COOPERATIVE AGREEMENT ON HUMAN SETTLEMENTS AND NATURAL RESOURCE SYSTEMS ANALYSIS

SOCIAL INSTITUTIONAL PROFILE OF THE CAYES PLAIN BASIN: TOWARDS A COORDINATED RURAL REGIONAL DEVELOPMENT STRATEGY

by

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Cooperative Agreement (USAID)

January 1984

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FOREWORD

In this proposed plan for coordinated rural regional development, the two primary goals are to improve the rural quality of life and at the same time to improve the land resource base. These two objectives are only possible to attain by considering all lands within the targeted areas in regard to their potential capabilities for development and resource improvements. Among others, these resource improvements include possible production capabilities related to food, fuel (charcoal), and timber; physical factors including hydrology, drought likelihood, slope stability, and erosion-siltation rates; infrastructure improvement including storage facilities and transportation; economic improvements in marketing, credit, and processing; and improvements in the agricultural use of lands including seed improvements, new-crops, conservation practices and field consolidation.

The physical factors affecting production and environmental quality in a land-rural based economy are largely related to the nature of the drainage basin in which the lands are situated, including climatic, lithologic, and topographic properties. The degree to which development activities are conceptualized within the physical environmental constraints--that is, work in harmony with nature-- will determine to a large degree interactions of the human activities in maintaining or improving the area's environmental situation.

Regional development may be implemented within any boundary, but planning environmental improvements, infrastructures, and mobilization of human resources will encounter significant restrictions unless carried out within meaningful units. In a river basin all natural resources can be controlled from the highest to lowest lands through the regulation of surface waters. For this reason basin boundaries delimit a meaningful planning unit in most humid areas where agricultural expansion is the primary goal. Almost all river basins are formed through a system of tributary or smaller stream basins. Because of this structural property, a development plan can be executed gradually in a regional context sub-basin by sub-basin according to the availability of human, financial, institutional, and other development requisites. When the planning strategy is expanded from tributary to tributary basin on a systematic basis, upon completion of the planning and implementation stages of the project, the whole river basin's socio-economic and land resource base will be improved.

From the physical perspective, a planning strategy attempts to initiate improvements in the tributary basins located in the major watershed areas of the river basin, then sequentially incorporates the remaining basins in the downstream direction.

This approach reflects the natural unidirectional flow of energy and matter within river systems. However, human systems such as market and social networks needed to initiate and absorb physical changes usually have different functional relations than the upstream-downstream spatial pattern of the river network. Until the regional river basin development project is complete, the human physical domains must be integrated into a complementary planning unit to insure continuous acceptance and maintenance of completed land use and institutional improvements.

Most projects are begun and completed with various ranges of success in the short term. However, even the most successful projects often need to be restarted after a number of years. All too often with the completion of a project in the formal sense (termination of external funding), its dynamics gradually wind down, and lands revert to their original status. A number of years later the project in new trappings is reintroduced and the old scheme is recreated. With the increasing population, deteriorating hydrologic conditions, and ongoing soil degradation, a new project incurs higher costs and less degrees of freedom in meeting its expected goals. Many Haitian agricultural projects have been analogous to the Alice Through the Looking Glass phenomenon of running forward on a reverse running conveyor belt. To remain where you are, let alone to improve the situation, requires even more effort. For example, ever since colonial times when irrigation was introduced in Saint-Domingue, a vicious cycle of abandonment and rebuilding of irrigation has been set into motion. Yet with each rebuilding scheme, potential has decreased due to the chronic processes of deforestation and soil erosion that directly affect water and soil resources. Superimposed on these ongoing physical factors are a plethora of human variables such as land tenure, organizational deficiencies, and increasing population densities that diminish the likelihood of success.

Perhaps the one underlying design flaw in most previous rural-based projects was that projects were conceptualized within the very narrow confines of the immediate project. Offsite project variables and impacts were rarely considered. Likewise, the engineering and public works components were usually stressed while the human infrastructure, including organization and maintenance components, were downplayed. It is for these reasons that this plan stresses a regional rather than sectoral approach and that the conceptualization of the rural development strategy includes both the physical and human components in a coordinated framework. The river basin, as a whole, as opposed to specific units within it, is the focus for the development strategy since all areas within the basin have direct and indirect impacts throughout the entire system. Thus, the coordinated rural regional development strategy that is presented in the following sections of this report attempts to incorporate existing processes as they operate in rural areas. It attempts to stimulate the region's latent potential as well as to strengthen its existing capabilities.

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CHAPTER 1

INTRODUCTION

1.1 THE SCOPE OF THE STUDY

A Social Institutional Profile (SIP) usually is intended to provide information on the social-economic, natural resource, and organizational/institutional structures in a particular area, so as to facilitate the USAID in-country mission's pursuit of its goals in that area. However, the present report extends the conventional limits of a SIP since, in addition to furnishing useful background information on the Cayes Plain Basin study area (in the form of "hard" data, interview results, field observations and more impressionistic information), it seeks to accomplish three other objectives. First, it attempts to establish a general methodology that can be used to analyze the physical, economic, and institutional characteristics of a rural region and, subsequently, to construct a workable development plan for that region. Second, it attempts to conduct the background analysis and to specify the dimensions of such a development plan for the Cayes Plain Basin. As indicated in the Foreword, the principal goals of a development plan for this area are the amelioration of the quality of rural life and the improvement of the land resource base. Finally, this report seeks to develop an appropriate and effective strategy for implementing the development plan. This latter objective is especially crucial since, without a set of effective implementation mechanisms, even the most well-conceived plan is merely a hypothetical exercise.

1.2 THE CAYES PLAIN BASIN: RATIONALE

The focus of this extended SIP, the Cayes Plain Basin, has been selected for analysis for a number of cogent reasons.

1. The Cayes Plain Basin is in many ways an archetype of the humid portions of Haiti since it manifests all of the topographic units found in these humid areas. The Platons Unit, while of minor areal extent compared to the total area of the Cayes Plain Basin, is in many ways a microcosm of the physical environment in the Central Plateau and, to some extent, it is characterized by similar problems of restricted accessibility.

2. The Basin is both a major agricultural area and one of the country's most densely populated regions, approximately 375,000 people live within the Cayes Plain Basin (SNEM 1982). It is an area characterized by a range of settlement types, including the city of Les Cayes (pop. 37,000), Haiti's third largest center. The land in the basin is intensively utilized and covers the spectrum in terms of quality and productivity.

3. The Basin is an area having untapped water resources which hold high potential for the enhancement of agriculture. Further, like other portions of Haiti, it contains active irrigation works which are characterized by a continual need for rehabilitation.

4. Not only does the Basin appear to be an operationally valid planning region, from both human and physical points of view, but it also appears to be a manageable planning unit. The latter denotes that the Basin is sufficiently compact (compared, for example, with the Central Plateau) such that investments committed will not be spread too thinly; and that logical sub-regional units exist that may be employed for the implementation of a development plan. That is to say, from a temporal perspective it is impossible to simultaneously implement all elements of a plan in all portions of the planning region. Implementation must be phased, and this requires the delineation of sub-regions which possess an internal functional integrity in terms of both human and physical criteria. The Cayes Plain Basin is completely occupied by three such units: The drainage areas of a set of small rivers that emerge from groundwaters on the lowlands (e.g., the Picot and Bordonne Rivers), the Rivière de la Grande Ravine du Sud, and L'Acul River Basin.

For reasons of logistics and human resources it has not been possible for the Study Team to examine each of these three sub-regions in equal depth. For the following reasons L'Acul River Basin has been selected as the detailed case-study of this report.

a. Just as the Cayes Plain Basin is a model for the humid portions of Haiti, L'Acul River Basin is a model which manifests the general characteristics of the larger Cayes Plain region. In addition, L'Acul Basin contains the Platons highlands which, as noted above, are unique in the Cayes Plain Basin, but are typical in the broader national context.

b. Due to L'Acul Watershed Project conducted by the U.S. Soil Conservation Service, there exists a useful set of background data which can be used as a point of reference for L'Acul sub-region. The dearth of consistent and reliable data continues to be a major constraint to development planning in all regions of Haiti.

c. A number of AID projects and interventions have been instituted in L'Acul Basin in recent years. It is hoped that the program outlined here can complement and build upon these initiatives in such a manner that the individual impacts of all activities will be multiplicative.

d. Just as the Cayes Plain Basin is identified as a valid and manageable planning region, at a reduced spatial scale the same characteristics are attributed to L'Acul River Basin. L'Acul Basin is a relatively self-contained unit from both a human and a physical perspective. Further, it is composed of four distinct sub-regional units which can be effectively utilized for the construction and implementation of a coordinated rural regional development plan.

1.3 THE CAYES PLAIN BASIN REGION: OVERVIEW

Located in the southwestern portion of the Southern Peninsula, the Cayes Plain Basin comprises approximately 720 square kilometers (Figure 1.1). Two large river systems, L'Acul and Grande Ravine du Sud, as well as ten smaller permanent river systems are found within the basin. From a perspective of rural development, a wide spectrum of ecologic conditions exist in the area. These range from high-risk, low potential, severely degraded lands to low-risk, high potential agricultural lands (DATPE 1982).

Estimates of population vary widely for the Cayes Plain Basin. According to the 1982 census, approximately 375,000 people live within the area. Of this total, 10 percent live in Les Cayes. Excluding Les Cayes, and to a far lesser extent Camp Perrin, almost all the remaining inhabitants earn their livelihood from occupations directly connected to agricultural pursuits. Accurate figures on the age structure of the population are elusive, but a casual, non-scientific sample undertaken by the Study Team indicates that approximately 40 percent of the population is under fifteen years. As this population ages and enters the reproductive stage, either ever increasing demands will be placed on the immediate lands within the basin or outmigration will dramatically increase. Already population densities range from over 475/km^2 on the lowlands to a "low" of 125/km^2 in the poorer agricultural areas within the slope zones. No place within the whole Cayes Plain Basin can be classified as underpopulated.

As would be expected, the economic structure within the Cayes Plain is dominated by the agricultural activities of its inhabitants. No secondary industries exist within the basin. Additionally, none of the primary industries utilize materials that are imported into the region. Thus the industrial sector that exists within the area is directly linked to the land resource. This is obvious from the following list of active industries. Within the Cayes Plain Basin there are a few small clairin distilleries, one small sugar centrale, one small dairy plant, a few vetiver plants, and some livestock slaughtering facilities; these represent the gamut of industrial activity. A small tomato processing plant functionning in 1982-1983 appears at this time to be out of business. This paucity of industrial development is reflected in the economic structure of the family unit for the overwhelming majority of the Cayes Plain Basin inhabitants. The rural family unit is largely a self-sufficient entity that lacks any real specialization. Even the irrigated rice farmers grow a variety of crops. While this self-sufficient structure maximizes the family unit's ability to survive under present environmental conditions, it must result in a decreased level of economic efficiency and output. This is reflected in the low agricultural yields when the Cayes Plain Basin is compared to other areas in the world.

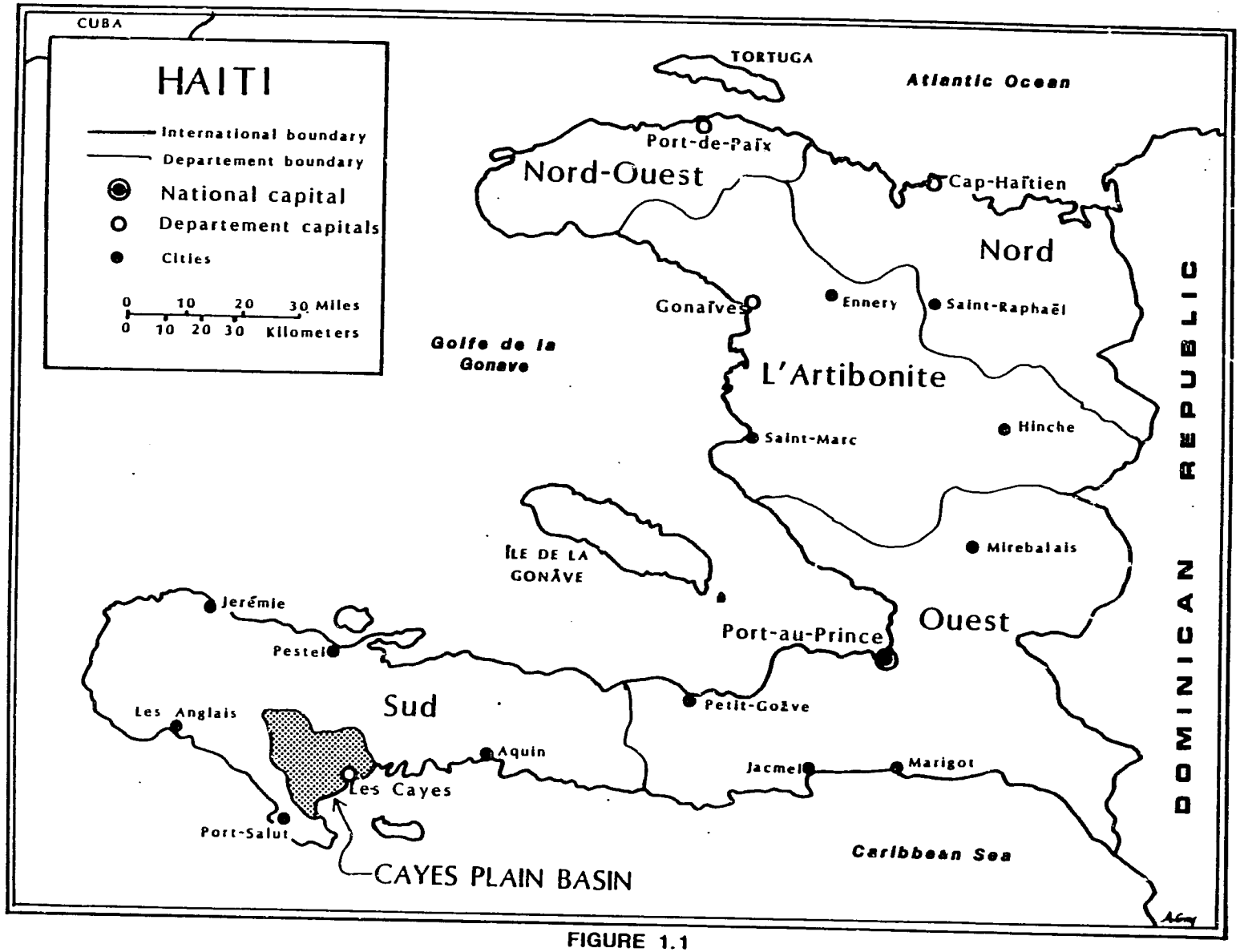

HAITI
International boundary
Departement boundary
National capital
Departement capitals
Cities
0 10 20 30 Miles
0 10 20 30 Kilometers
CUBA
TORTUGA
Atlantic Ocean
Port-de-Paix
Nord-Ouest
Cap-Haïtien
Nord
Gonaïves
Ennery
Saint-Raphaël
Golfe de la Gonave
L'Artibonite
Saint-Marc
Hinche
Mirebalais
ÎLE DE LA GONÂVE
Jerémie
Pestel
Port-au-Prince
Ouest
Petit-Goâve
Les Anglais
Sud
Aquin
Jacmel
Marigot
Les Cayes
Port-Salut
Caribbean Sea
CAYES PLAIN BASIN
DOMINICAN REPUBLIC

FIGURE 1.1

The crops grown in the area are dominated by varieties that are largely consumed locally, as will be shown in Chapter 5. This is particularly true for the rainfed agricultural areas. The two dominant irrigated crops, tobacco and rice, clearly enter the national market. Throughout the Cayes Plain Basin a well articulated market system exists. The flows of commodities through this market system reach the most distant points of the basin with surprising facility. Yet, like the industrial composition of the region, the market's goods are dominated by the agrarian economy of the area. The structure and functions of the Cayes Plain Basin marketing system are developed in Chapter 4.

The institutional composition of the basin in many ways reflects both the patterns of population densities and the ease of accessibility within the Cayes Plain Basin. By far, the greatest concentration of institutions is located on the Cayes Plain. Except for the church, government security, conseils communautaires, a few PVOs and a number of informal local community-based organizations, the upland areas of the basin have been largely ignored. It is on the lowlands that the majority of public and private, both formal and informal organizations are located. Most government ministries are represented in the basin, specifically in Les Cayes. However reflected by the magnitude of their presence and the level of the functionaries, this region appears to have been a relatively low priority for the national government.

Given this low level of involvement, the government has chosen to emphasize the lowlands in the majority of its spheres of work. For example, while limited government credit (BCA) has just become available (1983) for the small farmers, the BCA efforts have only been on the lowlands. This is likewise true for most church activities, with the exception of some missionary work. Since most PVOs in the Cayes area are related to church activities, these too have been proportionally biased to the lowlands. One slight exception to this is in the Camp Perrin area, a location immediately juxtaposed to the lowlands. Even USAID has emphasized the lowlands. This concentration of activities on the lowlands, by almost all organizations, has resulted in an unequal allocation of resources within the basin to the detriment of all areas in the region including the lowlands. The role and nature of organizations in the context of co-operative rural development for the Cayes Plain Basin, is discussed in detail in Chapter 6.

1.4 THE STUDY PLAN

As noted at the beginning of this chapter, the present document is designed to accomplish four objectives:

1. The provision of a range of specific data and general information concerning the study area;

2. The establishment of a planning methodology which can be generally employed throughout Haiti;

3. The specification of a coordinated rural regional development plan for the Cayes Plain Basin and, in particular, L'Acul River Basin; and

4. The recommendation of an appropriate and effective set of mechanisms for the implementation of the development plan.

Chapters 2 through 6 deal with the first two objectives. Chapter 2 specifies the conceptual model of the planning process that the Study Team utilizes subsequently in this report. Chapters 3 and 4 are detailed descriptions and analyses of the physical setting and marketing structure of L'Acul River Basin; Chapter 5 deals with the interface of these two elements in L'Acul system: agricultural activity. These latter three chapters are relatively lengthy as they are intended not only to present specific information about the study area but also to inform the reader concerning the relevent factors and variables that need to be taken into consideration, and concerning the appropriate methods of analyses to be utilized. To the reader concerned strictly with policy formulation and policy implementation these technical chapters may seem painfully detailed. It is the hope of the Study Team, however, that this document can serve as a useful model for the entire planning process--technical assessment as well as policy formulation and implementation.

Chapter 6 presents a description and analysis of the institutional context of the study area and considers a range of formal and informal, governmental and non-governmental organizations which have significant implications not only for the formulation of a development plan but also, and most particularly, for the implementation of a plan.

The third and fourth objectives cited above--the specification of a coordinated rural regional development plan for L'Acul River Basin, and the recommendation of an effective set of implementation mechanisms--are the concern of the final sections, Chapters 7 and 8. The material contained in these two chapters is the logical culmination of the approaches developed and the analyses conducted in Chapters 2 through 6.

CHAPTER 2

AN APPROACH TO RURAL REGIONAL DEVELOPMENT: PLANNING AND IMPLEMENTATION IN THE HAITIAN CONTEXT

2.1 INTRODUCTION

The purpose of this chapter is to make explicit the view of the planning process that the study team will utilize subsequently in this report. After some general comments on major issues in development planning, the elements of the coordinated regional approach employed in this exercise are outlined and justified. A conceptual model of the development planning process based upon these elements is then presented.

2.2 ISSUES IN DEVELOPMENT PLANNING

Over the past thirty years, during which period regional development, in general, and rural development, in particular, have occupied the attention of governments and planners in the developed and developing worlds, a number of identifiable approaches to the stimulation of economic growth and social well-being have been adopted. The nature of these individual approaches is, in turn, a function of the view of the causes of underdevelopment that is explicitly or implicitly held by decision-makers and planners.

There are essentially six views of the roots of underdevelopment; naturally, these views are not mutually exclusive and there is considerable overlap between them. The first view is based upon a combined balance of trade/economic base framework and holds that exports are the principal growth stimulus for a region. Export-producing activities ("basic activities", in the terminology of economic base theory) create "injections" into the local (regional) economy which, through the multiplier mechanism and the circular flow of income, not only generate wealth but also stimulate local-serving or "non-basic" activities (e.g., retail stores, services, entertainment facilities etc.). A related concept is that of import substitution. By reducing the "leakages" from the local economy that occur when imported goods and services are purchased--that is, by substituting local products for the imports--an effect similar to that resulting from the stimulation of exports can be achieved. Regional development policies which are based upon this view stress the creation and expansion of export markets and opportunities for the substitution of local goods and services for imports. A related concept is the staples theory, which attributes the lack of growth or the decline of the economies of certain regions to a natural resource base for which there is a low demand, i.e., for which there is little export potential.

A second view concerns the role of migration as an economic adjustment mechanism. According to this line of neo-classical reasoning, per capita income is the sole acceptable measure of development; per capita income is a function of both the total population of a region and its total earned income. An increase in per capita income may be achieved by a reduction in the divisor, i.e. by the out-migration of unemployed and underemployed portions of the population to areas where employment opportunities are more plentiful. It is believed that this economic adjustment will generally occur as a result of the normal functioning of the labor market mechanism. The major constraint to this approach is policies (e.g. social assistance programs) which attempt to interfere with the market mechanism by creating a better standard of living for the population in situ, thus reducing the motivation for migration. Policies based upon this view emphasize the reduction in the social "safety net", the encouragement of the free operation of the labor market, and the provision of incentives to migration.

A third view stresses the role of physical capital and infrastructure in development. The argument is essentially a simple one based on the notions that industry requires a suitable environment in order to develop and to flourish and that improving both intraregional and interregional accessibility will stimulate economic transactions. The construction of roads and sewers, the extension of electrical networks, and the establishment of serviced industrial parks are among the policies associated with this approach.

A fourth view stresses the importance of a region's industrial structure. The argument here is that in order for economic growth to occur a region requires both certain strategic industries (for example, those that can create value added from the region's resource bases) and a sufficiently well-developed set of linkages between industries. The latter point refers to the complementarity achieved when two or more firms create functional connections between their products in the form of forward or backward linkages; for example, a firm producing automobile engines has backward linkages to the firm producing carburators and forward linkages to the firm that assembles the finished automobile. Policies based upon this view involve the analysis of industrial structure, generally using input-output or inter-industry analysis, and attempts to alleviate bottlenecks and to fill-in "missing-links" in the industrial structure. A policy that overlaps both the physical capital/infrastructure and industrial structure viewpoints involves the establishment of growth centers. A growth center represents an attempt to maximize a region's connectivity with the rest of the national economic system, particularly with the nation's urban network, so that "growth impulses" generated nationally will diffuse throughout the region via "spread" or "trickle down" effects. The designated growth center is generally an existing urban node into which various types of economic activity are concentrated in order to induce regional economic growth and to create the potential for facilitating inter-industry linkages.

A fifth view assigns the causality for underdevelopment not to intrinsic factors within the region itself but to external exploitation; this is the neo-marxist approach of dependency theory. The reasoning here is that the economic and political "center" of a country is able to dominate the "periphery" (i.e., the lesser developed regions) and to extract surplus economic value from its natural resource base, its relatively weak industrial structure, and its labor force. Dependency theory thus builds a model of polarized economic development in which the center continues to grow both as a result of its own attributes and as a result of its exploitation of the periphery, and in which the periphery remains at a low level of development. Policies associated with this approach involve selective regional closure, that is, attempts to reduce the linkages between the center and the periphery, thus curtailing the domination by the former of the latter.

Finally, there are a number of related views which attribute underdevelopment to certain barriers preventing the indigenous regional population from reaching its full economic and societal potential. Lack of information, knowledge, and know-how, as well as insufficiently developed levels of animation, motivation, and entrepreneurial spirit retard the capacity of the population for raising its level of social and economic well-being. This approach is based upon the notion that the source of development lies in the local population rather than in the region's natural resource endowment or in external factors. Policies stemming from this viewpoint stress the need for better knowledge and skills, better access to information, and a higher degree of both social animation and entrepreneurial activity. To a large extent, these types of policies, stressing as they do the indigenous population and its potential, are the inverse of those mentioned above which stress external linkages, physical capital, infrastructure, and industrial structure.

In the discussion above two general issues are explicit: that of increasing the degree of integration of a region into the national economic structure versus regional closure; and that of emphasizing the development of human resources versus emphasizing physical capital and infrastructure. Related to these two issues, and implicit in the above discussion, are two others. First, there is the question of the goal of regional development: achieving national economic efficiency (i.e. maximizing total economic output) or promoting equity between individuals and/or regions. The mutual exclusion of these two goals is one of the classic dilemmas of development theory, one which appears incapable of resolution. Second, there is the question of adopting a regional (spatial) approach versus a sectoral approach. This dichotomy is discussed in detail in the following section. However, it must be stressed that there is no single answer to the complex problem of regional development. All of the viewpoints that have been presented contain within them elements of truth.

2.3 RURAL DEVELOPMENT PLANNING: THE COORDINATED REGIONAL APPROACH

In this section, the Study Team's basic planning philosophy is made explicit. This document is neither philosophical nor theoretical in purpose, but the nature of the approach adopted must be specified from the outset. The most effective manner in which to present this approach is to situate it in the context of a simple typology of planning alternatives (Figure 2.1). This typology is constructed using two dimensions: spatial orientation and functional orientation. Type I approaches are not only sectoral (rather than regional) in orientation, but also focus upon a single activity. This is often referred to as a "development project" strategy and may be exemplified by the construction of a dam or of an irrigation project. A Type II strategy involves a single activity but is concerned with its distribution over a certain region; for example, an attempt to increase tree planting in the Artibonite River Basin. Type III approaches are non-regional but do attempt to coordinate sectoral activity. One may cite as an example a general national health program having the following components: the provision of better sanitation facilities, the provision of potable water, increased capacity for the treatment of malaria, and the suppression of the mosquito population. Finally, a Type IV strategy is both regional and coordinated in nature. This is the approach adopted by the Study Team and is now explored in more detail.

A coordinated approach to planning signifies one in which various economic sectors (e.g., marketing, transportation, agriculture, industry), various components of the physical environment (e.g., rainfall, soil depth and quality, geomorphology and lithology), and various elements of the socio-cultural milieu (e.g., attitudes, values, and beliefs associated with farming practices and land tenure) are considered. Further, this approach recognizes that these three broad categories are themselves functionally interrelated. Thus, one would take into consideration not only agricultural, marketing, and processing activities but also the relationship of these to both physical and socio-cultural factors. From a systems perspective the planning environment can be regarded as a set of interacting systems, each of which is composed of interacting sub-systems. Obviously there are degrees of coordination between the extremes of the single activity approach and the "perfectly" coordinated approach. While "perfect" coordination is unlikely to ever be achieved, one can strive to identify and to coordinate a set of key interacting elements. One important implication of a coordinated approach to planning is that its successful operationalization requires an interdisciplinary effort.

A regional approach is one in which the spatial dimensions of both human social-economic activity and the physical environment are incorporated into the planning process. In contrast to the sectoral view implicitly held by the classical economist, who treats the world as if it were located on the head of a pin and as if location in space is of no import, the regional view acknowledges two important facts:

first, that all human and physical phenomena are located (in both absolute, and relative terms) somewhere in terrestrial space; and, second, that the specific location at which a phenomenon is found can not only exert a profound influence upon the nature of that phenomenon but can also affect the degree to which that phenomenon is capable of influencing other phenomena. For example, the economic viability of an aluminum smelter may range from very poor to very good, depending upon how it is situated relative to sources of hydroelectric energy.

