintaining erosion control structures. But because this is not the best of worlds, this sequence of events simply never (or virtually never) occurs. It is for this very reason that development organizations come into existence. There are a number of specific, identifiable support services without which communities cannot or will not carry out projects.

But the successful provision of these services in turn presupposes certain institutional capacities on the part of the implementing agencies. But it takes but brief exposure to a handful of development projects to sensitize the observer to weaknesses in the development agencies themselves which prevent them from effectively providing the services which they are mandated to supply.

Rather than launch into a series of random, hit-and-miss criticisms, I will attempt in this chapter, first, to make a systematic inventory of the types of agencies which have been, and will probably continue to be, involved

in soil conservation projects, in Haiti; secondly, to specify in logical and chronological order the principal services which these agencies--particularly the implementing agencies--should provide to community groups to soil conservation projects; and thirdly, to discuss the major weaknesses which research has uncovered in the delivery of each of these services.

5.1 Institutions and Soil Conservation Projects.

Office discussion and even some written reports make a dichotomous distinction between large governmental development agency on the one hand, and the "PVO's," the Private Voluntary Organizations, on the other. This distinction, however, is merely a first approximation and masks a number of important internal distinctions. For purposes of the analysis of past and present soil conservation practices, we can discinguish among five types of development organizations that are above the level of, and provide various types of inputs to the individuals or the local community groups that actually execute the projects.

5.1.1 The Ministries of Agriculture and Education of the GOH.

Within the government of Haiti, the most important organ of recent soil conservation activity has been the Department d'Agriculture, des Ressources Naturelles, et du Développement Rural, popularly called by the place name of its host community, Damien. Damien has had some sort of formal institutional involvement in a number of the more important recent projects investigated in the course of this study. It has generally not been an autonomous, self-sufficient agent; its agents have rather plugged into one or another component of projects funded or otherwise supported by one of the other agencies to be discussed. For example, the two Damien forest

agents currently involved in reforesting the Kenscoff areas depend on one PVO--the Baptist Mission at Fermath--for the majority of their trees, and on another PVO--CARE--for the supply of Food for Work with which they motivate the communities to participate. Damien technicians are also playing leading organizational and technical roles in the context of the UN/FAO project currently in action in and around Limbé.

In addition to Damien, however, ONAAC (Office National d'Alphabétisation et d'Action Communautaire), lodged within the Ministry of Education, has also been involved in soil conservation activities. Some of the rock wall building in and around Anse Rouge, for example, has been organized by ONAAC animators. As with the Damien employees, however, their involvement generally occurs in the context of programs whose material support comes from elsewhere--HACHO in the case of the above-mentioned Anse Rouge activities.

One could view this situation in a negative light, taking it as a symbol of the continuing weakness of national soil conservation institutions. There is some truth in this. But there is a programmatically much more useful construal of this situation. Were it not for the presence of these other institutions, the Damien technicians would have learned nothing, would have accomplished nothing. But the presence of these other projects, funded and administered by outsiders, has been a source of invaluable training and firsthand field experience to a number of Haitian technicians. The training that the technicians are receiving in this context, training that involves not only technical matters, but organizational, motivational, and administrative problems as well, is far superior to the theoretical training which they would receive in Damien itself.

Stated differently, we should consider the presence of these outside projects, not as a plague and curse on the country, as some doctrinaire philosophers of "institution building" would have it, but rather as an invaluable source of training for GOH technicians who become involved, in addition to the benefits which accrue to the communities. The ultimate objective is the strengthening of governmental institutions. But given the contemporary institutional reality of Haiti, an effective path to this goal might entail simultaneously the strengthening of these privately run projects and the incorporation at field level of GOH personnel, in addition to the assistance that is being given directly to Damien.

5.1.2 International Development Agencies.

The major international development agencies which have supported one or another type of soil conservation activity have been the bilateral USAID and the multilateral United Nations, both with central offices in Port-au-Prince. Neither of these agencies is, strictly speaking, an "implementing agency" in their current modus operandi. That is, they do not have direct hire personnel living in the field working directly in the provision of technical or supervisory assistance to GOH counterparts or to community groups. They have become first and foremost funding agencies for projects and to an impressive degree, especially in the case of USAID, serve as employment agencies, carrying out the role of broker in the search for foreign technicians, hired on a contract basis, who will implement projects in collaboration with GOH counterparts.

The earliest systematic soil conservation efforts appear to have been carried out in the context of the UNESCO supported Marbial project of the late forties and early fifties. In addition, the UN recently completed a 10-year project involving soil conservation in the area around Aux Cayes, and is currently carrying out activities in an earlier mentioned project in Limbé. USAID's most direct involvements in soil conservation has been in the context of the PDAI project in the Acul watershed of Aux Cayes. But in addition, USAID has been indirectly involved in soil conservation through its support of various relief agencies such as HACHO and CARE (to be discussed below).

The radically non-implementing character of the U.N. and USAID is a product of recent institutional evolution. As recently as the early sixties, USAID (then called USOM) had direct hire technicians living in the Artibonite working on a daily counterpart basis with GOH technicians involved in the construction of the Peligre dam. Such an arrangement would today be totally out of character with the Agency· the newly-arrived direct hire employee who insisted on living in a project region would come under quick fire from the "new professionals" and would undoubtedly soon find himself beating the corridors in Washington looking for a new country assignment. The evolution of this trend appears to be picking up even more momentum. Counterpart relationships even at the ministerial level now appear to be a quickly fading fiction. The employees who have GOH counterparts appear to meet them only sporadically and--in some recent cases--only with marked institutional and interpersonal strain. But an increasing number of Agency employees have been freed from the discomfort of such strains by their total involvement in Agency-internal planning, bookkeeping, and evaluation.

The insulated character of these activities is viewed as a weakness only by a minority of direct-hire employees, generally the older technicians who look back with approval on the earlier field activities of the Agency, or younger employees with a Peace Corps or some other volunteer background who had envisioned a USAID career as a professionalization, perhaps at a somewhat higher level, of permanent, direct developmental involvement with

foreign counterparts and with the day-to-day problems of program implementation. The prevailing ethos, however, appears to accept the new office-based role of the Agency as somehow being the necessary prelude to GOH "institution building," and which in some cases even dismisses the learning of Creole and the making of frequent field trips as perhaps suitable for lower-order technicians and other temporary amateurs, but hardly necessary activities for the true developmental "pro."

A dispassionate assessment is needed of this issue, because in discussing it we are in reality discussing what the nature of USAID should be as a developmental agency. I will here restrict my comments to what I have observed in the course of my observation of soil conservation projects in Haiti, trying to arrive at a sense of the "strengths" and "weaknesses" inherent in USAID's current operational style.

Of all the developmental agencies observed, USAID is by far the most "powerful," by at least two definitions of the term. In the first place, the unparalleled amount of money it disburses places it in a position of greater potential influence than agencies with fewer resources at their disposition. But secondly and more concretely, USAID has in fact been indirectly involved in more soil conservation projects than any other institution by virtue of the direct and indirect support it has given to the various PVO's in Haiti, the operational groups which have actually implemented projects.

Another source of potential strength is in the collective expertise of an organization whose employees have had developmental experience in all parts of the globe. This expertise should be found not only in the minds of those walking about USAID corridors but also in the documentation available to the agency.

It must be stated, however, that from the point of view of soil conservation projects these potential strengths have not been exploited.

In the first place, USAID has not yet helped steer its client PVO's in the direction of sound soil conservation practices, but has to some degree continued to mechanically pump resources into projects that have not only been poorly executed but poorly conceived from the start. Many of the HACHO wall building projects in the Northwest, for example, in which many "soil conservation" structures are laboriously erected on barren hillsides that have seen few raindrops and have never felt the cultivator's hoe, show a lack of systematic planning. As a major funder of HACHO, USAID has, at not time, used its potential influence to alter HACHO policy in these specific matters. This failure, of course, stems from the absence within USAID itself of a coherent plan of attack on this issue. The theme of "agroforestation" discussed in this report, in which soil conservation is planned in the context of profit-oriented peasant cultivation, could provide one such conceptual anchor. But the Agency needs some such anchor if it is to exercise its potential influence over implementing agencies.

In terms of its collective expertise, there is a conspicuous lack of documentation. The recently established library in USAID/Haiti is an invaluable resource which should be broadened and strengthened. But in discussing soil-conservation, for example, the country mission should have at its disposition a vast inventory of projects that have been tried in other countries, by USAID and other agencies, with comments on successful and unsuccessful approaches. Such documentation is not currently available and missions may find themselves reinventing wheels.

What of inherent "weaknesses" in the Agency, which might hamper its effectiveness in soil conservation practices?

One weakness is to be found in a tendency to "over-bureaucratize" and "over-structure" its projects. To exemplify concretely, current planning envisions the following possible approach to soil conservation. USAID will contract with a private U.S. agency to provide technical assistance. This agency will in turn subcontract with available technicians (many of whose availability may stem from unemployment or old age retirement). These technicians will, in turn, work with Damien technicians. Finally Damien technicians will work directly with the community groups which will build the structures and plant the trees. Such planning is impeccably consistent with current agency procedures, but outsiders may be pardoned for skepticism concerning the eventual outcome of this long chain. Current slogans emphasize reaching the poor; but institutional practice continues to interpose resource-consuming structures which appear to complicate tremendously the flow of assistance to the areas where it is needed.

Another weakness stems from an institutional tendency to diffuse responsibility and to free employees from the negative results of careless planning. To exemplify concretely again in the context of past soil conservation, the PDAI in Damien, funded by USAID, commenced its watershed activities with the most ambitious socio-economic survey, entailing hundreds of thousands of questionnaires, ever undertaken in Haiti. The survey was poorly designed and even more poorly supervised. The survey has never been analyzed or even coded; the questionnaires lie rotting in different communities around the country. Thousands upon thousands of dollars were wasted.

If the employees of a private corporation had wasted money in this fashion, heads would have rolled. But the custodians of public money can commit such travesties with virtual impunity. The individuals in USAID responsible for this undertaking have long since departed and it is unlikely that any negative sanctions were ever applied around this particular survey issue. In fact, it is unlikely that anybody in the mission even remembers the survey.

Such travesties must be seen, however, less as products of personal incompetence or irresponsibility, than as the result of an institutional structure which makes it difficult for an employee to sink his or her teeth into a project with some administrative power. When the goal of "institutional building" is interpreted as meaning that "the host government can do with the money what it pleases without our interference", then USAID is, in effect, consigning its employees to the pathetic role of facilitating the flow of money into hands that they know will not use it effectively.

It is clear that this phenomenon is a critical weakness; but unfortunately it is not clear what can be done to turn the process around. Even if USAID maintains its role as a funding, non-implementing agency, it can hopefully devise formulas for giving its technicians and administrators some genuine power in the disposition of the funding which the Agency so copiously supplies. It is not being recommended here that USAID reverts to direct implementation, but merely that it finds some middle gorund to permit it to intervene with some clout in the soil conservation projects which it supports.

5.1.3 International Relief Agencies

Most of the village-level developmental action that has occurred in Haiti during the past twenty-five years has proceeded on the basis of assistance from well-known international relief agencies, both religious and secular in character. Among the more important agencies Church World Service (CWS), CARE, Catholic Relief Service (CRS), and the Haitian-American Community Help Organization (HACHO). The first three of the above mentioned agencies are international in character. HACHO, in contrast, was founded in the 1960's with U.S. foreign assistance funds after the deterioration in diplomatic relations led to the cessation of formal assistance from the U.S. government.

Each of these agencies has become involved in soil conservations as part of its developmental activities. But the character of the projects varies greatly. HACHO, for example, has funded thirty disguised humanitarian relief projects which have taken the form of the massive building of rock walls on barren, unclaimed land in the Northwest where the absence of both rainfall and crops technically reduces the need for erosion control measures. What was needed in these instances were projects which would justify the disbursal of large amounts of relief food during droughts and famines, and wall building stepped in to fill that need. But HACHO has also funded reforestation activities of a more extended and serious nature in the Jean-Rabel area. This project entailed contracting the services of two young foresters from Virginia Polytechnical Institute, each of whom spent approximately a year in the project area.

These international relief agencies differ profoundly in their modus operandi from agencies such as USAID and the U.N. In the first place, most of them make at least some attempt to be "operational." Even Catholic Relief Service, one of whose administrators disclaimed the title of "operational", nonetheless has full time Haitian employees who make regular visits to field operations. At the other extreme is HACHO, which is highly operational in character. HACHO has extensive operations in four towns of the Northwest (Anse Rouge, Jean Rabel, Mole St.Nicholas, and Terre Neuve), operations which include hospitals, large warehouses, irrigation and potable water projects, and even "hotels" for lodging the large numbers of visitors who have occasion to drop in on the activities.

Secondly, these agencies often find themselves in a position of substantial economic dependence on the international agencies. This is most true of HACHO, whose very existence was threatened by the withdrawal of USAID funding. But it is also true of the other three agencies mentioned, a substantial part of whose activities consist of the humanitarian or work-related distributions of enormous amounts of USAID-mediated food. These organizations would either have to close up shop or at least substantially curtail their activities if this food and other types of USAID support were suddenly withdrawn.

In many soil conservation projects, these agencies have been the direct point of contact between the outside world and the community group implementing the project. As will be seen below, project weaknesses and failures have frequently stemmed directly from problems in these institutions.

5.1.4 Local Missionary Groups.

Haiti is probably unique in the Western Hemisphere, and perhaps in the world, in terms of its number of missionaries per square mile. A large number of fly-by-night groups, including numerous U.S. based groups who organize yearly summer excursions into the Haitian countryside, restrict their activities to preaching the Word. But the long-standing groups tend, in addition to their religious activities, to maintain one or another form of material project, generally (but not exclusively) entailing the delivery of medical services.

Such missionary groups have for years been involved in reforestation and erosion control activities. These activities vary from occasional, sporadic attempts, such as those of the Catholic Oblate Fathers in various communities of the South, to the establishment of large nurseries which have been instrumental in supplying the trees for an entire region. Here reference is being made to the nursery established by Ronald Smith in conjunction with the Hopital Bon Samaritain in Limbé, and to the nursery established by the Turnbulls in the Baptist mission of Fermath. Long before the establishment of their nursery, the Turnbulls had also been instrumental in teaching wall building and terracing techniques in their region.

Unlike the international relief agencies, these missionary groups have maintained a total or almost total economic independence from USAID and other international agencies. In fact, in the course of my research as a USAID consultant, I was the recipient of several courteous tongue-lashings concerning the kafkaesque, bureaucratic experiences which certain of these groups had undergone in their efforts to secure something as straightforward

as a project vehicle from USAID.

Because of their long-standing presence in the community, many of these groups have direct contact with the various community organizations in their regions and for this reason have been (and could continue to be) among the most effective intermediaries in reforestation and terracing projects that are channeled through private agencies rather than through the GOH.

5.1.5 U.S. Based Contract Agencies.

The most recent arrival among development groups is the private development company which specializes in the provision of short-term consultants and long-term contract technicians to USAID. The appearance of these groups can be directly linked to the earlier discussed evolution of USAID away from field activities into full-time planning, bookkeeping, and evaluation. Their appearance is said by some to be the product of a decision taken under the Nixon administration to make overseas development a matter for private enterprise. This recent trend has resulted in a decision by some major U.S. corporations to enter the development field through the creation of special subunits within the corporation (Westinghouse Health System has already carried out a two-year contract with USAID/Haiti). It has furthermore buttressed the tendency of academic institutions to seek a corporate foothold in this field. (Louisiana State University and Virginia Polytechnic Institute have already supplied consultants and technicians to USAID/Haiti, and negotiations were recently being held with Michigan State University to provide services as well.)

But most impressively this trend has triggered off the rapid proliferation of numerous private corporations, frequently sporting catchy names (Experience, Inc., Practical Concepts, Inc.), generally having an office in Washington, D.C. permitting proximity to the source of all funds. These outfits keep close vigilance on the appearance of new RFP's ("Requests for Proposals") from USAID and other public institutions and compete for the honor of filling these contracts.

In at least two senses the institutionalization of this arrangement constitutes a dangerous tendency, not only from the point of soil conservation projects, put from a general developmental perspective as well. In the first place this particular use of "private enterprise," far from decreasing the cost of projects, has caused budgets to skyrocket by virtue of a number of debilitating "overhead" arrangements. The most impressive example concerns the winning of "IQC's" (Indefinite Quantity Contracts), in which company overhead may be computed as double the daily consultant fee. To the degree that such short-term inputs are technically necessary to soil conservation activities, a contract arrangement of this sort constitutes a overwhelming burden on project budgets.

But more seriously, the contract arrangement is weakened by tendency of the companies (and the universities) to themselves rely on subcontracting to outsiders. It is rare for the companies to provide the required services with their own direct-hire personnel.

Rather, they maintain lists of consultants and technicians available on short notice. The result is a strong tendency for the experts to be individuals who are either unemployed or retired. It is, in short, not at all clear whether these contract arrangements are in fact providing USAID with the cream of U.S. private enterprise.

USAID's soil conservation efforts here have already relied on contract arrangements. A forester and a soils-conservation technician, hired under contract, spent several years in the Acul watershed. And, as mentioned earlier, Virginia Polytechnic Institute was contracted to supply HACHO with two forestry specialists for the Jean Rabel area. Most significantly current planning in the Agricultural Development Office envisions reliance on the contract system--probably with a firm such as Pacific Consultants--to supply Damien with long-term technical support in soil conservation activities. That is, the strengths and weaknesses of these contract groups will in the future exert an even heavier impact on the course of soil conservation in Haiti.

The preceding pages have attempted to identifiy and briefly discuss the various types of agencies involved in the funding and implementation of soil conservation projects in Haiti. The research workscope requested observations on the strengths and weaknesses of such agencies, and the preceding comments have been a preliminary attempt to distinguish between the different groups and to provide an overall sense of the particular developmental niche which each occupies.

But strengths and weaknesses can be better assessed when we examine soil conservation projects in more detail. The following sections will break soil conservation projects down into their constituent tasks and analyze the manner in which these tasks have been neglected or poorly executed by the different types of implementing agencies.

5.2 Project Task Analysis: The Functions of the Implementing Agencies

In specifying the tasks which institutions must carry out, I believe we must distinguish between two types of projects, each of which will have a somewhat different series of tasks, at least in the initial stages of the project. The first type of project entails what falls under the rubric of "community development". According to the "classic" community development philosophy which prevailed in the fifties and sixties, in this type of project communities chose their own objectives and implementing agencies helped them reach these objectives. The initial tasks in this case entail preliminary research to learn what types of projects the communities want and meetings to help the communities plan their strategies for acquiring the necessary types of support to carry out the project.

Soil conservation in Haiti has not, will not, and should not be treated as a community development project in the sense mentioned above. It belongs rather to a second major type of project, one whose necessity has been determined <u>outside</u> the community.

If development agencies were to wait for the peasant communities of Haiti to spontaneously prioritize tree planting and earthwork construction, it is unlikely that soil conservation would ever be achieved. In removing soil conservation from the rubric of community development, I am not suggesting that many elements of community development strategy would not be useful and essential to the program. Without community participation in key operational decisions, the project is unlikely to succeed. But the initial tasks of a soil conservation project--the services which implementing agencies must provide--are of a somewhat different character.