FIGURE 2.1

MATRIX OF PLANNING APPROACHES

Functional Orientation \ Spatial Orientation	Sectoral Approach	Regional Approach
Single Activity Approach	I	II
Coordinated Approach	III	IV

Similarly, its location will have potentially strong effects upon both the employment levels and the environmental quality of the surrounding area. Thus, economic geographers, regional planners, and regional economists concern themselves not only with such concepts as distance decay functions, spillover and neighborhood effects, and distribution over space, but also with the manner in which individual subregions interact with one another over space through flows of people, goods, information, and physical material. From an entirely pragmatic viewpoint the regional approach is eminently sensible since it encourages the concentration of efforts within a well-defined area rather than allowing them to be spread too thinly over a wide area. Having discussed the elements of the regional approach, it is necessary to define more precisely the concept of "region" and then to specify the regional unit employed in this study. A region is an intellectual construct having no existence beyond the minds of the planners and policy-makers who establish it for a specific purpose using various human and physical criteria that will best permit planning goals to be achieved. That is to say, regions do not exist naturally but are delineated as needed. There is, however, a logic to the delineation of a region, and this generally involves the consideration of both the homogeneity of attributes (e.g., per capita income, soil and crop types) and the flow patterns of people, products, information, money, energy and physical matter (e.g., soil particles, water). The basic rule of thumb in delineating a region is that the variation in the criteria utilized should be lower within the region than that between the region and an external area. For example, one would expect that the per capita income level (if that were one of the criteria utilized) at two points within the region would vary less than between one point within the region and one external point.

In the approach utilized here the river basin is the regional unit of analysis. There are two reasons for this decision. First, many of the variables and attributes upon which this rural regional development planning methodology is based (e.g., pedological, biological, and hydrological factors) clearly function within the boundaries of major river basins. Second, field investigation by the Study Team has shown that many manifestations of human social and economic activity in Haiti also tend to function most strongly within river basin boundaries. That is to say, there are generally more social and economic flows within river basins than between basins. (See, for example, the discussion of marketing in chapter 4). This is in contrast to developed countries characterized by better transportation capabilities and more mobile populations, where the river basin is generally not, from a human perspective, an appropriate regional unit since it does not effectively delimit the boundaries of economic and social flows. In the Haitian context there is also a third consideration. Due to the general unavailability of socio-economic data for units below the national level, and in the

absence of specific fieldwork, insufficient human acitvity information exists for attempting to delineate regions. Thus, by default exclusively physical criteria must often be utilized. In summary, when higher agricultural productivity and the preservation of the environment in a particular area of Haiti are the goals of the planning exercise, as they are here, both physical and human evidence suggests that the river basin is an appropriate regional unit.

By definition a river basin comprises all of the area above the mouth of a river that contributes to the discharge of the river system. A basin includes both the area that contributes to the surface (runoff) waters as well as the zones contributing groundwater, since the discharge of a permanent river is determined by both the former and the latter. In practice, however, most river basin boundaries are determined solely by topographic features that produce the surface flows into the river network (Figure 2.2).

In a river basin all energy and matter flow in a unidirectional manner from the upper reaches to the mouth of the river. It is this property that makes the river basin a logical unit for regional development concerned with agriculture and environment since two crucial variables affecting agriculture, water and soil, are removed and transported from the land via the river system. In addition, the flow characteristics of these two variables as well as the interactions of numerous human interactions (e.g., crop treatment) with these variables are determined by the energy attributes (altitude, slope) of the basin. According to Donner (1975: 44-45), because of Haiti's rugged topography, only when the river basin is the basic planning unit can agricultural development occur.

2.4 A CONCEPTUAL MODEL OF THE COORDINATED RURAL REGIONAL DEVELOPMENT PROCESS

Having explored the nature of the terms "coordinated" and "regional", the conceptual model of the coordinated rural regional development process that is utilized by the Study Team is now presented (Figure 2.3). It must be stressed that this model is not simply a theoretical creation but is, rather, one designed to achieve results. It is for this reason that, in the planning process, the implementation of the plan is given equal weight with the development of a logical plan.

Rural development in Haiti is ultimately a question of being able to improve its agricultural system. This statement is not meant to imply that other activities such as primary and secondary processing and urban-based growth center functions do not play a role; it is simply a recognition of the fact that the overwhelming majority of the rural population earns its livelihood from working the soil.

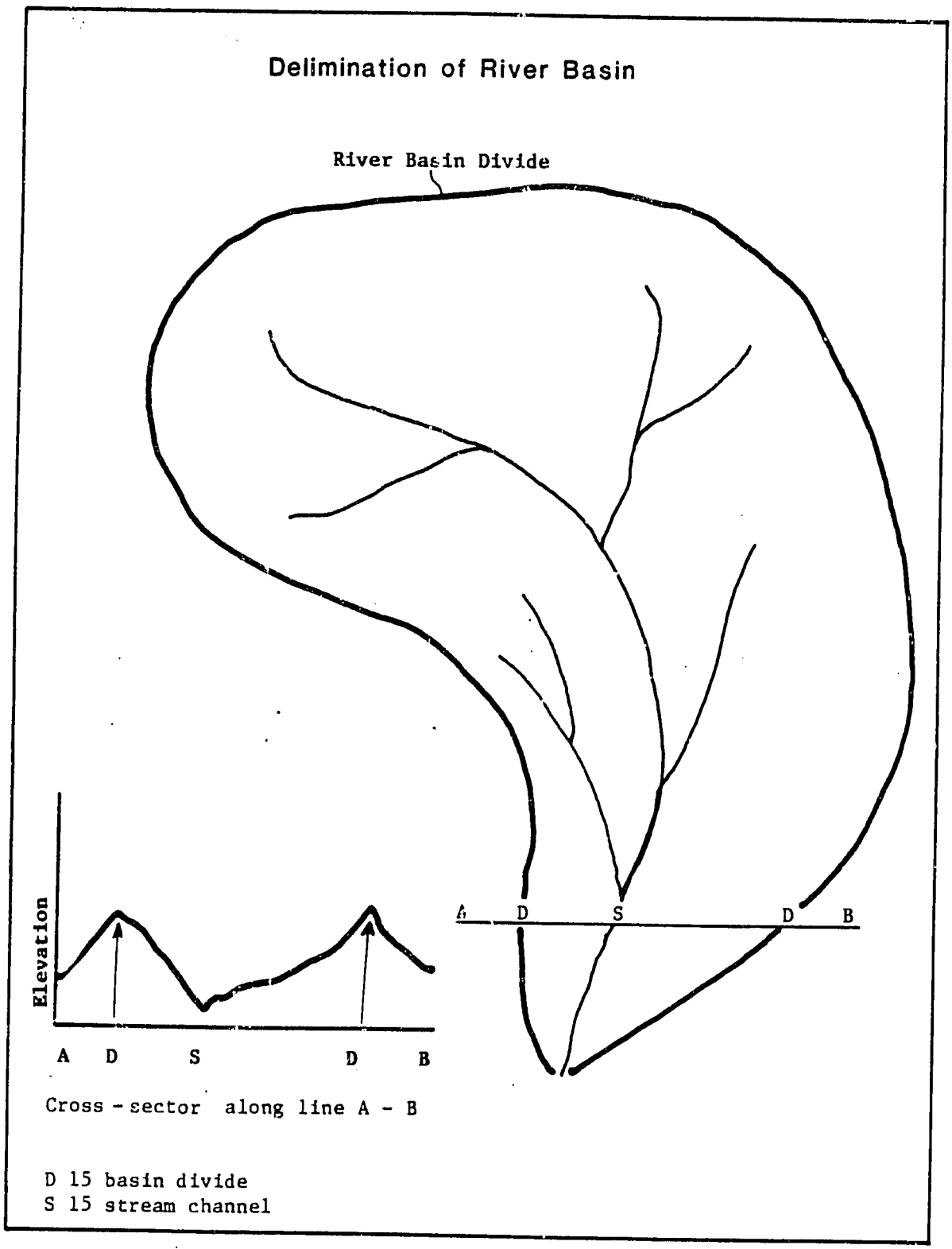
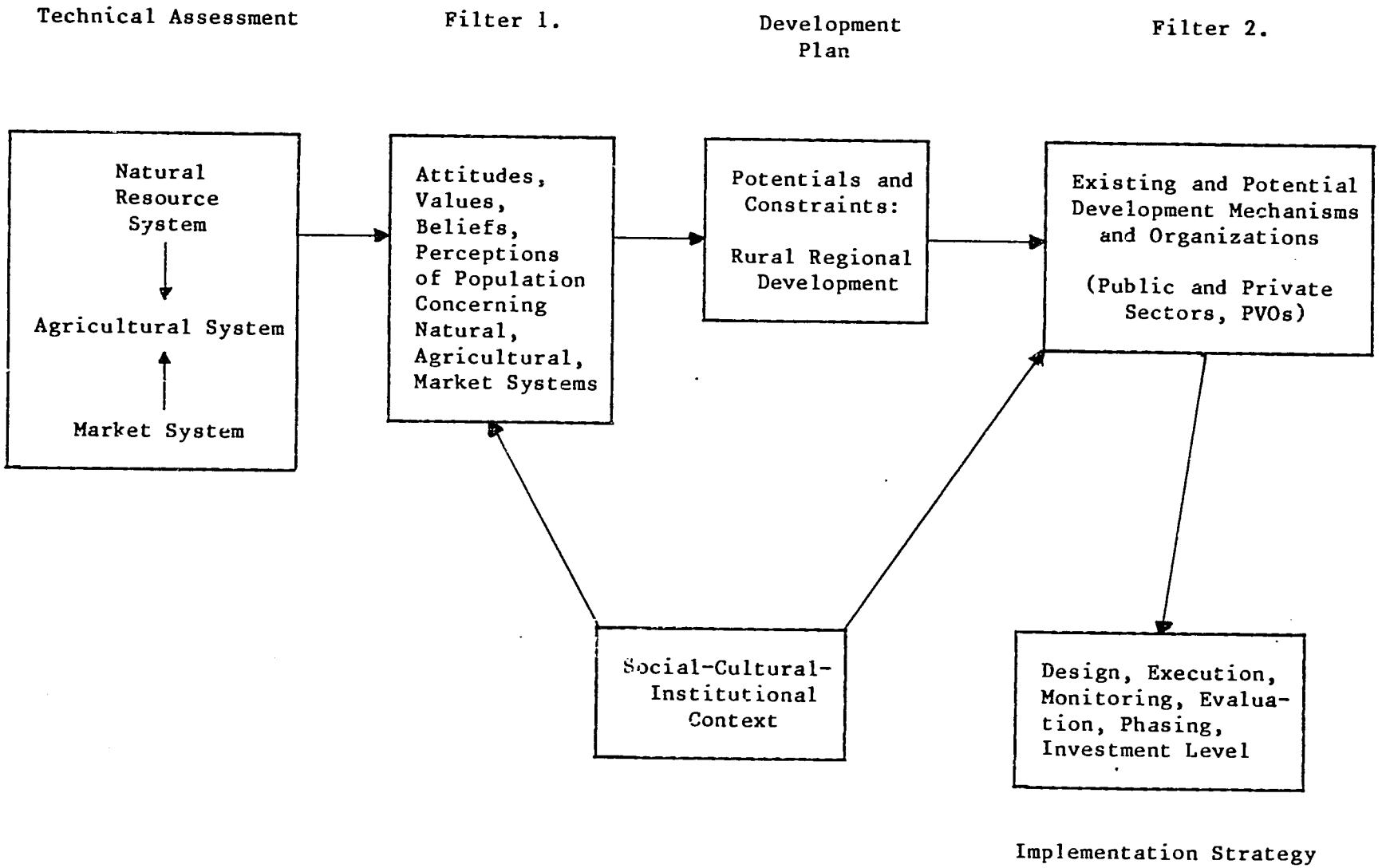

Delimination of River Basin
River Basin Divide
Elevation
A
D
S
D
B
A
D
S
D
B
Cross - sector along line A - B
D 15 basin divide
S 15 stream channel

Figure 2.2

FIGURE 2.3 CONCEPTUAL MODEL OF RURAL REGIONAL DEVELOPMENT IN HAITI



Agricultural production is subject to the constraints and potentials of the natural resource system: rainfall, climate, soil type and depth. Similarly, in an economy such as Haiti's where produce is not grown exclusively for on-site consumption, the nature of the marketing system has important implications for the creation and retention of surplus value by individual households. Thus, the first step in the planning process is a technical assessment of these three interrelated systems.

An "objective" technical assessment, however, does not necessarily reflect the "real" world. It is an axiom of social science that the use of the natural environment by man and the manner in which he conducts social and economic activities will be a function of his attitudes, values, beliefs, and perceptions: not only those that relate directly to the systems in question but also those that relate to ancilliary phenomena and processes, e.g., religious practices, the ownership of land and animals, the role of the extended family. It is for this reason that the technical assessment must be passed through a first social-cultural-institutional filter. At this point certain directions and initiatives suggested by the technical assessment will be shown to be inappropriate while other, new considerations may emerge.

Having developed a thorough understanding of the three critical systems and of the social-cultural-institutional context in which they are situated, it becomes possible to weigh the regions's potentials and constraints and to arrive at a development plan which explicitly considers the interaction of the various economic sectors, components of the physical environment, and elements of the socio-cultural milieu, all within a regional framework. Depending upon the specific nature of the planning exercise and upon the specific goals established, the regional scope and substantive breadth will vary.

However, the most well-conceived plan is merely an intellectual curiosity until it is implemented. The implementation stage is thus the most critical element of the planning process and has two components: the identification or establishment of suitable implementation mechanisms and the formulation of an implementation strategy. The former may involve governmental or quasi-governmental authorities and organizations, actors from the private sector, private voluntary organizations and other organizations and institutions in the not-for-profit sector. Once again, in order to arrive at the appropriate implementation mechanisms, "objective" reality must be passed through a social-cultural-institutional filter which may eliminate certain alternatives and suggest others. Once this has been accomplished the latter concern, the implementation strategy, may then be addressed. As indicated, this includes considerations of the design of individual plan components as well as execution of the overall strategy; the on-going monitoring and evaluation of plan implementation; the phasing of the specific components of the plan implementation strategy; and requisite levels of investment.

Having specified the nature of the coordinated rural regional development approach adopted, the following chapters examine the individual elements of the planning model. Chapters 3, 4, and 5 comprise the technical assessment of the physical, marketing, and agricultural systems. Chapter 6 explores the social-cultural-institutional context that underlies the model's two filters, focusing specifically upon institutions and organizations--not only describing those that exist but also citing what will be required in order to successfully implement a coordinated rural regional development plan. The final two chapters outline the specific development plan and implementation strategy that are indicated by the factors and conditions reviewed in Chapters 3 to 6.

CHAPTER 3

THE PHYSICAL SETTING: ACTIVE PROCESSES AND THE EXISTING ENVIRONMENTAL SITUATION

3.1 INTRODUCTION

In humid tropical areas erosion is one of the most serious limiting factors in agricultural and livestock production. Geologic erosion is a natural phenomenon. In most areas where vegetation has been unaltered by human activities a general balance exists between erosion and soil formation. With the introduction of cultivation, the soil is broken and the natural vegetation is removed. Both of these changes increase the potential for soil erosion. If measures are not simultaneously introduced to counter these changes accelerated soil erosion almost always follows. In Haiti, in response to both an increasing population and limited access to the better agricultural lands, peasants have continually needed to search for new lands to cultivate. Most of the lands available for peasants were and are in physical settings that from an agricultural perspective have a low potential and high erosional risk if brought under continuous cultivation. In past years a system of shifting cultivation and fallowing of lands was a response to the degradation of the soil as a result of agricultural activities.

Today, with the extreme scarcity of agricultural lands, intensification of cultivation is necessary. There is not enough land available for the individual farmers to continue practicing the previous rotation of crops interdispersed with periods of fallow. Almost no land remains fallow for a long enough period to restore soil fertility to adequate levels. This results in lower yields and the need to increase the proportion of land under cultivation just to meet previous agricultural outputs. Also with lower yields, the vegetation cover of the crops is reduced and the soil is less protected from rainfall. Thus, with the continuous increase in the use of marginal lands, erosion has been in an accelerated phase for a long period of time. Today, the evidence indicates that the process continues unabated. According to Ahmad (1977), Haiti is a classic example of continuing severe land degradation, perhaps more than any other country in the world. In the following sections we explore the problems and processes of land degradation in general and specifically, within the Haitian context, in the Cayes Plain Basin.

In the following sections basic concepts and methods of measurements (assessment) are introduced. All the constructs and indicies presented in this chapter contribute to an understanding of the environmental situation as it exists, or could exist under different conditions. The generation of numerical values for the

crucial variables of soil-loss, land capability, and moisture availability provide the necessary background information to permit rational planning decisions to be made. To meet the demands of this SIP it was necessary to develop some primary data in order to determine the viable options that exist for agriculture in the Cayes Plain Basin. Even to meet the preliminary needs of this study, the data base was so poor that it was necessary to estimate the primary data in many cases. In the next phase of a coordinated rural regional development project more information for constructing these indicies will need to be provided if planners are to have sufficient information available to make valid planning decisions.

3.2 EROSIONAL PROCESSES

This report only considers soil erosion resulting from water since in Haiti it is clearly the dominant erosional agent. Erosion is caused by the impact of raindrops on exposed soil and by runoff causing sheet, rill, and gully erosion. In restricted Haitian environmental settings, stream bank and sub-surface flow erosion are important.

On cultivated lands six factors have been identified as the crucial variables affecting the erosional rates on given parcels of land. These are rainfall intensity and quantity, runoff, soil erodibility, slope steepness, plant cover, and conservation practices. Whether accelerated soil erosion occurs or not depends on the balance between the energy, resistance, and protection factors. Energy factors include the energy potential of rainfall and runoff to initiate erosion (erosivity), the slope steepness, and the length of the field. The resistance group is comprised of those properties of these soil that resist erosion.

The resistance of the soil to erosion, called erodibility, is determined by its physical, chemical, and organic composition. Soil properties increasing water infiltration (decreasing runoff) decrease erodibility; conversely factors decreasing infiltration such as compaction, increase erodibility. Protection variables include vegetation cover and conservation practices.

Soil erosion is a two-phase process. First, individual particles of the soil need to be detached from the soil mass. Raindrop impact on the soil is the most important agent initiating soil detachment. It is only effective when bare soil is exposed to the direct impact of the raindrop. Land clearing always increases the effectiveness of this process. Once soil is detached, the second process of transport in running water is required. Overland (runoff) flow is the agent that transports the soil downslope and eventually to the river system. When sufficient energy (velocity) is no longer present to transport the soil particles in the runoff, deposition occurs. From an agricultural perspective both excessive erosion and

deposition create situations that result in lower crop yields. In Haiti, in areas under irrigation excessive deposition has historically been a major problem.

With the clearing of the natural vegetation from most of Haiti's land and the substitution of vegetation that does not protect the soil to the same degree from raindrop impact, widespread accelerated erosion exists. Change in vegetation cover, alone, has resulted in major soil-loss on most agricultural lands. With erosion occurring over a long period, the soil moisture retention as well as the soil infiltration rates have decreased. This has increased the overall proportion of rainfall that flows as runoff and concomittantly has decreased ground water recharge. This results in larger storm flows which increases the capacity of existing streams to transport materials. Thus the initiation of accelerated erosion without immediate counter efforts sets into motion a positive feedback mechanism that makes eroding landscapes even more favorable for further erosion.

Under these conditions erosion causes disastrous floods and pseudo-droughts, those resulting from pedological not climatological change, are created through the reduction of the water holding capacity of soils, and the drying up of springs and river flow. This leads to a continuing lowering of agricultural, grazing, and silvacultural potential of the affected area. Because of the deterioration in the environment resulting from erosion, it is easier to prevent erosion than to reverse it once it has reached a major intensity. Unfortunately in Haiti already a large proportion of its lands are experiencing accelerated soil loss. However, in those few upland areas where soil erosion has not become excessive, such as Les Platons, immediate preventive actions will be less costly than waiting until these areas reach the stage of the majority of today's Haitian lands.

The five types of erosion are sheet and rill erosion, gully erosion, streambank erosion and sub-surface flow erosion. Sheet erosion is the removal of soil via unconcentrated overland flow. It is the dominant form of soil-loss on gentle slopes (less than 4 percent).

Rill erosion begins to occur when the overland flow becomes concentrated. This movement of water in flow streams results in the formation of ephemeral local channels known as rills. In Western Nigeria rills began to form on slopes greater than 4 percent, they became the dominant erosional process on 15 percent slopes (Lewis, 1980). When sheet and rill erosion occur and land is cultivated for the next planting season, manifestations of the erosion are not readily visible. One intense storm or runoff from saturated soils may remove 2 to 5 mm of soil in a few hours. On moderate or gentle slopes, sheet and rill erosion remove the fine soil particles

resulting in a coarser soil texture. This residual soil material has lower fertility and productive capacity. Worldwide, sheet and rill erosion are the major form of erosion on agricultural lands.

Gully erosion is the next important form of erosion on a worldwide basis, but where it exists, it is the most destructive phase of water erosion. It is caused by the concentration of runoff from extended areas. When both the volume and velocity of the water becomes high enough, it gradually removes the soil material and excavates a ditch. Unlike the rill, gullies are permanent steep-sided channels. Like the rill, they only have discharges during and immediately following a rain event. Almost always their presence indicates accelerated erosion. When no engineering structures are present, a gully always forms in the lower portion of a slope and procedes upslope. Pathways in many rural settings result in the initiation of gully formation. Today road building and associated drainage diversion result in excessive runoff at specific points. Under these conditions the gully is initiated at the road and rapidly moves downslope. In Haiti where lands over 30 degrees are under cultivation, gully erosion is a major widespread process that is removing productive lands into the completely non-productive category.

Stream bank erosion occurs when riverbanks cave in due to the undercutting of the river channel. It is a natural process associated with the normal dynamics of river channel migration. However, it can be associated with accelerated erosion in areas where the flow regime of the river has been altered due to changes in the balance between overland and groundwater flows. Where the overland flow component has increased, the river channel must handle a larger discharge than previously for the same flow frequency. This requires the river to scour a larger channel resulting in riverbank collapse. In the process, cropland juxtaposed to the river channel is lost.

Finally, subsurface erosion is important in areas where earth materials permit concentrated flow in natural tunnels or pipes. Limestone areas are one example of an environmental situation where this can occur. In addition plant nutrients especially those added by fertilizers, are removed by this process. This removal of soluble minerals reduces a soil's resistance to erosion by reducing plant growth and thereby reducing plant cover. Rarely is sub-surface erosion accelerated by human interventions. When excessive fertilizer losses occur they are usually the result of increased overland flows not sub-surface erosion.

3.3 ESTIMATING SOIL-LOSS AND CLASSIFYING LAND CAPABILITY

The erosion rate for specific locations within a river basin is determined by the interaction and magnitude of the numerous physical and management variables at the sites. The Universal Soil Loss Equation (USLE) is the most widely used model to evaluate erosional

conditions. It was originally developed to predict the long term average soil losses resulting from sheet and rill erosion from specific fields under specified cropping and management systems (Wischimeier & Smith 1978). Recently it has been extended to be applicable to noncrop land use as well as to estimating river basin erosion and sedimentation delivery rates. The USLE is defined as:

$$A_m = R\ K\ L\ S\ C\ P \quad \text{where}$$

A_m = Soil loss in metric tons per hectare per year

R = Runoff and Rainfall factor

K = Soil erodibility factor

L = Slope length factor

S = Slope factor - an evaluation of the interaction between slope length and steepness.

C = Crop and management factor

P = Conservation practices

Only the R factor is completely independent of human interactions with the land resource. It is solely defined by the precipitation characteristics of the area. The K factor, while largely determined by the soil's structure and texture, can be altered through interventions affecting the organic content of the soil. Additionally agricultural practices such as the use of fire and irrigation can alter the K value. Field length and slope angles can be modified by boundary changes and morphology changes such as terracing. Both the C and P factors for any parcel of land are completely determined by human intervention. It can be seen clearly from the variables identified as crucial in the USLE that soil erosion rates can be strongly altered by the land use patterns established in a given region.

One of the problems in applying the USLE to tropical areas is that it is an empirically derived equation. It was formulated in the U.S.A. where climate, soil types, and agricultural systems differ markedly from most third world countries. Recently, research in some tropical areas, mostly in Africa, have begun to develop numerical values for many tropical settings (Roose 1977). For Haiti, as a whole, little information is available at the required degree of precision to apply the USLE. In particular rainfall records are too sparse in areal coverage to determine the erosivity value, a crucial input in determining the R value. Fortunately the p^2/P ratio can be calibrated and substituted for erosivity (Fournier 1960) where $\underline{p}$ is the highest mean monthly rainfall and $\underline{P}$ is the annual mean rainfall.

Only in the upper portion of L'Acul River Basin does specific data exist permitting the USLE to be applied (USDA - SCS, 1983) (Figure 3.1) in Haiti without making major assumptions.

No widely acceptable methodologies comparable to the USLE exist for predicting gully, streambank, and subsurface erosion. To accurately assess these forms of erosion the need still exists to measure them in the field or from large scale remotely sensed information. For example, for planning purposes the erosional hazard for gullying can be estimated directly from aerial photographs by calculating simple indices such as gully density. Yet even this simple method requires large scale and recent photographs. Unlike the USLE, this approach cannot be used to simulate the gully hazard if changes in the vegetation and conservation practices would be planned. But it does permit the identification of hazard prone areas if the frequency of gullies can be correlated to specific phenomena such as slope steepness thresholds, paths, and road culverts.

The Land Capability Classification's (LCC) (Klingebiel and Montgomery 1966) primary objective is to regionalize land units into units of similar rural land use capability. When land is utilized inappropriately either it is underutilized which results in less than maximum economic return; or if it is overutilized, land degradation will occur. In its assignment of land capability the LCC gives heavy weight to the role of slope angle. Furthermore, it does not specify the suitability of the land within each of its land classes for particular crops. However, this can be inferred if the erosional protection of the crops are known. The LCC delimits all lands into one of eight classes sequentially ordered from Class I to Class VIII. Class I includes all lands with little or no risk of soil erosion when placed into cultivation. At the opposite end of the spectrum, Class VIII can only be safely "utilized" in its natural state (Table 3.1). Only classes I through IV are from an environmental perspective suitable for cultivation. In Haiti, all classes have been used for cultivation at one time or another. This accounts for the rampant erosion throughout the nation, which at its extreme results in exposed bedrock. This misuse of the land, specifically placing lands in cultivation that fall within higher classes (V-VIII), resulting from land scarcity for the small farmer, is one major contributing factor to land degradation.

In addition to the prime designation of land into eight major classes, capability subclasses are formed by adding an additional e, w, or s to the Roman Numerals. The letter e indicates that erosion risk is the major limiting land use factor; w indicates poor drainage or a high water table affects plant growth; and s specifies that the shallow nature of the soil is the prime limiting factor. In Haiti, the s sub-category has been increasing due to its ongoing erosional problem. As a result, the Haitian land resource is continuously decreasing in terms of its production potential and lands previously in the lower classes have today moved into higher categories.

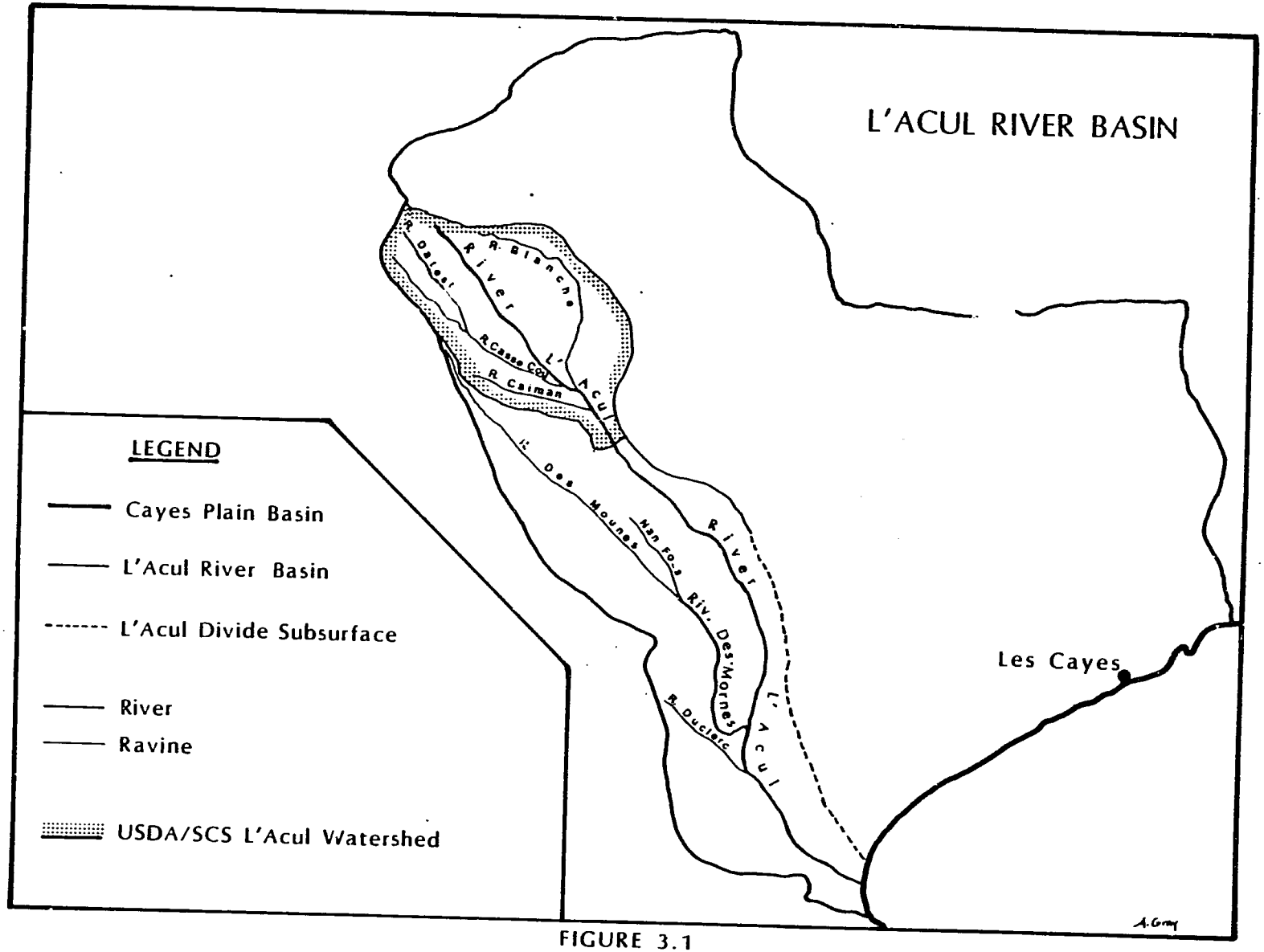

L'ACUL RIVER BASIN
LEGEND
Cayes Plain Basin
L'Acul River Basin
L'Acul Divide Subsurface
River
Ravine
USDA/SCS L'Acul Watershed
R. Blanche
R. Dalest
River
R. Casse Col
R. Caiman
L'Acul
R. Des Mounes
Man Fou
Riv. Des Mornes
R. Ducleric
River
L'Acul
Les Cayes
A. Gray

FIGURE 3.1

TABLE 3.1

CLASS CHARACTERISTICS AND RECOMMENDED LANDUSE

I	Deep, productive soils, easily worked, on nearly level land; not subject to overland flow; no or slight risk of damage when cultivated; use of fertilizers and lime, cover crops, crop rotations required to maintain soil fertility and soil structure.
II	Productive soils on gentle slopes; moderate depth; subject to occasional overland flow; may require drainage; moderate risk of damage when cultivated; use crop rotations, water-control systems or special tillage practices to control erosion.
III	Soils of moderate fertility on moderately steep slopes, subject to more severe erosion; subject to severe risk of damage but can be used for crops provided adequate plant cover is maintained; hay or other sod crops should be grown instead of row crops.
IV	Good soils on steep slopes, subject to severe erosion; very severe risk of damage but may be cultivated occasionally if handled with great care; keep in hay or pasture but a grain crop may be grown once in five or six years.
V	Land is too wet or stony for cultivation but of nearly level slope; subject to only slight erosion if properly managed; should be used for pasture or forestry but grazing should be regulated to prevent plant cover from being destroyed.
VI	Shallow soils on steep slopes; use of grazing and forestry; grazing should be regulated to preserve plant cover; if the plant cover is destroyed, use should be restricted until cover is re-established.
VII	Steep, rough, eroded land with shallow soils; also includes droughty and swampy land; severe risk of damage even when used for pasture or forestry; strict grazing or forest management must be applied.
VIII	Very rough land; not suitable even for woodland or grazing; reserve for wildlife, recreation or watershed conservation.

Classes I-IV denote soils suitable for cultivation.
Classes V-VIII denote soils unsuitable for cultivation.

LCC - Klingebiel & Montgomery 1966

Since all slopes greater than 7° fall outside lands suitable for cultivation, the LCC is probably too restrictive in countries when manual labor and not machinery is the major method of farming. In addition modifications in the LCC for tropical areas is warranted since generally tropical soils have greater concentrations of iron and aluminum oxides than mid-latitude soils. This gives them a lower erodibility than soils of similar texture and structure permitting their rational utilization on steeper slopes. Nevertheless, the methodology for classification as presented in the LCC is a useful planning device as it clearly gives a basis for assessing the relative erosional risks of tracts of land for agriculture, grazing and silvaculture.

Figure 3.2 illustrates the sequence for assigning units of land into their appropriate class. The LCC is especially pertinent to the Haitian situation given the dominant role of agriculture in the employment and economy of the country. It can, as a first approximation, rapidly determine current land use that is out of harmony with the physical environment. As such it is a useful tool for deciding which areas should be targeted into a priority action designation in order to arrest a region's erosional rates.

3.4 THE PHYSICAL/ENVIRONMENTAL CONTEXT OF L'ACUL RIVER BASIN

3.4.1 Discharge Characteristics

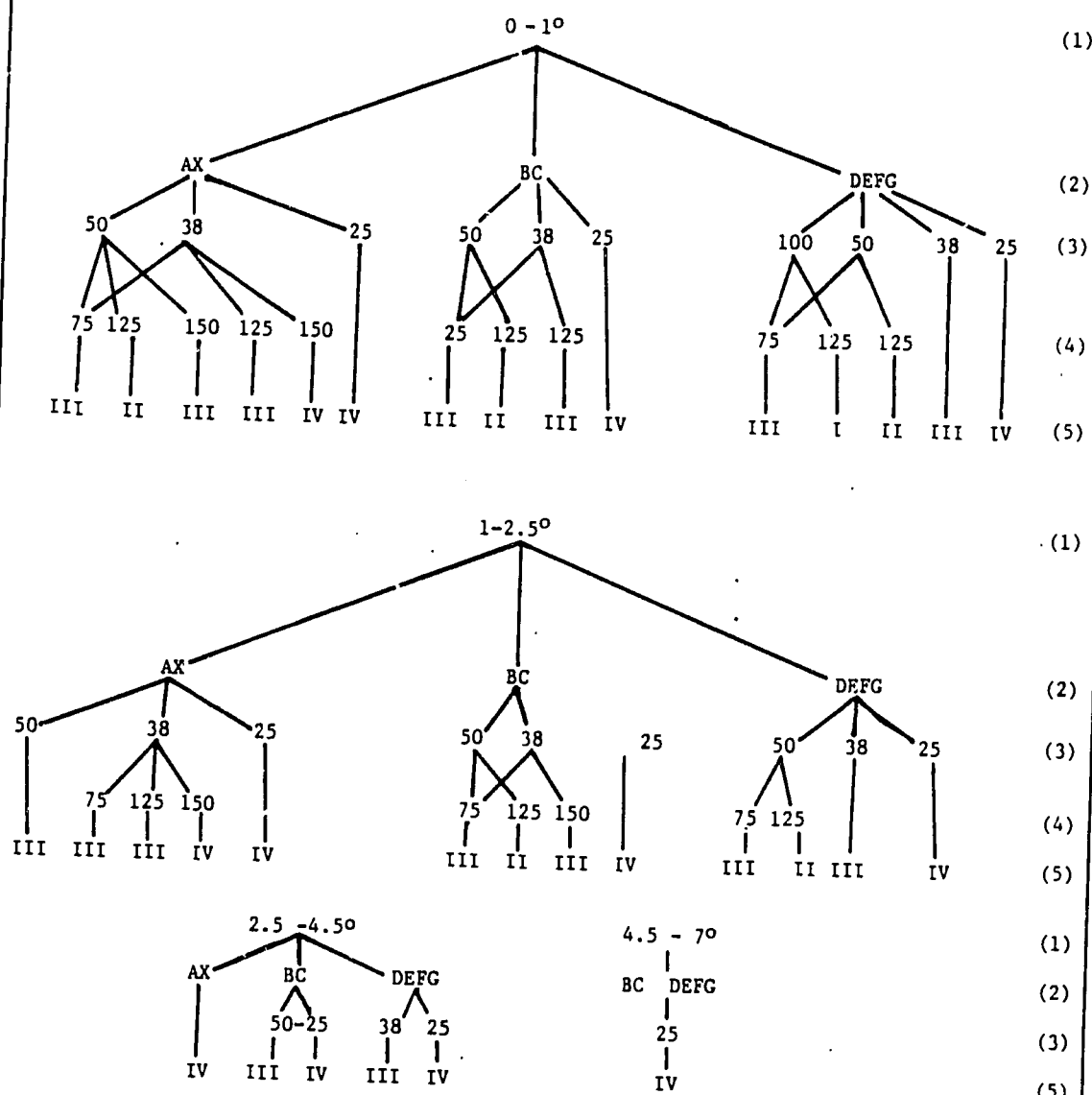
L'Acul River Basin, occupying approximately 30 percent of the Cayes Plain Basin, is 230 square kilometers in area. L'Acul is situated along the western margin of the Cayes Plain Basin with its major river axis oriented from the northwest toward the southeast. In terms of catchment area, L'Acul Basin is the tenth largest Haitian river basin (Figure 3.3). The total length of the major stream segment (Ravine and River Acul) is 34.9 km. With the exception of the Ravine Caiman all of the headwaters in the basin are intermittent during a portion of the dry season.

River discharge properties are determined by a complex set of variables all interacting simultaneously Among the primary variables affecting discharge are the temperature and rainfall attributes, the local geology, the topography, the shape of the basin, the vegetation cover and the soil. Because of the complexity of the interactions that determine the discharge of a river system, the only accurate method of obtaining this information is by direct measurements. For the Cayes Plain Basin as a whole, no continuous stream flow data exist since 1935 (Harza 1979, p. B-11-4). In L'Acul only one published figure exists using only one year for measurement, published by Sheladia Associates (1983). Given this paucity of hydrologic data it is only possible to crudely estimate that L'Acul's mean annual discharge at its mouth falls within the range of 2.5 - 5 m^3/sec. Given the elongated shape of the basin, which should result in an extreme stream regime having brief periods of large peak discharges

SEQUENCE OF ASSIGNING CLASSES TO LAND SUITABLE

FOR CULTIVATION

THE L C C



A= SAND X= LOAMY SAND B= SANDY LOAM C= SANDY CLAY D= CLAY LOAM

E= SANDY CLAY F= CLAY

(1)= Slope of land (2)= Topsoil Texture (3)= Effective Soil Depth (CM)

(4)= Permeability of Upper Subsoil (B Horizon) (5)= Class

Figure 3.2

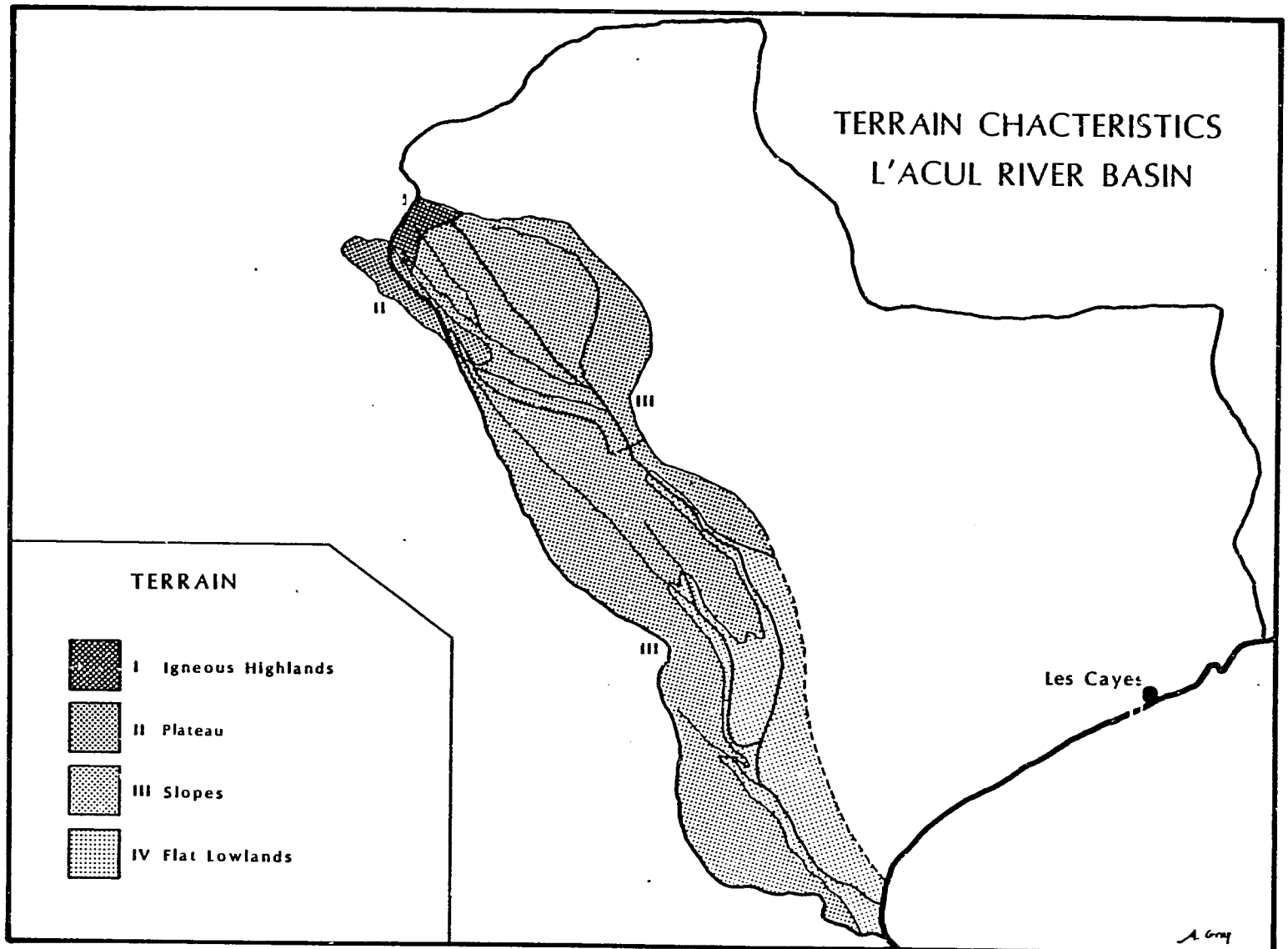

TERRAIN CHACTERISTICS
L'ACUL RIVER BASIN
I
II
III
III
Les Cayes
TERRAIN
I Igneous Highlands
II Plateau
III Slopes
IV Flat Lowlands

FIGURE 3.3

after periods of rainfall, the steep slopes in the upper and middle portions of the basin, the removal of the tree cover, and the thin to bare rock soil cover in large areas of the basin, L'Acul River and all of its tributaries must have periods when they flow as raging torrents with discharge far in excess of their mean flow. The presence of bedload material over one-half meter in diameter in most of the basins streams attests to the large velocities experienced during the peak flows. The general absence of finer materials in the river beds indicates the highly erosive nature of the river flows in the River Basin. In order to maximize the water resources of L'Acul Basin, strategies to dampen the extreme nature of today's river discharges need to be undertaken. By lowering the peak discharges larger quantities of water will be available for utilization, especially in the flat lowlands. Today, during the peak flows, a large percentage of the basins' waters pass through the system and empty into the Caribbean without being utilized either for irrigation or potable water supply.

3.4.2 Topography

Using lithologic, slope inclination, and elevation criteria, L'Acul River Basin can be divided into four major topographic units. These units differ both in their erosional and agricultural potential. Because the environmental interaction between these units is relative to the dynamics of L'Acul river system, the proper management of these topographic units will both improve their in situ environmental characteristics as well as improve the lands beyond each of the units. It is this latter characteristic that necessitates the need to co-ordinate land use activities within all of the basin's topographic units if the basin's soil and water resources are to be used in the most rational manner.

On Figure 3.3 the four major topographic units are delimited. The greatest relief and highest elevations within the basin are found in the Igneous Highland Unit. This unit comprizes a little less than one percent of the basin or approximately 3 square kilometers (Table 3.2). Elevations in this unit range from 1200 to 2170 meters above

Table 3.2

L'Acul River Basin Topographic Units

Name	Percentage	Area (km 2)
Igneous Highlands	1	3
Platons	6	16
Slopes	68	156
Flat Lowlands	25	55
	100	230

sea level. Local relief is 800 meters. It is an area of steep slopes with no flat lands. The northern limit of this unit forms the river divide between those streams flowing southward toward the Caribbean and those flowing northward toward the Atlantic Ocean near Jeremie. The Platons is an area characterized overall as a gently rolling plateau with periodic abrupt limestone hills rising from this rolling terrain. The plateau's surface has a regional dip from the northwest to the southeast. This dip is manifested in the units' elevation which ranges from 1200 meters in the northwest and systematically decreases to 600 meters in the southeast. The underlying lithology of the whole unit is limestone. Because of this rock's permeability and solution weathering properties, the presence of surface water runoff is limited. Most of the area's drainage is underground. The surface runoff flows to the numerous depressions that pock the terrain in short blind valleys. These depressions, known as sinkholes, serve as local collectors of the water runoff. These sinkholes are the major groundwater recharge areas. It appears that the groundwater flow in Les Platons is from the northwest toward the southeast with the greatest outflow emerging at the Tête L'Acul in the lower slope unit. Because most of the water from precipitation in this area flows underground and not on the surface in an integrated river network, a common phenomena in limestone areas, the surface drainage divide on Les Platons is relatively meaningless. The crucial hydrologic divide in this unit is determined by the regional dip of the limestone. For this reason, the Sousbois area in the northwestern portion of Les Platons Unit is included in L'Acul River Basin even though it lies just outside of the topographic divide. All indications are that the groundwater in the vicinity of Sousbois flows toward the southeast and enters L'Acul River System. In its transition to the slope topographic unit, the Platons margins are bounded with steep rocky slopes, in many places greater than 50°. These margins are dissected in many places by short but deep ravines. These margins are either occupied by rapidly eroding farmlands, or abandoned fields.

The slope topographic unit makes up 68 percent of L'Acul River Basin. This is the archetypical landscape of Haiti. It is a hodge-podge of fluvially eroded valleys resulting in a complex dissected surface. It is comprised of numerous hills having moderate to steep slopes and narrow-valley bottoms. It is an area where very little flat land is to be seen, and where it exists, it is normally found on the valley bottoms which are susceptible to frequent flash flooding. Within L'Acul River Basin the dominant underlying rocks are either of igneous origin or within the family of rocks comprised of calcium carbonates (OEA, 1972). Slopes range anywhere from 10 to 60 degrees and local relief is between 100 to 200 meters.

The flat lowlands, which are part of the Cayes Plain are an area of low relief and low slopes. The regional dip is from the north to the south. Along the slope unit-flat lowland boundary the elevation of the plain is about 100 meters. From these margins it slopes seaward at relatively uniform rates. The underlying material of the lowlands is primarily alluvium. Being extremely permeable, much of

the runoff flowing from the slope unit infiltrates beneath the lowlands surface. As such a large reservoir of untapped groundwater likely exists throughout these lowlands. The numerous streams that emerge at springs on the lowlands gives clear evidence of the large groundwater reservoir existing under this unit.

3.4.3 Climate

Only one meteorological station exists within L'Acul River Basin. This is at Dubreuil, and this station was only established in August, 1979. Therefore, no long term rainfall records exist in in the area. Within the whole of the Cayes Plain Basin, stations are located only at Les Cayes, Gerard (Torbeck), Levy Farm, Chantal, and Camp Perrin. Therefore no actual climatological data exist for the slope, Platons, and Igneous Highlands within L'Acul River Basin. That is, for the whole of the Cayes Plain Basin actual data only exist for the flat lowlands. As a result all statements concerning the upland areas are based on inference using the roles of elevation, topographic orientation, and distance from the ocean in determining the temperature and precipitation values of these areas. It is from these inferred values that the crucial climatological properties for agricultural production in the upland areas such as evapo-transpiration rates are derived.

The minimum rainfall in L'Acul and the Cayes Plain Basin is along the coastline. In this area the annual rainfall is approximately 2000 mm (Les Cayes 2035 mm). Moving inland, rainfall gradually increases on the lowlands (Chantal 2464 mm; Camp Perrin 2272 mm). By extrapolating annual precipitation from the National Meteorological Service's average annual precipitation map, rainfall in the upper reaches of the slope unit and Platons must range between 2400 and 2800 mm per year. Along the upper margins of the highlands precipitation likely over 3000 mm. A humid climate is found throughout the whole basin. The lowlands have a definite wet-dry season regime. As you move inland, the elevation rises and the climate becomes ever more humid until you reach the Igneous Highlands that experience only a very short dry season. This overall humid climate, along with the dry seasons, makes the area have very favorable moisture conditions for agriculture, forestry and livestock production.

With the average annual temperature at Les Cayes 25.8^{o} C (elev. 5 m), Chantal 26.1^{o} (elev. 40 m), and Camp Perrin 24.9^{o} (elev. 230 m), we can assume the mean annual temperature at Le Prêtre (180 m) is approximately 25.4^{o} C, at the Citadelle des Platons (680 m) 22.0^{o} C, and at Sousbois (920 m) 20.7^{o} C (Figure 3.3). These figures are derived assuming the average environmental lapse rate in the area is 0.6^{o} C per 100 meters, the average rate for the troposphere. The highest monthly temperature for the lowlands is about 27.5^{o} C in July and 22.4^{o} C at Sousbois. The lowest mean annual temperature on the lowlands is about 24.0^{o} C (Jan) and 18.1^{o} C on the Platons.

From an agricultural point of view, these raw temperature and rainfall figures need to be used to derive the evapo-transpiration rates and the moisture balance for the Cayes Plain Basin. Given that no areas of below freezing temperatures exists in the whole basin, it is the moisture balance that determines the growing season for all rainfed vegetation. It is the deficit between potential evapo-transpiration and precipitation that determines the amount of water needed in areas undergoing irrigation. Using the methodology developed by Hargreaves and Samani (April, 1983), the moisture availability index (MAI) is approximated for Le Prêtre, the Citadelle, and Sousbois. Their published MAI values are used for Les Cayes, Camp Perrin, and Chantal (Hargreaves and Samani, 1983, pp. A-19, A-21, A-43).

The MAI is a particularly useful agroclimatological index for planning purposes in that it is an index of relative rainfall adequacy. It is defined as:

$$MAI = \frac{P\ D}{ETP}$$

where PD is the 75 percent probability of precipitation (monthly) and ETP is the monthly potential evapo-transpiration. An MAI value of 0.33 or less for one month is considered a danger signal in rainfed agriculture. At this level, production most likely will drop below an economical level. This is especially true if it occurs before the plant has reached its critical growth stage. If the MAI value is less than 0.50 for the growing season, the use of fertilizers is not considered economical since not enough moisture exists to allow the fertilizer to become soluble and then be utilized in plant growth. The MAI value, since it detects moisture deficiencies is useful as a planning guide for irrigated areas too. Conversely, a high monthly MAI index, over 1.20, generally indicates a need for drainage as water logging will occur unless the soils are extremely permeable. Given the poor moisture retention of many Haitian soils because of their degraded state, these high MAI values probably only indicate drainage problems along valley bottom lands and other flat lowlands. In fact, it is probably only during periods of high MAI values (0.75) that most soils have enough moisture storage as to prevent moisture stress from occuring.

Table 3.3 lists the published MAI values for Les Cayes, Camp Perrin, and Chantal. The estimated values for Le Pêtre, the Citadelle, and Sousbois are also given. These values were derived by estimating the monthly temperature and rainfall of these locations using available data. The probability distribution of this rainfall was assumed to be similar to the closest published station in the Hargreaves and Samani report. Using their computation method the MAI values for these three sites were then derived. A brief inspection of Table 3.3 indicates that all of the Cayes Plain Basin, from a moisture balance perspective, is a good agricultural region.

TABLE 3.3

MONTHLY MOISTURE AVAILABILITY INDEX FOR L'ACUL RIVER BASIN

STATION	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	ANNUAL PP
Carp-Ferrin	0.30	0.28	0.39	0.74	1.17	0.66	0.45	0.64	1.11	1.65	0.86	0.18	1.15	2272
Chantal	0.25	0.45	0.46	0.95	1.56	0.90	0.57	0.76	1.59	1.55	0.25	0.25	1.14	2464
Les Cayes	0.36	0.45	0.33	0.82	1.36	0.76	0.63	0.90	1.08	1.57	0.74	0.18	1.20	2035
Citadelle*	0.37	0.51	0.57	1.03	1.71	0.92	0.71	0.94	1.72	1.66	0.87	0.36	1.41	2670
Le Prêtre*	0.34	0.44	0.51	1.00	1.44	0.94	0.61	0.83	1.49	1.57	0.37	0.35	1.23	2510
Sousbois*	0.44	0.52	0.58	1.03	1.80	0.94	0.76	0.99	1.83	1.64	0.86	0.35	1.44	2675

* = Estimated Values

Derived Using Methodology Explained in
HARGREAVES and SAMANI, 1983

At Camp Perrin December through March are relatively dry, while at the opposite extreme, Sousbois only appears to have a moisture problem in December. The flat lowlands and the lower elevations in the slope unit fall within a climatic zone having a rainy season between seven to nine months with either two or three months of excessive rainfall. The upper slopes, Platons, and Igneous Highland Units appear to have a ten month rainy period, with only December and January having really dry periods. From the consideration of rainfall inputs, the whole Cayes Plain Basin appears to be one of the most favorable locales in all of Haiti.

The extreme apparent moisture conditions inferred from Table 3.2 need to be tempered due to local soil conditions and microclimatic properties that are widespread throughout the basin, excepting the flat lowlands. First, visual impressions of the vegetation throughout the Platons seem to indicate that its soil moisture availability is not as high as in the slope valley bottom areas such as Le Prêtre. Most likely this reflects the higher permeability rates on the Platons due to its limestone geology (Wooding, etal, 1924). Therefore Table 3.3 most likely overestimates the available moisture in the Platons (Citadelle and Sousbois). Second, the thin nature of the soil throughout most of the slope unit means that despite the favorable macro-moisture conditons, the residual soil moisture storage capacity of the soils is low. Thus, despite no moisture stress being indicated for most of the year, in actuality pseudo-drought conditions could exist whenever rain events do not occur over a two-week period. Evidence for this inference is manifested by the extreme difference in the quality of vegetation between the east and west facing slopes throughout the whole slope unit. In all cases the west facing slopes had a lower quality of vegetation than the east facing slopes. This probably reflects the microclimatic differences resulting from the temporal pattern of exposure to sunlight and the slope's low soil moisture retention capacity.