The major tasks of implementing agencies are as follows:

1. Research and feasibility assessment.
2. Planning.
3. Community selection.
4. Pre-project education and motivation.
5. Organization of community groups.
6. Technical training of skilled laborers and of the community at large.
7. Supply of tools and seedlings.
8. Supplies of money and/or food.
9. Supervision of work.
10. Formative evaluation for mid-course corrections.
11. Follow-up and maintenance support and services.

These tasks can be viewed as the major areas in which emplementing agencies can and should provide services to communities targeted for soil conservation projects. This list, which is arranged in rough chronological order, provides us a paradigm for examining and assessing the performance of the agencies and a consequent basis for making systematically derived recommendations.

Each of these tasks merits at least brief discussion.

5.2.1 Research and Feasibility Assessment.

This first task of the implementing agency entails gathering information, not only on the causes of soil erosion in the targeted region, but also information on the economy and social organization of the communities of the region, as well as the previous exposure which these communities have had with development projects of one sort or another.

5.2.2. Preliminary Project Planning

This task entails the design of a preliminary plan of attack subject substantial to modification on the basis of preproject discussions with participating community groups and mid-course corrections made on the basis of ongoing assessments of project effectiveness. The prelimininary plan should not only contain the standard personnel and budget breakdowns, but should contain a precise cost/benefit analysis of treated hillsides from the viewpoint of the participating peasants. That is, the program planning should entail precise micro-economic analysis of the advantages to accrue to the peasants who participate in the project.

5.2.3 Community Selection

The general region in which the project is to take place will probably have been made at the time the project was first conceptualized. But it will subsequently be necessary to choose specific communities which will be affected by the project and to decide the order in which the communities will be approached. The choice should ideally be made on the basis of some ecologically relevant criterion. For example if the project is a watershed restoration project, then standard procedure is to choose communities furthest up into the watershed.

5.2.4 Pre-project Education and Motivation

As the first stage of the field component, project personnel must establish contact with the community and explain to them the nature and purpose of the intended interventions. The ideal situation would be one in which the project arrives with such an attractive package that the community spontaneously invites the project's presence. Experience has been, however, that in the domain of soil conservation this rarely occurs. The education process should be two-way, project personnel modifying certain aspects of their plan on the basis of feedback, suggestions, or objections from the community members. The end result of this highly delicate phase will hopefully be a decision, more or less generally consented to, to participate in the soil conservation project.

5.2.5 Organization of Community Groups

If there are pre-existing, functional community action groups, they may be the entities to implement the soil conservation project. If there are no groups, or the groups are non-functional or dominated by particular or alien interests, the project should use the service of trained animators to form new groups. If new groups are being formed, where all possible the groups should be formed on the basis of land ownership on the treated hillsides. This would result in groups being constituted of members cropping contiguous plots of ground.

5.2.6 Technical Training of Skilled Laborers and of the Community at Large

As the project proceeds, the intent will be to instruct the community in heretofore unknown soil conservation and tree planting techniques. This will entail training a small number of individuals in specialized tasks, such as use of the A-frame and planting of trees, and the general instruction of the community in more common conservation-related tasks such as the building of rock walls and the maintenance of trees.

5.2.7 Supply of Materials

The implementing agency will generally have to supply tools of several types for the carrying out of different types of soil conservation activities. In addition the project will in all likelihood decide to supply the seedlings. This latter task entails not only the establishment of project nursery, but also the maintenance of one or more trucks.

5.2.8 Supply of Money and/or Food

If the decision is made to systematically remunerate individuals for labor on the project, the implementing agency will have to have a system for the regular disbursement of payroll funds or the regular (at least monthly) shipment of food into the project region.

5.2.9 Supervision of Work

By no means will it suffice for the implementing agency to give initial technical instruction and then let the project unfold on its own. Technical supervision will have to be constant, and the ideal arrangement is one in which project technicians are out working on a daily basis along with the peasants themselves in the treatment of hillsides. Supervision will further be required in the distribution of the money of food, this being an area where corruption has often entered, sabotaging the morale of many a project.

Formative Evaluation for Mid-Course Corrections

It would generally be disastrous for projects to mechanically barrel along following the plans that were forged in the early stages of the project. The implementing agency will have to combine a knack for systematic, tight planning with a simultaneous openness, flexibility, and--if possible--a sense of humour when it becomes obvious that nothing is working as planned. Mid-course corrections should be made, combining the use of ad-hoc, creative manouvers with an underlying substratum of systematic planning. But these mid-course corrections

can be made only if project directors and administrators have ongoing direct contacts with field realities and a willingness to receive feedback from project technicians and--especially--from community members. Ideally project directors should have direct pipelines to the communities and not depend on their project subordinates as their sole eyes and ears into village realities.

5.2.10 Follow-up and Maintenance Support and Services

The fragility of young trees and of most erosion control structures creates a situation in which projects must have some built-in strategy for encouraging the maintenance of project achievements. It has not generally been the case that communities will, on completion of the work, spontaneously protect the trees and maintain the walls or canals. Projects must extend themselves for a reasonable amount of time and distinguish between construction and maintenance phases, devising motivations and sanctions appropriate to each phase.

The successful execution of these tasks is not a sufficient prerequisite to project success. The key ingredient will be the presentation of objectives that are perceived as profitable by the project participants. Without these objectives, even the most superlatively organized project will fail. But reforestation projects entail long-term inputs and follow-up for which there is no analogy in the case of the Furcy vegetable planting. That is, even with profit-generating objectives, the project's success will hinge more heavily on the institutional services enumerated above.

The final section of this chapter will briefly discuss the shortcomings which have been observed in these tasks during the course of the research.

5.3 Major Operational Shortcomings

Using the previously constructed task list, it will be possible briefly to identify the major shortcomings which were observed in project implementations under each category of task.

5.3.1 Research and Feasibility Assessment

1. The one project which did systematic research never bothered to analyze the pre-project data. As a prelude to its general activities in four regions of the country, the USAID supported Projet de Developpement Agricole I .egre did an exhaustive socio-economic survey covering hundreds of thousands of individuals.

This piece of research, in terms of its sheer quantity, was the largest piece of research ever done in Haiti besides the national census. But the reforestation projects began in the Acul Watershed and in the Jean Rabel areas before the data were even analyzed. And in recent months the Damien technicians charged with the analysis of the data decided that the questionnaire had been so poorly designed and so poorly supervised that the data were probably valueless. The data will thus not be analyzed, an open admission that vast quantities were wasted.

2. Virtually no other project observed has initiated its activities with even a brief study of the economy or social organization of the peasants in the project region.

3. Quite surprisingly there appear to be virtually no attempts made by project organizers even to learn about past soil conservation projects that have occurred in Haiti. In this sense each project to one degree or another attempts to reinvent the wheel. In their determination to avoid getting bogged down in "academic research" and move into immediate action, projects thus may neglect simple research that even common sense would dictate.

5.3.2 Planning

1. The main complaint heard was that planning tended to be centralized and authoritarian. We recognize that, by their very nature, soil conservation projects are decided on from without. But this does not mean that important operational decisions cannot be worked out in conjunction with the communities. Thus, project technicians were

in some cases ordered to plant trees on top of, instead of at the base of, rock walls, even though field experience had demonstrated disadvantages in this system.

2. Ths planning tends to be largely technical in nature--e.g. focusing on the nursery, or on the techniques of wall building. There is as a rule virtually no systematic planning that deals with the issue of integrating these activities into the economic life of the peasant, or even of seeking ways to at least avoid jeopardizing that life. On the contrary, more than one technician has been heard to say that soil conservation would be so much easier to achieve if we could simply remove the peasants from the hillsides to be treated.

3. The timetable set up by projects tends to be rigid, and project directors may start sending out heated directives if matters fall behind schedule. What looks like good, strict administration from a bureaucratic perspective, however, turns out to be institutional folly from the perspective of the field. If the community has still not agreed to build walls, for example, then an administrative directive to get out and build walls will simply trigger off invasions of land by work gangs whipped together under the stimulus of Food for Work.

5.3.3. Community Selection

The main drawback here is that projects may follow the path of least resistance and simply choose more conveniently located communities for restoration rather than the more distant communities in upper reaches of the watershed which, from a technical point of view, should be the first to be treated. In the Jean Rabel project, for example, the watershed was eventually abandoned, as the project turned to the reforestation of the cemetery region contiguous to the town, a decision which made little sense in terms of the watershed objectives of the project. When such retreats occur from earlier objectives, it is frequently merely a symptom that, from the point of view of the participants, the project objective has become that of simply securing employment, so why not do it in a manner that does not entail arduous trips up into inaccessible hills. Thus in Jean Rabel the project reforested land contiguous to the town cemetery.

5.3.4. Pre-Project Education and Motivation

1. In view of the anxieties which reforestation projects may evoke with respect to possible eviction, this becomes one of the more important phases of the project. The objective should be the elicitation of an invitation from the community. But projects have on occasion been in such a hurry to begin that this phase has been skimpily carried out.

2. Quite specifically it is important to emphasize the point that the trees belong to the peasants, not to the State or to the "Compagnie Blan".

3. A very effective technique has been the bringing of peasants from one region to view soil conservation projects that have been implemented elsewhere in Haiti. A trip to Fort-Jacques not only taught the peasants of Aux Cayes to build walls, it also reassured them that the end result of projects was not eviction of the peasants.

5.3.5. Organization of Community Groups

1. The project administrators have generally given very little thought to the organization and internal structure of the groups that will execute projects. They have either hoped that functional groups will already be there, or they will leave it up to subordinates to worry about the formation of groups.

2. What has happened in too many cases has been the adoption of an organizational model that relies on the formation of simple work gangs, which may not even be composed of members of the same community. Soil conservation projects could be used as a vehicle for creating and strengthening dynamic community groups whose members have genuine common interests beyond the securing of Food for Work. But the Food for Work is in many cases the only bond linking the members of the implementing work gangs. The presence of the work gang could be symptomatic that the project has taken the path of least resistance and become a simple wage labor project.

5.3.6. Technical Training

1. In some cases I have observed that project technicians have provided no training when many peasants were literally clamoring for technical instruction. This was true of the coffee growing community of Baptiste. With the advent of fertilizer, many peasants want to expand their coffee gardens but want to do so using modern seedbed techniques. The agronomists in the colony were simply not providing this information and peasants were going elsewhere. I saw one rather large coffee nursery whose owner had learned the technique from listening to Radio Soleil.

2. In other cases the technicians supplied by the project may themselves not be qualified to teach the peasants the required techniques. One sees many young Damien agronomes who have no field experience. And the description of one of the project earlier in the report alluded to the foreign soil conservation advisor whose degree was in sociology and who had to learn wall-building from the peasants of Fort Jacques.

3. In yet other cases the technicians may try to peddle inappropriate techniques which they may have seen work elsewhere but may be less suitable for mountain environments or may not take into account the technology and diversification habits of Haitian peasant agriculture.

5.3.7. Supplying of Project Inputs

The most frequent complaint in end of service reports of technicians is that the implementing agencies either have not provided them with transportation or have not made adequate allowances for the maintenance and repair of the vehicles. This matter almost let to the premature resignation of the first forestry technician working in Jean Rabel under HACHO. The understanding had been that HACHO would supply the VPI technicians with transportation. But when the young forester, after several months of frustation, asked about his vehicle, he was told bluntly to get a horse. When he threatened resignation, he soon found himself in possession of a motorcycle--a rather unsatisfactory compromise from the point of view of facilitating the transportation of seedlings up into a watershed.

5.3.8. Payment and Food

1. These matters will be discussed on some detail in the following chapter. For present purposes it is important to point out that, when money is paid, it is generally several months late. This leads to forced debtor relationships between worker and foreman or worker and local lender and opens the door to numerous sorts of maneuvers to separate the workers from a substantial part of their wages.

2. An argument will be made for supplying cash inputs. But there is no need to disburse this "encouragement" in the form of daily or piecework wages. Other models could be employed. One of the more creative models observed was that used by the Oriental Mission Society outside of Cap Haitien. Peasants enter into a contract relation with the cooperative and are paid so much per year for the maintenance of each tree. This is construed as a loan, the peasant being obliged to share part of the proceeds from the tree with the cooperative. One need not endorse the specifics of the plan but can still approve of the effort to disburse money in creative fashions that go beyond the standard model of the traditional work gang and its monthly payroll. It is not money or food itself which destroy community initiative, it is their use in unimaginative fashions. Properly pumped in, money could be used to strengthen local groups.

5.3.9 Supervision

Some projects are careful in the supervision of delicate technical matters, but others appear haphazard. It seems that some nurseries give out trees without really knowing whether the groups that will plant them have been properly trained in planting techniques. And it became clear from conversations in the coffee community of Baptiste that most peasants had been given only the scantiest instructions in the proper application of fertilizer. Ideally the first time a peasant applies fertilizer to a coffee tree, it should be done under the supervision of a trained technician.

5.3.10 Formative Evaluation and Mid-Course Corrections

1. Virtually every project observed, but especially the longer projects, manifested a tendency to change directions in mid-stream. Unfortunately the changes were frequently made as a result of the departure of one technician and his replacement by another, not as a result of intelligent self-corrections by project technicians in the course of their own work. The exceptions to this rule tended to be field technicians in contact with peasants. Foreign office-based technicians were frequently criticized for being rigid.

2. I have talked to creative field technicians who have good ideas but who literally feel it would be out of place to mention these ideas to their town-based supervisors, that it would be an implicit criticism, one that could jeopardize their jobs. This is obviously an unhealthy communications climate, and project directors should encourage feedback from their technicians and from community members themselves.

3. The very residence of project directors in Port-au-Prince or in towns militates against the field sensitivity which would permit creative mid-stream course corrections. Technicians in implementing agencies should get out to the field and stay in the field as long as possible.

4. By the same token field technicians, in evaluating their activities, should try to sensitize themselves to phenomena that fall outside the scope of their immediate technical specialty.

I asked one forest technician, who had been involved principally with the growing of nurseries, why the peasants didn't seem to want to plant the trees. His answer, given in all seriousness, was that there was too much inbreeding going on in the community, resulting in the emergence of an unusually high rate of mental retardation. This was one of the technicians who was advocating removal of peasant communities as a strategy for achieving soil conservation. In addition to biological systems, whose operation produces healthy nurseries, there are also social and economic systems, whose operation produces rational, coherent behavior on the part of participants. Community rejection of projects is frequently the result of technicians focusing exclusively on the biological systems with little interest in, or sympathy for, the social systems with which projects are supposed to mesh. If projects are not working, only intelligent analysis--not cracker--barrel theories of retardation--will permit the design of appropriate mid-course corrections.

5.3.11 Maintenance of Trees and Structures

1. The policy of most projects has been to wash their hands of responsibility once trees have been planted and walls have been built. The implicit hope is that the community will have been educated sufficiently to induce them to maintain the trees and structures--a hope that is uncalled for in projects whose principal payoff has been Food for Work.

2. Projects have to begin systematically exploring the notion of a "maintenance" phase, a phase that should concentrate on the trees rather than the walls. This phase must last at least the two or three years that will be necessary to see the trees beyond the stage where livestock can destroy them. The above mentioned OMS project has such a phase.

3. Too many projects rely on simply threatening farmers with fines or incarceration if they intentionally destroy what the project has created. Thought should be given to the design of positive inducements.

4. The implementation of a maintenance phase would entail the gathering of information on the ownership of the land and the trees. No record is generally kept of whose land trees are planted on and some project organizers have been quite honest about their total lack of information on whose land their projects are being implemented. The design of a maintenance phase, in short, will force program implementers to start examining the generally ignored question of land tenure.

In addition to discussing the different types of groups which become involved in soil-conservation projects, this chapter has attempted to analyze soil conservation projects into their major constituent tasks and to discuss the major shortcomings which have appeared at each link in the chain. This chapter has focused on the role of implementing agencies. The following chapter will examine projects from the viewpoint of the community groups themselves.

CHAPTER SIX

ORGANIZATIONAL VARIABLES

6.1 Soil Conservation and Community Groups

The trust of this analysis has emphasized the desirability of searching out ecologically restorative strategies permitting individual peasants to generate self-sustaining profits as the best route to eventual soil conservation. The emphasis is on the profit-making peasant household, not on the community per-se. But even the most fanatic advocate of individual profit-making as the prime developmental goal will have to recognize the importance of groups for any development project. Even if one does not ascribe to the quasi-religious emphasis placed by some developmental philosophies on community groups as the royal road to developmental salvation, one is still forced to recognize the practical impossibility of having an agency deal individually with thousands of peasant households. Whether you view it as a necessary good or a necessary evil, local group formation is a central element in the developmental process.

But if group structures can facilitate development, they can also effectively sabotage it. In this section I will analyze the role which different types of local groups have played in tree planting and wall building in rural Haiti, paying particular attention to the

dynamics which have shunted many projects off into directions that have little to do with long range soil conservation.

6.11 Rise of Collector - Distributors

One of the difficulties in understanding the dynamics of what has happened with groups in rural Haiti is the large gap which exists between the rhetoric--the stated ideals--of groups and the actual functions which groups have carried out. Developmentally oriented community groups--i.e. groups whose stated purpose has been "development"--have existed in rural Haiti for over 25 years. But the actual functioning of these groups has frequently departed from what most observers would call development. In their actual functioning they have frequently played the role of simple collector-distributors of food and other resources supplied by foreign developmental agencies.

The major spurts of development assistance in Haiti have been associated with one or another famine-producing ecological crisis, generally a hurricane. From the point of view of Haitian community groups, hurricane Hazel of the early fifties can be viewed as an important starting point. Hurricanes have triggered off the shipment of vast amounts of food and other resources from abroad. In-country agencies such as CWS, CARE, HACHO and others then have the very practical task of distributing these perishable goods, hopefully into areas where they will reach those who most need them.

Back in the 1950's before HACHO had come into existence, and when CWS was probably the major food distributing organization in the country, there was as yet little adherence to the now dominant theme of "institution building"--the tendency to view the major development task as that of "supporting" and "strengthening" whatever government happens to be in power. The emphasis, rather, was still on the practical, humanitarian task of distributing emergency resources. It is in this context that "community development groups" began forming among the Haitian peasants, and it is this dynamic which continues to dominate the genesis and functioning of many community groups in rural Haiti, including those which have been used to carry out soil conservation activities.

The groups came into existence, not of spontaneous community dynamics, but as a result of the logistical difficulties which prevented relief agencies from dealing individually with thousands of peasant households. The agencies called for community groups as a prerequisite to receiving aid--and the communities responded with an alacrity born of genuine material distress. From a small number of "conseils Communautaires" formed in the Fort-Jacques area in the fifties, rural Haiti has witnessed the burgeoning of thousands of groups across the entire rural landscape.