The east facing slopes have a more favorable micro-climatic environment than the west facing slopes, all other factors held constant. This is due to the presence of ground moisture (dew) being present when the sun shines on the east facing slopes during the morning period. The evaporation of the ground moisture and dew from the plant leaves prevents the temperatures, both ground and plant, from becoming excessive. Thus the plants for a given quantity of solar insolation do not transpire as much water. However, by the time the sunlight strikes the west facing slopes (noon and afternoon) this ground moisture has been evaporated. Therefore the incoming solar insolation raises the ground and plant temperatures to a greater degree requiring the plant to place heavier demands on the soil moisture. Simply put, the east facing slopes are more humid than the west facing slopes. This allows a greater plant density to exist on the west slopes, with the result that the soil has been better protected through the years. In fact, almost all areas having bedrock exposed on the surface in L'Acul River Basin are on west facing slopes. Throughout L'Acul River Basin, the east slopes have been

severely degraded. The existing thin soils cannot store enough moisture and plants undergo moisture stress despite MAI values far in excess of 0.33. Most of the fields on these slopes have been already abandoned.

3.4.4 Soils

According to the DATPE classification of soil potential (1982) the Cayes Plain Basin has some of the highest potential soils in Haiti (Figure 3.4). Conversely, it also has areas with no agricultural potential. In general the soils having the highest potential are found solely on the flat low lands; the lowest potential soils are found in the Igneous Highlands and Slope Units; and good to average soils are found on the Platons. On the basis of the DATPE classification, the majority of the slopes unit lands should be solely in forest and where agriculture is practiced, major soil conservation practices should be in place. In reality, most of the lands in the slope unit are in cultivation and little soil conservation practices are in place. Already, as mentioned in the climate section, the west facing slopes in many areas are devoid of soil. This has been the product of a large number of years of misuse. In the upper portion of the Ravine Des Mornes, the Ravine Caiman and on the margins of the Platons, lands in excess of 45° are being used for sorghum and sweet potatoes. Clear physical evidence on these fields, such as large rocks, point to rapid erosion.

The detailed soil mapping done by the USDA-SCS in the upper Acul Basin indicates that no Class I soils exist within the upper Acul (USDA-SCS, June 1983 p. 13). Only 9.4 percent of the upper Acul Basin according to the LCC classification should be placed in cultivation (Table 3.4). Yet, over 45 percent is in cropland and another 18 percent is periodically cultivated. This overutilization of marginal soils is widespread throughout the Slope and Igneous Mountain Units.

TABLE 3.4

Soil Classes of Upper Acul

	LCC	Percent of Total Area
A.	II	0.13
	III	1.7
	IV	7.6
B.	V	1.9
	VI	16.1
	VII	68.3
	VIII (Wasteland)	4.2

Modified from USDA-SCS June, 1983 P. 14

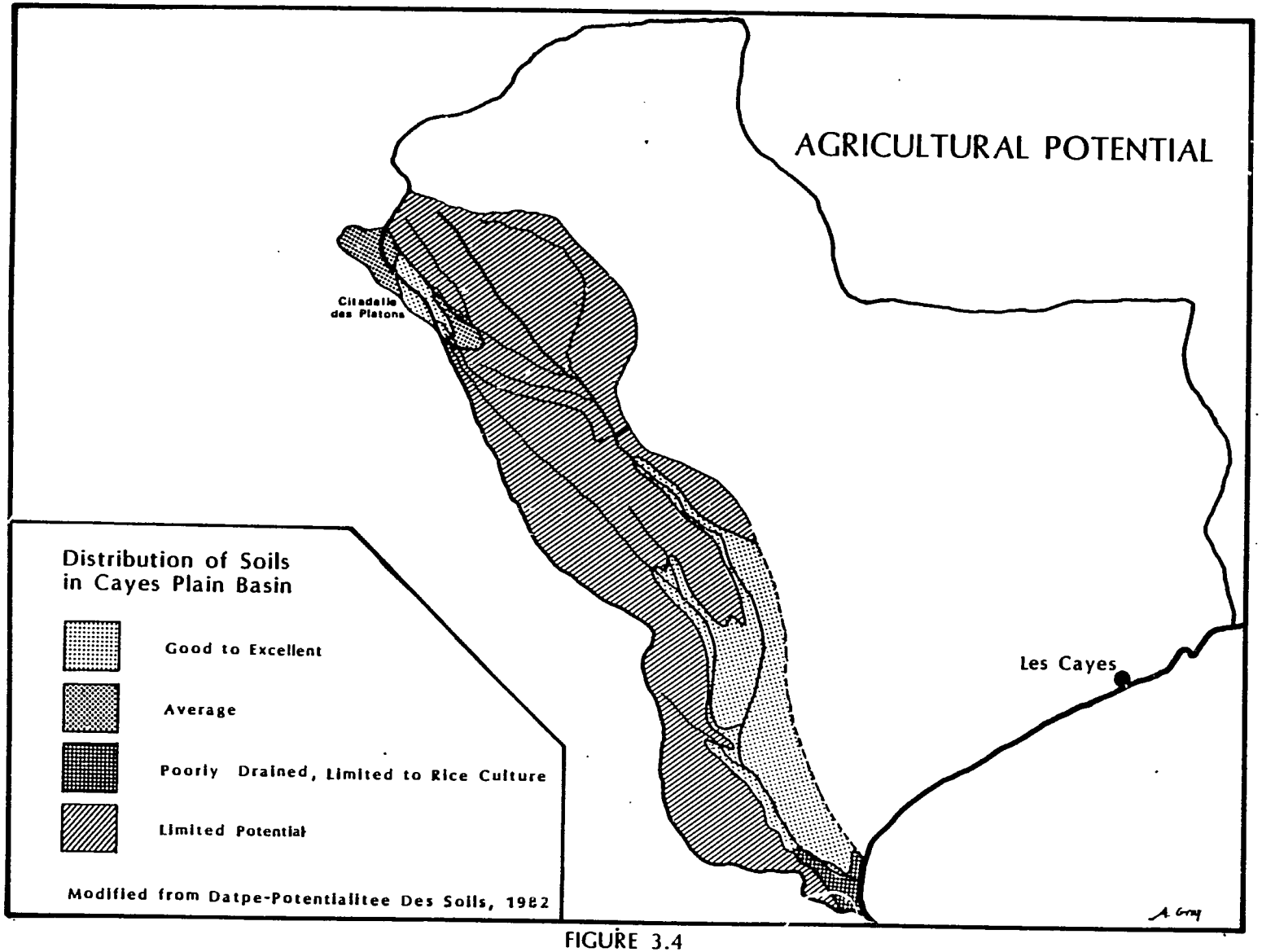

AGRICULTURAL POTENTIAL
Citadelle des Platons
Les Cayes
Distribution of Soils in Cayes Plain Basin
Good to Excellent
Average
Poorly Drained, Limited to Rice Culture
Limited Potential
Modified from Datpe-Potentialitee Des Soils, 1982
A. Gray

FIGURE 3.4

It implies that within L'Acul River Basin active land degradation is occurring which is lowering the lands' potential both in the eroded areas and on the flat lands where excessive soil is deposited.

3.5 SYNTHESIS

The Cayes Plain Basin, specifically L'Acul River Basin, possesses many physical properties that are common throughout most of Haiti. The utilization of the lands within the area likewise presents a potpourri of conditions typical of the rural countryside. A limited resource base is and has been stressed over a long period by an ever growing population pressure resulting in a degrading environmental situation. This ongoing process must be arrested quickly, otherwise a large portion of the productive lands will cease to able to be profitable.

The highest potential lands are the relatively limited flat lands concentrated within the Cayes Plain and the Platons. Neither of these areas are producing their potential agricultural yields. In both cases, if more water were available for irrigation, farming practices improved, and selected crop substitution occurred, yields and income could be increased. To increase the hydrologic potential of the Cayes Plain Basin, a set of actions need to be undertaken that will alter existing land use and farming practices throughout all of the interconnected topographic units comprising the area. The Highlands, Platons, Slopes, and Lowlands all interact with each other in terms of their physical properties. The co-ordinated strategy as well as possible interventions required to improve the physical setting of the area for rural regional basin development is found in Chapters seven and eight.

Given the information presented in this chapter, three crucial changes that this strategy must accomplish are:

1. Arrest the pervasive soil erosion occurring in the slope and highland units;

2. Improve the quantity and availability of water in the Platons and Lowland units; and

3. Alter the existing farming practices to introduce different land use and conservation practices to increase the profitability of the small farmers.

CHAPTER 4

MARKET STRUCTURE

4.1 INTRODUCTION

Marketing is a process which coordinates the exchange of resources, goods, and services over time and space. This process represents the direct interaction of supply and demand and is the sine qua non of any but the most rudimentary economic system. The unit value of the resource, good or service exchanged should reflect its marginal cost of supply to the seller and its marginal value to the buyer. If this mechanism is inefficient or costly, scarce resources will tend to be misallocated and the marketing process becomes a constraint to economic growth. Conversely, the efficient operation of this mechanism will ensure a satisfactory (if not optimal) allocation of resources among society and will create the potential for improved economic performance.

The purpose of this chapter is to describe and to analyze the market structure of L'Acul River Basin [1]: to identify the location of the markets in time and space; to delineate both the functional hierarchy of this market system and the nature of the commodity flows between markets; to examine spatial and temporal price variations between markets; and, finally, to examine the constraints to, and opportunities for, development associated with this market system. Before undertaking this detailed analysis of marketing in L'Acul River Basin, section 4.2 considers some general issues and approaches relevant to the internal marketing system of Haiti. Note that the focus of this chapter is the internal (i.e. intraregional or interregional) market for food stuffs and household articles. Export commodities such as coffee, sisal, and vetiver are marketed through independent systems which are quite different from the former in both form and function; these systems are beyond the scope of the present inquiry.

4.2 THE HAITIAN INTERNAL MARKETING SYSTEM: ISSUES AND APPROACHES

Over the past two decades a fairly sizeable literature on Haiti's internal marketing system has developed. This literature covers a spectrum of issues and approaches. The purpose of this section is to explore the nature and range of topics examined before moving on to a substantive analysis of L'Acul River Basin.

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[1]Although this study focuses upon L'Acul River Basin, the marketing system of the basin is broadly defined to include functionally related markets within the broader Cayes Plain Basin.

LaGra, Fanfan, and Charleston (1975) have produced a fairly comprehensive enumeration of 519 public markets throughout Haiti. For each market they identify its location, principal day(s) of functioning, type of construction, approximate size, principal modes of transportation, origins of motorized transport, and the state of the roads leading to the market. In addition, they develop and apply a three-level typology of markets: semi-rural markets, which serve local producers and consumers, as well as some Madame Sarahs (traveling intermediaries that assemble and break bulk and transport goods between regions); regional markets, which are assembly points characterized by a variety and abundance of products, and which serve as principal points of exchange between producers and Madame Sarahs; and urban markets, large commercial centers in which exchange occurs through several levels of intermediaries. Note that a regional market may function as a semi-rural market (i.e., with a lower range and quantity of goods, with a smaller number of buyers and sellers, and exclusively for a local market) on certain days of the week. LaGra et al argue that the prices in both semi-rural and regional markets reflect prices paid at the producer-level; urban markets are characterized by higher prices than the other two types, due to transportation costs and the number of intermediaries involved.

A number of other authors have developed similar typologies. These are summarized in Table 4.1. The most utilized of these typologies is that of Mintz (1960b) who identifies the following four market types: 1) strategic marketplaces which play a central role with respect to the entire market system, serving as bulking and break-bulk points for interregional trades; 2) "captured" town marketplaces in which shops dominate the market and which provision local middle-class merchants; 3) mixed marketplaces, local markets with associated subsidiary trading activities such that its relationship to the outside is not as unilateral in character as a local market; and 4) local marketplaces which are outlets for consumer goods via local exchange (and which may also be a strategic marketplace on one of its non-principal days). The other typologies presented are self-explanatory; perhaps the only one requiring comment is that used by the Institut Francais d'Haiti. The type 1, 2, and 3 markets are based upon the role of Madame Sarahs from Port-au-Prince, indicating respectively: 1) direct interaction between Port-au-Prince Madame Sarahs and producers; 2) interaction between local revendeuses and producers; and 3) interaction between Port-au-Prince Madame Sarahs and revendeuses. A type 4 market is also implied but not observed in

the study area; this corresponds to the "urban market" of LaGra et al (1975). It should also be noted that Le Bureau des Contributions employs the simple distinction of the urban market, which takes place in a center in which a communal magistrate resides, and the rural market, which is located in a section rural.

TABLE 4.1

Typologies of Haitian Markets

Author	1(highest)	2	3	4(lowest)
LaGra et al (1975)	Urban	Regional	-	Semi-rural
Mintz (1960b)	Strategic	Captured Town	Mixed	Local
Moral (1959)	Sea Cost	Regional	Town	Local
Wood (1963)	Port	Interregional	-	Intraregional
Johnson (1970)	Port	Major inland Assembly and wholesale	-	Local
Institut Francais d'Haiti (1980)	Type 4	Type 3	Type 2	Type 1

After Lundahl (1980)

A second major issue evident in the marketing literature on Haiti involves the extent to which the market system is characterized by perfect competition and efficiency, as opposed to imperfect competition, inefficiency, and exploitation of the peasant consumers. Moral (1959) was one of the first authors to argue that Haiti's internal market system operates under imperfect competition with the end result that the peasants are victimized. Jaffe (1983) describes the market system as monopolistic-monopsonistic in its process of price determination. The lack of competition is responsible for a dendritic market structure which abets economic stagnation. Johnson (1970) takes a similar view with regard to both the dendritic structure and its consequences. Opposing views are taken by a number of authors. Johnson and LaGra (1975) found price variation characteristic of imperfect competition between geographic areas but not between markets within the same area; transport costs between areas seem to account for what variations do exist. Mintz (1964), citing a high level of competition between market intermediaries, concludes that the system is free from exploitation. The level of market services may be low but society pays a low cost for them. A large number of participants is substituted for a high level of productivity. Lundahl (1980) characterizes the market system as dendritic ("vertical" in his terminology) but argues (1983) that it is relatively efficient and that there is relatively little exploitation of the peasants by middlemen; no monopsony can be detected and prices are set by the interaction of supply and demand.

Two further related issues involve levels of price variation between markets and the distribution of profits among market participants. As noted above, Johnson and LaGra (1975), using average monthly prices for 6 commodities over 37 markets for the period 1971-1974 found significant levels of price variation between geographic areas but did not detect significant variation by market type within a geographic area. Lundahl (1983), using 1969-1974 average monthly price data collected for regional markets by the Inter-American Institute for Agricultural Sciences, found some degree of price variation beyond the expected differences caused by transportation and processing. With regard to the distribution of profits among market participants, Murray and Alvarez (1973) found a 25 percent mark-up between the price paid to the producer and that paid by the final consumer; Madame Sarahs gained, on average, a 10 percent profit on their role as intermediary. Lundahl (1983) estimates that both revendeuses and Madame Sarahs make a profit of 10 - 20 percent on their transactions, but notes that the margin is, in fact, somewhat less since the cost of their labor is not taken into account. L'Institut Francais d'Haiti (1980) arrives at the following ranges in relation to the allocation of final selling price: producers, 45-78 percent (mean = 61 percent); Madame Sarah, 18-48 percent (mean = 31 percent); transportation, 1-24 percent (mean = 7 percent); depot operators, 0.1 - 4.4 percent (mean = 1 percent).

A detailed analysis of the roles of various actors in the marketing process has been made by a number of authors. The Inter-American Institute for Agricultural Sciences (1974) presents an overview of the various types of producers, consumers, and middlemen. Murray and Alvarez (1973) focus upon the role of the Madame Sarah, and Mintz (1960a; 1960b; 1964) presents a detailed account of the functioning of both Madame Sarahs and revendeuses.

Other approaches have examined the marketing of individual commodities. Murray and Alvarez (1973) have focused upon beans; Sorenson and Chung (1973) upon corn, rice, and millet; and Roe (1978) upon a variety of grains, vegetables, and fruits.

Finally, Rouzier (1981) has used the structure of the Haitian marketing system (both internal and international) as an example in the context of his theoretical micro-econometric discussion of international and interregional trade flows. Rouzier's principal purpose is the development of an abstract conceptual framework and his discussion contains little substantive information about marketing in Haiti.

4.3 THE MARKET STRUCTURE OF L'ACUL RIVER BASIN

In the following sections an examination of the marketing system of the study area is undertaken in light of some of the major issues and approaches that have been raised in the literature. By gaining an understanding of the manner in which this system functions it becomes possible to assess its potentialities for enhancing the development process in L'Acul River Basin. Unless otherwise noted, the following observations are based upon this Study Team's field work, undertaken in L'Acul River Basin between November 15 and 29, 1983.

4.3.1 MARKET LOCATION IN TIME AND SPACE

Thirteen markets in L'Acul River Basin, as broadly defined above, were examined. The location of these markets and the routes connecting them are shown in Figure 4.1; their location in time is presented in Table 4.2. Tuesday is the most significant market day in L'Acul River Basin; the Study Team was told repeatedly and in various locations that Tuesday is the market day of the "professionals", meaning the Madame Sarahs and the revendeuses. This statement also reflects the central role of the Ducis market in provisioning other markets in the area. This will be discussed below.

Figure 4.2 combines the spatial and temporal dimensions of the market system. A definite regionalization of principal market days may be observed. Taken together, there is a temporal complementarity among the larger markets, i.e. Ducis meets on Tuesday, Cayes on Wednesday; Chantal on Friday. This permits a maximum flow of goods and intermediaries between these major markets. Table 4.3 presents additional information about each market: Type of infrastructure,

TABLE 4.2

Market Days, L'Acul River Basin

Market	Principal Day(s)	Secondary Day(s)
Arniquet	Monday	Thursday
Carrefour Valère	Monday	Thursday
Ducis	Tuesday	Friday
Canon	Tuesday	Friday
Le Prêtre	Tuesday	Friday*
Caiman	Tuesday	Friday*
Platons	Tuesday	All Days Except Sunday
Cayes	Wednesday	Saturday
Chantal	Friday	-
Camp Perrin	Friday	Monday
Sousbois	Saturday	Thursday
Carrefour Joute	Saturday	Wednesday
Torbeck	Every Day	-

*Market also functions in a reduced capacity every other day of the week except Sunday.

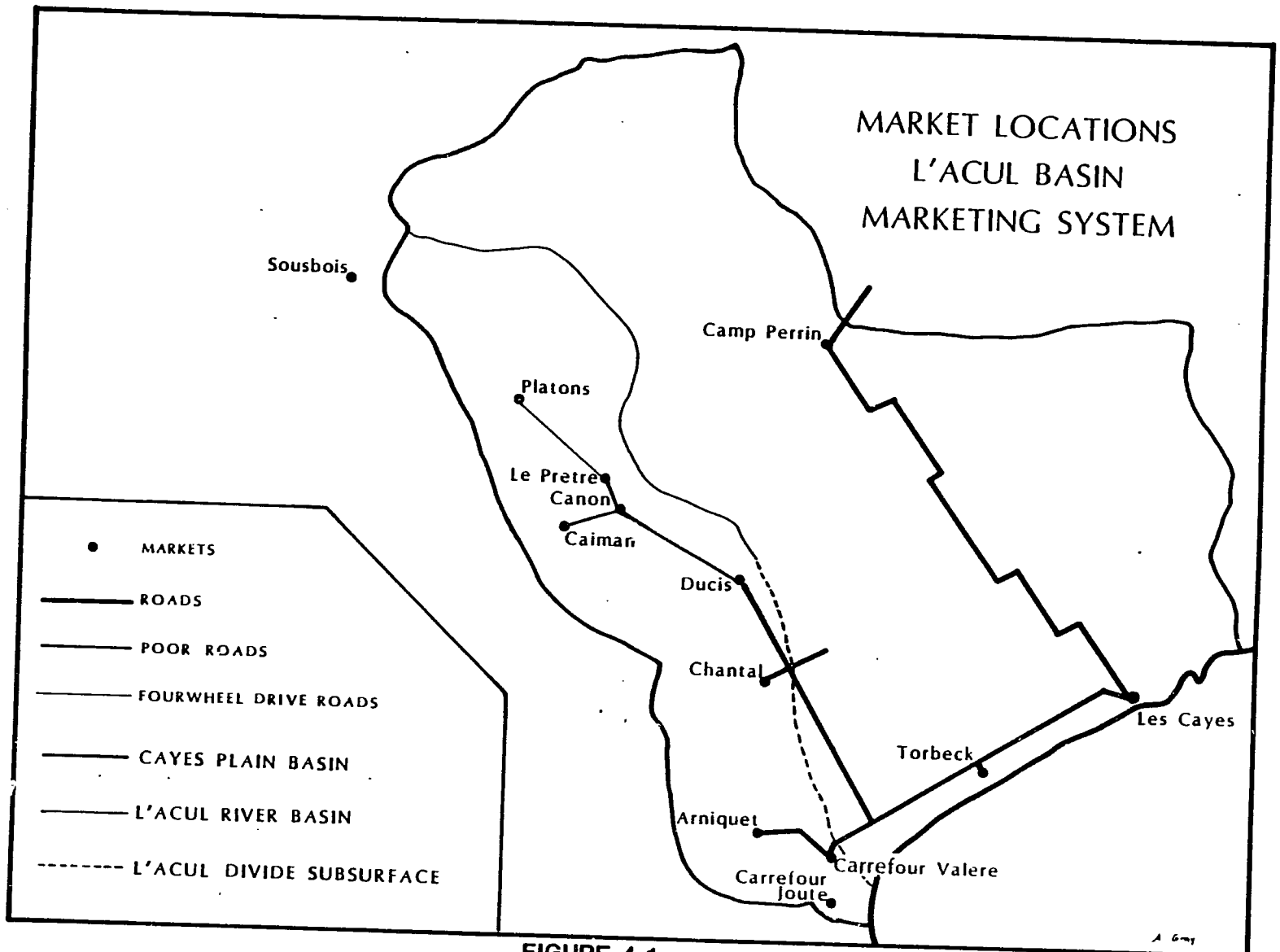

MARKET LOCATIONS
L'ACUL BASIN
MARKETING SYSTEM
Sousbois
Camp Perrin
Platons
Le Pretre
Canon
Caiman
Ducis
Chantal
Torbeck
Les Cayes
Arniquet
Carrefour Valere
Carrefour Joute
MARKETS
ROADS
POOR ROADS
FOURWHEEL DRIVE ROADS
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

FIGURE 4.1

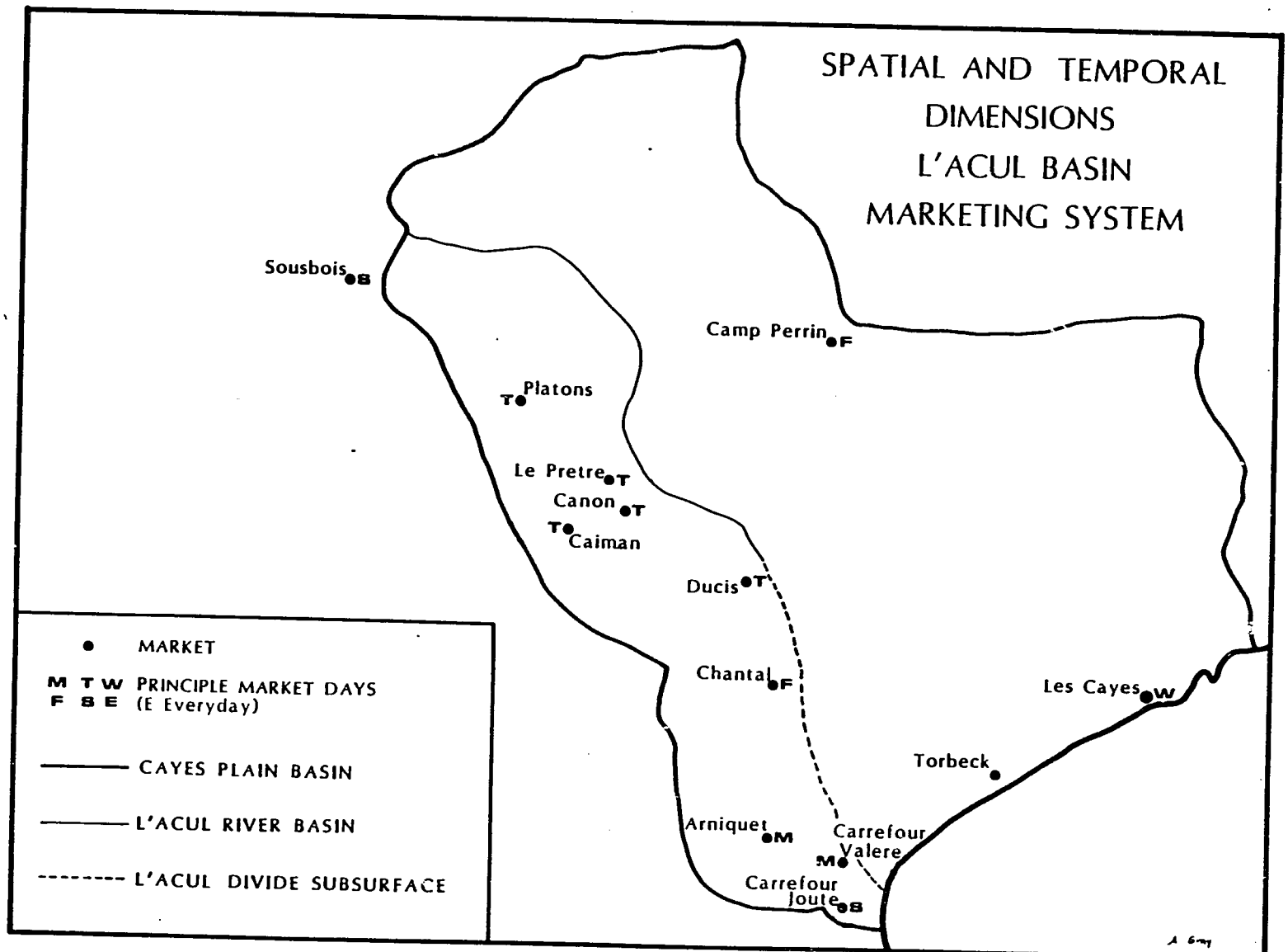

SPATIAL AND TEMPORAL
DIMENSIONS
L'ACUL BASIN
MARKETING SYSTEM
Sousbois S
Camp Perrin F
Platons T
Le Pretre T
Canon T
Caiman T
Ducis T
Chantal F
Les Cayes W
Torbeck
Arniquet M
Carrefour Valere M
Carrefour Joute S
MARKET
M T W F S E PRINCIPLE MARKET DAYS (E Everyday)
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

FIGURE 4.2

Table 4.3
Market Characteristics

Market	Infrastructure	No. of vendors	Modes of transportation	Index of road conditions*
Arniquet	120 permanent tin & straw tonnelles	150	Foot, animal truck	25
Carrefour Valère	38 permanent tin & straw tonnelles	50	Foot, animal truck	25
Ducis	200 permanent tin & straw tonnelles	300	Foot, animal truck	25
Canon	-	15	Foot, animal	8.5
Le Prêtre	8 permanent straw tonnelles	30	Foot, animal	7.5
Caiman	4 permanent tonnelles	20	Foot, animal	3.5
Platons	-	15	Foot, animal	3.5
Cayes	Permanent semi covered building	300	Foot, car, truck	40
Chantal	200 permanent tin & straw tonnelles	300	Foot, animal, truck	25
Camp Perrin	100 permanent tin & straw tonnelles	120	Foot, animal, truck	30
Sousbois	35 permanent straw tonnelles	50	Foot, animal	3.0**
Carrefour Joute	8 permanent tin & straw tonnelles	100	Foot, animal, truck	25
Torbeck	13 permanent tin & straw tonnelles	20	Foot, animal, truck	30

*Defined as a "safe" speed in a four wheel drive vehicle, miles per hour.

**Represents walking speed; inaccessible to vehicles.

approximate number of vendors, principal modes of transportation, and an index of road condition for access roads.

4.3.2 MARKET HIERARCHY

Marketing systems consist of interrelated individual elements which may be distinguished from one another on the basis of the function that each provides in the context of the entire system. These functions are expressed in terms of level in the hierarchical system of markets. Such systems are conventionally analyzed within the framework of central place theory. In the present study the central place approach is employed as a frame of reference; as will be seen subsequently, the divergence of L'Acul River Basin system from central place theory is more striking than any similarity. Central place theory is based upon six propositions:

1. There exists a hierarchical set of markets which are distinguished from one another on the basis of the range of goods and services that each provides. Higher level centers (markets) exhibit all of the goods and services available at lower level centers, plus a set of goods and services that the lower level centers do not provide.

2. Higher order goods and services require a higher population concentration to support them than do lower order goods and services. This is referred to as the threshold of a good.

3. In order to achieve the higher threshold required, higher order centers are characterized by a larger range than are lower order centers. That is to say, higher order centers have more extensive market areas associated with them than do lower order centers.

4. Consumer movements to lower order centers tend to be frequent and to cover shorter distances (a smaller range), while movements to higher order centers tend to be less frequent and cover larger distances.

5. In most instances goods tend to move vertically, up and down the hierarchy from one level to an adjacent level rather than horizontally.

6. Market areas are arranged in a nested fashion such that the market area for a higher order center will contain several market areas for each of one or more centers tend to be spaced farther apart than are lower order centers.

In contrast to the market hierarchies summarized in Table 4.1 which are, in general, based upon the nature of the settlement in which the market is located (e.g., rural, town, urban), and to a lesser extent, upon the area that the market serves (e.g., local, interregional), the present study defines the hierarchical market system on the basis of the types and quantities of goods available at individual markets. Having examined the range of goods provided at each of the 13 markets in the study area, a hierarchy was established on the following basis:

Level 5. (lowest) Basic items: foodstuffs, soap, thread, matches, notebooks, pens, small amount of cloth, small amount of meat.

Level 4. Basic items plus sundries: charcoal, batteries, plastic ware, small amount and limited variety of clothing.

Level 3. Basic items and sundries plus houseware/clothing: metal cookware, cups, glasses, hardware, shoes, large amount and variety of clothing.

Level 2. Basic items, sundries, and houseware/clothing plus specialty items: briefcases, handbags, straw products and hats, furniture, livestock in large quantities (alive and butchered) tools, rubber boots.

Level 1. (highest) Basic items, sundries, houseware, clothing, and specialty items in greater quantities and variety than in Level 4.

Table 4.4 and Figure 4.3 illustrate the nature and location of the hierarchy observed in L'Acul River Basin marketing system. The large urban market at Cayes is distinguished from the next highest level (Ducis and Chantal) principally in terms of the amounts and variety of goods available; the Cayes market does not represent a discrete step up in terms of the order of goods provided. Referring to Table 4.3, one can also note that the size of a market, in terms of the number of vendors, does not necessarily accurately reflect its level in the hierarchy. For example, Arniquet with 150 vendors and Caiman with 20 are placed at Level 3; similarly, Platons and Canon with 15 vendors each and Carrefour Joute with 100 are placed at Level 5. In both instances the seemingly disparate markets are functionally analogous to one another. The wide spreads in the number of vendors may be explained by the population densities supporting the markets. Arniquet and Carrefour Joute have much higher population densities than do Caiman, Platons, or Canon, and can thus support a greater number of vendors.

It is interesting to note that no clear central place spacing is evident from Figure 4.3, although Level 3 and 4 markets do tend to be rather evenly distributed. The two Level 2 markets, Ducis and Chantal, are much closer together than would be expected on the basis of central place theory. However, one must consider the time dimension; the two markets are not in direct competition, but rather, are complementary.

4.3.3 COMMODITY FLOWS

The flow of commodities between markets is shown in Table 4.5. This summarizes both origin and destination of goods. To facilitate the interpretation of this table, Figures 4.4A - 4.4M depict the origins of goods flowing to each market. Several observations may be

TABLE 4.4

L'Acul River Basin Marketing System Hierarchy

Level	Characteristics*	Market
1	Basic items, sundries, houseware/clothing specialty items in larger variety and quantity	Cayes
2	Basic items, sundries, houseware/clothing specialty items	Ducis, Chantal
3	Basic items, sundries, houseware/clothing	Arniquet Caiman Sousbois
4	Basic items, sundries	Camp Perrin Carrefour Valere Torbeck, Le Prêtre
5	Basic items	Platons, Canon, Carrefour Joute

*Defined in text

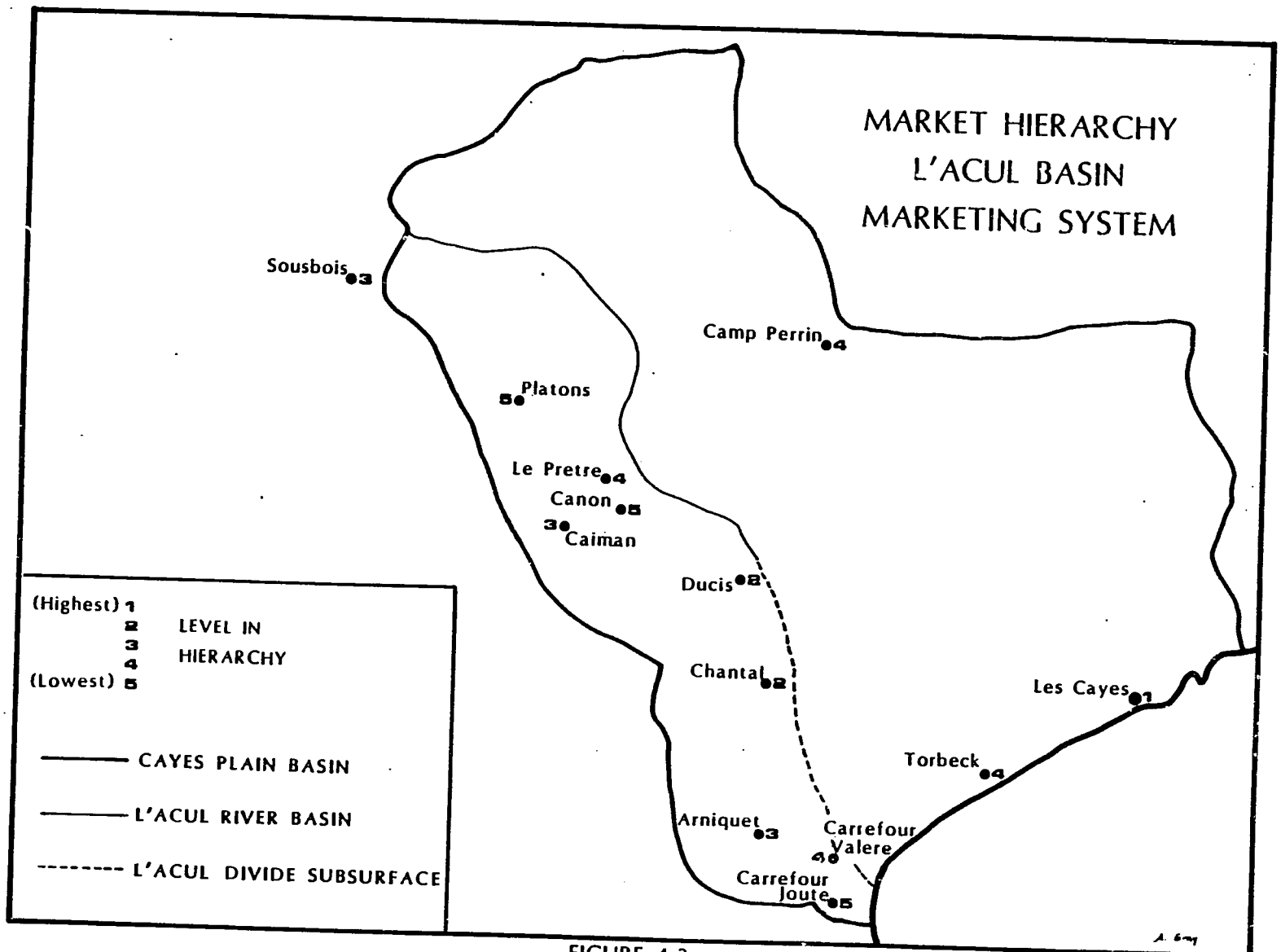

MARKET HIERARCHY
L'ACUL BASIN
MARKETING SYSTEM
Sousbois 3
Camp Perrin 4
Platons 5
Le Pretre 4
Canon 5
Caiman 3
Ducis 2
Chantal 2
Les Cayes 1
Torbeck 4
Arniquet 3
Carrefour Valere 4
Carrefour Joute 5
(Highest) 1
2
3
4
(Lowest) 5
LEVEL IN HIERARCHY
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

FIGURE 4.3

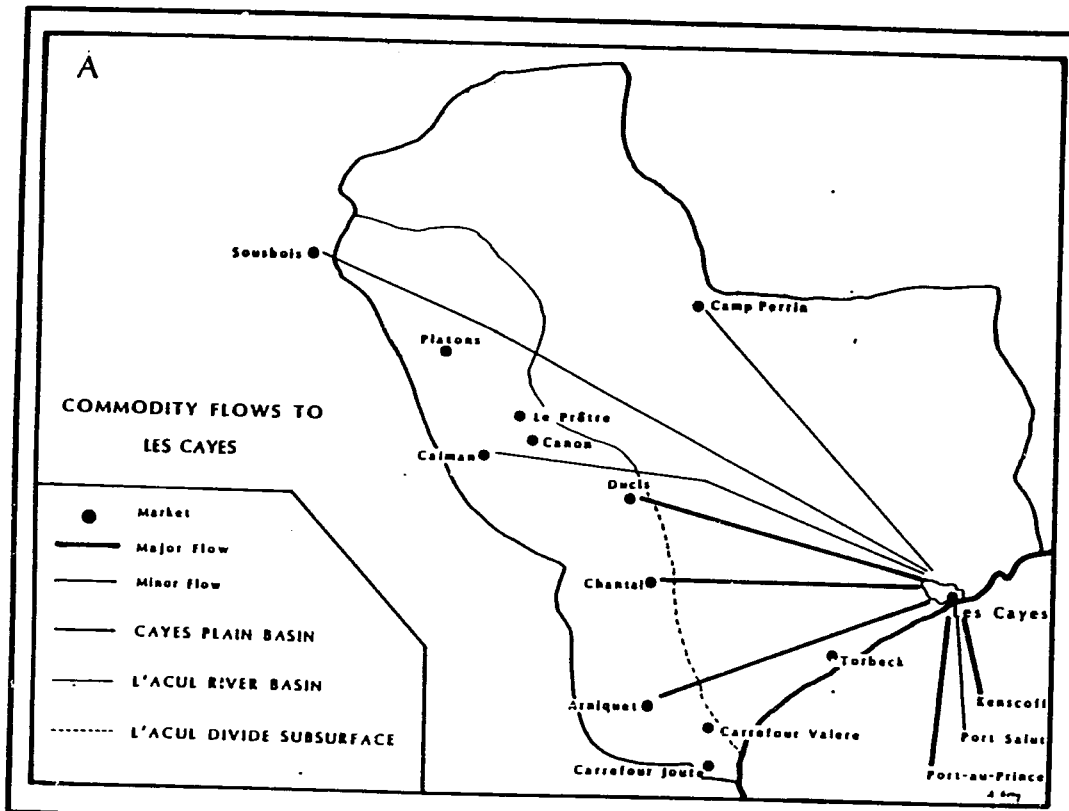
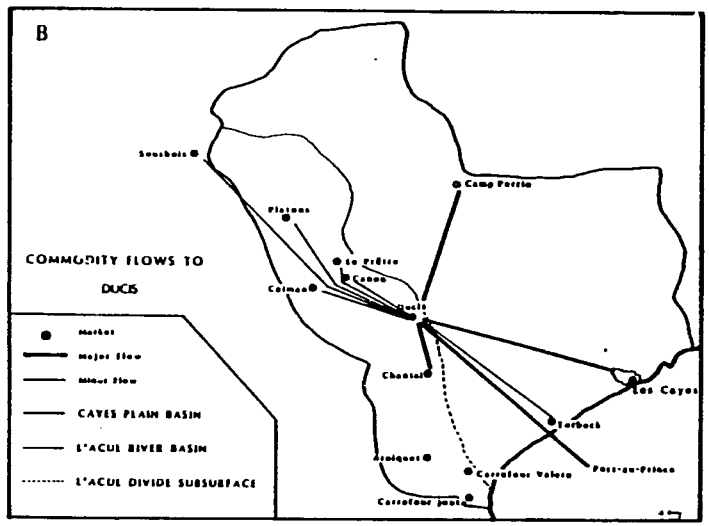
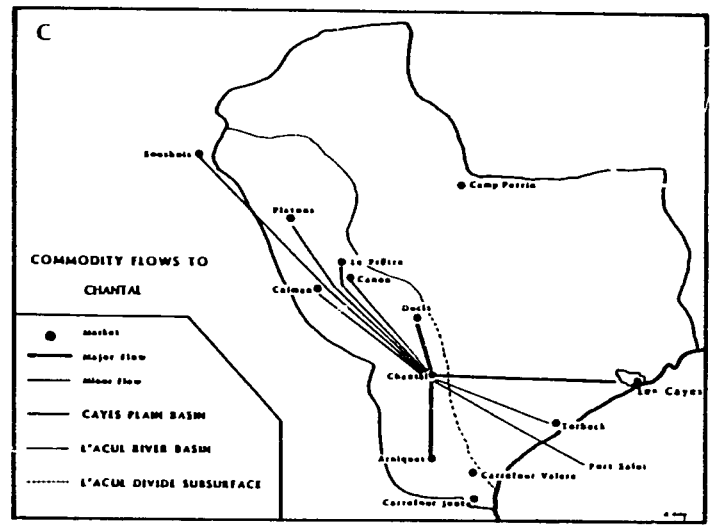
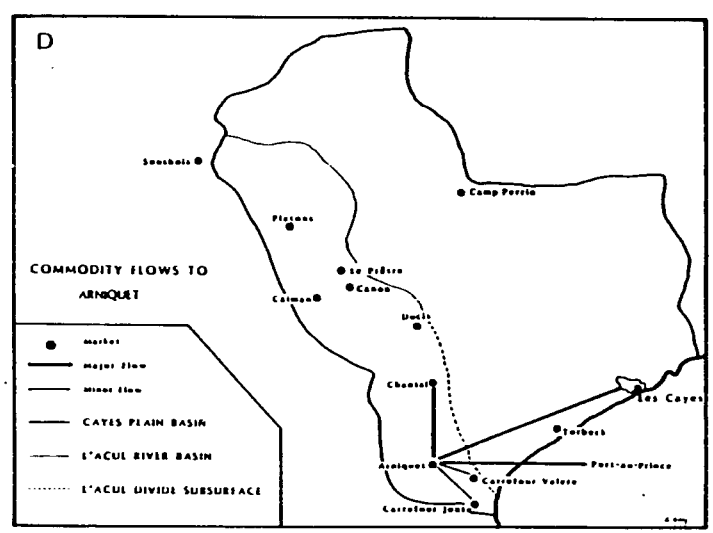


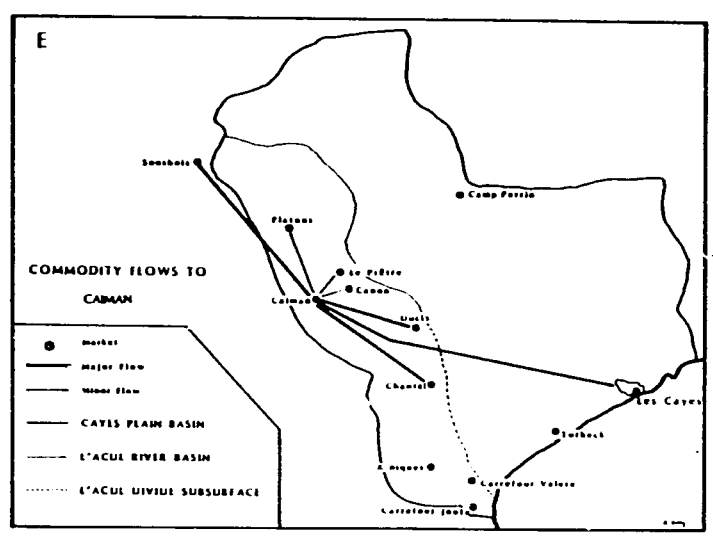
FIGURE 4.4 A-M

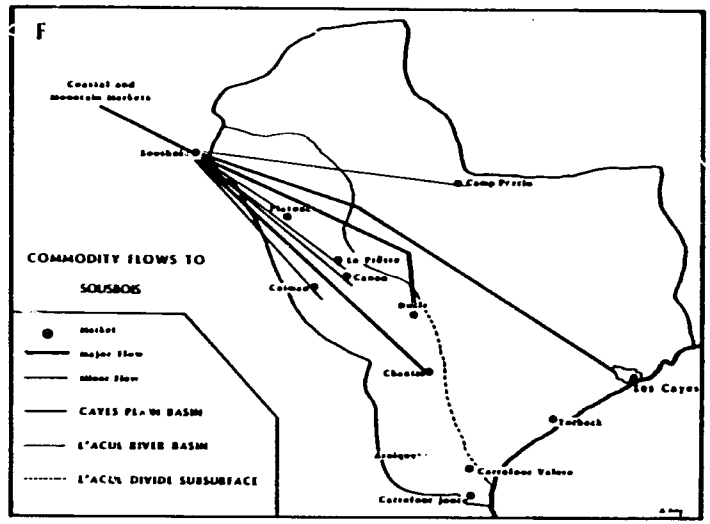
ORIGINS OF GOODS FLOWING TO L'ACUL RIVER BASIN MARKETS

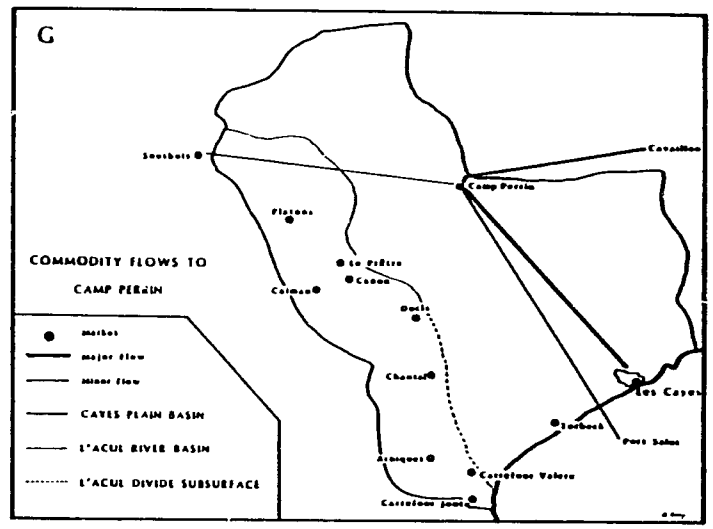

B
COMMODITY FLOWS TO
DUCIS
Souchois
Plaisance
Camp Perrin
Le Pilère
Canaan
Calmeau
Ducis
Chantal
Les Cayes
Torbeck
Aquiquet
Carrefour Valeur
Port-au-Prince
Carrefour Jacob
Market
Major Flow
Minor Flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

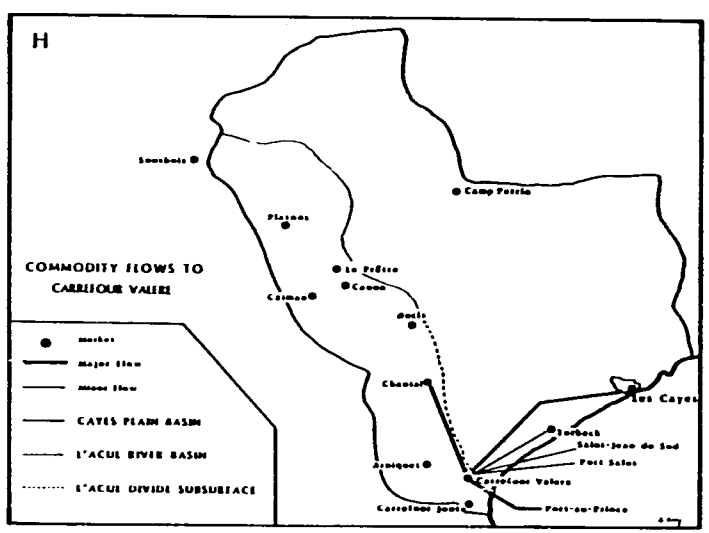

C
COMMODITY FLOWS TO
CHANTAL
Souchois
Plaisance
Camp Perrin
Le Pilère
Canaan
Calmeau
Ducis
Chantal
Les Cayes
Torbeck
Aquiquet
Carrefour Valeur
Port Salut
Carrefour Jacob
Market
Major Flow
Minor Flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

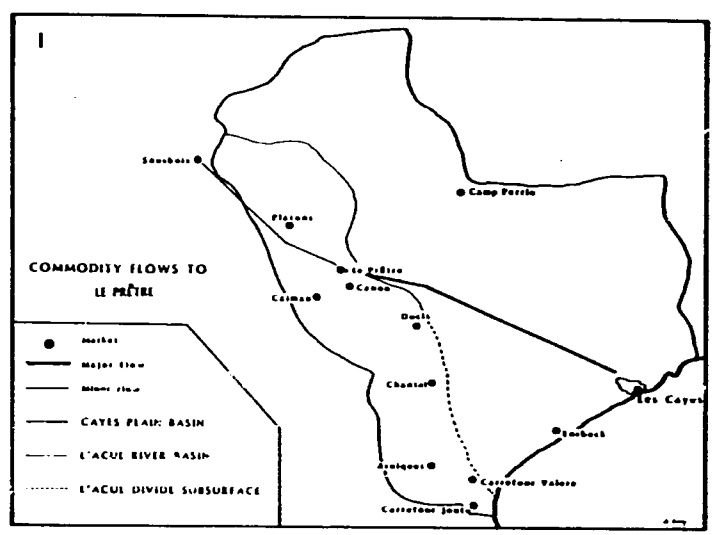

D
COMMODITY FLOWS TO
AQUIQUET
Souchois
Plaisance
Camp Perrin
Le Pilère
Canaan
Calmeau
Ducis
Chantal
Les Cayes
Torbeck
Aquiquet
Port-au-Prince
Carrefour Valeur
Carrefour Jacob
Market
Major Flow
Minor Flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

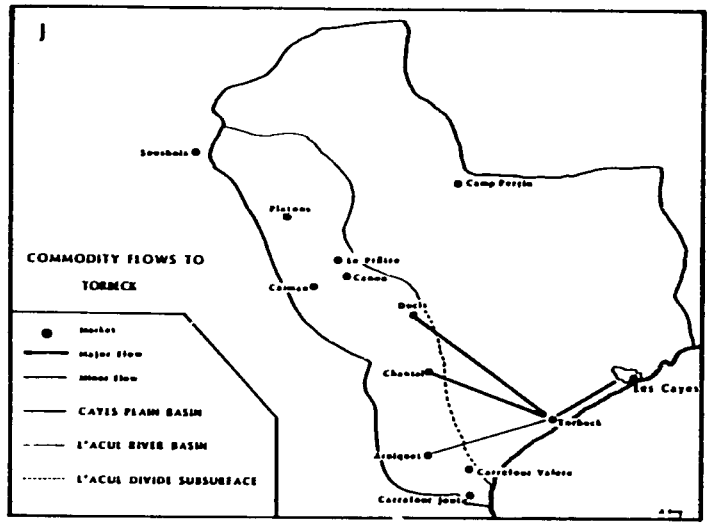

E
COMMODITY FLOWS TO
CAIMAN
Souchois
Plaisance
Camp Perrin
Le Pilère
Canaan
Calmeau
Ducis
Chantal
Les Cayes
Torbeck
Aquiquet
Carrefour Valeur
Carrefour Jacob
Market
Major Flow
Minor Flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

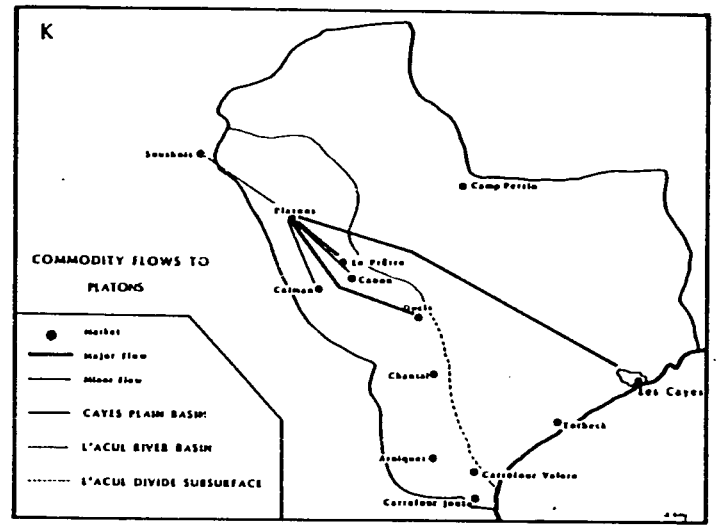

F
Coastal and mountain markets
Sousbois
Camp Perrin
Plaisance
Le Pilière
Cayes
Cormier
Duclis
Chantal
Les Cayes
Torbeck
Arniquet
Carrefour Valère
Carrefour Jean
COMMODITY FLOWS TO SOUSBOIS
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

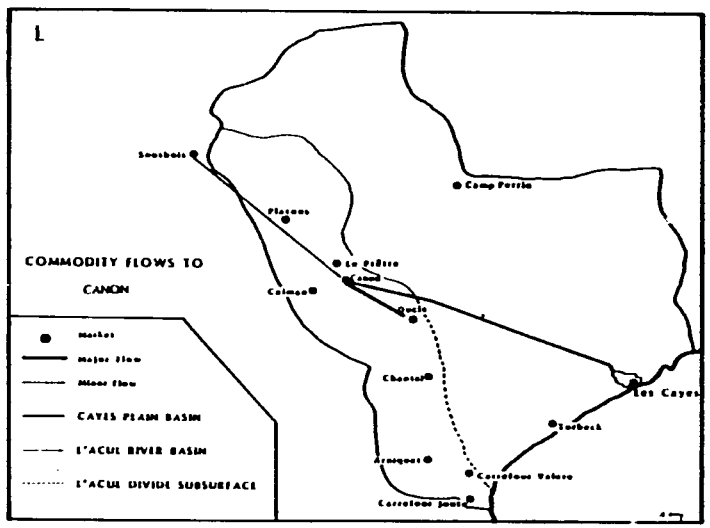

G
Sousbois
Cavaillon
Camp Perrin
Plaisance
Le Pilière
Cayes
Cormier
Duclis
Chantal
Les Cayes
Torbeck
Port Salut
Arniquet
Carrefour Valère
Carrefour Jean
COMMODITY FLOWS TO CAMP PERRIN
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

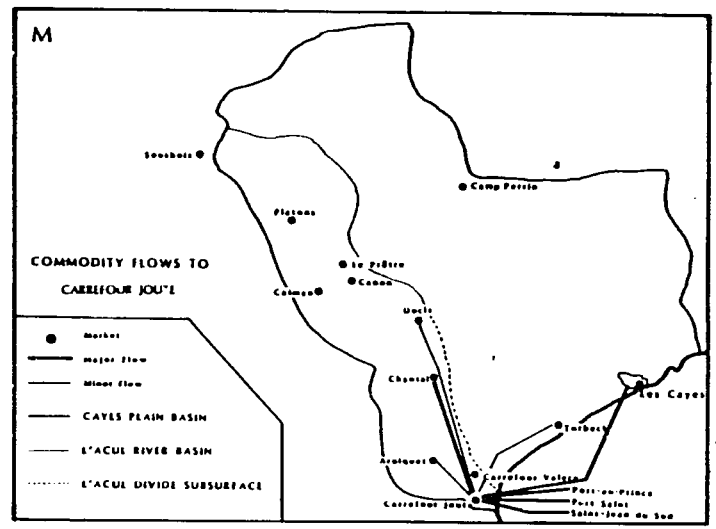

H
Sousbois
Camp Perrin
Plaisance
Le Pilière
Cayes
Cormier
Duclis
Chantal
Les Cayes
Torbeck
Saint-Jean du Sud
Port Salut
Arniquet
Carrefour Valère
Carrefour Jean
Port-au-Prince
COMMODITY FLOWS TO CARREFOUR VALERE
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE


I
Sousbois
Camp Perrin
Plaisance
Le Pilière
Cayes
Cormier
Duclis
Chantal
Les Cayes
Torbeck
Arniquet
Carrefour Valère
Carrefour Jean
COMMODITY FLOWS TO LE PILIERE
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE


J
COMMODITY FLOWS TO
TORBECK
Souxbois
Platons
Camp Perrin
La Pédre
Canon
Calmon
Duclo
Chantal
Torbeck
Les Cayes
Arniquet
Carrefour Valere
Carrefour Jouit
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE


K
COMMODITY FLOWS TO
PLATONS
Souxbois
Platons
Camp Perrin
La Pédre
Canon
Calmon
Duclo
Chantal
Torbeck
Les Cayes
Arniquet
Carrefour Valere
Carrefour Jouit
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE


L
COMMODITY FLOWS TO
CANON
Souxbois
Platons
Camp Perrin
La Pédre
Canon
Calmon
Duclo
Chantal
Torbeck
Les Cayes
Arniquet
Carrefour Valere
Carrefour Jouit
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE


M
COMMODITY FLOWS TO
CARREFOUR JOUIT
Souxbois
Platons
Camp Perrin
La Pédre
Canon
Calmon
Duclo
Chantal
Torbeck
Les Cayes
Arniquet
Carrefour Valere
Carrefour Jouit
Port-au-Prince
Port Salut
Saint-Jean du Sud
Market
Major flow
Minor flow
CAYES PLAIN BASIN
L'ACUL RIVER BASIN
L'ACUL DIVIDE SUBSURFACE

made concerning Table 4.5. First, it is clear that the classical central place-type flow of goods is not found in L'Acul River Basin marketing system. That is to say, although goods move vertically up and down the hierarchy they tend not to pass through markets at adjacent levels of the hierarchy. Contrary to the suggestions made by Johnson (1970) and Jaffe (1983), the marketing system is not dendritic but, rather, may be described as primate. This term is generally used to describe the non-hierarchical direct connections between the largest (primate) city and all other cities in developing countries. Its use here indicates that direct connections exist between the higher order markets (e.g. Cayes, Ducis, Chantal, Sousbois) and the majority of other markets, irrespective of their levels in the hierarchy. Note that there are several instances of direct links to Port-au-Prince. These findings help to reinforce the delineation of the market hierarchy specified above.