But the character of most of the groups that have been formed has been determined by the conditions of their birth; the original groups were formed in impoverished and/or disaster-ridden communities as

vehicles for attracting and distributing the food and money of the suddenly ubiquitous blancs. This must be perceived clearly. Whatever the developmental rhetoric, the actual major function of these groups has been to attract, to collect, and to distribute.

This is not meant as a criticism of the groups. Such groups can serve certain essential functions. From the viewpoint of relief agencies, they have facilitated the unloading of enormous quantities of food and other resources. From the point of view of the communities, they have been the vehicle which has successfully attracted the attention of food-bearing blan and have thus been a major mechanism for the infusion of truly needed resources. In labeling these groups as collector-distributor units, I am not dismissing them as useless. In a country such as Haiti, especially after hurricanes, they may be precisely what is needed.

The problem arises when the collecting-distributing function reasserts itself and comes to dominate in projects whose success depends on a different type of dynamic. I must allude to a distinction which I made earlier between two types of profit seeking that occur in the context of development programs. There is first of all the self-sustained profit making that is introduced and perpetuated in a region such as Furcy, in which new profit-making techniques are incorporated into the agrarian repertoire of the peasant community. And there is the second form of profit-seeking which restricts itself to the opportunistic collection and distribution of outside resources, which entails no permanent, profit-generating changes in the economic behavior of the peasants.

In designing (and evaluating) soil consefvation projects, we are primarily interested in the first type of change. Restoration of the environment cannot take place through one-shot interventions; it presupposes, rather, permanent changes in local agrarian technology. And I have argued that such changes will occur only if they are associated with visible, self-sustaining profit-making of the first type mentioned above.

It is here that many reforestation and terracing projects have foundered. The project organizers have not succeeded in introducing tree planting and wall building in a manner that renders them clearly profitable to the peasant. On the contrary. In some instances, projects have barreled in and proceeded in a fashion that the peasant has perceived as detrimental to his interests.

But because these projects have also come with enormous infusions of food and other resources, the collecting-distributing function has asserted itself, and communities have accepted or at least tolerated the projects. The groups that have carried out the projects have, in many cases, not been the type of group that can generate self-sustaining profits of the first type, but that simply channel the short-term flow of project food and money.

3.12 The Community Council: Occasional Agent of Reforestation

The most common type of group found throughout rural Haiti is the Konsey Kominoté, the Community Council. These groups, although they have no juridical status in Haitian law analogous to that, for example, of cooperatives, they tend to have a well-elaborated formal internal structure--president, secretary, treasurer, and other formalized roles. Membership in these councils is based on residence in a community; leadership roles almost invariably fall to better off members of the community, in many cases members whose occupation may place them in a different social class from the mass of the peasants.

In some cases of reforestation--including much of the reforestation stemming from the Fermathe nursery--the community councils are the active units. The president or some other leader will communicate with the nursery administrators and an arrangement will be made for members of the council to pick up a specified number of plants and transport them--generally on their heads--back to the community.

These councils are among the few that have ever been observed to plant trees without the stimulus of food for work.

6.13 The Ekip: Ephemeral Work Gang

But most of the tree planting (and wall building) has entailed food for work. And the presence of this stimulus generally triggers off fierce competition for the privilege of entering the payroll. This dynamic has led in many cases to the formation and utilization of groups that have already been alluded to in this report: the work gang (Ekip).

The work-gang can be characterized as a group with the following characteristics:

1. A fixed number of members, generally rigidly adhered to.
2. No internal organization except for the differentiation between forman and worker.
3. Ephemeral existence, in some projects the groups being dissolved and reconstituted at the end of each month work.
4. No residential requirement, total outsiders frequently being incorporated into the group.
5. No tasks which extend beyond the specific task for which payment is being made.

It must be pointed out that the ekip is probably the most convenient form of work unit to utilize from the point of view of the disbursement of wages, be they in the form of food or cash.

Its convenience probably accounts for the large number of projects that have eventually adopted it as their organizational model. But from a developmental point of view, the work gang must be seen as defective. The inclusion of outsiders who have no local interest in the land, the ephemerality of the group, its constitution for one sole purpose, will eventually leave the project community without any functioning units to carry out the long-range surveillance and maintenance functions required by soil conservation projects. Planners who ascribe to the desirability of forming functional community groups as an integral part of any development project will be particularly dissatisfied with the work gang. One is justified in suspecting that the project which utilizes the work-gang as the principal action unit is a project which has bypassed the task of community organization in a rush to start the work rolling and the Food for Work flowing.

5.14 Characteristics of the Ideal Group

There is no one single group model which can be enthroned as superior, but we can insist that the groups have at least certain characteristics.

1. Membership based on some common interest. This could be residence in the same community or--perhaps even more promising--ownership or cropping interest in contiguous plots of ground that will be treated as a physical unit by the erosion control project.

2. Smallness of size. Common participation in decisions will be more likely in groups of ten or fifteen than in unwieldy community councils of sixty or seventy.

3. Operational decision making power. Ideally the groups would have some autonomy in planning certain aspects of their work, rather than being simple followers of orders, as is the case with the work gang. They may perhaps be able to schedule their own work days, choose the particular complex of erosion control devices which they prefer (in consultation with technicians, of course), have some say as to the timing of the disbursement of remuneration, if the latter is used, and so on.

4. Multiple functions. These groups should be organized in such a fashion that they might be able to carry out other tasks as well, besides the tasks for which they were first organized.

5. Longevity. The groups should be able to last for several years, during the entire "maintenance phase" of the project. One of the defects of must current and past projects has been the absence of maintenance provisions. But in order for these provisions to be built in, the groups formed must be stable.

6.2 Payment vs. Voluntary Participation.

Perhaps the most important operational decision to be made--the decision that will most deeply affect the course of the project--is the decision as to whether to pay people in one form or another for any labor which they do as part of the project. The basic character of the project will be affected by the decision which project leaders make in this regard. The project in which people are consistently volunteering time and labor will in the long run turn out to be quite a different type of project from one in which participation is elicited and sustained via the payment of overt or disguised wages.

I have found this issue to be the mostly hotly debated bone of contention among planners and organizers of development projects in rural Haiti--Haitian technicians, international agencies, and private volunteer and missionary groups alike. The most vigorous and most articulate arguments tend to be those that advise against paying people for participation in reforestation or terrace building activities. Of the dozens of arguments against payment the following are probably the most frequently heard:

1. Most reforestation and wall building projects are done on the land belonging to the participants themselves, and the trees are ordinarily supplied free of cost. Why in the world should people be paid for making improvements on their own land?

2. Payment is in direct opposition to the spirit of self-help volunteerism that is supposed to imbue all true community development projects.

3. Payment can lead to the mechanical, obedient carrying out by the community of useless projects for which there is no genuine local felt need and in which the community's only stake is the money that will be received in the form of wages.

4. Payment has been found to open the doors to intrusion by outsiders who buy their way onto the project's payroll, creating the developmentally absurb situation in which community members stand angrily and helplessly by as strangers receive wages for carrying out projects in the community.

5. Payment for participation will almost guarantee that the project will subsequently not be sustained by the community.

6. Payment may even lead to intentional sabotage of the projects by wage-hungry individuals who hope that they will thus induce the project organizers to return with more money to pay people to repair the damage.

7. Payment completely muddies the water for those local projects which have succeeded in operating on a voluntary basis. Once the work gets out, everyone will demand to be paid by any would-be organizer of development activities.

8. Payment of wages may raise the cost of projects to levels beyond the reach of many otherwise effective local private voluntary agencies.

Of the persons contacted in this research, the most articulate opponents of payment for reforestation were the Turnbulls in Fermathe. As a result of their long-stanging presence in the community, they have been able to organize many (though not all) of their projects, including recent reforestation activities, on the basis of completely voluntary labor by local Community Councils. I visited the community of Madlen, across the ravine that separates the Kenscoff road from the neighboring ridge beneath Fermathe and did in fact see large numbers of trees (mostly Eucalyptus) which had been voluntarily planted by the Community Council.

But as of about two years ago, CARE has begun pumping into the region substantial amounts of Food for Work directly earmarked for reforestation activities. The principal organizers of the planting of the trees and the distribution of the food are two local Damien-hired forestry agents, whose reforestation projects have been given new vigor by this sudden infusion of food, so easily convertible into cash. Not all communities have as yet received this food. But in my conversations with the villagers of Madlen--those same villagers who have voluntarily planted trees--it was clear that work had reached them of the fact that members of other communities are being paid in food for carrying out activities which they had done for free.

Some among them made no bones about the fact that they also would like to cash in on the food and were wondering when their turn would come.

Indeed on many occasions I have come away convinced that a Community Council has undertaken a voluntary, unremunerated activity in some part of rural Haiti principally as a way of demonstrating to the blan the Community's good will in hopes that the blan will respond by pouring in a little ti-ankourajman (best translated as "Food for Work"). The Turnbulls are undoubtedly correct in their assessment that it will henceforth be much more difficult to organize voluntary self-help tree planting in the Fermathe region.

The arguments against payment are logical, articulate, and strongly felt; and those who make them are in many cases knowledgeable individuals with a longstanding track record of significant development activities in rural Haiti. But they are swimming against a tide whose momentum can now probably not be turned back. Paradoxically, the Kenscoff forestry agents who are reforesting the hills with CARE food get perhaps 90% of their trees from the Turnbull's nursery. It would be counterproductive to refuse the trees, since perhaps as much as 50% of the Fermathe annual stock is moved by precisely these two agents and their Food for Work.

The handwriting on the wall appears clear. Of the nineteen projects on which information was gathered in this research, at least fourteen employ or have employed some form of systematic remuneration of project participants.

Can no valid arguments be made in favor of payment? Is payment of project participants simply a capitulation to a bad habit with which certain development groups have now irreversibly infested the country? Absolutely not. The arguments have been heard against wages. In the case of reforestation and development projects, a number of arguments can be made in favor as well.

1. Certain reforestation projects, such as the Jean Rabel and Acul Watershed projects, have as their main goal the protection of lowland irrigation systems. The structures and trees being used are of little immediate value to the hillside farmers, may in fact be perceived as short-term detriments. Why should they not receive financial support for time and labor expended in activities whose major beneficiaries live downstream?
2. Haitian peasants are the poorest group in the Western Hemisphere. Underemployment notwithstanding, they more than any other group can justifiably dedicate all their time to the pursuit of remunerative activities; they less than others can be expected to participate in projects whose benefits are off in the distance somewhere.

3. Projects wish to restore hillsides in as brief a period of time as possible. Where possible it is better to have project participants labor five or six mornings a week than one. But this obviously demands the payment of some form of wages.

4. In the U.S.A. soil conservation efforts among farmers have generally involved not only technical assistance, but various forms of cash subsidies. The restoration of the Great Plains Dustbowl in the 1930's under the U.S. Soil Conservation service, and the subsequent interventions, in the wake of droughts in the early 50's, made ample provision for the provision of direct financial assistance to farmers willing to implement conservation measures. In terms of U.S. overseas assistance policy, it would be most unusual for the U.S. Government to deny in <u>principle</u> to Haitian farmers the types of cash subsidies that have been found necessary to elicit farmer cooperation in the U.S.

5. If subsidies in the form of cash payments can be justified in principle--and they most certainly can, as argued above--they simultaneously provide an excellent practical route for channelling large amounts of resources directly to rural communities, complying thus with the recently revived official USAID interest in the "poorest of the poor."

6. From the point of view of the Haitian peasant, the benefits from soil conservation activities (including the ones to be proposed in this report) are still a matter of faith. The benefits have simply not yet been proven and project participants are exposing themselves to risks that are both financial and social. (More will be said of the latter below.) It would appear eminently suitable to give some for of direct support to the risk takers in different parts of the country.

This latter point of view corresponds to what one will hear from farmers as well. During a conversation with several farmers, in which we all agreed as to the economic value that could be derived from planting trees as a crop. I confronted them with the following question. If trees are like a crop, why should people here want to receive payment for planting them? You don't have anybody pay you to plant beans or corn. Why should you get paid to plant trees on your land? The answer was immediate and right to the point: <u>pèyizan poko wè kob lap tirè nan pyè bwa-a</u>. (the peasant still hasn't set eyes on the money he'll get from the trees. When tree planting has proven its economic value beyond a doubt, we may expect it to become as much a part of the economic behavior of the peasant as is the fertilizer buying and terrace building of the peasants of Furcy. But during the interim, financial support will be needed.

In short, even taking into careful account the many dangers created by the introduction of a wage element into development projects. USAID and the GOH should build such arrangements into the heart of any planned soil conservation activities. A compromise scheme has been developed by the USAID fund Project de Développement Agricole Intégré combining the need for wages with the desirability of a self-help philosophy. Project participants in the Acul Watershed and the Jean Rabel areas have been paid on a "3-4-5" scheme. The workers receive payment for the first three days of work. The payment for the fourth day goes into the treasury of the local councils. And the fifth day of work is volunteered to the Community. Though this plan has run into snags (e.g. the money for the council treasuries has in general not materialized, meaning that workers are in effect volunteering two out of five days), some modified version may be found to be a suitable compromise to the question of payment vs. voluntary labor.

6.3 Money for Work vs. Food for Work

We find ourselves now, having recommended the incorporation of some form of remuneration scheme into soil conservation projects. In the absurd position of having to ask what would strike most 20th century observers as a ridiculous follow-up question: should the people be paid in money or in some other way? But the question is made necessary by virtue of the past 25 years of development history in Haiti. Hurricane Hazel in the early 50's can probably be taken as the starting point for the massive importation into Haiti of various types of foodstuffs. In their original intent, and indeed in much

of their current functioning, these foodstuffs were destined for projects of an overtly humanitarian nature: emergency food, school lunch programs, hospital and clinic food, old age homes, and the like.

But in addition to these overtly charitable uses of food, program planners have for more than two decades engaged in the practice of dispensing food in the context of community development programs. Those who worked on roads, buildings, hillsides, or whatever would receive rations of food to help them through the day. From this it was but a short step to providing the workiers with enough food to feed not only themselves, but also their families. Since the amount of food an individual received depended , however, not on the size of his family, but on the number of days he worked, this Food for Work strategy came to be perceived by recipients quite accurately for what it was: a form of simple wage labor in which the medium of exchange was not the Haitian gourde, but the sack of cornmeal, wheat, or bulgur, the can of oil, and the tin of sardines.

During the past twenty five years, the use of this Food for Work has put wind in the sails of perhaps thousands of local development efforts which would otherwise have been hard pressed to elicit the cooperation of community members. The rural poor of Haiti, though the vast majority would prefer cash, have shown themselves highly willing to labor for this medium of exchange.

Though the origins of this practice fall outside the scope of this research, the proliferation of Food for Work projects is due not only to an eagerness on the part of the recipient communities. There have also existed strong pressures from abroad to utilize the available foodstuffs, and anecdotes abound in which local Food for Peace officers cajole the various relief agencies into accepting larger and larger amounts of food. Though the institutional background to this food pushing is now different from what it was in the '50's, by now local development agencies such Church World Service, Catholic Relief Service, CARE, CARITAS, and HACHO have adapted, have evolved in this direction, and to a frighteningly large degree have become simple intermediaries facilitating the flow of food. So essential has the "food pushing" role become that were the food to disappear, more than one of these agencies would undoubtedly find themselves without a role in life.

The relevance of the Food for Work issue to this research resides in the tremendous impact which this food has exerted on the course of most soil conservation efforts in Haiti. Though hard data are lacking, I am convinced that more than 8 out of every 10 trees that have been planted, and more than 9 out of every 10 linear kilometer of walls and terraces constructed in Haiti, owe their existence to one or another Food for Work program. Of the fourteen projects which I found using payment in their soil conservation efforts, ten used food rather than cash. And the projects that used cash tended on the whole to be much smaller in scope than projects run by Food for Work.

The containers in which the food is sent--heavily stamped with the admonition to neither sell nor exchange the contents--try to perpetuate a version of events that everybody in Haiti knows to be a total fiction: the fiction that the recipients of the food consume rather than sell the food. As a matter of fact, there is a vigorous market for most of the foods, especially the wheat, cornmeal, and oil. Much of the economic life of towns of the arid Northwest could well be symbolized by two photos: one would show sacks of charcoal piled outside of peasant houses, the other would show sacks of HACHO-endowed Food for Work piled in the town marketplace.

Unfortunately, the food is sold not only by its legal recipients. There is a widespread conviction heard throughout Haiti that an unspecified but hefty percentage of the food is siphoned off by administrators long before it reaches the hands of the workers. The mountains surrounding Limbe and Plaisance have been lined with hundred of linear kilometers of vegetal barriers to combat erosion; but the belief of people queried is that only part of the food which the "Company" (i.e. FAO) made available for this purpose actually reached the communities. An administrator in an irrigation project in Croix de Fer expressed relief that people were being paid in cash. Where Food for Work is involved, there is automatic suspicion that the administrators are selling off large amounts of it.

The suspicions are there even when the behaviors are not. I personally know of project administrators who regularly sell large amounts of food to finance legitimate development activities; but where sales by administrators take place, this creative use of the food is probably the exception in a system where self-enrichment appears to be the norm.

Whatever abuses have come to surround Food for Work, its use has become so institutionalized in rural Haiti that we must seriously entertain what could otherwise be dismissed as a ridiculous question: should soil conservation projects be based on payment with money or on payment with food?

In view of the widespread market for the food, the choice being proffered is not one between cash and nourishment, but rather between real money and make believe money that the recipient has to first transact to convert into hard cash. It is true that some of the food is consumed. But in the absence of hard data, one must go on impressions; and my impression is that more than 80% of the food received by workers is sold. Furthermore, perhaps as much as 40% of the food received <u>has already been committed by the worker to one or another form of creditor</u>--an arrangement that also exists where wages are paid in money. That is, Food for Work in rural Haiti has become another form of currency.

I have heard some defenses of food for work in soil conservation projects. The use of food guarantees that the families of the workers will receive at least some nourishment, that the entire monthly earnings will not be squandered in the gaguere (cockfights). A knowledgeable technician familiar with different remuneration arrangements has assured me that the physical condition of the workers being paid in food is superior to that of workers receiving cash wages. They work longer and harder.

But these reasons carry little weight in making the decision between the two types of currency to be used in payment. There would be something distastefully paternalistic in a decision to continue Food for Work out of a fear that the workers will misuse their money.

If there is total administrative freedom to choose between the two types of currency, I strongly recommend the use of money rather than food. It may be the case, however, that leeway in this matter is limited, that there are strong institutional pressures from abroad which would render very difficult a prior conversion of the available food into cash. If this is the case, that is, if it is a choice between food or no remuneration at all, then the food should be used. It may be an inferior currency, but, after all, it still is a currency. And in deciding which currency to use, we should keep in mind that we are eventually aiming for the design of reforestation

and terracing projects in which the major payoff is not the ti-ankourajman which the people receive during the project, but rather the enhanced annual domestic income that they will hopefully come to enjoy as a result of their transformation into growers and harvesters of trees.

6.4 How should the currency be distributed?

Whatever the currency used in projects, the task is to administer it in such a way that it effectively reaches the hands of the workers.