Second, with few exceptions, markets at the same or similar level of the hierarchy tend to have similar linkage patterns, for example Cayes, Ducis, Chantal; Arniquet, Caiman; Platons, Canon. The major exceptions to this generalization are: Sousbois, which has a more extensive linkage pattern than other level 3 markets due to its strategic role as an interface between L'Acul Basin marketing system and markets in the mountains and on the northern coast of the peninsula; and Carrefour Valere and Carrefour Joute which serve principally as markets for local produce.

Finally, one should note the role of the population in and around Platons in maintaining linkages between, on one hand, Sousbois and the markets toward the north; and, on the other hand, those in the study area. It is common for the residents of Platons to make the 4 hour round trip to Sousbois on a Thursday or Saturday and the 5-6 hour round trip to Ducis or Chantal on Tuesday or Friday. In this manner the flow of goods between the uplands and lowlands is facilitated. This is not to imply, however that other linkages between the uplands and lowlands do not exist; it is not uncommon for a 10-12 hour (or longer) round trip to be made between the uplands and lowlands in one day. It is possible for the market women from the uplands to catch a truck to Ducis at Le Prêtre, if the river is sufficiently low (cost 6 G per person round trip), or, if not, at Dubreuil (cost: 4 G per person round trip). From Ducis transport can be obtained to Cayes at cost of 2 G per person and an additional 2 G per sack each way. Direct connections by truck may be made between Ducis and Port au Prince every Tuesday for a cost of 15 G per person each way.

4.3.4 MARKET PRICE VARIATION

Over the two-week period in which the marketing system was studied, (the major portion of markets being visited in the first week) no significant difference in the individual prices of a common

TABLE 4.5

Origin-Destination Matrix:

Commodity Flows

Destination/ Origin	1 CY	2 D	3 CH	4 A	5 CA	6 S	7 CP	8 CV	9 LP	10 T	11 P	12 CN	13 CJ	14 PaP	15 O
1 Cayes	/	+	+	+	+	+	+	+	+	+	+	+	+	+	
2 Ducis	+	/	+		+	+			-	+	+	+	-	+	
3 Chantal	+	+	/	+	+	+		+		+			+		
4 Arniquet	+		+	/				-		-			-		
5 Caiman	-	-	-		/	-					-				
6 Sousbois	-	-	-		+	/	-		-		-	-		+	+
7 Camp Perrin	-	+				-	/								
8 Carrefour Valere			-					/							
9 Le Prêtre		-	-		-	-			/		+				
10 Torbeck		-	-					-		/			-		
11 Platons		-	-		-	-					/				
12 Canon		-	-		-	-					-	/			
13 Carrefour Joute				-				-					/		
14 Port au Prince	+	+		+				+					+	/	
15 Other	+	-	-			+	-	-					-		/

\+ Major Flows
\- Minor Flows

list of products was found between markets. [1] This finding is somewhat surprising given the functioning of all other marketing systems with which the authors are familiar. The lack of variation can, however, be explained by two factors. First, time has no intrinsic monetary value in the "accounting system" of the Haitian individual or household. Therefore consumers are willing to spend several extra hours travelling to a market where they can obtain the lowest price on a specific item. This high degree of consumer mobility creates strong competition between markets and enforces a high degree of price uniformity. Second, as noted above, L'Acul River Basin marketing system is primate rather than dendritic in nature. The direct vertical connections imply a reduced level of intermediary activity (i.e. intermediate linkages between adjacent levels in the hierarchy) and thus a minimal level of mark-ups as the commodities reach their final destination. Both Johnson (1970) and Jaffe (1983) argue that a dendritic system, characterized by lack of horizontal competition, leads to price discrimination and exploitation of the consumers by intermediaries. This may be so but the present evidence indicates that a primate structure can compensate for lack of horizontal competition. In summary, then, there is every indication that L'Acul River Basin marketing system possesses a price structure that responds directly to the stimulus of supply and demand and that the system is both relatively efficient and non-discriminatory.

Table 4.6 summarizes typical system-wide prices for a list of directly comparable and commonly purchased commodities. It must be stressed that these prices and the general lack of price variation between markets are associated with a specific time period; without further study the results cannot be generalized for longer time periods or for other markets. Figures 4.5 (A through E) illustrates the temporal variations (in terms of average monthly prices) for some specific commodities at three markets in the study area. These data suggest varying degrees of price variation, at least between Cayes Camp Perrin, and Ducis/Chantal. The latter pair are treated as one since there is no variation in the price of commodities between them.

Figure 4.6 shows temporal price variations for four commodities at the Cayes market. Both sets of data are presented for illustrative purposes and no attempt is made to interpret them due to their unknown level of reliability. Variations in the supply of certain commodities are, however, evident in the data. For example, the relative supplies of sorghum and corn, as reflected in the market prices, are exactly out of phase; the peak in the corn supply corresponds to the lowest availability of sorghum and vice-versa.

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[1] Market prices for commodities were collected by two Caucasians, one fluent in Creole. It was made clear to the vendors that the information was required for a study; there was no intention of purchase. In this way the true market price rather than the "prix blanc" was obtained. For verification, 3-5 vendors were asked the price of an individual commodity.

TABLE 4.6

Market Prices:
L'Acul River Basin Marketing System

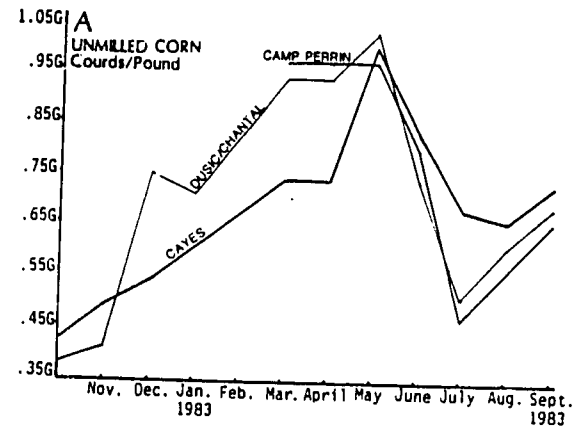
November 15 - 29, 1983

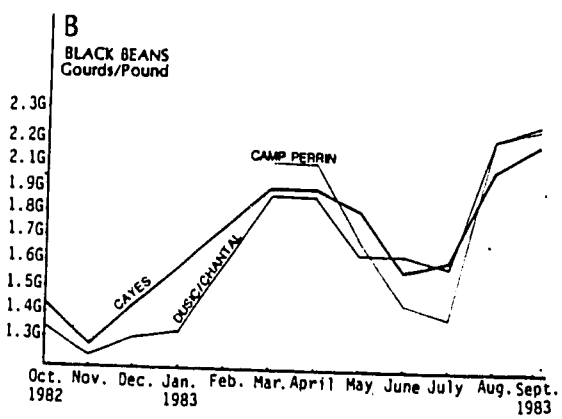
Item	Price per Unit
Congo Beans	20 Kob/verre*
Black Beans	1 Gourd/verre
Red Beans	90 Kob/verre
Country Rice	1 Gourd/verre
Milled Corn	50 Kob/verre
Unmilled Corn	35 Kob/verre
Wheat	50 Kob/verre
Brown Sugar	20 Kob/small roll
Milled Sorghum**	60 Kob/verre
Salt	15 Kob/verre
Okra	20 Kob/low
Matches	2.5 Gourd/package
Farine France	60 Kob/verre
Garlic	20 Kob/head
Tobacco	1 Gourd/4 leaves
Soap	1.10 Gourd/bar
Peanuts	25 Kob/petit verre
Cigarettes	3.25 Gourd/package

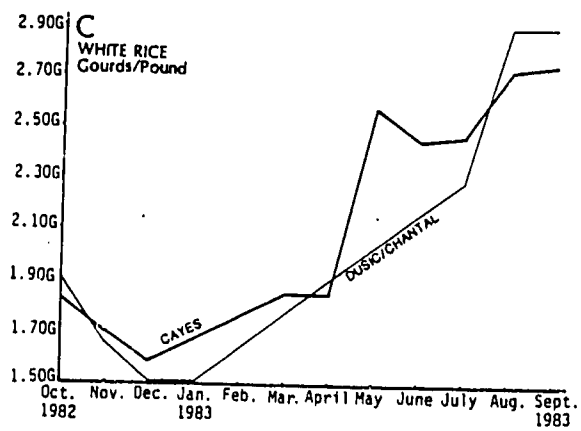
* There are 11.5 verre in a marmite.
** In short supply; not available everywhere.

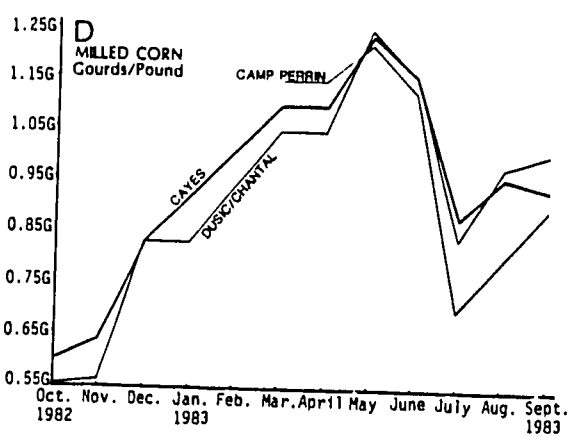
Figure 4.5 A thru E

TEMPORAL VARIATIONS IN MONTHLY PRICES FOR SELECTED COMMODITIES









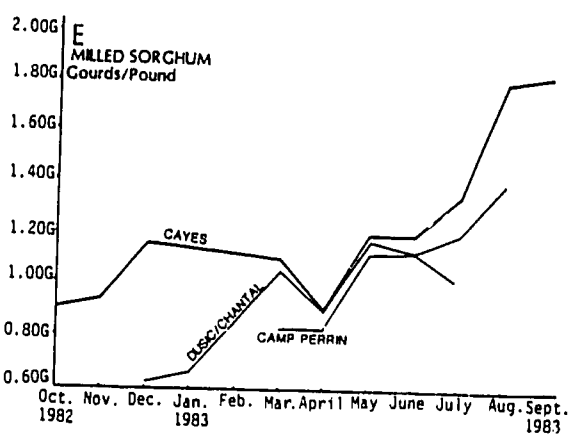
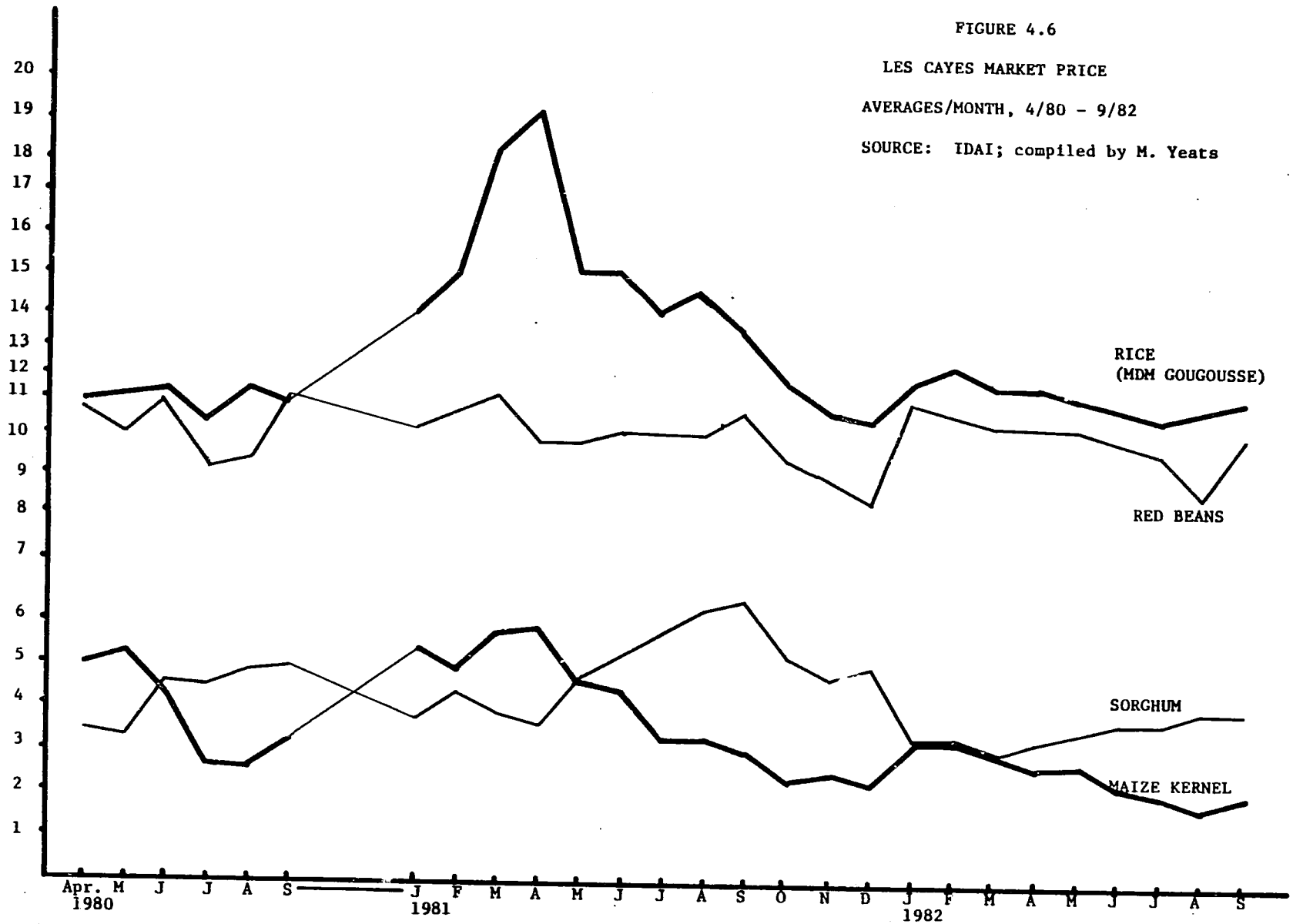


FIGURE 4.6

LES CAYES MARKET PRICE

AVERAGES/MONTH, 4/80 - 9/82

SOURCE: IDAI; compiled by M. Yeats



A final consideration relating to market prices is the amount of profit accruing to the various participants in the marketing process. Table 4.7 illustrates typical profit margins for vendors selling directly to consumers (i.e., retailers rather than intermediaries) for a variety of commodities. Due to time and manpower constraints it was not possible to measure the profit margin realized by other participants. In general, there tends to be a lower mark up on commonly utilized foodstuffs and a higher one on tools, housewares, and imported foodstuffs, e.g. garlic. Where appropriate, the profit margin has been adjusted to include the cost of motorized transportation. Although there is a relatively wide range in level of profit, values clustering around 10% are the most commonly encountered. It should be noted that one way in which the vendor may increase her profit margin is to process raw or semi-finished products, thus enhancing the final selling price. This increase in value added frequently occurs in the case of milling corn en grain and coffee en paille, drying green rice, and baking bread.

4.3.5 IMPLICATIONS FOR DEVELOPMENT

L'Acul River Basin marketing system has been described and analyzed. The general impression left by this examination is that the system is a fairly uniform and relatively closed functional unit with few lateral external linkages. The system is a competitive one which is non-exploitative and which is relatively efficient (from a viewpoint which does not place a monetary value on the expenditure of time). It remains to discuss the implications for development that are raised by this analysis of the system. These implications are relevant not only to the marketing system per se but also to the broader economic system to which it is intimately related. It should be stressed that at this stage of the study (i.e., before passing the results through our two social-institutional filters) the following observations are only that; they are not yet specific recommendations for development

Export Development. Certain agricultural products that are grown or that could be grown in the Cayes Plain Basin have the potential for serving export markets at both the interregional (i.e., Haitian) and international levels. Among the existing crops the expansion of coffee production is the most fruitful possibility, given the introduction of better management practices. In addition, coffee has the added benefit of enhancing soil conservation. It is difficult to identify other crops with the potential for international export given the large, complex, organized, and independent marketing infrastructures required. Existing crops with the potential for interregional export include bananas (which have had in the past an international significance) and the various citrus tree crops. Both bananas and citrus crops are conducive to soil conservation.

TABLE 4.7

Retailer Profits
November 15 - 29, 1983

Commodity	Profit (%)
Unmilled Corn	5
Soap, Cloth	6
Sorghum, Coffee, Straw Hats Country Rice	7
Peanuts, Wheat	8
Milled Corn, Black Beans	9
Bread, Brown Sugar, Matches	10
Fish	15
Flour, Rice Jean-Claude	15
Rubber Boots	18
Cigarettes, Plastic Bowls, Machetes Coconut pieces	20
Garlic, Plantain	25
Carbonated Beverages	29
Batteries (flashlight type)	38
Charcoal	40
Salt	43
Glassware	50

Onions, radishes, and possibly garlic and potatoes are among the potential crops with significance for interregional export. With time and good management, wood may become a source of export income. The difficulty here is that because of the time lag between the initial planting and the first "harvest", the small farmers must find alternative short-term sources of income. The practice of continuously planting and selectively harvesting trees is, of course, one of the better soil conservation practices. Finally, there is the possibility that some of the lowlands within the Cayes Plain Basin may be suitable for the introduction of cacao, a crop with international export potential.

Import Substitution. A related consideration is the production for local consumption of commodities imported into the region from interregional or international origin points. Again, onions and potatoes (presently from Kenscoff) and garlic (presently from Spain) are obvious possibilities. In addition, many imported small manufactured items that require neither large capital investments nor state-of-the-art technologies could be subsituted for by locally produced goods. Among these are various tools and implements, houseware and hardware items, and clothing.

Creation of Value Added. A further consideration that is directly linked to both export development and import substitution involves the processing of raw materials, especially of agricultural products; i.e., turning perishable produce into more durable commodities with a higher market value. It should be noted that one of the few existing processing operations in the Cayes Plain Basin, a tomato paste plant, has recently been shut down because of competition from lower priced imports from the Dominican Republic. Although the situation is highly complex, it is rumored that the imported product has been able to attain a lower price because the Haitian government has released one large importer from the obligation of paying import duties. It is evident that, if this is in fact true, this type of practice should be curtailed and indigenous industries encouraged rather than discouraged. Sugar refining is another possibility for the creation of value added. Therefore, it is essential that the linkage between the cane and its processing site be improved through more efficient collection and transportation. With each hour that elapses between the cutting of the cane and its processing the cane's sucrose content diminishes. In order to compete on the world market, however, the existing underutilized Centrale Dessalines will need to achieve an economies-of-scale threshold. Related to the production of cane is the distillation of rum. It appears, however, that a major world-wide marketing campaign would be necessary to increase the demand for Haitian rum. Further, in the long-term the possibility exists for the processing of wood products and lumber.

Transport and Storage Infrastructure. In order to enhance the economic viability of the region certain improvements in its transportation infrastructure would be desirable. The roads above

Dubreuil linking it with Canon, Caiman, Le Prêtre, and Platons need to be upgraded for improved vehicular access. The three river crossings between Dubreuil and Le Prêtre, in particular, present serious problems during the rainy season. The road from Le Prêtre to Platons, which is barely passable in a four wheel drive vehicle (which can attain a speed equivalent only to foot traffic) will need to be upgraded if the Platons area is to realize its full potential. The peasants in the Platons area have aspirations of growing certain crops, such as tomatoes, which would likely suffer considerable damage in transit over the present road. Also, other farming changes such as the introduction of livestock would likely be facilitated, as would access to the area for agronomes and other technical workers. In addition, foot paths in the slopes area that link the Ravine des Mornes and the Ravine Duclerc hinterlands to the principal L'Acul road network are presently dangerous during the rainy season even to the Haitian peasant who is accustomed to navigating them. In general, however, "desenclavement" is not a problem as it is in the Central Plateau. Critical issues relating to domestic and international transportation linkages with Cayes also need to be addressed. These will be considered in the following section. Clearly, improvements are required in both areas in order to promote the development of the Cayes Plain Basin. Facilities for the storage of agricultural produce is a second required infrastructural component. As shown in Figures 4.5 and 4.6, there are seasonal fluctuations in the market prices of agricultural commodities due to the seasonal variations in the supply of these commodities. In many instances the peasant producers sell their produce for low prices when the supply is abundant and buy it back at higher prices later in the year when it is scarce. Improved rural storage facilities would assist in the interseasonal stabilization of market supply and permit the farmer to retain the surplus value that his efforts have created. Beans, sorghum, corn and, to a somewhat lesser extent, rice are among the commodities for which the need for storage facilitis are most acute.

The Role of Cayes as a Central Place - Growth Center. The Cayes Plain Basin is linked to the rest of Haiti and to the rest of the world through Cayes, the nation's third largest city, and thence through Port-au-Prince. As shown above in section 4.3.3, there are direct connections between Ducis, and also some of the lower order markets, and Port-au-Prince, but Cayes generally functions as the region's interface with the exterior. Thus Cayes has the potential for serving a very crucial function in a regional development context. There are several aspects to this strategic function. First, Cayes may serve as a regional growth center from which investments, technology, and the impetus to economic growth will "spread" or "trickle down" to the areas with which it has contact.

At present Cayes, as all other Haitian cities outside of Port-au-Prince, is not being utilized to its full economic potential. The surrounding rural areas would benefit not only from the development of an urban-industrial base in Cayes but also from the innovations, information and social services that a vital urban center

generates. Second, the development of a more developed industrial structure would provide employment opportunities which might help to reduce some of the pressure of the farm population upon agricultural land (particularly on the slopes), the productive capability of which is diminishing visibly with each passing year. Third, Cayes has the potential for the re-establishment of its historical function as an active port with linkages to the rest of Haiti and to the rest of the world. Not only would this facilitate interregional and international exports, but it would also raise the possiblity of developing a quasi-freeport assembly function similar to that of Port-au-Prince. The lower land prices in Cayes might make this a very economically attractive alternative. Note, however, that all of the above alternatives relating to Cayes' potential as a growth center would require a major reorientation on the part of the Government of Haiti, whose explicit and implicit economic development policies tend to centralize all activities and direct all economic flows to Port-au-Prince. For example, the recently completed paved road between Port-au-Prince and Cayes has actually worked to the detriment of local merchants in Cayes; many of their former customers now do at least a portion of their shopping in Port-au-Prince.

Other Issues.

A number of other issues that may have implications for regional development are worthy of exploration. First, the markets are an effective medium of communication with the Haitian population. With a high degree of frequency some member of every household visits one of the lower level markets and, with somewhat lower frequency, one of the higher level ones. The implication of this is that information, seeds, and various social services can be distributed using the market system. Second, levels of agricultural production may be enhanced by crop type substitution and by selective crop variety substitution.

The former refers to the substitution of soil-conserving perennials, such as coffee, for annuals, as well as to the introduction of new types such as onion and garlic. The latter refers to the substitution of crop varieties that have a different date of maturation than those presently utilized. The effect of this is to even out the peaks and valleys in the supply of a crop. The substitution must be accomplished selectively, for if the new variety is adopted by all farmers the peaks and valleys in the supply of the crop will simply be shifted in time. A final economic consideration is the availability of credit to the farmers. Credit is important for the purchase of land, fertilizer, and seeds. It was generally observed in the course of this study that there is a wide variation in the access to, and utilization of, credit; the lowland farmers tend to avail themselves of available credit to a much greater extent than do farmers on the slopes or uplands. The problem of credit is discussed in more detail in Chapter Six.

CHAPTER 5

AGRICULTURE: THE PHYSICAL-ECONOMIC INTERFACE

5.1 INTRODUCTION

From the perspective of developing a rational co-ordinated rural regional development strategy for the Cayes Plain Basin in general and L'Acul River Basin in particular, it is necessary to consider the plain first from a regional perspective, and only then examine its site specific attributes. The optimal approach to initiate the crucial changes in rural Haiti for improving the environmental situation is simultaneously combining and developing all physical and human resouces while never taxing the resource capabilities above their ecologic capabilities. Improvements in the physical environment will increase the long-term economic situtation by developing a resource base able to support improvements in per capita income. Equally, existing limitations of the human resource need to be countered since without concurrent improvements in the socio-economic situation the physical improvements would likely be only exceedingly short-term.

Only in a regional river basin approach can all resources be controlled in a rational manner from the basin divides to the lowest lands without external forces preventing the re-establishment of the ecologic balance. This balance is essential for improved agriculture, grazing, and silvacultural production and social progress in a primarily land resource oriented economy.