In the case of food, the strategy adopted by the FAO project in Aux Cayes seems reasonable. The food was stored in a central depot in the town of Aux Cayes. Payment was made on the basis of a 24 day work month, each worker receiving for that period of time two sacks of cornmeal (each containing 50 lbs.), a bottle of oil, and 18 cans of sardines. The payroll was prepared once a month. The person in charge of delivering the food made every attempt to distribute it directly. The payroll was prepared and sent down once a month, and a truck with the correct amount of food would be dispatched to a centrally located village. There the food would immediately be distributed to the workers, every attempt being made to avoid storing the food in the rural areas. It is in this context of rural storage that much food is reported to have been pilfered.

(There are an equal number of anecdotes, however, in which town administrators have been caught unloading entire trucks at the homes of friends or relatives in towns.) The work month was arranged in such a way that the workers received entire sacks. The project tried to avoid a situation where sacks had to be opened and doled out in smaller quantities.

Using this system, the peasants themselves converted the food into cash. The cornmeal could be sold for about $6.00 a sack, the oil for $5.00, and the sardines for about 20¢ a can, giving the worker an approximate effective wage of about 4½ gourdes a day.

Two interesting patterns emerged in this regard. In the first place, there may frequently be a difference of opinion between Port-au-Prince administrators of agencies such as Catholic Relief Service and local field technicians in terms of the quantities of food that should be given for a day's work. The Port-au-Prince personnel, perhaps still assuming that people eat the food, calculate daily consumption of each item in arriving at their payment levels and generally come out low. Field technicians, fully aware that the food is sold, is in fact a poorly disguised wage, aim for a level that will give the worker the equivalent of a local daily wage if the food were to be sold locally. The market price, not the daily consumption quota, is the determining criterion.

Secondly, local field administrators appear to fix their quotas in terms of the wages prevailing in the region. The administrators of Afe Neg Koumbit in the Furcy area set a substantially higher daily quota of cornmeal than is given in the FAO projects in either Aux Cayes or Limbe (7-8 lbs. a day as opposed to 4-5 lbs. a day). This also may be a reflection of differences in wages between Furcy and other regions of the country.

But in either case we have the interesting pattern whereby the Food for Work is in fact being treated as a market commodity, few people even reflecting any more on the irrelevant injunction printed on the sacks prohibiting the sale or exchange of the contents.

I have already mentioned that a handful of projects paid the workers, not in food, but in money. In at least some cases reported around rural Haiti, communities have been known to refuse to work for food. But the cash-paying projects observed in this research chose this option, not from local pressure, but from project principle.

The use of money appears to trigger off even more agressive maneuvers on the part of the workers to secure and maintain a job, increasing the difficulty of administration and supervision. One of the grandfathers of Haitian development projects--the famous Marbial project of the late forties and early fifties— opted for cash strategies. Peasants were paid, for example, to supply and plant sisal and bananas as erosion control barriers. Because these items were in short local supply at the time, peasants would line a hillside with the proper quantities of plants,collect their wages, and

fortwith dig up the sisal and bananas to replant them on another hillside, where they would collect another round of wages.

But the most serious problems created by wage labor arrangements concern the loss of income which has been observed to occur. In the first place the foremen and supervisors find themselves in positions of great local power, and it is common knowledge that you generally have to buy your way into the payroll of a project, forfeiting at least a month's wages to the supervisor who deigns to include you in the list of workers.

But secondly, and more seriously, long delays in the arrival of payrolls cause individuals to enter into debt arrangements by which they may forfeit as much as 50% of their income. Unlike regular state employees, who receive a monthly check, participants in development projects are placed on a monthly payroll. The payroll has to be composed by the foreman, verified, sent to Port-au-Prince, and make its way through a large number of ministries. It is standard practice to expect a two or three month delay.

However very reliable information gathered and crosschecked in the Belladere region indicates that the delays are in fact longer, in the order of four or five months, giving rise to the suspicion that local foremen may somehow be contributing to the delays. Why should they do this? Faced with delays, a large percentage of workers resort to the strategy of vann mwa travay-yo (selling their month's wages). The approach either the foreman or a local lender and sell

their monthly salary of 130 gourdes for 70 or 80 gourdes. The lender gives them the 70 gourdes. When the payroll comes through, the foreman or other lender simply pockets the borrower's 130 gourdes.

Thus the problems associated with the distribution of cash wages are quite different from those which surround the distribution of Food for Work. Soil conservation projects (any type of project, for that matter) will be seriously jeopardized unless institutional arrangements are devised which ensure the prompt flow of the cash to its proper recipients. This entire question will be discussed in a later section of the report.

6.5 Day Labor vs. Contract Labor

Having made the decision to remunerate, projects have been forced to decide on the specif unit that would serve as the basis for payment. Two major options have been utilized by different projects--or by the same project at different stages. The first is the standard practice of paying by the day. The second option entails paying by the unit of work accomplished--which was generally referred to as a "contract" system by the projects utilizing them.

The day labor system is by far the most common, and is a simpler system to administer. There is no need to check up on the quantity of work done by an individual (or a team) in a given day. All that is needed is a list of the persons present. But though it is simpler, it has been found to produce inferior results in the projects studied.

Two of the projects--the FAO project in Aux Cayes and the HACHO project in Jean Rabel--switched in midstream to a system whereby people were paid by the amount of work, claiming that there was intentional foot-dragging on the part of many workers being paid under the day-labor system.

In its revamped version, the payment system in Aux Cayes worked as follows. A team of two men would be expected to build 20 linear meters of rock wall per day. If mini terraces were being built, a man was expected to do 20 linear meters in a day. In the case of digging holes for trees an individual was expected to dig 40 holes per day if the holes were 30 cubic centimeters, 30 holes per day if the holes were 40 cubic centimeters. (Fruit trees and forest trees have different size requirements for transplanting.) In effect the contract system reverted to a type of day-labor system, because in fact most individuals managed to do a day's quota before going home. All that was added was the expectation that a person had to do so much work in a day.

At first the farmers objected to the contract system, but after a brief period of time the majority reportedly came to prefer it. Individuals would start early in the morning and would have terminated their day's work by as early as 10:00 A.M., leaving them free to go home and tend to their own gardens. Some complaints were heard that perhaps the contract system produced sloppier work. But the general

feeling in three regions where I observed it was that it was superior to the day-labor system. The most dramatic effects of a contract system were to be seen in an irrigation project visited in Croix Fer. Groups of men are being paid to dig canals at the rate of three and a half gourdes per cubic meter. The adoption of this system has accelerated the construction of the canal in a manner that is truly impressive.

Where contract labor of this sort is used, some flexibility is called for. In the case of building rock walls, for example, in some spots rocks have to be dug up and the construction is more difficult. Adjustments in the rate have to be made. But on the Whole positive responses to contract arrangements should lead us to adopt some form of a contract system in soil conservation projects, at least for some tasks.

A major innovation that is in addition called for is the design of a strategy for maintaining the trees during their vulnerable early years. It must be remembered that, even if a project successfully induces peasants to plant trees as a crop, the outcome will be in doubt until one or two harvests are in. But if trees with a short rotation are used, it will be programmatically feasible to usher participating families through at least the first rotation with some form of financial aid, preferably based on the number of trees that "escape" (chapé)--a term which succinctly captures one dimension of Haitian peasant orientation toward the survival of trees. That is, the strategy should entail, not the use of watchmen or marschalls,

but the use of modest cash inducements. And such maintenance strategies should be seen, not as permanent features of the Haitian landscape, but as interim measures until the fast growing trees have proven their economic value to the participating communities.

CHAPTER SEVEN

TECHNICAL VARIABLES

There are a series of important technical decisions to be made in the course of any reforestation or soil conservation project. Even assuming the presence of a viable, profit-generating objective, improper choices on these decisions could hamper the success of the project. As will be seen below, however, the deciding factor--even on a technical choice--may be a non-technical consideration. For example, the choice of the spacing used between trees may hinge less on the particular growth needs of the trees than on the need to provide the cultivator sufficient space to continue grazing his animals. The present section of the report will deal with factors such as these.

7.1 Reforestation vs. the Use of Structures

If the prime consideration in a project is the most effective way of halting erosion, then most projects will undoubtedly opt for a combination of tree planting techniques and terrace or wall building techniques. Paradoxically, however, in the case of erosion-control projects among small-growing cultivators, the choice of emphasis or combination may be determined less by the erosion control efficiency of the particular measure than by the ability of the measure to contribute to the profit making objectives of the peasant.

That is, whatever their relative erosion control efficiency, certain types of measures may be inherently more contributive than others to the profit motive of the peasant. A project that depends on eliciting peasant cooperation will be forced, all other things being equal, to give as much weight to the profit characteristics of the measure as to their erosion control characteristics.

A general principle which appears to emerge from the research is that terracing and wall building can be profitable to the peasants only in certain special types of economic contexts, whereas tree planting holds more general promise for the mountain peasant of Haiti as an economic type.

The only context in which terracing and wall building have been found to be truly profitable has been the context of the hillside planting of cash crops using fertilizer. In this case the erosion control structures are necessary to protect the peasant's investment in fertilizer. Even where some households have moved away from commercial fertilizer to the use of homemade compost, as appears to have happened in the Fort-Jacques area, the terraces and walls are still sufficiently important to merit maintenance.

But it would appear that in those mountain regions where the peasants are not yet using fertilizer of compost, they will not on their own undertake the construction and maintenance of these structures.

The difference between fertilizer assisted yields and traditional yields is large enough to motivate erosion control investment. In contrast, the difference between the yield from a dry-walled, unfertilized mountain bean plot and an unprotected mountain bean plot is probably not dramatic enough to warrant investment on the peasant's part.

It would seem therefore that the most promising avenue to pursue is a program strategy which places emphasis on helping peasants make quick profits from the growth of different types of trees. That is, an emphasis on reforestation would appear more likely to succeed than the emphasis that many projects have tried to place on wall building or vegetative barrier.

It is true, one can point out to the peasant the marginal economic benefits to be had from vegetative barriers. But it should be recalled that, to be successful, erosion control measures cannot be associated only with marginal benefits. They have to somehow be meshed with visible, preferably dramatic, increases in annual profits. Except for those regions where cash cropping fertilizer use has come to prevail, trees seem to offer the most likely avenue toward this goal.

7.2 Combining Reforestation with Wall-Building

Why not simply combine the two? That is, it would be possible to design a project emphasizing the growing of quick yield trees, but to organize the project in such a way that the hillsides to receive the trees will first be treated with other erosion control structures. This is precisely what the FAO project in the Aux Cayes area did. All trees that were planted, were planted either in conjunction with dry-walls (where there were rocks) or mini-terraces (where there were no rocks).

The technician who directed this project justified this by claiming that the walls and terraces were beneficial to the trees themselves. But on the other hand, other important reforestation projects, such as that of the Turnbulls in Fermathe and that of Smith in Limbe, have simply planted trees without insisting that they be in conjunction with other erosion control structures. The matter warrants more technical research, but at this point it would appear over-restrictive, and might perhaps raise the cost of projects innecessarily, to insist on a marriage between the two general types of strategy. There may be regions where tree planting by itself would make more economic sense.

Where the decision is made to combine the two, the question then arises as to where to place the trees in relation to the structures. The most common erosion control structure in Haiti has been and will

probably continue to be, the dry wall. I have heard arguments as to whether the tree should be planted on top, near the edge of the wall, or down below, near the base of the wall. Experience in the Aux Cayes area would indicate that planting the trees on top of the walls not only leads to quick root-damage to the wall structure, but also deprives the young tree of some of the moisture it would receive if planted at the base of the wall.

7.3. Species - Selection Decisions

7.31 Consulting the Farmers

Most community development experts would assume that farmers should be consulted as to the trees that will be planted on their land. This is true, but the matter is not as simple as doctrinaire community development philosophy would have us believe.

Standard community development philosophy insists that the only type of valid project is one that springs from the spontaneous "felt needs" of the community. The reader should be aware by now, however, that the erosion control projects being discussed here have not sprung, and in the near future will probably not spring, from the spontaneous felt needs of the Haitian peasant community. They are projects that initiate from without. To state it somewhat differently, what is being proposed here are tree planting and wall building projects for which the peasants may feel absolutely

no need whatsoever. The strategy is one, not of learning what the felt needs of the community are, but of learning what is the most profitable way to introduce projects that the community may never have thought of, may in fact initially resist. To repeat, the project is initiated from outside the community.

Should the peasants then have the final say in what types of trees will be planted? Probably. But project organizers should enter with a de-romanticized vision of the wise old peasant and accept the possibility that popular community opinion may be misinformed. Recall: it is simply not part of Haitian peasant economy, tradition, or culture to plant wood trees. A wood tree is something that lèvé pou ko-l, that grows by itself. If asked about what trees they would like to plant, nine out of ten peasants will start reciting a list of fruit trees, because in fact the only type of systematic tree planting that has been found throughout Haiti is the planting of a small number of intermixed fruit trees around the family home. But one of the most revolutionary and profitable innovations that a project could introduce is the large scale planting of fast growing wood trees, a concept that is unheard of in traditional Haiti.

Therefore, in answer to the question, yes, project organizers should consult with the peasants, who will have very practical insights into what trees have succeeded and have not succeeded in the region. But at the same time project organizers should be prepared to argue a new point of view as well. That is the whole point of the project.

There is no special sense in which peasants should absolutely be consulted; this concerns the specific trees that will be planted on their property. Most reforestation projects have made at least some superficial efforts to elicit peasant preferences. But this ordinarily takes the form of general questions about "what type of trees would people in this region prefer." It was surprising to learn, however, that at the moment of tree planting the peasant himself frequently had no choice in the matter. When the day came for his plot to be covered with trees, the work teams would plant whatever trees happened to be sent up from the nursery on that day. It turned out to be a game of chance, some peasants getting well known fruit trees and others being saddled with exotic wood trees whose names they could not even pronounce. Projects should eliminate this practice and, where possible, move toward the other extreme of permitting peasant to specify precisely the particular combination of trees they would prefer on their land.

7.32 Wood Trees vs. Fruit Trees

When asked as to whether they would prefer a hillside planted in fruit trees or a hillside filled with wood trees, most peasants would tell me that they would prefer a hillside planted with a combination of both types. Traditional Haitian peasant agriculture is built on the principle of risk-minimizing diversification. The peasant will not only strive for the acquisition of different types of land in his holding; he will in addition systematically intercrop different cultivates within the very same plot.

The principle of diversification should be taken into account by organizers of reforestation projects. It is easy for a technician to become enamoured of a particular species; the"miracle tree" Leucaena, for example, appears to evoke quasi-religious devotion among many of its adherents. But reforestation projects predicated on the allocation of land by peasants should be prepared to accept and facilitate intra-holding deversification. The peasant will no more allocate all of his tree land to leucaena than he would allocate all of his cropping ground to cabbage.

In most of the reforestation projects which I visited, the fruit trees were on the whole faring much more poorly than the wood trees. But long habituation to the concept of planting a fruit tree will lead the peasant to insist that at least half of the trees planted be fruit trees. This is problematic in regions of high altitude, where in fact the fruit will either not grow, or produce such poor specimens as to be unable to compete in the marketplace with the higher quality fruit produced at lower altitudes. Largely because of this problem, for example, the Fermathe nursery is specializing in the production of wood trees, especially eucalyptus.

But even in those regions where fruit will not grow well, some attempt should be made to supply at least moderately appropriate fruit trees, to permit the peasant to intercrop his trees in the same manner that he is used to intercropping his traditional crops.

7.33 Peasant Taxonomy of Wood Trees.

But the principle of intercropping can be applied even in regions where wood trees come to predominate. During the course of this research I have come upon a folk-taxonomy of wood trees that appears to prevail in different parts of the country. Peasants corrected me in my own attempts to distinguish simply between "wood trees" and "fruit trees". Within my own taxon of "wood trees" the peasants distinguish at least three sub-categories, constituted on the basis, not of botanical characteristics, but of practical uses.

1. Bwa pou siye. (Trees to saw). These are the true lumber trees, such as pine and mahogany, which,if left to maturity, can be used to fé planch, to make boards. (The creole term planch generally refers to the wide, thin board. The thicker and narrower two-by-four, though called a board in English, is called in Creole by the term travé, not planch.)

2. Bwa pou fe kay. ("Trees to build houses".) Except for the doors, the rural house in Haiti generally does not use boards. The walls will be constructed of blocks (kay block) or rock masonry (Kay miraye) in the case of better off houses, or of thin lattice and mudplaster in the case of poorer houses (kay klisé). But other types of wood are employed in constructing the roof rafters and the major uprights. There are some lumber trees, such as the popular bwa plé, whose fibrous characteristics render them unsuitable for the making of thin boards, but which can still be used in the construction

of these other parts of the house. These trees are placed by the peasants in a different category from the somewhat more valuable "sawing trees."

3. Bwa pou fe chabon. Last and to some degree least are those trees, such as gayak and bayaond, whose wood is unsuitable for any type of construction but which have been found suitable for charcoal making. The income derived from the individual charcoal tree is substantially less than that produced by either of the two types of lumber trees mentioned above. But the new availability and prominence of certain fast growing "miracle trees" such as leucaena and akasya endow these charcoal trees with an incalculably important potential for transforming the economy of the mountain peasant.

We can expect that, where tree growing becomes a common practice, farmers will attempt to intercrop different types of wood trees, using as their distinguishing criterion some variant of the above described taxonomy. But projects should give special emphasis to the third type of tree, charcoal trees. Their fast rotation could qualify them as the principal entry way to introducing the practice of planting trees as a cash crop. They have the further advantage that, being resistant to drought and unfavorable soil conditions, they can flourish or at least survive where other types of trees, especially fruit trees, would almost certainly perish.

7.4 Site-Selection Decisions

A number of important decisions concerning the location of the trees will have to be made.

Trees can grow, of course, both on mountain and lowland plots. But there are a number of reasons which should incline projects to choose highland regions for reforestation projects. There is first of all the fact that, in addition to the profit considerations mentioned earlier, a prime objective of reforestation is erosion control. It would make no sense, from the point of view of this goal, to concentrate planting in the lowlands.

But the same caveat enters even where profit considerations are taken into account. It would probably be unwise to induce lowland peasants to plant trees. The project will succeed to the degree that the profits from tree planting are substantially higher than profits to be made from other plots. But lowland own the whole tends to support more profitable agriculture than mountain soil, and the opportunity costs of planting trees would consequently be higher. Peasants may end up regretting take up valuable space with trees.

This is precisely what has happened to the project of the Oriental Mission Society in Limbé. An ingenuous cash remuneration scheme was devised, which succeeded in motivating widespread tree planting among the members of the mission's cooperative. But the trees planted were slow growing trees. and they were first planted on lowland plots outside of Cap Haitien. As the trees have grown larger, peasants find

that they are losing money because of the valuable space that the trees are taking up.

One tactic is to plant the trees on land that is less valuable--i.e. mountain land. The task is to choose the sites in such a way that the cost/benefit calculus will come out in favor of the treed plot rather than the treeless plot.

But caution must be taken not to go to the other extreme and dump all of the trees on the absolutely worst land unsuited for agriculture. This appears to be what is happening to many of the trees that are being planted in the Kenscoff/Fort Jacques region. The Community Councils seek out the worst plots of ground--i.e. those plots where the absence of cultivation means that landowners will be less likely to object.

But it is on this type of land that livestock are grazed, thus exposing the trees to destruction from that quarter. It would appear that the best solution is to plant the trees on plots where mountain agriculture is practiced. From an erosion control point of view, those are the plots at highest risk. And from a maintenance perspective, if the trees can be planted at the beginning of the cropping cycle, they will not only not interfere with traditional cultivation, but they will also be freed from the danger of animals, since peasants take strong precautions against the entry of animals

into such garden land. I have seen dramatic demonstrations of this principle in several regions of the country. The survival rate of trees planted on mountain garden land appeared to be four or five times greater than that of trees planted on marginal pasture land.

7.5 Private Woodlots vs. Communal Forests.

In this same vein we can ask whether reforestation projects should not aim for communal forests on State land rather than the private woodlots being envisioned in this report. This is a very complex issue.

In the first place it should be stated that there is clearly room in Haiti for "public reforestation projects," massive tree planting projects of a public works character which hire large numbers of people to reforest currently abandoned tract of State land or unclaimed land. But it is quite significant that virtually all reforestation projects have avoided this practice, have concentrated rather on reforesting private landholdings. The dynamics of a public works project--the challenges of planting and maintaining trees on land owned by nobody-- are of different character from the problems associated with attempts to get peasants to reforest their own holdings. Reforestation projects have, in my opinion, wisely opted for the strategy of approaching the peasant landowners, for all the difficulties that this entails.

USAID should, in my opinion, orient the bulk of its reforestation assistance to projects involving the property of the small private landowner.

In the first place, the trees stand a much greater chance of survival. Public reforestation projects have been successfully carried out in Algeria, for example. But they presuppose the existence of an institutional apparatus and a public sector committment which is simply non-existent in contemporary Haiti. The trees simply would not survive.

But secondly, and more importantly, the concept of growing trees as a cash crop is an increasingly feasible option which would not only help reforest treeless hillsides, but in so doing would open the doors to a profound, positive transformation of the economy of the mountain peasant. There is a market for charcoal and lumber. USAID's mandate to help the poorest of the poor would be directly fulfilled by any program which made the breakthrough of having peasants plant trees as a crop rather than mine them as a finite resource, as has been the case up till the present. If USAID is to become involved in reforestation activities, it should select that model which is most consistent with its mandate to assist the poorer sectors of Haitian society.

But the benefits to the peasants of having them plant trees on State land would be limited to the wages which they receive. What is being proposed here, however, is a much more important benefit: the breakthrough into a self-sustained microeconomy of tree cropping, analogous to the vegetable cropping of the Furcy farmers. This breakthrough will be made only on land over which the peasant has strong proprietary rights. In short, USAID should emphasize the route of the private woodlot, not that of the public forest.

7.6 Nursery Decisions

One decision to be taken early in projects concerns the source of the trees. Two of the most important nurseries in the country are run by individuals associated with mission groups: the nursery located in the Hopital Bon Samaritain in Limbe and nursery of the Baptist mission in Fermath. Both of these nurseries have been important supply sources for the tree planting that has occured in their respective regions.

But public sector planning for reforestation projects cannot allow itself to rely on these private voluntary supply sources. A responsible project must build in its own solution to the supply problem. Two competing arrangements have been observed. One arrangement entails the establishment of a regional nursery, such as that at Levy, near Aux Cayes, that supplies the trees for a large number of communities. Another arrangement attempts to set up

nurseries in the specific mountain communities where the planting occurs. Such community nurseries have been attempted in the community of Cassis, near Maniche, as part of the FAO project. Another such nursery was created in the community of Mare Rouge, beyond Jean Rabel, as part of an HACHO supported reforestation program.

In the case of the regional nursery, the seedlings are planted and cared for by nursery specialists. The peasants merely receive the shipments of plants when they are ready to treat a hillside. In the case of the community nursery, the peasants are responsible for the entire process, sowing, watering, and caring for their own nursery, and perhaps even searching out their own plants.

Each arrangement has advantages. The personal involvement of the peasants in their own community nursery, the independence which this gives them from outside supply sources, will make this option attractive to believers in "community development". Furthermore I have observed case where the establishment of their own nursery permitted the peasants of a community to begin planting certain popular trees which the project nursery had refused to send.

But in the long run I believe that the large regional nursery run by paid professionals will be the most efficient solution. Community nurseries are essentially voluntary in character, and the technical skills of the participants may be rudimentary.

Furthermore they retain dependence on the outside for the bags in which the seeds will be planted. The production of well-watered, disease free trees should be a task allocated to regional professionals. Just as peasants are not expected to synthesize their own fertilizer--they receive it ready made--perhaps we should also accept the existence of regional nurseries run by experts as a necessary feature of a modern reforestation project.

The danger is this approach resides in the tendencies of regional nurseries to dictate to the peasants what they will plant. The hills around Kenscoff and Fermathe are slowly filling up with eucalyptus trees as a result of decisions made, not by the peasants, but by the organizers of the nursery. The decision is probably an ecologically wise one, but advocated of peasant involvement in decision making will feel uncomfortable with any arrangement that leaves the community fundamentally powerless in terms of this important decision.

The solution, however, probably does not lie in the direction of community nurseries, but in the design of institutional arrangements by which local communities can in fact influence the content of the regional nursery that will supply them with trees.

Timing of Nursery Activities with Community Extension.

One of the most serious defects observed in many of the reforestation projects observed stems from the tendency of project organizers to define the establishment of a nursery as the principal and most problematic task of the project. The implicit assumption is: if we can supply the trees, the peasants will eagerly grab them up. This has resulted, in certain instances, in the planting of 100,000 bags before anybody knew exactly where the trees will be planted.

Both the Fermathe nursery and the Limbe nursery appear to have solved this problem. There is a CARE supplied Food for Work program which moves a substantial percentage of the Fermathe plants, and Ronald Smith in Limbe has managed to find buyers (mostly middle or large landowners) to take the plants from his nursery at subsidized prices. But certain other projects have found themselves with rapidly maturing nurseries before the project had decided who the beneficiaries of the nursery would be.

As indicated earlier in the report, this triggers off panic behavior in which project administrators may pressure project field technicians, who in turn may find themselves obliged to literally invade fields to plant the trees.

I have been told that the problem of peasant indifference (or resistance) to trees does not exist in the Fermathe area. This may be true, and one is in fact impressed by the large number of trees that are being planted by local community councils even in the absence of Food for Work. But this situation is not characteristic of the country as a whole. Organizers of projects should be aware that, throughout much of Haiti, the major task is not the technical one of establishing a nursery, but the organizational/motivational task of inducing peasant communities to plant and maintain the trees. Until the project has a handle on this problem, it should go easy at the nursery end.

7.7 Planting Decisions

7.71 Timing of the Planting

The nursery has to be timed in such a manner that the seedlings will be ready to transplant at a time when there will be rainfall in the recipient community. The need for coordinating nursery activities and shipments with the climate of the recipient communities seems obvious, but at least one project neglected it, to the detriment of the dispatched trees. The nursery in this case was located on a plain beneath the watershed. This is a region of sharp microclimatic differences between plain and mountain, and between one valley and the next. The seedlings were ready, it rained on the Plain, and the foresters assumed that it was also raining on the mountains.

A truckload of seedlings was sent up, and the technicians were forced to plant them in dry ground. The result was the destruction of all the trees.

If possible, the planting of the seedlings should occur as closely as possible to the planting of the crops in the fields where the trees will stand. As was mentioned earlier, trees that are intercropped with traditional cultivates stand a substantially higher probability of survival than trees that are not integrated into agricultural activities.

7.72 Spacing of the Trees

The proper spacing of the trees is essential to their survival if the trees are being planted on uncultivated ground. In this latter case, they stand a high chance of being exposed to animals.

Experience in the FAO project in Aux Cayes indicates that peasants are more likely to take care of the trees if:

1. the trees in a row are planted closely together;
2. several rows are planted closely to each other to form a mini-lot within the field; and
3. each mini-lot is separated from the next by about 15 meters of open field in which the peasant will have space to tie his livestock.

Seedlings should be planted close together in the same row. For example, wood trees could be planted about a meter apart. Eventually they will be thinned to two meters. But the initial tight spacing of each row, and the juxtaposition of several rows to form a mini-lot, creates an impressive visual package which the peasant will be less likely to carelessly expose to an animal. The interspersing of open spaces of 15 meters furthermore gives the peasant ample room to tie cattle.

This deployment of trees is appropriate for non-cultivated plots. If the peasant, however, is intercropping fast growing wood trees with his traditional crops, there is no need to leave large open tracts. The land will presumably have crops for at least a year and a half. By the time the land goes into fallow, the trees will be large enough to withstand animals. In fact, with some species, the trees will be so large that animals can be tied to them. The branches of these trees will undoubtedly have been thinned to permit cropping, and there should be enough vegetation to permit grazing.

7.73 Selecting Ecologically Appropriate Trees

In certain projects not enough attention was given to selecting the right spot on the plot for the right tree. In his traditional agriculture, the peasant knows precisely where he should plant the beans, the corn, the bananas, and the other items that form the crop inventory on his garden. But the organizers of tree planting

have not always shown the same sagacity. I have seen reforested hillsides on which fragile fruit trees have been planted on the denuded crests and hardy wood trees have been planted on the richer bottom land. Sound agronomy would call for just the opposite pattern.

The problem is frequently organizational, rather than technical, in nature. In the first place, the foreman, not the peasant proprietor, organizes the planting. He may have less stake in showing tender loving care for the proper deployment of the trees. But it may also be the case that, on the day the top of the ridge is being reforested, the nursery happened to send up lemon trees. But when the bottom was being planted, the trees were wood bearing bwa blan. The foremen conscientiously follows the directive to start at the top of the hill, with the result that the trees are planted in inappropriate locations. Once again we see the need for closer coordination between nursery activities and planting activities.

7.74 The Organization of Tree Planting

The question to be discussed here is: should the planting of the trees be the task of the landowner, or should it be the task of a community group of some sort? In most of the projects studied, tree planting was done strictly through groups of one sort or another. Nurseries did not, as a rule, give out trees to individual farmers.

Trees were dispatched en masse to a Community Council or to a groupman. And the planting itself was the responsibility of these groups. The landower himself was simply one more member of the group, and in some cases the landowner was not even contacted.

If we reflect on this matter, we see that such a use of groups can have certain important consequences for the manner in which the trees will be perceived. Community development philosophers will laud the group spirit to which such an arrangement gives rise. But it gives rise simultaneously to a number of problems as well. The most serious disadvantage of this practice is that it creates the impression that the trees really do not belong to the landowner. And in certain regions peasants are in fact told that these are pyé bwa léta, the government's trees. Such a definition may be mildly effective as a deterrent to careless or willful destruction, but it certainly militates against the development of a proprietary concern on the part of the peasant. The arrangement that is being advocated in this report is one in which the owner views the trees as his own cash crop. In this sense the widespread practice of making tree planting a "community project" may be counterproductive.

The alternative to this is not to have a lone peasant all by himself ligging the trees, digging the holes, and planting the seedlings. On the contrary, the planting of trees will have to be physically carried out by a group. The most effective division of labor is one in which some people carry the trees up, others dig the holes,

and yet others do the actual planting. The planting itself is a skilled task that perhaps should be left in the hands of specially trained community members.

The decision to be made is whether the peasant proprietor will have the responsibility of organizing the group, much as he organizes collective labor for other facets of his agriculture, or whether he will be the passive recipient of the group's activity on his land. If some arrangement could be devised by which the chef bwa.--the peasant owner of the trees-- had a certain organizational responsibility for the planting of the trees on his land, we could help combat the undesirable situation in which the peasants feel that somehow the government or the blan are filling his property with their trees.

7.8 Surveillance and Protection of Newly Planted Trees

If trees were truly perceived by the peasant as a source of imminent wealth, as a cash harvest from which they could expect a substantial cash yield, projects would not have to make special provisions for the protection and maintenance of the newly planted trees. The peasants themselves would watch over them, in the same manner that they protect their beans and manioc. But in virtually none of the reforestation programs studied here had the peasants come to view trees as a true cash crop. In many cases they merely permitted the project to plant trees on their land--and in a few cases they found that the project had planted trees there without

their permission. Under such conditions, trees are in great danger during the first year or two of their lives in rural Haiti.

To the degree that reforestation programs find themselves obliged to "push" trees on to unconvinced or reluctant peasants, then these projects had better build some systematic surveillance measures into the program design. Yet for the most part, the projects researched here made virtually no serious provision for the protection of the trees.

7.81 Livestock: Main Source of Danger

In the words of one peasant: se pyé bet ki kraze, se bouch bet ki manje. (The animal's foot knocks down, the animal's mouth gobbles up.) Livestock constitute by far the most serious threat to the survival of newly transplanted trees. To understand the precise nature of the danger, a few brief comments should be made on the contemporary livestock economy in rural Haiti.

One way of dividing up the livestock kingdom in rural Haiti is to distinguish between those animals for which peasants search out decent pastures (even to the point of renting or otherwise paying) and those animals are more or less left to fend for themselves. Into the former category we can place cows, horses and mules. The

latter category is made up of pigs, goats, sheep and other lesser animals. Though pigs may receive special care in the weeks before their sale, they and the other lesser animals are for the most part left to fend for themselves in the lakou, at the roadsides, on the barren edges of former gardens.

But cows, horses, and mules require more elegant feeding. In most of the regions visited, horses are fast vanishing, and mules are playing a decreasingly important role. The major enemy of the reforested hillside in rural Haiti, then, is the picketed cow.

The problem stems from the nature of the feeding system. The contemporary pasturage system in rural Haiti is a midway compromise between the traditional patterns of bygone years and more modern systems found in economically more advanced contexts. In the traditional system, the Haitian peasant branded his cows and set them out to wander freely within a large region. The cow would adopt a territory within which it would range (and bear offspring). With some effort, the peasant could always retrieve the animal when the need arose.

This type of free grazing has been effectively outlawed throughout most of Haiti at least as early as the 1940's. It is incompatible

with population pressure and the demand for garden land. When this type of free grazing prevails, cultivators are obliged to construct wooden fences around their gardens, a luxury that is simply not possible in a deforested country such as Haiti.

The most common alternative to free grazing is the modern practice of fencing in a pasture and allowing animals to wander and graze within the confines of that pasture. But even this system demands the construction of fences, and--except for the well known living fences of Haiti--fences demand either wood or the money to purchase wire. To get around these demands, the Haitian peasant has adopted the practice of picketing animals as his major pasturage strategy. A long rope is tied around the animal's neck and at the other end is fastened to a stake which is driven into the ground. In this way no fence is needed. Someone from the household--generally male children--are assigned the daily task of changing the animal's position, as fodder is terminated, and of bringing the animal once a day to drink water.

The mortal enmity that has arisen between the cow and the young tree stems from the fact that the vast majority of trees have been planted on agriculturally marginal land. The peasant has generally tried to comply with the desires of reforestation planners in a way that entails as little interference as possible with his agricultural cycle. Furthermore land that is removed from agriculture generally tends to be the steeper land, where the perceived danger of erosion

is greater, and where Community Councils will understandably tend to plant the trees. This use of marginal land for tree planting can be viewed as a convenient arrangement by which peasant communities can secure the advantages of project intervention (i.e. Food for Work) with as little risk as possible to their own agrarian economy.

But it is on precisely this type of land that the cows are also picketed. The peasant has removed the threatening trees from his garden, but he has introduced a competitor to his cow. The dilemma is complicated by the truly essential role that the cow plays in the Haitian peasant economy. Virtually no peasant eats the meat from his cow, and few drink the milk. The value of the cow is rather in terms of its function as a self-perpetuating bank to be used to purchase land or to help see the owner through some crisis. In the current state of affairs, the picketed cow is worth a lot more to the peasant than the newly planted row of trees, especially if they are exotic trees whose use he may not understand, and whose name he may not even be able to pronounce.

The result of this situation has been the destruction of perhaps hundreds of thousands of newly planted trees. Their principal function had been served--Food for Work--and there may be little stake in their preservation.

Precisely how does the destruction take place? There are several possible sequence of events that surfaced during the investigation.

1. The farmer himself may be simply hostile to the trees, especially if he was not allowed to participate in the wage labor to plant them or--as has happened--his land was simply invaded in the name of konsevasyon-di-sol.

2. The farmer may simply be careless and leave the animal too much rope, permitting it to munch on or trample a young sapling.

3. It may be the farmer's child who pickets the animal and accidentally places it within reach of the tree. (Farmers generally would blame their children when questioned as to why animals destroyed the trees on their own land.

4. The farmer may not be the sole owner of the land. It may be undivided inheritance land communally held. This is particularly frequent in the case of the type of agriculturally marginal land that has been the object of tree planting. In such a situation there may be competition among siblings for the scarce pasturage and there will be an understandable tendency to ignore the young trees.

5. In certain regions it may be a neighbor's cow who kills the trees. In many communities one can graze his animals on the land of a friend or neighbor without asking permission. Though this traditional permissiveness is fast disappearing in more prosperous regions subject to land pressures, it still prevails on the type of marginal land that has been relegated to reforestation projects.

6. The farmer may have rented out his pastureland. The practice of renting is associated with the long cord. The person renting the land for a given period of time has only one objective: To have his animal get as much of the fodder as possible. This means using a long cord, which in turn leads to the picketing of animals in a way that will allow them to reach newly planted trees.

In short, where the trees are not viewed as a valued crop and where they have been relegated to marginal land used only for pasture, they will almost certainly succumb to their mortal enemy the cow.

7.82 Other Sources of Danger

Though cows are the principal source of danger, they are not the only source. Many trees have succumbed simply because they were planted in the absence of sufficient rainfall. This type of untimely planting frequently occurs because of pressure from the nursery directors, who want to clear out their stock come what may, and who may order the planting of such and such number of trees. I have also observed trees in their second or third year damaged by the peeling

off of bark done purposely by people who are making a cord of one sort or another. This was observed particularly in the case of the taveno tree.

7.9 Project Measures Against Destruction

Most projects studied had simply made no provision for the protection of the trees. It was simply a matter of plante pyé bwa, viré do-ou (plant the tree, turn your back). The record keeping systems are indicative of a general attitude. Those projects which kept records restricted the archives to simply listing the number of each species of tree planted and the date of the planting. I found no records being kept of the locations of the plantings or of the owners of the land where the planting occurred.

One exception to this was the FAO project in the Aux Cayes area. This project hired special watchman (gadyin) to patrol the treated hillside and report destruction to the trees. If an animal was found destroying the trees, the animal could be impounded and the owner made to pay a fine--even though the animal was on his own land. The peasant in addition might be ordered to replant the trees at his own expense.

This system was not very effective. The watchmen were generally local people who would come under strong local sanctions if they actually went ahead and took a peasant's animal from his own land.