5.2 ACTUAL AND POTENTIAL CROPS IN L'ACUL

Table 5.1 lists the major agricultural crops, forestry, and animal production activities potentially viable for the climatic moisture conditions found within the Cayes Plain Basin. Because the soils throughout the uplands generally are either thin or drain rapidly, in spite of the area being classified as climatically humid (0.80), in terms of soil moisture available for plant growth most of the lands within the upper Acul act as subhumid (0.65 - 0.80) zones. The west facing slopes, due to the already discussed microclimatic attributes of these areas, act as a semi-humid to sub-humid moisture zone. In addition to moisture, temperature affects the range of possible crops. In L'Acul River Basin the variation in temperature from one portion to another is largely a result of elevation. The lowlands are generally below 100 meters, the slopes between 100 and 800 meters, the Platons between 600 and 1200 meters, and the Igneous Highlands above 1200 meters. Given that mean annual temperature decreases at an average value of 0.6^{o} C/100 meters, a temperature range of over 7° C exists between a lowland location such as Chantal

Potential Rainfed Crops for Cayes Plain Basin

UNIT	R/EO (%)	Moisture Range Suitable for Various Crops without Irrigation	Animal Production	Forest Species
Platons, Igneuus Highlands, Slopes	>.80	rice		coniferous species, neem
Lowlands	.65-.80	sugar cane, banana, potatoes, tobacco, coconut, pineapple, coffee, barley, sweet potatoes, cotton, beans, wheat, peanut, mango, pawpaw, sisal, corn, congo pea	dairying, grazing	coniferous species, eucalypus, wattle, neem

Major potential growing zones (optimal)

Sub-optimal moisture conditions

R = Average Annual Rainfall

EO = Annual Potential Evapotranspiration

EO( ) = 2422-0.358h(meters) h = elevation

Modified for Haiti based on H.M.H. Braun - Agroclimatic Zone Map of Kenya, Nairobi, 1982

Table 5.1

and a Platons site such as Formond (Sousbois). With the increasing elevation and cooler temperatures you would expect to find a differentiation in crop types between the four major units in L'Acul River Basin. Table 5.2 presents the crops according to land unit and tenure system as they were observed by the Study Team during November and December, 1983 throughout the whole Acul River Basin. Very little differentiation is evident in terms of land units. Many crops are found in all of the units. Among these widespread crops are: sweet potatoes, cocoyam, beans, sorghum, mango, corn, and banana. Only a few crops such as sugarcane, citrus, rice, and Irish potatoes are grown in only a portion of the river basin. It appears that little crop specialization has evolved within L'Acul due to ecological differences. This can be partially explained by the relatively similar moisture available for plant growth in the uplands and lowlands given the soil moisture retention properties of the upland soils. However, this lack of ecological crop specialization might reflect two other critical factors determining crop choice. First, the absence of a wide selection of seed or nursery stock limits the selection process. Many farmers, especially in the Platons indicated this was an important factor that limits their crop selection. Second, there is not a large demand in L'Acul River Basin marketing system for other crops. However, this second possiblity is likely invalid since foodstuffs from as far away as Kenscoff-Furcy reach all markets within the system.

A greater differentiation in crop selection appears to result from land tenure. On table 5.2, in the sharecropped and rented categories, no tree crops are evident. All of the crops grown are annuals. Clearly investment in perennial crops on these types of lands is not considered by the individuals working the lands.

Finally, from an environmental perspective it is important to note that on the lands within the slope unit, very few of the crops grown minimize soil erosion. In spite of active field abandonment resulting from severe land degradation, farmers continue to crop their land until it is impossible. Fields over 55° are continuously being planted in sorghum, a particular crop that exacerbates erosion.

5.3 LINKS BETWEEN RURAL LAND USE AND ENVIRONMENT

5.3.1 Introduction

Many of the environmental problems existing within the Cayes Plain Basin including low land productivity, water shortages, and flooding result from the improper use of the land. Because both soil and water are transported within the river system, all of the land units are interconnected regarding these two resources. Within the Cayes Plain Basin the best lands from an agriculture perspective are the rolling to flat uplands on Les Platons and the low flat lands on

TABLE 5.2

Crops Observed: November - December 1983,
L'Acul River Basin

UNIT	TENURE	CROPS	
Platons	Inherited Land	Sweet Potato	Irish Potato
		Manioc	Peas
		Sorghum	Beans
		Cocoyam	Taro
		Coffee	Banana
		Citrus	Mango
	Purchased Land	Coffee	Yam
		Mahaut	Peas
		Sweet Potato	Beans
		Sorghum	Corn (maize)
		Citrus	Mango
	Sharecropped Land	Peas	Beans
		Sweet Potato	Manioc
	Rented Land	Manioc	Irish Potato
		Sweet Potato	Sorghum
Slopes	Owned Land (Include inherited and purchased)		
		Congo Peas	Sweet Potato
		Cocoyam	Avocado
		Sorghum	Coffee
		Orange (sour and sweet)	
		Manioc	Banana
		Mango	Peanut
		Karayib	Sugar Cane
	Rented Land	Yam	Manioc
		Karayib (?)	Banana
		Sweet Potato	Sorghum
	Sharecropped	Yam	Sweet Potato
		Karayib	Beans
		Sorghum	Corn
Lowlands	Non Irrigated	Sorghum	Karayib
		Corn	Cocoyam
		Sweet Potato	Peanuts
		Banana	Tobacco
		Beans	Mango
		Sugar Cane	
	Irrigated	Rice	Beans
		Tobacco	

(?) English Name could not be determined but like a cocoyam

the Cayes Plain. It is the uplands--The Igneous Mountains, Les Platons, and Slope Units-- which are the major watersheds of the rivers flowing across the Cayes Plain. In addition many of the characteristics of these uplands, their infiltration rates, slope steepness, and interception characteristics--determine the ratio of the precipitation that flows as direct runoff contrasted to ground water flows to the river channels. As this ratio increases, river discharges for low frequency flows become larger, while at high frequency flows they become smaller. For example if because of a decrease in the vegetation cover, a smaller proportion of precipitation infiltrates into the groundwater, the river will flood more often (low frequency event) and have lower baseflow (high frequency). Since the occupation of the Cayes Plain Basin by the French and continuing unabated to the present, all land use practices in operation have resulted in increases in this ratio. This signifies that land use practices have been and are diametrically opposed to the rational use of the water resource. In the following sections of this chapter, the term, agriculture is used in its broadest sense. That is it includes not only foodcrops but also livestock production and forestry.

5.3.2 L'Acul River Basin Agriculture and Environmental Impacts

During the field portions of this S.I.P. it became obvious to the Study Team that within the river basin the complex mixed forest that was indigenous to the whole area has been completely cleared. Only in a small portion of the Igneous Highlands does there exist a semblance of forest cover, and here it is in a degraded state with few tree species and large areas having no protecting underbrush and few saplings, the latter being continuously cleared for firewood. Therefore the natural regeneration of the forest, even in its one small remaining area, is threatened by existing practices.

A brief inspection of Table 5.2 clearly indicates that the overwhelming proportion of land in cultivation is in annual crops. Only sugar cane, scattered fruit trees and other scattered types of trees, "wild" coffee bushes, banana and vetiver are perennial. From an environmental perspective perennial crops are soil conserving compared to annuals. Thus, the current mix of crops is not favorable for a conservation strategy. This latter statement attains even greater credibility when the spatial distribution of these crops is examined. No systematic pattern of the perennial crops exists relative to the environmental setting with the exception of rice which is only grown on the plain. Sugar cane is grown on both steep and gentle slopes, trees are found scattered throughout the lands without any development of complete areal coverage. Thus little continuous tree cover exists throughout the basin. Individual trees scattered throughout the landscape provide only minimal erosional control since runoff generated in other areas flows freely past the individual trees, often exposing some of the tree roots. Vetiver actually encourages soil erosion throughout L'Acul River Basin since, when it is harvested, it is pulled out of the ground resulting in a loose base

soil. As the harvest often occurs just prior to the advent of the rainy season, the potential for soil erosion is extremely high. Coffee, as it is only grown in the immediate area of the kay, which is often situated on a level parcel of land, likewise is not being utilized as a soil conserving crop. Similarly, annual crops are grown under widely disparate conditions independent of any apparent environmental concern. Sorghum, congo peas, beans, corn, and manioc are planted over the whole spectrum of slope conditions existing in the river basin. While congo peas are considered a soil enriching crop due to their ability to fix nitrogen, because of their poor leaf cover the soil is continuously washed down slope when they are grown on moderate to steep slopes. Thus the benefits of increasing soil fertility are more than countered by the low degree of erosional protection.

Similar to cropping practices, livestock grazing as it occurs in L'Acul River Basin is not conducive to environmental maintenance. Generally, animals are tethered and left to graze in a limited area each day. This results in a process of discontinuous overgrazing. In addition, as livestock are moved on a daily basis along footpaths in their search for pasture, there develop zones of overgrazed land. These overgrazed zones act as catalysts for the initiation of excessive rill and, at times, gully erosion in many locales. In summary, given the distribution of agricultural activities throughout the whole basin, it is evident that either little concern exists for the soil resources or the constraints placed upon the farmers do not allow the peasants to consider the options necessary for soil conservation.

5.3.3 Existing Farming Practices and Environmental Impacts

Throughout L'Acul River Basin, little obvious conservation practices are evident. From the preparation of the fields for planting through the harvest, little evidence exists that indicates soil conservation enters into the minds of the small farmers. For example, in the process of preparing the soil for seed planting, the farmers almost universally 'hoe' the soils downslope, thereby contributing to the downslope movement of the soil. Even in the relatively well managed slope areas of Furcy-Kenscoff (Port au Prince) this practice is utilized. Clearly the ease of using this hoeing technique results in its ubiquitous use.

The piling-up of soil in mounds might appear to be a soil conserving device. Yet the evidence indicates that it is the need to increase the depth of the soil to a sufficient depth to permit plant growth that is the major motivation for this practice. That is, in many places the thinness of the soil profile requires this practice. The lack of a specific orientation bias in the plane view of the mounds results in these features having a minimal impact on decreasing the movement of the overland flow of the water. In fact, the placement of mounds on the steep slopes might even increase the likelihood of erosion.

The clearing of rocks from the fields gives further evidence of the minimal consideration of soil erosion control in the daily activities of the farmer. Throughout the Slope and Platons units many fields are 'pocked' with cairn-like mounds. Nowhere were these cairns oriented parallel to the slope contour to act as barriers to the downslope movement of materials even though this practice would not have resulted in more work for the individuals. Minimal contouring and mulching are practiced throughout L'Acul. When contouring is evident, it is often on steep slopes (10°) that minimize its impact.

Two bits of contradictory evidence exist to this apparent lack of erosion control consciousness on the part of the small farmer. First on Les Platons, relics of stonewalls are evident in the vicinity of the Citadelle. These were built for soil erosion control. However today they are gradually going into disrepair. This reversal in the erosion control process began when the agronome who mobilized the farmers was transferred and no government replacement was sent to the area. Likewise, terrace building near Canoe initiated under the PDAI program is evident. But these, as the stonewalls, appear to be relics on the landscape.

In summary, current farming practices clearly place a low priority on soil conservation. In fact some of the practices appear to accelerate the erosional processes. Evidence exists that the small farmers are willing to become involved in soil erosion control. But for this activity to be successful, methods must be found to make it a part of their daily routine; otherwise, when the outside force that initiated the erosional activities leaves the area, the practices will cease.

5.3.4 Existing Irrigation Practices and Environment

Irrigation in L'Acul River Basin for all practical purposes is synonymous with the Dubreuil Project. The evaluation of this project is reported in great detail (Stutler, et al. 1983). For the purposes of this report only two aspects of the water management in this project need to be mentioned. Neither of these aspects are stressed in the Stutler report. First, it appears that minimal monitoring of the quantities of water delivered to individual fields occurs. Visual observations by the Study Team appear to indicate that most of the fields are being over irrigated. Worldwide, many irrigation projects have failed due to problems associated with water logging. Care needs to be practiced to insure that the lands being irrigated remain viable. Second, this wasteful use of the water minimizes the areal coverage of the Cayes Plain that is potentially available for irrigation. One other aspect of the irrigation project that was noted appears to be the lack of ongoing maintenance in the canals. Some damage was observed but no repair crews were ever observed. If this low maintenace policy continues, when the system is under stress major damage could occur.

Another environmental component that could limit the Dubreuil Project occurs in the vicinity of the diversion dam. The reservoir behind the barrage is already completely silted-up. If a major flood occurs on L'Acul, in spite of the engineering precautions, the diversion channel could become blocked by the massive quantities of bedload materials available for transport upstream of the dam. Whether or not this event occurs will be decided by the agricultural activities occurring not on the Cayes Plain lowlands, but by the farming practices on the Slopes, Platons, and Highland units.

5.4 Land Tenure

It is widely recognized that the specific characteristics of a region's (or a nation's) land tenure system exert a strong influence upon agricultural practices and productivity. A number of authors have focused upon this issue in the Haitian context (Murray 1977, 1978a, 1978b, 1978c; Smucker 1982; Zuvekas 1978). The purpose of the present section is to examine patterns of land tenure in L'Acul River Basin and to explore their implications for agricultural activity.

5.4.1 Land Tenure Patterns

In his discussion of land tenure, Murray (1977: 177) suggests the existence of "genuine subcultural differences between lowland Haiti and highland Haiti, differences that appear to be related more to ecology than to simple regional variation." Most previous research in the Cayes Plain Basin has been in the lowlands. This is in contrast to Murray's opinion that the literature on Haiti has "leaned somewhat heavily toward the study of highland life", (Murray 1977: 77). As a result, the Study Team felt it was necessary to obtain land tenure information in both the uplands and lowlands in spite of the limited field period.

The present examination utilizes three of the four sub-regional units defined in Chapter 3: Les Platons, the Slopes, and the Lowlands. A fourth unit, the Igneous Highlands, has been omitted due to time and accessibility constraints. As is shown, the tenure situation in Les Platons and slope areas of L'Acul River Basin doesn't differ significantly from what has been written about other mountainous regions of Haiti (Zuvekas 1978).

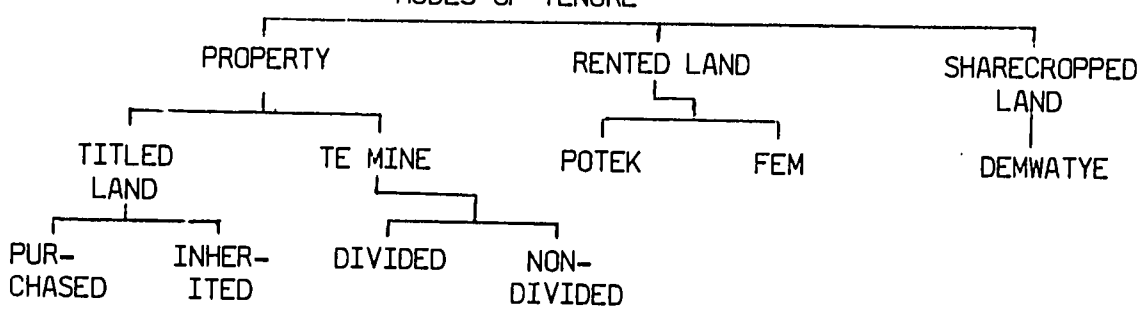
In order to compare Les Platons, Slope and Lowlands units, a formal land tenure questionnaire was applied to 12 household heads on a random sample basis in each of the three subzones. For the Lowlands, a distinction was made between irrigated and non-irrigated land: 6 farm units were sampled in each of the two lowland areas. Besides questions dealing with tenure, the questionnaire examined the areas of credit, wage labor, and informal forms of cooperative labor such as eskwad.

Most farmers were interviewed in their homes, and the majority were men. However, when a woman considered herself to be a household head, she was interviewed. The interviews were conducted in Creole. After informal conversation of 10 to 15 minutes, the formal questionnaire was introduced. The survey was done within a two week time frame (Nov. 18 - Dec. 1, 1983), and covered a total of 129 plots worked by 36 farmers for a total of approximately 53 karo.

While the results from Les Platons and the Slopes likely are representative of the land situation in these areas, the sample of 12 farmers in the plain certainly does not represent the lowland land tenure situation in totality. In this study the large landowners, which are important in the lowlands, were not interviewed. Therefore it is better to consider this sample a "sondage" which can be compared with caution to the Slopes and Les Platons.

To facilitate the interpretation of this survey, the introduction of Serge Larose's (undated) diagram of possible tenure status in Haiti is introduced (Table 5.3):

Table 5.3
MODES OF TENURE



Potek refers to land which has been rented and paid for, for two or more years. Fem is land rented on an annual basis.

Because of important developments over the last two or three decades, in particular the phenomenon of buying inheritable land, the Larose breakdown of land tenure needs to be modified. Many respondents, explaining about plots they purchased, bought lands that were part of the family lands. Thus, the term "inherited" becomes ambivalent because up to now "inherited land" referred by definition to non-purchased land. It thus seems better to divide the section "titled land" into three categories: (1) purchased non-inherited, (2) purchased inherited, and (3) inherited non-purchased land. An explanation of this recent development is presented below. The term "inherited", as used in our tabulations, refers to non-purchased inherited land, usually divided and rarely titled. In Larose's scheme it would fit the "divided tè minè" category. The inherited land is worked by the farmer for his personal benefit.

Location and Tenure Type. Figures 5.1 to 5.3 indicate the relationship between sub-region and type of ownership. With a same number of respondents in each level of the basin (Platons, Slope, Lowlands), there are a significantly smaller number of plots owned in the Lowlands (Figure 5.3). Out of a total of 129 plots surveyed, 83 were owned (i.e inherited or purchased). All those who bought plots have a clear legal title to their land. For those who own divided inherited plots, the legal title (gran pyes) is in the hands of one of the family members. The average number of parcels owned (purchased or inherited) for the 36 farmers is 2.5 plots. As illustrated in Figure 5.4, there are no significant differences between Platons, Slope and Lowland units in total average number of plots per farmers: 3.16 in the Platon, 3.58 in the Slope, and 3.91 in the Lowlands.

The literature reports a great variety in the average number of plots held per farmer. Smucker (1982) found 5.2 plots per "economic unit" in the northern Haitian hills. Zuvekas (1978) cites Kulakow et al.'s findings in the Cayes Plain as 2.6 plots per farmer; White's report in the same area found 1.7 . The 1971 census showed an average of 1.8 plots. Murray's (1977) average in the Cul-de-Sac Plain was much higher: 5.8 plots per "holding".

In our survey, three farmers out of 36 did not own any land; one in each of the three land units. The Platons farmer is a future land owner. Today he works with other family members on a 21.3 karo family holding (anpil éritiyé). The slope farmer sharecropped 5 karo from his cousin, a coffee speculator who stole the land from his uncle by bribing the notary. Otherwise this land would have become the inheritance of the actual sharecropper. The non-owner on the lowland rents one plot and sharecrops two non-irrigated plots. His mother is still alive and owns 2.5 sèzèm (or 2.5 sixteenth of a karo), often called ventsenk (25) in Creole. The farmer works his mother's land but not for his own benefit. In the future he will inherit at least part of this plot.

The reason these three exceptions are emphasized relates to the issue of landlessness. The only person who will not own any land through future inheritance is the speculator's cousin. Zuvekas' percentages of people who own at least part of the land they work range from 65 to 100 percent. L'Acul Basin findings of 33 out of 36 farmers owning land is 91.6 percent. It increases to 97.2 percent if we consider the future ownership of two of the three other farmers. Smucker found 17 percent of landless farmers (Smucker, 1982: 265); Plotkin's survey in the North revealed only 7 percent of landless household heads (Plotkin, undated:2). From the evidence gathered in this study and reported in most other studies, landlessness appears to be a non-issue in most areas when only the current farmers are considered. However, from this, one should not infer that enough land exists for the rural population. Perhaps one reason why landlessness is not an issue is that most rural people without land migrate out of the countryside.

FIGURE 5.1

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF PURCHASED PLOTS BY LOCATION

TOTAL: 35 plots

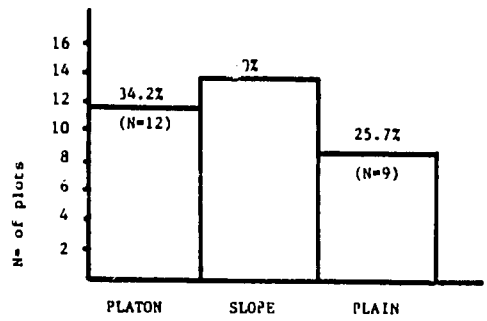


FIGURE 5.2

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF INHERITED PLOTS BY LOCATION

TOTAL: 48 plots

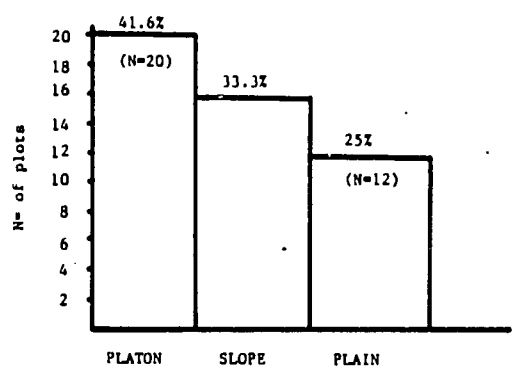


FIGURE 5.3

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF OWNED PLOTS (INHERIT or BOUGHT) BY LOCATION

TOTAL: 83 plots

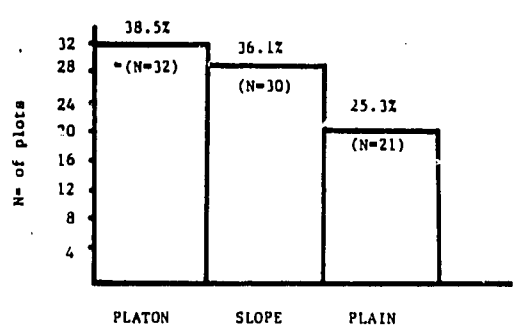


FIGURE 5.4

FREQUENCY DISTRIBUTION OF NUMBER OF PLOTS

(PER FARMER) BY LOCATION

TOTAL: 36 FARMERS
129 PLOTS

AVERAGE: 3.58 plots
per farmer

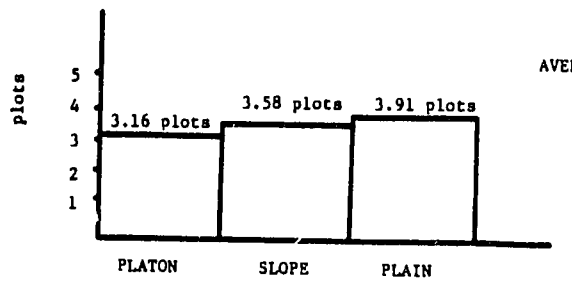


FIGURE 5.5

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF RENTED PLOTS BY LOCATION

TOTAL: 28 plots

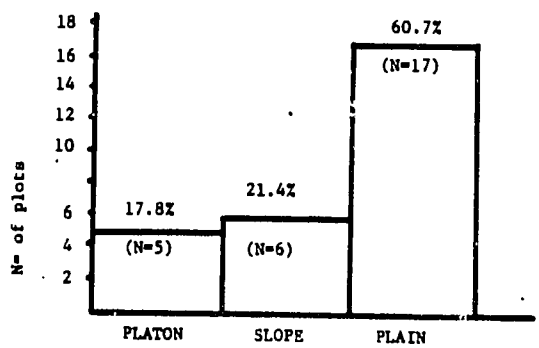
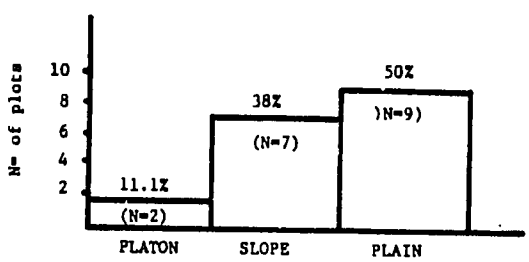


FIGURE 5.6

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF SHARECROPPED PLOTS BY LOCATION

TOTAL: 18 plots



Figures 5.5 and 5.6 refer to rented and sharecropped plots. They show that in the Lowland many more plots are sharecropped and rented than in the Slope and Platons areas. In the Platons, two respondents indicated that they would like to sharecrop, but that no land was avalaible. The same two farmers were also owners (of less than 1 karo); one of them also rents a plot. Thus, it appears that farmers' land demands are not met by the current availability of land.

Of the total 129 plots surveyed, 18 are sharecropped. This is 13.9 percent, which is close to the 14.4 percent found in the 1970 national survey. (Zuvekas, 1978: 16).

Figures 5.7 - 5.10 illustrate the meaning of the word "owner". They indicate that "ownership" doesn't mean that the farmer necessarily can make a sufficient living from his land. In the same way that inherited and purchased land is governed by a regime of microproperty (81.8 percent own less than 1/2 a karo), so are rented and sharecropped plots extremely small in size. Of the rented plots, 92.8 percent are less than 1/2 karo; 94.3 percent of the sharecropped plots are also less than 1/2 a karo. In our survey in the Cayes Plain Basin, 62 percent of the plots measure less than 1/4 of a karo, and 23.2 percent are between 1/4 and 1/2 a karo.

Signs of increasing pressure on the land are revealed in many of the respondents' reactions to the question on what they do to prevent erosion. They can no longer afford to fallow their plots for one or more seasons. In Smucker's research area, less than a decade ago, over 75 percent of the household units still maintained some land in fallow (Smucker 1982: 259). In L'Acul Basin no such freedom remains. In Le Prêtre (Slope), family members have conflicts even over which part of the non-divided family land will be worked by whom. This "first-come, first-take" method of acquiring family plots was observed by Murray (1978) in the same area. The Study Team was told that this was not a general practice, but that only mechan yo (mean people) had this bad habit. Both phenomena, the disappearance of the fallowing custom and the "grabbing" of family lands, illustrate increased pressure on the land. The farmer's most obvious reason for maintaining land in fallow is réfè tè-a (rebuild the land fertility). They all considered it a good, and traditionally probably the only, erosional control method.