Projects are ephemeral: residence in a community will be longstanding. The watchmen were understandably reluctant to make a nuisance of themselves among the neighbors upon whom they would one day have to count again. It is unlikely that the project ever successfully elicited the cooperation of the watchmen, despite the modest salary that was being paid.

An even more unsettling practice was observed in Kenscoff. There the peasants are being told that the trees that are being planted are pyé-bwa-léta, government trees, and that they will be punished if they destroy this governmental property. This may be an effective threat but it militates directly against the growth of proprietary feelings on the part of peasants.

If the objective is to create new bonds between peasants and trees. This construal of the trees as alien property sabotages the central part of the project.

Certain projects have less of a problem with maintenance. The OMS project in Cap-Haitien simply pays the peasants so much per tree per year. The survival rate of the trees is apparently very high. The Smith nursery in Limbe supplies trees principally to larger landholders who pay a modest price for the trees, and who have both the land and the motivation to take care of the trees once they are planted. There is little need for project intervention in such circumstances.

7.10 Other Erosion Control Structures

7.10.1 Bench Terraces and the Haitian Peasant

From the point of erosion control effficiency, the bench terrace is superior to all other erosion control structures. It entails a permanent change in the topography of a hillside. Standard bench terraces, which may be used on slopes up to 35% of gradient, frequently have a slight reverse incline and a ditch at the rear of the terrace to carry run-off water out to a protected outlet. In the course of this research, bench terraces were observed in Furcy. Fort-Jacques, Madlén (near Fermath), the Acul Watershed (near Aux Cayes). The bench terraces were all in a state of good repair. With the exception of the terraces in Furcy, which had been built by an urban landowner who tried his hand at flower growing (and did not succeed), the bench terraces were all built in the context of one or another soil conservatinn project.

The only area where bench terraces had been incorporated into the agricultural practices of the peasants was the Fort-Jacques/Fermathe area. In Furcy the peasants did not try to imitate the terraces of the urban landowner. And in the Laborde area even those terraces which had been built by the project were being used by the peasant for extraneous ends. On one of them a peasant constructed his house. On others only livestock were being grazed. In general the bench terraces I have seen did not appear to excite the interest of the local peasants.

The main drawback is the tremendous amount of time and labor that must be expended in the construction of a bench terrace. The dry wall, for example, entails the digging of a simple foundation and the laying of rocks. But the bench terrace in addition entails the laborious removal of topsoil, the levelling of the slope into step-like surfaces, the construction of risers, and the replacement of the topsoil.

The failure of bench terraces (outside of the Fort-Jacques area) to excite peasant interest stems from the fact that they have not been built in association with any profit-producing change in local agriculture. In the Laborde area, for example, the terraces were built on agriculturally marginal land, that is the land which the peasants were willing to lend the blan for their bizarre experiments. To this day the terraces are still not used for agriculture. The terraces were built as a demonstration. But what has been demonstrated is that the demonstration of a technical trick will not activate peasant behavior, unless it is accompanied by a clear demonstration that the investment will result in substantial otherwise unavailable profits.

But even despite its failure to catch on, the bench terrace continues to excite several soil conservationists who have worked in Haiti. Others--generally in a position of higher authority--have stepped in to curtail their construction in at least one project, claiming

that they were too expensive. This assessment is unfortunately correct from the point of view, not of their erosion control function, but of their ability to reward investors with increased returns. Until a soil conservationist arrives who can integrate the bench terrace into a broader web of innovations that produce profits for the peasant, the bench terrace will remain the device of project technicians and of city and town dwelling landowners who have the capital to obtain returns from these structures. Despite its unparalleled capacity to arrest erosion, I cannot recommend its use in projects in Haiti simply because it stands little chance of becoming incorporated into the economic repertoire of the peasant.

7.10.2 Dry Walls and the Haitian Peasant

The dry wall (mi sek) and the rock barrier (kodon pyé) are probably the two most common erosion control structures found throughout Haiti. The dividing line between the two is hard to draw, and terminological practices are not consistent from one part of the country to the other. The peasants use the term mi sek to refer as well to the bench terrace, since the Creole term teras means, not terrace, but road.

But despite terminological ambiguity, one sees throughout rural Haiti mountainsides with long rows of (generally crumbling) rocks. Some of these structures are fairly high (up to four feet) and are more carefully constructed. These are the dry walls. Others are lower and less elaborately constructed. These are what are

generally referred to as kodon pye.

Their erosion control efficiency, even when well built, is felt by most soil conservationists to be relatively low. Theoretically, with time and some luck, the dry wall can eventually transform itself into type of bench terrace. As soil piles up behind the wall, the landowner will pile on more rocks. More earth will then pile up. And more rocks will be added. The end result would be a level layer of topsoil supported by the wall--i.e. a bench terrace and its riser.

Unfortunately this sequence of events does not generally occur in Rural Haiti. With the exception of the Fort-Jacques area, any walls which I had observed had had as their main function the securing of Food for Work for those who constructed them. The charade is particularly dramatic in the Northwest. As part of its emergency food distribution program, HACHO has paid peasants to construct kilometer after kilometer of rock wall on barren land that could not possibly be used for agriculture. The absence of agriculture and the absence of rainfall drastically reduce the danger of erosion. When such hillsides are lined with rock walls, it does not take a detective to infer the presence of project busy work. When the rock walls begin to crumble, few landowners take the trouble to repair them.

A skeptic would erect a monument to the rock wall as a symbol of the labor mobilizing power of Food for Work in projects which may be completely useless to all concerned.

7.10.3 The Spacing of Erosion Control Structures

It may be that one day the rock wall will form part of a complex from which the peasant will draw profits. To some degree the rock walls of Fort-Jacques may have served this function. In such cases measures should be taken, not only to ensure their repair, but to construct them in such a way that repairs will be less frequent.

Paradoxically the skill with which the rocks are placed, or the dedication with which the builders stay on the contour of the slope, may be of less importance than the size of the wall and the vertical spacing of the wall from its nearest neighbor. The importance of size and spacing stems from the fact that the major enemy of the rural Haitian walls is probably the cow. If the walls are low, cows will attempt to climb over them. And if the walls are closely spaced, landowners will tie cows in such a way that they will be able to reach the walls. Walls that are high, in contrast, will frighten away most cows. And walls that are spaced from 12 to 15 meters from each other leave ample room to tie animals in such a fashion that they are out of reach of the walls. In short, one cannot be

optimistic about the rock wall, but if they are constructed, they should be constructed in such a way as to discourage destruction from the picketed cow.

7.10.4 Treatment of Ravines

In the Aux Cayes area, the use of well built check-dams has transformed the face of large numbers of (privately owned) ravines. Whereas formerly water used to rush down these once naked gullies, transporting soil downhill, the check dams have succeeded in capturing the soil. The ravines have been transformed from naked ditches into the most lush, verdant features of the landscape. Trees of all sorts are now planted there. The presence of the newly formed layers of thick soil, and the fast growing crops which this soil now supports (where there was formerly nothing) have induced most owners to take very good care of their check-dams. They have yielded payoffs in a way the the rock walls have not.

To briefly summarize the preceding section: many of the technical recommendations that have been made here stem from factors extraneous to the question of erosion control per se. The success or failure of many devices will be affected less by their technical ability to control erosion than by their ability to integrate themselves into the agricultural and livestock economy of the peasant.

PART FOUR

SOCIOCULTURAL ANTECEDENTS OF EROSION CONTROL

CHAPTER EIGHT

LAND TENURE AND SOIL CONSERVATION

Several observers have indicated their conviction that the prevailing land tenure system in Haiti has not only been one of the major contributing factors to soil erosion in the past, but also continues to be a major obstacle to the success of soil conservation practices in the agrarian repertoire of the Haitian peasant stems largely from the absence of a true proprietary relationship to the land which he crops. This has led to the emergence of a totally extractive, grab-while-you can approach to agriculture whose direct consequence has been the destruction of the nation's forest. This extractive orientation furthermore, according to the model, inhibits the spread of the ecologically protective behaviors which soil conservation technicians have tried to impart. In view of the frequency with which these assertions have been made, I gathered general information on the prevailing land tenure patterns in the various project regions, as well as more specific information from project organizers and participants concerning the manner in which different land tenure arrangements appeared to impinge on the success or failure of the project.

8.1 Overview of Haitian Peasant Land Tenure.

Haitian agriculture unfolds in the context of a private property land tenure system whose institutional underpinnings stem largely from French law and whose actual functioning is informed by a number of folk-adaptations which have emerged in the context of Haitian peasant society. A great

deal--undoubtedly most--of the land is under the control of private owners, though large tracts of land (never yet measured) also belong to the State. The intergenerational movement of land is governed by a bilateral, partible inheritance system in which all children (with certain minor exceptions) receive equal shares of the land of both parents. The preponderance of extralegal conjugal arrangements in the rural areas leads to a situation in which the land of both parents tends to be kept legally separated, creating a situation in which children generally frequently two separate sources of inheritance land. In addition to the intergenerational movement of land via inheritance, there is an impressively vigorous land market in which peasants buy and sell land.

The situation of deeds is one of the more obscure features of the land tenure system. It is probably the case that most of the privately claimed land in Haiti is covered by some form of deed. These deeds have arisen either in the context of 19th century governmental land grants or of more recent purchases which were followed by surveys and the preparation of new deeds. But though most private land is covered by deeds, there has never been a total cadastral survey of Haitian peasant holdings, leading to the emergence of competing deeds. Furthermore it is a rare peasant who has deeds for all of the plots in his holding, even for those plots of which he is the owner. Recent generations have seen the emergence of informal land division procedures in which siblings, resting in the knowledge that their father or grandfather

had a valid deed to the land (which is still preserved in many cases), avoid the expenses of a legal survey by informally dividing the land among themselves. The plots created by this subdivision do not have separate deeds, but the land is nonetheless frequently covered by a master deed. In most regions of Haiti these informal subdivisions, frequently made in the presence of community witnesses, have the force of law. In fact a sibling may, if necessary, sell his plot and the purchaser may elect to come in and survey the purchased piece of ground even though the seller had not yet taken out his own separate deed to the plot. However in the case of many, perhaps most, purchases, the buyer himself will not undertake the expense of a formal survey, but will rest his security on the notarized record of the transaction that is prepared at the moment of a sale.

In addition to the circulation of land via inheritance and purchase, many peasants gain access to land through one or another tenancy route, the principal variants being sharecropping and renting. When dealing with mountain peasants, most of this tenancy is of an intraclass nature--both landlord and tenant are peasants from the same general region. The landlord himself may continue to crop his own plots of ground and may even simultaneously be a sharecropper or renter on somebody else's land.

There is some degree of regional variation with respect to land tenure patterns. For example, in the rural areas north of Aux Cayes, the informal subdivision process does not unfold as described above. In the case of valuable land, siblings will call in a surveyor and pay the $20.00

or $25.00 required to draw up each separate deed. Where the land is too small, siblings will crop it in rotation, a practice which I have not found to be common in other parts of the country.

The case of State land presents another variant. In many parts of the country State land is used for the growth of traditional domestically important crops such as corn and millet and traditional cash crops such as beans. In such cases the prevailing arrangement is for the peasant to pay rent in the Tax Bureau of the nearest town. But in the case of more valuable State land, a frequent arrangement, which I have observed in both Aux Caves and Jean Rabel, for example, is for wealthy townspeople to rent the land at a low price from the Tax Bureau and to sublet it at higher prices to individual peasants.

But even State land has its regional variations. All of the coffee grown in the Baptiste region in the mountains south of Belladere is grown on State land. But in this region the practice of paying rents to the State was eliminated during the late forties when an agricultural colony was established in the regions and peasants who had been affected earlier slaughter and by the ejection of Haitians from the Dominican Republic were given plots of ground. Today the farmers treat this land as though it were their own, with the exception that they do not notarize land transactions, preferring to avoid any involvement with the State in matters of land.

8.2 The Issue of Land Tenure Insecurity

When reference is made to the land tenure insecurity of the Haitian

peasant, the assumption generally is that the general absence of legal deeds for the individual plots in his holding creates a sense of insecurity that militates against long term investment in the land. There are some possible errors in this model.

Earlier information presented in this report indicates the presence of a generalized fear that involvement with the State or blan could lead to eventual loss of land. One need only recall the reluctance of many farmers to have trees planted on their land for this reason to grasp the fundamental insecurity of the Haitian peasant. However this insecurity has nothing to do with the land tenure system. That is, the fear of possible expropriation was as strong among those proprietors who had purchased and deeded their land as it was among those who had no separate deeds. If anything, the purchasers of land, who had invested cash in their land, had more to lose. Had each and every peasant had a deed for each and every plot in his holding, the fear would have been equally great. The insecurity stems from a basic ambivalence about the intentions of public institutions.

There is a second type of insecurity which focuses around the danger of losing land to powerful individuals who take a sudden interest in the land. The peasants of a community near Anse Rouge participated actively in a HACHO-sponsored irrigation project to bring a large tract of "public land" under cultivation. No sooner had the system been installed than a powerful townswoman showed up with a deed indicating that the land was in fact part of her own personal patrimony. Such occurrences tend to focus an irrigation projects and do not appear to play a major role in those

marginal uphill lands of interest to soil conservation projects.

A third type of insecurity is to be found in the situation of the tenant or sharecropper. His access to the land is determined by the landlord and can be removed once the cropping cycle is finished or the rental period has expired. This insecurity is a built-in feature of any tenancy arrangement and is not due to any particular weakness of the Haitian land tenure system, except insofar as these tenancy relationships are prevalent in certain regions.

A fourth type of insecurity that is characteristic of Haitian peasant land tenure in a way that is apparently not so common in other parts of the Americas involves potential conflict between close or distant relatives. The informal divisions may eliminate certain absent relatives, or they may be on property which, in an earlier subdivision, had eliminated a relative. A common theme in rural Haiti is that of intrafamilial litigation over plots of ground. Probably most land conflicts in Haiti involve conflict, not between a peasant and an outsider, but between a peasant and a relative.

In what ways have these land tenure dynamics affected the course of erosion control projects?

One of the more paradoxical findings from this research entails the apparent pattern whereby the absentee owners and large landlords--the "bad guys" in the books of some analysts of Haitian society--take substantially better care of their land than the smallholding peasant "good guys." In the area of Furcy, for example, well to do citydwellers have been buying

up mountain land for decades. The land purchases have been made not with a view to putting the land to productive use, but with the intention of creating vacation residences and bucolic summer retreats from the heat and noise of Port-au-Prince. Many of these boujwa have taken great pains to protect the remaining pines on their land, and to reforest portions of their property that have already been denuded. Their refusal to let local peasants clear and work their land has in many cases earned them negative local reputations. One does not need to ask informants to learn which hillsides belong to local peasants and which belong to outsiders. If a hillside or ridge has abundant trees, it is tè moun lavil (the land of city people); if it is denuded and barren, it is tè abitan (peasant land).

A somewhat similar pattern can be seen in the case of Smith's nursery in Limbé. Despite early attempts to involve peasants in tree planting, in recent years the project has had to rely almost exclusively on purchases from middle and large landowners who are willing and able to set apart sections of their property for the long term regeneration of forests.

These patterns are not surprising. The wealthy tree planters are for the most part individuals who generate their wealth from non-agrarian pursuits. The destruction of Haitian forests and hillsides has come about through the action of those whose livelihood depends on the soil. The elite landowner can afford to leave his land in unproductive or semiproductive trees, and his behavior in this respect is ecologically positive. But his holdings account for only a fraction of potentially productive the land in Haiti, most of which is in the hands of people who must make a living from it. In designing reforestation programs,

policy makers must devise schemes by which this latter productive group can integrate tree growing into an agrarian economy which up until now has been predicated largely on the cutting of trees.

8.3 Land Tenure, Contour Mounds, and Rock Walls

In the first section of the report a description was given of the mound terraces of Furcy. These were seen to be effective erosion control structures, not only from the point of view of their physical erosion control efficiency, but also from the point of view of their effective incorporation into the agricultural technology of the peasants of the region.

The question to be answered in this section is: does the land tenure relationship between the farmer and the garden at all affect the farmer's willingness to use these devices? To pose the question concretely, will an owner-operator be more willing to invest time, labor, and money in the construction of mound terraces than a renter or sharecropper?

One of the most interesting aspects of the Furcy mound terraces is that they are virtually free of influence from the domain of land tenure. That is, the tenant will construct them with the same willingness as the owner operator. The reason for this is twofold:

1. The mound terrace is absolutely essential to protecting the farmer's investment in fertilizer.
2. The mound terrace is a temporary structure which is demolished at each harvest and which must be rebuilt for each cropping cycle.

This latter characteristic stems from the fact that vegetable growing entails a deep turning up of the earth (rabouré tẽ) for each cycle. It is impossible to reuse a mound terrace. Phrased another way: the tenant constructing a mound terrace is in no way making a long term improvement on the landlord's property. It is the temporary character of the mound terrace which frees it from any impact stemming from land tenure considerations.

The same is not true of structures such as rock walls. The rock wall is by its very nature designed to be a long term improvement on the land. It is true that most rock walls have fallen down. But in those exceptional regions where certain farmers have taken care to maintain and repair rock walls, it has in most cases been the owner-operator.

But these farmers remain exceptional. Even owneroperators generally allow their rock walls to crumble. This indifference stems, not from land tenure, but from the earlier mentioned fact that rock walls are for the most part simply devices for securing Food for Work rather than profit-generating innovations in the farmer's technology. Long-term erosion control structures will fall heavily under land tenure dynamics only when they are in the interest of owner operators. If they are of little value, they will be neglected, not only by tenants, but also by owners themselves.

8.4 Managers, Tenants, and Trees

Common sense would suggest that the owner-operator of a plot is much more likely to plant and protect trees than a manager or tenant, who could

be expected to be indifferent to the fate of plants whose benefits he himself will not reap. Common sense is right only up to a point. In many instances there is a somewhat more aggressive dynamic. Peasants who manage land for absentee owners, and tenants who crop land belonging to others, may not only be indifferent, but may actually be hostile, to the planting of trees on the plot of ground under their temporary control. The hostility stems less from interference with their agricultural activities than from possible complications in their future plans. With great frequency, when an owner sells a plot of ground, he will sell it to a manager or a longstanding tenant. But the presence of trees on the ground could either raise the value of the land beyond the capacity of the manager or tenant to buy, or endow the land with so much worth that the owner decides not to sell. Indeed the trees themselves could conceivably provide the owner with the cash to meet the crisis for which he would otherwise have had to sell the land. Tenants and trees tend to be natural enemies.

8.5 Undivided Inheritance Land: The Major Project Headache

The tenure arrangement that has been most detrimental to the soil conservation projects examined in this study is the tenure mode that dominates agriculturally marginal private land throughout Haiti. Holdings will be subdivided by siblings into discrete subunits only if the land is agriculturally valuable. But if the land has deteriorated to the point where cropping is not possible, where the only use that can be made of the land is the grazing of livestock, then siblings will not generally subdivide it among themselves, not even informally. They will rather leave it in an

undivided block, each sibling having the right to graze any and all of his animals in the land. When this arrangement persist through two or three generations, a very complex tenure situation arises in which the land is owned collectively by a vast cohort of siblings, cousins, and the second cousins. Each plot of cropping ground that has been subdivided has a discrete owner. But this undivided land, commonly referred to as tè èritaj or--in censuses--tè indivisè, presents a complex tangle of frequently hostile co-owners.

It takes little imagination to envision the fate of a row of young trees planted on this type of land. It is unlikely that all co-owners will have been involved in the planting of the trees, at least not in view of the way projects have been organized up till present. Pressures for grazing space will lead co-owners to tie their animals indiscriminately. And if by chance some of the trees should survive, there will be a quite probably race to cut them down and sell them before some other relative does. When trees are on the land of a single owner who is assured of eventual use of the trees, there is a higher probability that they will be taken care of. But when trees are on land dominated by ambiguous ownership patterns, the ownership of the trees is also ambiguous.

This problem would not be serious if only a fraction of the trees were being planted on this collectively owned land. Unfortunately a very high percentage of project trees-perhaps 50% in some communities--go precisely on this type of land. Why? Simply because there is a tendency to plant project trees on land that is severely eroded, on the one hand,

and marginal to agricultural activities on the other. To avoid where possible confrontation with gardening landowners, agronomes and foremen will head straight for the high hills--literally--seeking out land where they will receive a minimum of flack from concerned landowners. The offshoot is the planting of large numbers of trees on te eritaj; and the most common denouement to the story is the total destruction of the trees.

8.51 Solution 1: Foster Corporately Owned Woodlots

One solution might consist of accepting this communal tenure pattern as an unalterable feature of the Haitian landscape and devising educational and motivational inputs which encourage peasant co-owners to protect the trees, to usher them into maturity, and to split the proceeds in a collective, equitable fashion. In addition to protecting the environment, this would also lead to the creation of corporate units based, not on residence in a community, but on membership in a common kin group.

Such a scheme has never been tried in Haiti to my knowledge, and I simply doubt that it would work. I am acquainted with some kin groups among whom such a scheme has a small chance of success. But in most of the kin groups with which I am familiar, there are inevitably subgroups of relatives who dislike each other with an intensity scarcely comprehensible to an outsider. It would be an unwise decision to saddle a project with the task, not only of reforesting hills, but also of creating fraternal love among individuals who may be actively casting spells on each other.

The peasant economy of Haiti is fundamentally atomistic, at least in terms

of wealth generating property. Peasants pool labor, but they rarely pool property. Someday community development experts may succeed in transforming the orientation of the peasant, into one of collective, common endeavour. But soil conservation projects should not saddle themselves with this task, or reduce their chances of success by adopting models based on communal orientations which at present simply do not exist.

8.52 Solution 2: Individualize Land Tenure Patterns

An alternate solution ~~might~~ be for the project to facilitate the partitioning of these plots of land in such a fashion that each member of the kin group would get an individualized deed to a specific sub-plot within the larger block. In that way each tree would have a particular owner.

There are situations in which projects should envision some sort of regularization of land tenure arrangements in a project region. But such interventions should probably restrict themselves to validating master deeds and ensuring against the sudden encroachment of outsiders. It would be both cumbersome and unwise for outside agencies to begin tinkering with the internal tenure relations on plots of ground communally held by a group of relatives. There are some cans of worms that are best left unopened.

8.53 Solution 3: Individualizing Ownership of the Trees

Perhaps the simplest and most appropriate solution would be to organize the distribution of the trees in such a fashion that the trees pass from the control of the recipient community organization to the hands of specific

individuals. That is, the trees are assigned to specific owners, who, under the incentive of some project input, make themselves responsible for the protection of the tree and are the sole recipients of the profits from the tree when it is ready to be used.

Recall: the current manner in which the trees are planted in most projects leaves ambiguous the ownership of the tree. Even when the tree is planted on private property, the landowners are sometimes told to take care of the "State's trees." I have heard peasants disclaim ownership of trees that have been planted on their land--not because they would not like to be the owners, but because they were still not convinced that the project intended them to be the owners of the trees. The ownership of trees on communal land is even more ambiguous; if the land itself doesn't have a specific owner, the status of the trees is even less clear.

If an individual were given 200 trees, for example: and if he were convinced that in four or five years those trees would generate substantial income: and if he were in addition given some other project-supplied "encouragement" to usher those trees through their early years, then the situation would be totally clear. Under current customs he could argue that he has the right to plant these trees on a block of land in which he has communal rights, in the same manner that he could plant a garden there. He is not establishing permanent ownership rights in the plot of ground; but he does have ownership rights in the crops--in this case trees-which he has temporarily planted there.

It is here that we see the importance of a cultural construct in determining the behavior of community members. If a co-owner were to plant a manioc garden on undivided land, other relatives with rights in the plot would be obliged to tie their animals elsewhere. If they tied their animals in the manioc garden, the gardener could take them to court and would be paid an indemnity. But if the same person were to plant several rows of trees on this ground, rather than manioc, the other kin would simply continue to tie animals, since trees are not defined as a crop in the same fashion as other cultivates.

But once the trees have come to be defined locally as a "crop"--and this would constitute a revolutionary triumph for any project--then other relatives could not tie animals in a position that could destroy them, anymore than they could tie their animals in a manioc garden. Of the various solutions discussed here, this strategy of clarifying and specifying ownership rights in trees stands the highest chance of integrating itself successfully into the realities of contemporary Haitian peasant land tenure.

CHAPTER NINE

CULTURE AND CONSERVATION

9.1 Formulation of the Question

One of the hypothesis envisioned in the workscope concerns the possible impact of a number of cultural issues on the success or failure of erosion control projects. Are there some features of the general cultural orientations, or forms of autochthonous social organization, found among Haitian peasants which either facilitate or hinder the success of soil conservation projects? It should be obvious by now that the results of this study suggest the primacy of economic and institutional determinants, rather than the traditions and attitudinal patterns popularly lumped under the rubric "culture". But if Haitian peasant culture is not the major determinant of project success or failure, nonetheless it sets up possibilities and constraints which should be taken into account in the organization of projects.

9.2 Culture and Deforestation

The observer who stares in horror at ridge after ridge of treeless, barren hillsides cut with savage gullies and stripped of all but a thin remainder of now infertile topsoil can be pardoned for wondering about the culture which has encouraged, or at least permitted, its bearers to destroy the environment which supports their

life. I have heard more than one homespun analysis of the "extractive" nature of the orientation of the Haitian peasant, or of the absence of the disciplined "future orientation" which presumably helps the technologically advanced Euro-American to "delay gratification" and plan for the future.

Before launching into tirades against Haitian peasant culture, however, it is useful to recall that environments had already been altered by human cultivators long before human beings even thought of settling the Antilles some 7,000 years ago. Furthermore the desertification of vast expanses within large regions such as the African Sahel, largely as a result of overintensive tillage practices, have produced landscapes even more barren than those generally found in Haiti. Nonetheless the destruction of the Haitian environment correctly strikes observers as being disastrously thorough even in comparison, for example, with the milder types of environmental degradation which have afflicted Haiti's neighbors in the Greater Antilles.

Only the most lethargic mind could refrain from entertaining at least a mild curiosity about the causes of Haiti's unquestioned local lead in this tragic downward race.

But before laying the burden on Haitian culture, it is analytically healthy to examine more prosaic material features such as the pre-existing environment. Perhaps there was something special about the ecology of colonial and postcolonial Haiti which made it more prone than its neighbors to ecological destruction. A case could be made that indeed the very topography of Haiti made it likely that if one Caribbean nation were to end up denuded and eroded, Haiti would be that nation. An unparalleled percentage of the nation's surface takes the form of hillsides. 75% of Haitian land has slopes greater than 20 degrees. Using standard international land classification schemes, less than 20%—one observer puts the figure at 14%—of Haiti's land is truly arable, and even most of the arable land constitutes slopes which would require erosion control measures for proper cultivation. In short the very physical endowment of Haiti has rendered the corner of Hispaniola inherently more vulnerable to environmental degradation. Whatever his culture, the Haitian peasant had the ecological cards stacked against him from the outset.

But ecology explains only part of the matter, and perhaps a small part at that. The anthropological literature of the past two decades is replete with well documented examples of agrarian societies which have successfully—frequently on their own—devised environment-protecting customs and institutions which seem conspicuously absent in Haiti.

Such agrarian strategies frequently take the guise of religious taboos, for example. It has recently been argued, for example, that the now famous Sacred Cow complex in India can best be understood as a subtle form of economic insurance against the destruction of an invaluable local adjunct to the local agrarian economy—the cow whose droppings provide the most important source of domestic fuel. It would appear that Haiti could have benefited from the emergence of vigorous folk-religious taboos against the cutting of trees. Why have these taboos not conveniently appeared?

As a matter of fact, they have. I have lived in a village of the plain whose inhabitants are hard pressed to find firewood and where—surprisingly—there is a substantial number of trees still standing which in other regions would have long ago fallen to the axes of the charcoal makers. In virtually every single case, these trees are bwa sévi, sacred trees whose destruction would bring prompt retribution down on the head of the feller (or on the heads of his children). But these taboos are weak, certainly weaker than the more powerful forces which have made it necessary and/or profitable to chop the trees down. And for reasons which fall beyond the scope of this discussion, rural Haitian folk religion has come to focus on matters of sickness and healing rather than on matters overtly connected with the local agrarian economy.

But other agrarian societies have successfully devised non-religious, technological solutions to problems of soil erosion. One need only point to the famous terraces constructed by the Inca--some of them still in use today--or the elaborate tillage practices of many tribal peoples which, in combination, with careful systematic fallowing practices have managed to preserve fragile environments.

Why have such environment-protecting agrarian practices apparently never emerged as a feature of Haitian peasant culture?

As for the terraces, an examination of the anthropological literature will reveal that such labor demanding innovations tend to occur only within certain sociopolitical contexts. Probably the principal governing factor is the presence of either an advanced chiefdom or a centralized state which has developed effective institutions of communal labor mobilization. It is true that Haiti has been a nation-state with a centralized government from the earliest days of the Republic. But the government has been, throughout its history, conspicuously inefficient in the mobilization of communal labor for communal ends. The most glorious exception--Henry Christophe--mobilized his subjects, not for the building of hillside bench terraces, but for the construction of an enormous mountain Citadel, a not unreasonable choice in view

of the then imminent danger of a reinvasion by the recently ejected French, and the remoteness of the problem of soil erosion in a country that was then still heavily forested and underpopulated. By the time soil erosion has become a problem, Haitian governmental institutions had long since lost most vestiges of effective labor-mobilizing control over the rural population. It is not unfair to point out that most recent Haitian governments have been much more skillful in the organization of extraction than in the organization of production. But the important point here is that the absence of the impressive terrace works that have characterized certain other agrarian cultures is more a reflection of the state of the local institutional superstructure than of the culture of the peasants.

But what of the simpler types of protective devices which less complex tribal societies have hit upon in the course of their own agrarian development? Why do so many Haitian peasant communities give the appearance of taking no precautions against soil erosion? A rather same answer would be to point out that there are at least a few observed cases of peasant communities some of whose members erect different types of vegetal barriers on steeper slopes in hopes of slowing down at least some of the soil loss. And in some communities which I have visited, these devices were reported to be longstanding traditions in the community, rather than innovations introduced by an agronomist.

But such cultural devices constitute feeble exceptions in an agrarian system that is frankly characterized by the general absence of soil protecting measures in physical environments which appear to cry out for such measures. With respect to this, it must be pointed out that the major weapon in the conservation regime of most highland horticulturalists has been the maintaining of a reasonably lengthy fallow period which permits regrowth of secondary vegetation and the concomitant regeneration of the soil. But population growth has been found, wherever it occurs, to wreak havoc on highland horticultural systems principally through a forced shortening of the fallow period. Rather than letting the land rest 12 or 15 years, cultivators may be forced to return to the plot after only one or two years of brief pause--during which period they may even have been forced to graze their animals on the plot, thus impeding the growth of even low brush vegetation. This is the situation which characterizes perhaps most of rural Haiti. The current population density creates a pressure on land that effectively precludes the application of necessary fallowing practices. The result has been widespread destruction of even secondary forest environments, and their replacement in many regions by treeless, brushless highland savannas, now forever beyond the reach of spontaneous forest regeneration even if by some miracle the land were to be left untouched. In short once again we find that it is an exogenous variable--population pressure--rather than culture which bears the causal brunt in the process of environmental degradation.

But population pressure has exerted its environmentally destructive impact via another route as well. The response of most Haitian peasants has been to shorten their fallow. But the response of a growing number has been to give up the entire hopeless endeavour and seek their fortune in Port-au-Prince or other smaller towns. But this has created market for lumber and charcoal where presumably such markets did not exist before. It should be pointed out that the exportation of lumber was one of the major sources of governmental revenue during parts of the nineteenth century and several documents allude to the existence of private lumber companies that had arisen to meet this market. But in recent decades the demand has focused in the urban areas, combining with the simultaneous demand for charcoal. These forces, which from an environmental point of view constitute negative pressures, from the peasant's point of view constitutes a new economic opportunity to generate cash from a product formerly devoid of commercial value. The manner in which the peasants have leapt to fill this growing demand has already been the subject of several professional reports.

In filling this demand, the Haitian peasant has been neither more nor less vigorous than his counterparts across the Dominican border. And yet there exist dramatic ecological difference between the two sides of the border. During my research in the mountains south of the border town of Belladere, I was once again impressed by the contrast between the luxuriant pine forest visible on the Dominican side and the barren, yellow savannas of the Haitian side. This contrast is best understood, not as a product of Dominican Haitian cultural differences, but of differences in governmental institutions. For nearly two decades the Dominican government has vigorously enforced stringent forestry legislation imposing heavy penalties on the cutting of trees, even trees that are on one's own land. The rural agents of the Haitian forestry service, in contrast, have adopted a policy, not of curtailing, but of simply cashing in on, the cutting of trees by charging fees to peasants or professional lumber merchants. Once again, sound comparative analysis would be forced to explain contrasts in Haitian and Dominican ecology, less in terms of differences between the respective cultures than in terms of contrasts between their respective governments.

9.3 Culture and Tree Planting

Is the only interaction between the peasant and trees one of destruction? Do the traditional lifeways of Haiti make no allowance for the planting of any trees by the peasant to replace those that are cut down? Can this not be seen as a lacuna in Haitian peasant culture?

No observer of traditional Haitian life has ever recorded a systematic custom of replacing trees that have been purposely cut for one reason or another. The tree cutting of the Haitian peasant is truly extractive, and the concept of sustained yield harvesting is totally alien to his traditional lifeways. But the same is true of virtually ever other agrarian group that has depended on the cutting of trees for land clearing purposes. The regeneration that successfully occurs on the former garden plots of many tropical horticulturists is always first and foremost a product of the spontaneous regrowth of secondary cover, not of deliberate tree planting on the part of the cultivators. The principal difference is that in some settings land is abundant enough to permit long fallows, where in other regions such as Haiti demography and land pressure conspire to eliminate the practice of systematic, lengthy fallow.

There have, however, been certain types of tree planting in traditional rural Haiti. The most important type, especially prevalent in the mountain areas, has been the custom of surrounding one's house and courtyard (lakou) with an orchard and/or coffee grove, whose principal functions, aside from the harvesting of the fruits, have been the provision of shade and the sheltering of the house from the wind.

Two features of this custom are important. The first is its smallness of scale. The practice consists of planting one or two trees of several varieties. It has nothing to do, either in scale or layout, with the orchard-planting behavior envisioned by some soil conservation specialists. Unfortunately, when pre-project questioning is done of the peasants concerning "what trees would you like to plant," the project technician posing the question is thinking in terms of intercropped orchards, but the peasant is in all likelihood thinking in terms of a small number of trees to supplement those which he has around his house.

Secondly this traditional tree planting involves only fruit trees. The concept of planting a wood tree is totally alien to the traditional practices of the peasant. Indeed some peasants consider the practice of planting wood trees such as bwa blan and bwa plé as the most revolutionary aspect of the reforestation projects

with which they are familiar. In traditional life, a wood tree is not something you plantè; it is something that lèvè pou kò-li (grows by itself). In short projects which attempt to introduce systematic tree planting on a large scale, especially the planting of wood trees, are undertaking something for which their is no pre-existing cultural precedent in rural Haiti.

9.4 The Short-Term Future: Investment for Profits

Soil conservation projects presuppose a concern for the future. To what degree do rural Haitian value systems and cultural orientations equip their bearers to engage in future oriented behaviors. I will discuss this issue by distinguishing among the short-term future, the intermediate future, and the distant future.

In terms of the short-term future, the Haitian peasant manifests an entrepreneurial spirit that has few parallels among his counterparts in other impoverished rural settings of the Americas. Most first-hand observers would agree in characterizing Haitian peasants as cash-croppers par-excellence, willing to plant for the market when there are realistic hopes of profits to be made. In addition, their wives have the distinction of being, as a group, the most active--and, for analysts, probably the most respected and studied--marketwomen in the Western hemisphere, willing to combine small amounts of capital with enormous amounts of labor in hopes of making a small cash profit.

But the investment behaviors of the peasant household go beyond the short-term undertakings that terminate at the end of a cropping cycle or a marketing venture. In addition there exist impressive patterns of the saurization for future land purchase which take the form principally of savings in livestock. Popular stereotype repeats the story of the young peasant who sells some eggs to buy small chickens, sells the chickens to buy a goat, sells the goats to buy a pig, sells the pigs to buy a cow, and finally--as the grand payoff--sells the cow to purchase a plot of ground. The frequency of some variant of this process indicates clearly the existence of an effective and practical future orientation in the behavior of the Haitian peasant.

But the catch, from the point of view of soil conservation projects, is that the end result must generally entail some sort of tangible cash-generating payoff. If soil conservation schemes have on occasion failed to excite peasant communities, the fault lies not with an absence of concern for the future in the orientation of the peasant, but with the absence of realistic, convincingly presented material payoffs in the design of the project.

As has already been stated, and as will be restated in the recommendations section of the report, this is by far the most important determinant of the success or failure of soil conservation projects. Program design must emphasize the cash payoffs that will come from trees, but must first have explored different alternatives to produce an agroforestation model which, both on paper and "on the ground", will produce higher profits for the peasant cultivator. With few exceptions, projects up till now have neither put together an economically viable agro-forestation micro-model, nor have they been particularly successful in convincing the peasant as to the benefits to be derived from the project's implementation. Many have simply droned on about the need to protect one's soil.

9.5 The Intermediate Future: Preparation for Old Age and Death

Another anthropologically impressive element in Haitian peasant culture is the preparation that is given for old age and death. As they enter their fifties and their energies begin to decline, peasants with at least some means will begin making preparations for a gradual withdrawal from the agricultural cycle and for the spending of an old age in which they are free from the need for heavy field labor and are covered in terms of their food, clothing, and illness needs. In addition to giving out pre-inheritance land

to his children (who will then be obliged to support him), the peasant will also try to retain at least some land to be worked by share-croppers, thus insuring himself of direct stakes in as many gardens as possible, in addition to receiving regular contributions from his children.

But probably the most impressive—and, for outsiders, most bizarre—element of the old-age preparation of the Haitian peasant is to be found in the elaborate and costly preparations which are made for death. The salient element in this preparation will be the construction of an expensive tomb, the average one costing some three or four hundred dollars, but more elaborate ones costing up to several thousand dollars. The hidden economic rationale behind this apparently "irrational" investment--the land-circulating function carried out by the rural Haitian mortuary complex—falls beyond the scope of the present discussion. What is important here is the existence of a value system which emphasizes preparation not only for the short-range objectives mentioned earlier, but for substantially more delayed objectives as well.

In the course of this research I have heard experienced field agents exhort peasants to plant trees as a preparation for their old age. In fact the possession of a private woodlot would make perfect sense in terms of the current scheme of things. The income generated from the trees might not only free a peasant from the need to sell land in some future crisis; they would also assure him a steady cash income, obtainable with a minimum of labor, in his old age. As one technician exhorted: Planté pye bwa, mon chè; lè ou antré nan grandet, oua vann bwa, oua bwé bouyon. Pyé bwa, sé tankou youn chek li yé. Plant trees, my friend. When you start getting old, you'll sell the wood and you'll be drinking boullion. Trees are like a monthly check.

9.6 The Long-Term Future: Concern for Unborn Generations

The payoffs of soil conservation projects, particularly the reforestation component, are frequently phrased in terms of the welfare of future generations of Haitians. Is this future orientation compatible with the thrust of Haitian peasant culture?

In the first place, it must be remembered that as is true of most aspects of human culture such concern with the distant future, especially the future that will continue after one is dead, is the product of training from parents. But the parents of the present day generation of Haitians have had neither the skills nor,

perhaps as a consequence, the concern to prevent the destruction of the nation's trees and the erosion of the island's soil. There is no realistic basis for expecting the present generation of Haitians to manifest a spontaneous ecological concern vis-a-vis the environment in which their own children or grandchildren will have to live.

Secondly even in cross-cultural perspective such concern is rare, especially when it entails unconfortable alterations in one's own behavior. One need only look to the behavior of the man in the street of industrialized nations in the face of the petroleum crisis---increased consumption, hoarding, and myopic, self-serving denials that the crisis is genuine---to exempt the Haitian peasant from cultural criticism on the grounds of ecological shortsightedness.

The major cultural imperative governing Haitian peasant parents with regard to their children is that of leaving them land. So strong is this imperative that a great deal of the feverish land-transacting which characterizes economic life in most parts of rural Haiti should be understood more as an attempt to secure land to leave to one's children than to augment one's own immediate personal income. Both motivations are present, but the frequency with which one hears the theme achté té pou pitit-yo ka lévé-jwenn ("buying land so that children will have something to inherit") suggests the primacy of the former.

This norm is sustained by patterns of very strong social pressure exerted, not only by the children themselves, but also by neighbors who keep a keen lookout on the inheritance status of each other's children. For the obligation to give land begins not only at one's death, but when one's children--especially one's male children--are in their late teens and will begin clamoring for land on which to grow gardens of their own. That is, the parent who scrambles to acquire land may be obeying the demands of a cultural imperative, but it is an imperative supported by the threat of very real and embarrassing negative social sanctions. It is effective enough to motivate maneuvering for land acquisition.

But in its present functioning, the norm to leave land appears to focus more on the quantity than on the quality of the land. It is here that simple educational messages could inject a new dimension involving trees. Projects could promulgate the theme that the mountain parent who leaves his child half a carreau of forested land is leaving a more valuable patrimony than the parent who leaves a child a full carreau of denuded, eroded land. Children should be encouraged to enquire of their parents as to the provisions that are being made to provide them with trees as part of their patrimony. The theme of trees will be the unusual component of these educational messages. But the theme of filial expectations of parents is in perfect harmony with expectations that are currently central elements in the value system of Haitian peasants.

The preceding pages have undertaken a brief discussion of certain aspects of Haitian culture as it relates to the success or failure of soil conservation projects. The basic thrust of the discussion has been optimistic as to the capacity of Haitian peasant culture to support soil conservation programs. I have argued that the destruction of the environment has come about not principally as a result of Haitian peasant culture, but as a result of the combined interaction of environmental, economic, institutional and political variables. Likewise the failure of projects to succeed is due less to cultural factors than to a failure of the projects to present convincing material payoffs. If this need for material payoffs is to be considered a "cultural weakness", then American culture would have to be judged as extremely weak as well.

The theme of material payoffs should be at the center of projects. But in addition I have suggested additional ancillary messages and themes which should form part of the educational component of soil conservation programs. The argument has been,

in effect, that the success of soil conservation projects depends, not on changes in Haitian peasant culture, but rather in positive changes in the cost/benefit calculus that surrounds the tree planting economy. If peasant tree planting can be presented in a profitable fashion--and this is now technically feasible--the profit motive that is close to the core of Haitian peasant culture will at last find an outlet that restores, instead of destroys, the Haitian environment. But the profit motive itself, as well as most other important features of Haitian peasant culture, should be viewed, not as detriments, but as assets.

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APPENDIX A

Observations on the Costs and Benefits of Different Tree Species

Ronald Smith

The following paragraphs will discuss the comparative benefits of lumber vs. charcoal vs. fruit. I will begin with a few brief comments on the fruit industry in Haiti, and some of its implications as we think of directions for reforestation. The fresh fruit industry in Haiti represents private enterprise at its worst. The extreme perishability of fruit commodities means that the buyer has all the cards, and the seller has none. When the middle man decides to buy a hundred sacks of mangos and take them to Port-au-Prince, he knows that he is taking a big risk. If he has not unloaded his merchandise within forty-eight hours, he stands to lose the whole investment. He must take this into account when he buys from the grower; risk, then, is translated into low prices. It is the de-centralization of this industry in Haiti that saves it from complete pillage. Each farmer has two or three fruit trees in his garden. In years when prices are good, he sacks them up and moves them to the marketplace; in years when prices are not good he lets them fall on the ground, or feeds them to his animals. It is important to understand that it is precisely because he has not covered a great deal of his land space with fruit trees, that the peasant is able to afford the occasional loss that he suffers when he can't sell his fruit. If, for example, half of his average were in fruit trees, the years of loss would be intolerable, and

he would soon be forced to reduce the number of fruit trees in favor of less perishable items.

Bearing this in mind, I am preparing a chart comparing the production and income potential of the different fruit products, but with the cautionary note that the information could not be projected out as the earning potential of peasant landholdings unless the marketing problems spoken of above were solved. The information contained in the chart is a combination of my own experience with the various fruits here in Haiti, and information contained in booklets published by CONSEJO DE BIENESTAR in Caracas, Venezuela.

Variety	Spacing	Trees per hectare	Production per tree	Production per hectare	Price per volume	Gross per hect. per year
Orange	6 meters	275	5 sacks	1375 sacks	$.40-sack	$550.00
Grapefruit	6 meters	275	4 sacks	1100 sacks	$3.00-sack	$3,300.00
Avocado	8 meters	156	8 sacks	1248 sacks	$2.00-sack	$2,496.00
Mango	12 meters	70	35 sacks	2450 sacks	$.20-sack	$490.00

It is my belief that the wise approach to planting fruit trees in Haiti is to space them out a few here and a few there over a large land space owned by many independent farmers. This will help guard against scarcity while at the same time working within the same marketing framework described above.

Lumber

The lumber trees can be divided into two groups; the moderate to slow growing hardwoods, and the faster growing lightweight hardwoods. The first group would be represented by mahogany (Swietenia mahogoni and Swietenia macrophylla), oak (Catalpa longissima, cedar (cederela odorata) and Tavernon (Lysiloma latisilique). These are the time tested first choice woods for everything from cabinet lumber to cement forms in Haiti. They are prized for their natural resistance to insects and warping which is rather important since they are most commonly used without benefit of treatment or paint. The second group of lightweight hardwoods is represented by Bois Blanc (Simuraba glanca, Blue Mahos (Hibiscus elatus), Sablier (Mura crepitans), and Saman (Pathosolobium saman). These woods give a faster yield, but of inferior quality to the above mentioned hardwoods.

Below is a comparison in outline of the two groups of hardwoods:

Medium to Slow Growing Hardwoods	Lightweight Hardwoods
1. Planting to harvest - 25 years	1. Planting to harvest - 15 years
2. Average value per stem - $50.00	2. Average value per stem - $37.50
3. Stems per hectare - 400	3. Stems per hectare - 400
4. Gross per hectare per year-$800.00	4. Gross per hect. per year - $1000.00

The value per stem is based on the present price for which a twenty inch Diameter-Breast-Hight tree can be sold to the sawyer while it is still standing. The number of stems per hectare is based on a spacing

of five meters distance. As can be seen from the comparison, the time factor as well as the income per hectare per year both tip the tables in favor of the lightweight hardwoods.

However, the time involved in either of these approaches is a real problem to the Haitian peasant who must see continuous returns from his land in order to survive. It is true that he can intercrop with his regular gardening practices for the first three or four years, but he is inevitably going to face a long period of time during which the forest canopy has been formed, and gardening is impossible. The other real drawback to the hardwood forest is that it will be seen as a "one-time-around" business; after one big harvest the likelihood of replanting and continuing forest rotations would seem to be quite slim. The pressure to use the land for immediate benefits will be too great. The worst that could possibly happen (and a phenomenon that has already been experienced by reforestation programs near city centers) is that the pressure for combustibles would become so great that precious wood forests would began to be turned into firewood and charcoal. I would emphasize that this is not the normal pattern of events in the Haitian countryside; the Haitian peasant is highly protective of precious woods, but when population pressures reach a certain point, he will find that he has no control over what happens to his own land. Scavengers will move in, and what they can't move off by day, they will move off by night.

That moves us quite logically into the question of charcoal plantations. I want to clearly state my bias on this matter. After working for ten years in Haiti almost exclusively with precious hardwoods, I have

been moved to the conclusion that the only reasonable approach to reforestation in Haiti is with charcoal forests. I will give the following reasons for that conclusion:

1. It is presently estimated that 80% of the wood resources of Haiti are being consumed in the form of combustibles. This massive cutting of wood is presently turning the interior of the island into a desert. The only alternative presently in view to this rape of the land would seem to be a charcoal industry that would systematically plant and cut on an intensive scale. Such a program might finally produce charcoal at such a reasonable price that it would become uneconomical for the itinerant charcoal collector to continue scavenging over the interior in search of those last few scraps of wood.
2. While precious wood forests take many years to bring into production, a charcoal forest can be in production in four years. Since most of the land space in Haiti is owned by small peasant landholders, this is a critical point. The small landholder cannot wait for ten to fifteen years for a precious wood forest to mature. But with charcoal, he can garden the first year or two while the forest is being established, and then with only a two year lapse he can be in production.
3. Since the trees grow readily from the stump, the harvest is continuous for up to five or six cuttings (at four year intervals) without replanting. This makes a more or less permanent root system to continually protect the land surface from erosion.

4. The economics of charcoal production compare favorably with any other potential use of marginal mountainous land. Fast growing species such as Leucaena leucocephala and Cassis siamea should easily produce 500 sacks (eight ton) of charcoal per hectare per year. At the present price of $1.60 per sack, this would mean a gross of $800.00 per hectare per year. Considering the shortened time factor, this compares quite favorable with the production of precious hardwoods.
5. Cahrcoal production is a labor intensive industry. It can help to ease the unemployment crisis in areas where it is implemented. It is also a low level technology industry which means that it can be decentralized quite easily.

In conclusion, terms of national energy and resource priorities, workability for the small landholder, an effective land reclaimation program, and a valid economic alternative to present use of mountainous land, I believe that charcoal production deserves high consideration.

APPENDIX B

The Costs and Benefits of Different Types of Nurseries

Ronald Smith

For all practical purposes, I would say that there are about five basic methods (with many variations) of getting from the seed to the planted forest. They are (1) bags, (2) Pots, (3) Root Trainers, (4) Bare-Root Planting, and (5) Direct Seeding. Each method has its strengths and its weaknesses, and one method may be applicable to certain circumstances while not to others. I will therefore take each method in turn and discuss its advantages and disadvantages. I will attempt to add to and summarize the discussion at the end of the report with a chart showing the cost breakdown of the different methods.

Plastic Bags

Growing nursery seedlings in plastic bags and moving them to the planting site with the soil and roots intact has become a standard forestry procedure over the last two decades. Using this system you can produce a healthy, vigorous eighteen to twenty four inch seedling that will compete well with the weeds, and that can be placed in the ground with little or no root damage. Since the bags are only used once and then thrown away, there is not the administrative hassle of moving containers back to the nursery site. I have found that the smallest size of plastic sack that will produce healthy and uniform nursery stock is about three inches in diameter,

and eight inches deep (capacity approximately one quart). The eight inches depth is sufficient to allow for the development of a straight tap-root, and the three inch diameter is the minimum space for the development of uniform leaves on all the plants. If this space is reduced by any significent margin, some plants will be crowded out while others take over. This means that you will end up with a lot of unusable plants in the nursery.

The main draw-back to the plastic bags is that they are expensive to handle. The trees with the balled earth intact weigh about two-and-one hald pounds each, so a thousand plants is a heavy pick-up load. If the trees have to be carried any distance from the road to the planting site, the labor can become very expensive. (A man can comfortably carry 12 to 15 plants). In comparison to the samll root trainers, the bags also take up a lot of nursery space, but in terms of the nursery operation they are really quite convenient, and I do not consider the space problem to be a great obstacle.

Plastic Pots

The use of the plastic pot is very similar to the use of the plastic bag. The main difference is that the pot is a reusable container. Since they cost about ten cents a piece as compared to one cent for the plastic bag, they must get ten uses with no loss or damage to compete with plastic bags. Beyond this improbability are all the problems of administration (counting pots!) and storage. In actual nursery use,

the pots are much more subject to the washing away of soil than plastic bags. Since the pots (at least the ones that I have had experience with) are not sufficiently deep to start with, this means that not infrequently the final proeuct in a compacted two or three inch cake of soil with a taproot that curls around in several soils upon itself. While these trees may survive on the planting site, later in life they will be much more subject to wind damage and falling. The one plus of the plastic pot in the nursery is that they give a little more leaf space above the ground. While I am sure that a pot can be (and may already be) produced that will overcome the technical problems spoken of above, I am not yet convinced that they will ever be as economical or as convenient as plastic bags.

Root Trainers

Root trainers are plastic, reusable containers that come in various sizes. Some hold as much earth as the plastic bags that we were speaking of above, while others are quite small. Those that we will be referring to in this paper are the no. 5 and no.6 root trainers. These are quite small, having an opening of about 3/4" x 1" and a depth of about four inches. Root trainers, as the name implies, are scientifically designed to form a superior root system on the young seedling. This is done through a series of vertical grooves in the plastic liners that stimulate continuous division and subdivision of the root hairs, thus forming a much more efficient nutrient collecting system. In what little experience

I have had with this system, the results are quite dramatic. A eucalyptus tree started in a root trainer and then transplanted to a plastic bag will attain a meter height in six weeks, while it takes three to four months to grow the same tree transplanted from the seed bed to the plastic sack.

There has recently been some success with projects in the mountainous areas of Haiti that have planted directly out into the field from the small root trainers. In the tropical lowlands I personally believe that these small whippy five and six inch plants are a bit small to compete with the lush tropical vegetation. If, however, planting patterns followed the gardening patterns (that is to say that the land was completely cleared and worked up), the more rapid growing species that are being talked about for charcoal production could probably be planted, and compete successfully with the incoming grass and weeds. The advantages would be that a Pick-up could carry about 8000 plants, and a worker could easily carry 100 plants out into the field. Digging holes (which is a necessity with the pots and bags) could be reduced to merely sticking a dibble into the soil to open it up, and placing the plant in the hole. The ease of planting would be quite comparable to the bare root method, and yet you would not disturb the roots in transplanting. The initial cost for root trainers and carrying cases is high, but they are reusable, and much more convenient to carry and store than the pots.

If you will refer to the chart comparing the cost of containers, you will see that the root trainer, in terms of cost, is not an unreasonable alternative to the other systems.

Bare Root Planting

Bare root planting is not suitable to all species of trees, but since it is a possible alternative method for the faster growing charcoal species that we are dealing with, it is worth considering. Mr. Turkoz, the present Director of the United Nations forestry project in Limbe, Haiti,has much experience with this method (he bare-root planted over 2000 hectares of cassia siamea in the Upper Volta Region of Africa). He claims that the survival rate with this method is about 90%. The principle of the bare-root method is to get a healthy root stock. This is cone by growing a plant about one meter in height. When the rains come, the plant is stubbed back to about six inches and dug out of the ground very carefully so as not to damage any more of the roots than necessary. The taproot is stubbed back, and the remaining stock is then placed in a basket in a moist medium (wet wood shavings or similar material) and transported to the planting site. The real plus for this system is the ease of transporting and planting. A pick-up truck can carry twenty or thirty thousand of the stubbed roots, and a man can carry three or four hundred through the field at once. The bare-root method has an advantage over direct seeding in areas where it is undesirable or

inconvenient to work up the soil before planting. It is my belief (as yet untested by experience) that this system may be hardier in terms of competing with weeds than the samll seedling produced in the root trainer. The delicate part of the operation is that (1) the roots must be kept moist at all times until the stock is planted, and (2) the planting must be done immediately after a good rain (usually within 24 to 48 hours). Some care must also be exercised to make sure that the planters put the roots down straight into the soil rather than twisting or bending them.

Direct Seeding

The main advantage of direct seeding is cost. There are no nurseries, and no expensive transportation problems. The possibility of mechanizing and planting on a large scale is also one of the advantages of this method. In terms of the peasant farmer, the seed might actually be planted in his garden when it is being prepared. However, it should be remembered that these gardens must be weeded and it would be quite easy for a farmer to inadvertently destroy these very small seedlings in the process. Other weaknesses of this method are the high probability of failure due to unforseen changes in the weather (unexpected dry periods) and the question of whether or not the plants will compete with the surrounding vegetation without being weeded (an expensive proposition). This method is highly recommended by Michael Benge (USAID Agro-Forestry Consultant), and is definitely worth experimenting with.

COST PER 1,000 PLANTS FOR VARIOUS NURSERY CONTAINERS

Container Cost per Planting	Preparing Soil and Filling Containers	Nursery Maintenance	Transport.	Planting Clearing not Included	Total	Type of Container
$10.00 *1	$15.00	$7.00	$20.00	$40.00	$92.00	Plastic bag
$15.00 *2	$12.00	7.00	20.00	40.00	$94.00	Pot
$7.00 *3	$3.00	3.00	3.00	12.00	$25.00	Root Trainer
·0	$1.00	1.00	2.00	12.00	$16.00	Bare Root

*1 - One use only

*2 - Six uses

*3 - Six uses

The cost of direct seeding done on a mechanized scale with 2,500 plants per hectare is $35.00 per 1,000 plants. This figure includes plowing and sub-soiling.

Note: If clearing of the land were to be included in the above chart, $40.00 per thousant would be added to the cost of the work when trees are planted at a density of 2,500 per hectare.