Farm Size and Price. Figure 5.11 illustrates average farm sizes in each sub-region. The 36 farmers work a total of 52.1 karo, an average of 1.44 karo. The plots in the Lowlands are only about half as large as the Slope and Platon's plots. One explanation may be the higher land prices in the irrigated plain and the lack of cash availability for buying larger plots. Zuvekas' (1978) statement that Haitian farmers "often deliberately seek to have fragmented landholdings, particularly in different ecological zones, because this

FIGURE 5.7

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF RENTED PLOTS BY SIZE

TOTAL: 28 plots

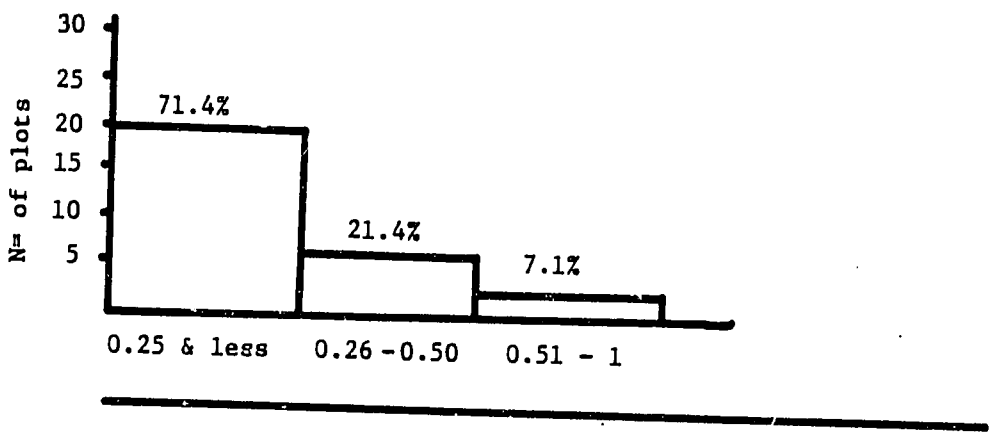


FIGURE 5.8

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF OWNED PLOTS BY SIZE

TOTAL: 83 plots

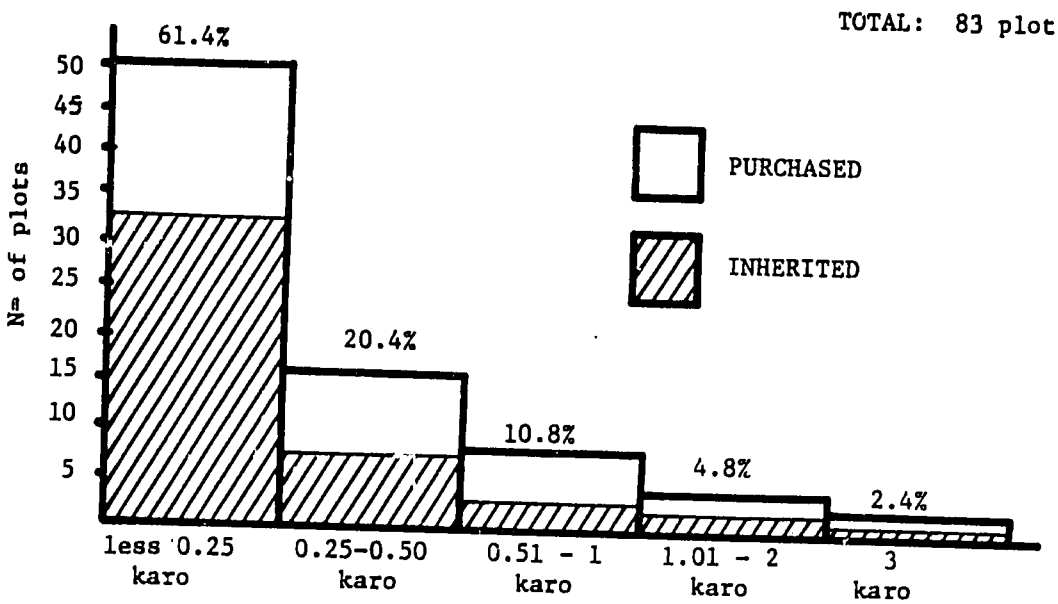


FIGURE 5.9

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF SHARECROPPED PLOTS BY SIZE

TOTAL: 18 plots

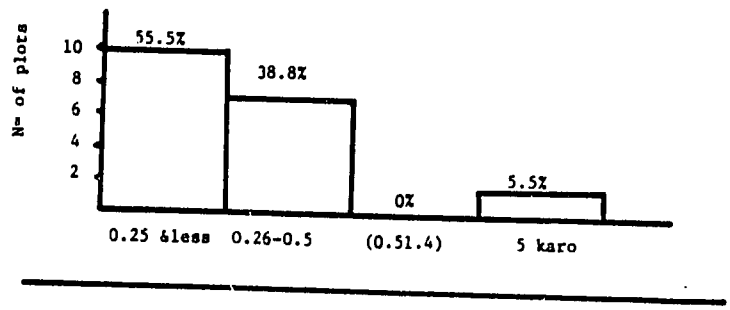


FIGURE 5.10

FREQUENCY & PERCENTAGE DISTRIBUTION OF

TOTAL NUMBER OF PLOTS BY SIZE

TOTAL: 129 plots

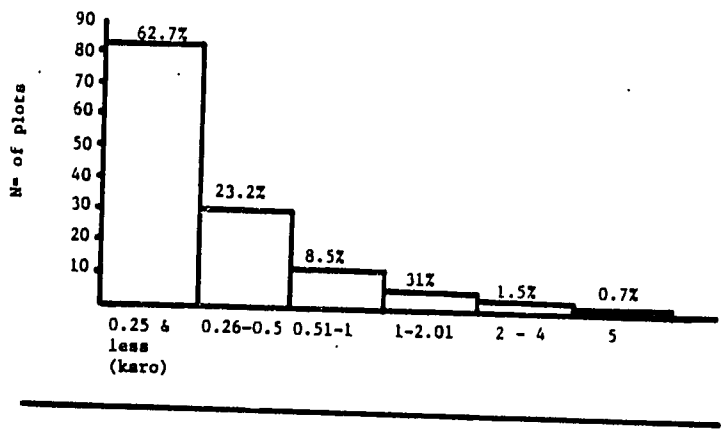
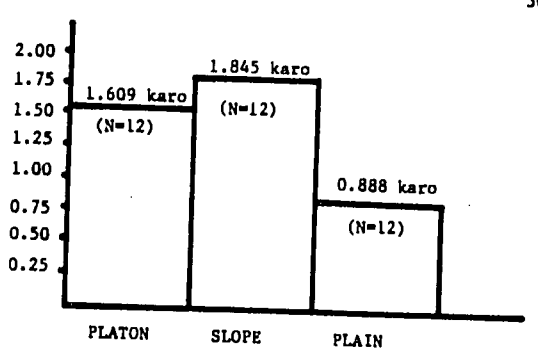


FIGURE 5.11

FREQUENCY DISTRIBUTION OF FARM SIZE

AVERAGE BY LOCATION

36 FARMS



provides some security against crop failure in any area" seems suspect. This might be a post facto explanation for not finding land close to their (farmers') houses. In the study area, each farmer's lands were in the same ecological zone even when fragmented.

Compared to other published estimates of Haitian holdings, the average 1.44 karo is high. Murray (1977) found 1.3 karo the average in the Cul-de-Sac. In Comhaire-Sylvain, the average size is 5 acres (1.8 karo), and in Simpson, the size is 3 to 6 acres (1.08 to 2.17 karo). It should be noted that in Murray's report (1977 pp. 208-209) he incorrectly converts his land holding at the rate of 1 karo equals 1.43 ha instead of 1.29 ha.

Within the Lowlands, rent for irrigated plots is almost twice the price of dry plots. Also, in the Lowlands more plots are rented than elsewhere. Out of 129 plots surveyed, 28 were rented, 17 in the Lowlands and 14 in irrigated areas. Irrigation is the only significant factor differentiating land sale prices. Irrigated land is 7 to 8 times more expensive than dry land, and jumped to an average of US$ 2,120 per karo in the 1980s (Figure 5.14). Palmer (1976: 147) found that in Belladère "renting is increasingly common as more and more farmers inherit impracticably small plots. At the same time, however, as land becomes scarce and more valuable, large landowners are more hesitant to put their properties up for rent." This can neither be confirmed nor denied for L'Acul based on results from our sample. The fact that in L'Acul River Basin the average size of all rented plots (0.24 karo) is smaller than the average size of all inherited plots (0.35 karo) would make the first part of Palmer's statement seem invalid for the area.

Land Security. Out of 129 plots, 35 (or 27.1%) were purchased. Not many authors mention comparable figures. Purchasing land implies to some form of relative wealth at one or another moment in life. Fifteen out of 36 farmers have purchased land: 5 in the Platons, 4 in the slope area, and 6 in the plain. Thus, there is no significant difference between sub-regions. It is interesting to note that land prices are higher in the Lowlands, especially for irrigated lands (Figure 5.12-5.14)

As mentioned earlier, many farmers purchase land from family members (inheritable land). One interpretation is that land is sold intergenerationnally (Murray 1977), and that the rituals, which are often performed for the dead, function as an intergenerational land circulating mechanism. Findings in Les Platons might confirm these findings. Farmers in Les Platons have the custom (at least ideally) of performing at least once in a lifetime an expensive ritual for the ancestors called devwa, literally "obligation". It consists of a Catholic mass by the local priest, a ritual by the local oungan (voodoo-priest), and a big meal, for which animals are killed. The price of such a ritual might run between $100 and $500. Often, in

FIGURE 5.12

FREQUENCY DISTRIBUTION OF PURCHASED

LAND PRICES (PER KARO) BY LOCATION

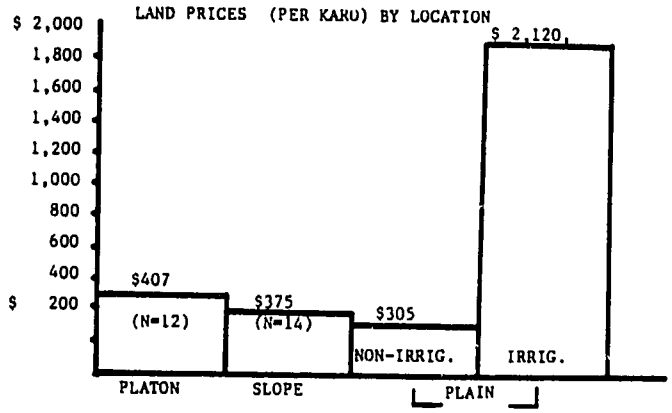


FIGURE 5.13

FREQUENCY DISTRIBUTION OF RENTED

LAND PRICES (per karo) (per year) BY LOCATION

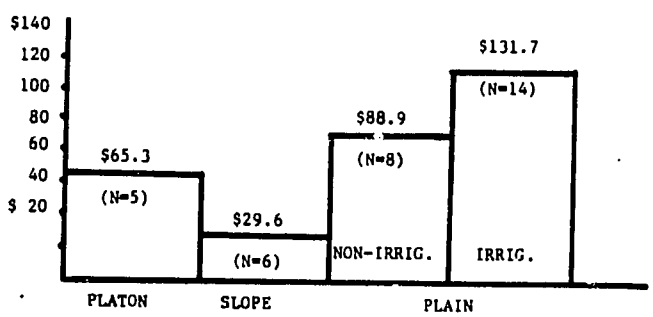


FIGURE 5.14

FREQUENCY DISTRIBUTION OF LAND PRICES (PURCHASED)

(BY DECADES) BY LOCATION ($ U.S.) (PER KARO)

Overall average per Karo	407.-	37.5	Irrig. 2,120.	Non-irr. 305.6
Before 1960	100.-	122.-	96.7	
1960-1969	-	408	367.-	
1970-1979	264	338	617.7	
1980+	563	-	2,640.-	
Location	Platon	Slope	Plain	

order to pay for this feast, people have to sell land. None of the respondents had yet performed their devwa. People tend to postpone this obligation until late in life. The devwa custom does not exist anymore in the Lowlands. People referred to it as vye koutim (old custom); vye has also a morally negative connotation ("only backward people do this"). Some people said they were Protestants and would not participate in this custom, but to the question if Protestantism was the cause of the custom's disappearance, it appears that it was not the only reason: "depi Janklod moun yo pi eklere" (Since Jean-Claude, people are more educated). On the slopes, devwa was also considered not to be fashionable but some people still perform it. One must make special mention of the custom of building tombs in gardens, a custom common in the South. It might just be a "folkloric custom," with no rational for it. But all tombs are built on family land, never on purchased or rented land. Thus, one can assume that the dead, symbolised by tombs, are perhaps at the core of the land tenure issue in L'Acul River Basin.

It does not appear that peasants feel very insecure about their land. The main complaints were that it is hard to buy or rent land. The land tenure security theme runs through most of the land tenure literature in Haiti; the threat of losing land seems to be a slowly increasing pressure growing from generation to generation. The presence of tombs (kavo) on inherited land could carry two opposite symbolic meanings in relation to land security: (1) "This land belongs to my (extended) family, and should never go into hands of non-family buyers"; or (2) "There is a constant danger that this land will be lost for the family, so, this stone (kavo) and my eternal presence here will make it impossible for you, my progeny, to sell this land." Both seem to mean the same but the first way of formulating it, refers to true tenure security, while the second formulation expresses the fragility of ownership, and the lifelong fight of the ancestor for this piece of property.

Tenure and Location.. Figures 5.15 - 5.18 deal with the size of the total amount of land differentiated by type of tenure and location in the study area. Since there were less owned plots in the Lowlands, the highest total acreage of rented and sharecropped land is found there. The acreage of inherited land is almost the same as the acreage of the purchased plots (Figure 5.15). Much more land is owned, than is either rented and sharecropped (Figure 5.14); 35.75 karo are owned while 16.38 karo are rented or sharecropped.

Common to Haiti and existing in L'Acul Basin. mixed tenure is the dominant method of land holding; 15 farmers out of 36 did not work any land besides they owned (non-mixed tenure pattern of 44.4 percent), 7 in Les Platons, 4 in the Slopes, and 4 in the Lowlands. For the 19 other farmers, besides working their own inherited or purchased plots, 7 farmers also rent land (Platon 4, Slope 2, Lowlands 1), and 7 farmers both rent and sharecrop some land (Platon 1, Slope 3, Lowlands 3).

FIGURE 5.15

FREQUENTED & PERCENTAGE DISTRIBUTION OF

OWNED (INHERITED or PURCHASED) LAND BY LOCATION

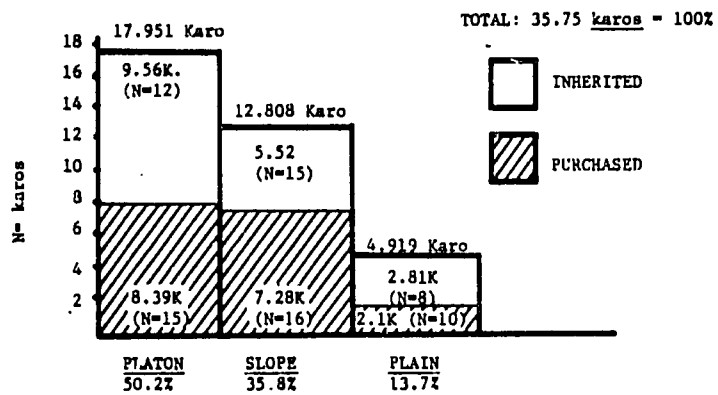


FIGURE 5.16

FREQUENCY & PERCENTAGE DISTRIBUTION

RENTED LAND BY LOCATION

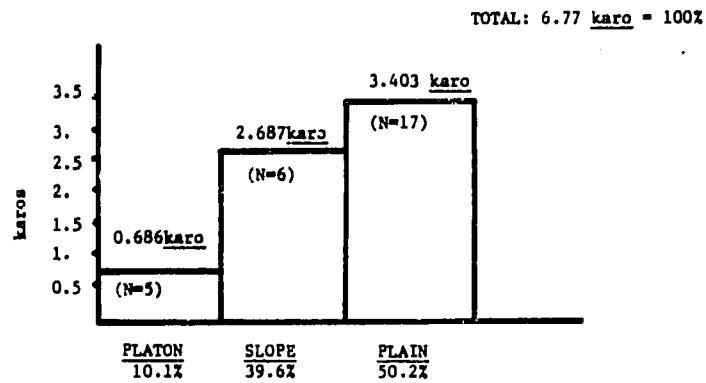


FIGURE 5.17

FREQUENCY & PERCENTAGE DISTRIBUTION

OF SHARECROPPED LAND BY LOCATION

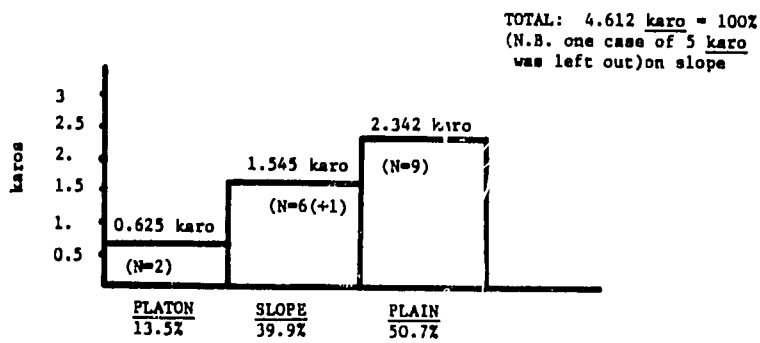


FIGURE 5.18

FREQUENCY DISTRIBUTION OF AVERAGE

PLOT SIZES BY LOCATION

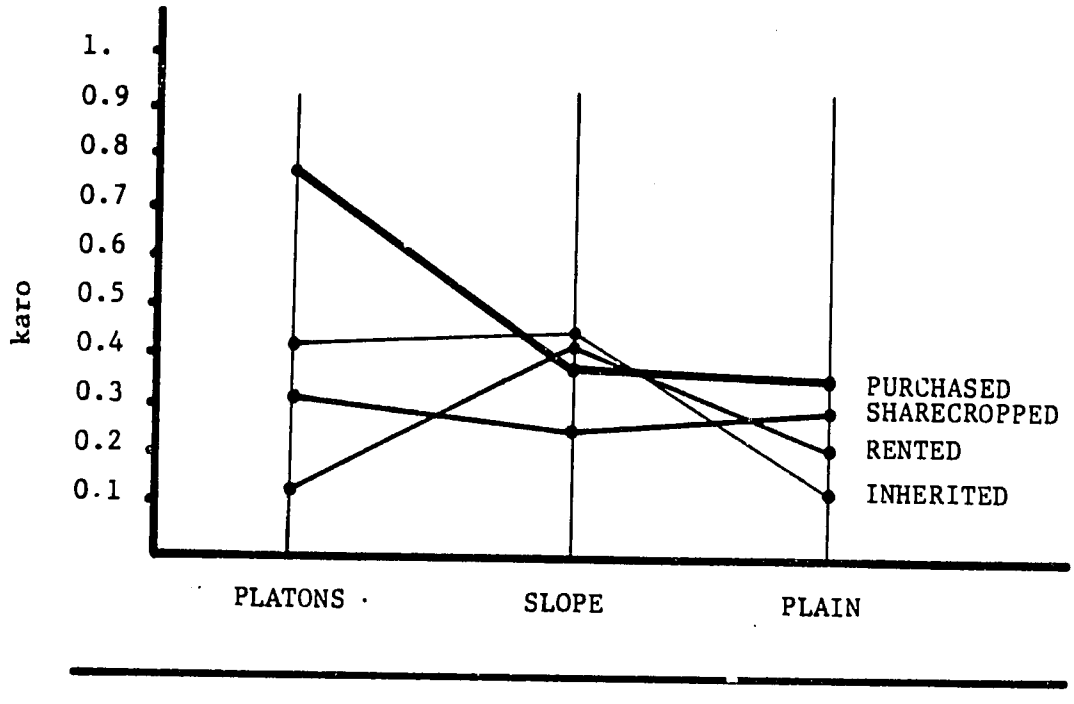
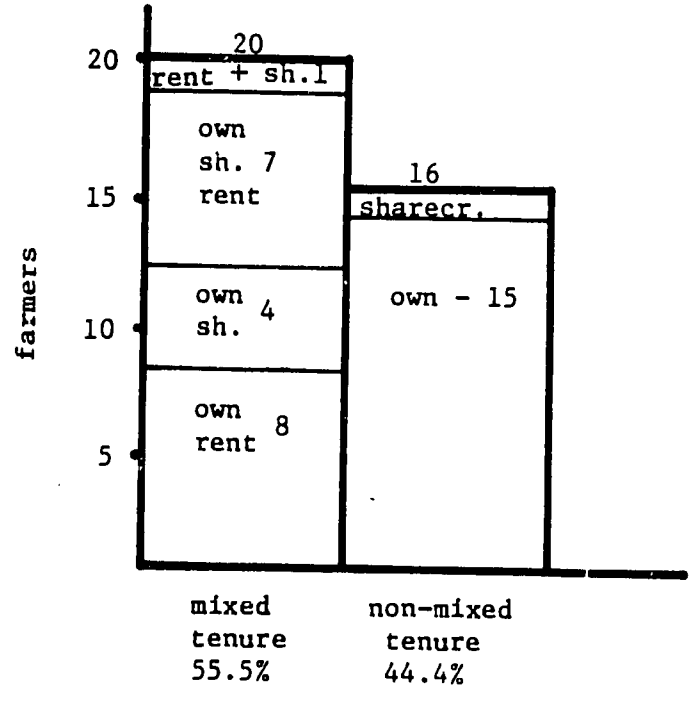


FIGURE 5.19

FREQUENCY & PERCENTAGE DISTRIBUTION OF

NUMBER OF FARMERS BY TYPE OF TENURE

TOTAL: 36 farmers



Of the 36 farmers, only 3 farmers did not own any land; two farmers both rented and sharecropped some plots, the other sharecropped only his cousin's 5 karo (Figure 5.19).

Thus, 20 farmers out of 36 (55.5 percent) work their land under mixed tenure conditions. In Smucker's northern research village "the modes of tenure ... is thoroughly mixed" (Smucker, 1982: 278). "The 1950 census does not provide any information on mixed tenure patterns" (Zuvekas 1978: 9). Only one farmer out of 36 had a tenant working on his land; he was ebenis, so besides his farm activity, he had also other cash income. Thus, one does not observe Murray's Cul-de-Sac pattern of sharecroppers, who give land out to others (38 percent), and of landlords, who have tenants working on their land, working as tenants on the land of others (60 percent); this illustrates the ambivalence of terms like "sharecropper, "owner" or "renter" (Murray 1977: 393) in other areas of Haiti. For L'Acul area, there is no such confusion in the surveyed sample.

In concluding the land tenure analysis of L'Acul River Basin, it is possible to make the following generalizations: (1) the regime of microproperty is the dominant pattern, and the majority of farmers are not capable of making a living on their own lands; (2) most farmers work under mixed tenure conditions; and (3) with an average farm size of 1.44 Karo, along with the risks of drought and crop failure, and the low productivity per plot, fundamental changes must be introduced in this area. These three generalizations apply only for the fields in Les Platons and Slope areas. Further studies are needed for the Lowlands area. Also the impact of large land holdings and ownership in the Lowlands ought to be studied.

5.4.2 Constraints On Agriculture

The following three aspects of land tenure need to be addressed in terms of their impact on the potential options for rural development. First, how do the size of land holdings affect the potential of co-ordinating rural development while improving the river basin's soil and hydrologic resource bases? Second, to what degree are the farm units fragmented? And third, what strategies are viable given the range of ownership/tenant categories?

Size of Land Holdings and Fragmentation of Farm Fields. Figure 5.11 illustrates the average farm size for Les Platons, Slope, and Lowland units. In a general manner the relative size of the farming units reflect the quality of the land. The lowlands, possessing the highest quality of land have the smallest ownership units. However this figure (0.89 karo) is biased toward underestimating the farm size, as no large landowners were part of our sample. Nevertheless, it is fair to state, that on the lowlands farm size is, on the

average smaller than in any of the other units. One explanation for the smaller plot size on the lowlands is that the higher productive lands command higher land prices. The lack of capital liquidity among the small farmers has resulted in the plot size being relatively small on the plain. On the Slopes and Platons, the lower productivity of these lands clearly requires a greater area to meet the demands of the farming unit. Yet given the relative quality of the lands, the size of farms on Les Platons indicate that the average Platons farmer has a greater agricultural potential than the Slope farmers.

From the perspective of farm size affecting rural development, in all cases the small nature of the land holdings in all of these units compounds the problems in developing an agricultural strategy. On the lowlands where irrigation is involved, the allocation of waters during periods of water shortage presents major policy decisions if equity is a consideration. Given the extremely small size of holdings, if water is withheld from any farmer, major financial losses will entail. Co-ordination and maintenance of the system is further complicated by the fragmentation of the land holdings. On the average, each lowland farm unit is comprized of 3 3/8 fields (average field size approximately 0.27 karo), none of which are necessarily contiguous to each other.

These same general properties exist on the Slope and Platons farms. On the slopes, the average size of a plot is 0.37 karo; and each farming unit on the Slopes is made-up of 5 fields. Les Platons unit appears to have the largest blocks of land. Here the average field size is 0.43 karo, with each farming unit on the average made of 3 7/10 fields. As on the lowlands, the fields of an individual farmer are not usually contiguous to each other.

Both the small size of the farming units as well as the dispersal of the fields compounds the problem of developing a strategy that will increase the agricultural returns from the fields while improving the quality of the resource. Unfortunately nature does not recognize the sovereignty of field boundaries. Thus to minimize erosional and runoff problems, it is necessary to co-ordinate all farming practices existing on the hillslope system. The actions of a farmer practicing good farming techniques could be completely negated by a farmer on the same hillslope system that ignores conservation. It is further complicated in Haiti due to the fragmentation of fields which results in such small parcels and in a multitude of owners farming parcels of lands juxtaposed to each other operating under numerous categories of tenure. This interrelation of farming units located in the same erosional depositional system (stream basin) has been legally recognized in the State of Iowa. A farmer in that State has the right to sue for damages occurring on his farmlands because of improper land use on another farmer's land.

Ownership/Tenancy Arrangements. As in other regions of the world, in the study area a strong relationship between the nature of land tenure and the degree of investment on the land may be observed (Table 5.2). As is expected intuitively, the ownership of land implies a relatively long-term time horizon; the land is a resource which, if maintained properly, will provide both food and income over a lifetime. The rental of land implies a medium-term time horizon. In the Cayes Plain Basin where land is generally rented in five year periods, often renewed, there is an incentive to preserve the land's productive capacity. Finally, sharecropping (deux-moitié) is associated with a relatively unstable form of land tenure. There is a definite disincentive to the expenditure of time and capital on the preservation of land that maybe utilized for a short-term.

Table 5.4 presents a summary of the ownership/tenancy arrangements for three of the four topographic units found in L'Acul River Basin. From the table it is clear that Les Platons unit has the most favorable land tenancy conditions in terms of incentives for the preservation of the land resource. Here 92 percent of the farmers cultivate lands of which they own at least some of their cropped lands. Fifty-four percent of Les Platons' farmers only cultivate lands that they own. Given this property along with the slightly larger land units found in this area, previously discussed, it appears the residents of Les Platons would be amenable to interventions that would improve the land and water resources of the area.

TABLE 5.4

Ownership/Tenancy Arrangement by Topographic Unit
(November - December 1983)

Land Farmed	Platons	Slopes	Lowlands
Owned Land Only	54%	36%	36%
Owned and Rented Land	30%	18%	36%
Owned and Sharecropped	8%	18%	8%
Rented and/or Share-cropped Land	8%	28%	28%

Conversely, the land unit that requires immediate interventions to arrest its rapidly deteriorating environmental situation, The Slope Unit, has apparently the least favorable land tenancy conditions. While ownership percentages of the land are identical for the Lowlands and Slopes (72%), the Slopes have the largest percentage of lands under sharecropping arrangements. Nevertheless, for L'Acul River Basin as a whole, it presents generally favorable land tenancy conditions for interventions. The overwhelming percentage of land in the basin is owner occupied, the group that should be most open to long term investment.

5.5 EXTRAPOLATING OF PRESENT AGRICULTURAL SITUATION

The preceeding portions of this chapter examined the interrelations between the physical and socio-economic domains in the Cayes Plain Basin. Within the Haitian context, it is the agricultural activities that most clearly manifest these interrelations. Throughout the life of a rural Haitian the direct links of the physical environment have life and death implications almost on a daily basis. As little slack exists in both the physical and socio-economic areas, whenever any component becomes stressed, the small farmers' low level of well being is placed in jeopardy. In the following two sections the likely outcomes of non-intervention in the existing rural framework are explored.

5.5.1 Land Resources

In each of the four topographic units within L'Acul River Basin, if the current situation is allowed to continue, the environmental situation will deteriorate in each unit. This will place ever increasing demands on the land resources. Because the topographic units are linked together via the river system network, the negative impacts occurring upstream will have a multiplier-like effect as they move downstream. Therefore the best lands from an agricultural perspective, the lowland Unit being located at the end of the system will experience most of the negative impacts of the deleterious events occurring upstream.

By extrapolating the existing trends into the future, unless interventions are introduced and become successful the following conditions in terms of the natural resources will likely occur:

1. The Igneous Highlands will become completely deforested. Runoff will increase; infiltration decrease. Soil erosion will remain a problem, and will likely become exacerbated.

2. Les Platons will experience local erosional deterioration. A gradual decline in land productivity and resulting lower yields will occur.

3. The Slopes will become non-productive except for the valley bottoms. The valley bottoms will become more susceptible to flooding making the area both less productive and more hazardous.

4. The non-irrigated lowlands will remain non-irrigated as less water will be available for irrigation. The currently irrigated lands will both decrease in areal extent as well as experience higher costs because:

   a. water supply will become more extreme. L'Acul's flow regime will fluctuate between torrents and trickles. Moderate flows will decrease in frequency and less waters will therefore be available for irrigation;

   b. Siltation will increase due to deterioration of upstream areas. This will result in high maintenance costs; and

   c. Actual destruction of irrigation works could occur as extreme hydrologic events (i.e. a discharge that today represents the 100 year flow) will become more common.

5. In all topographic units, the carrying capacity of the land for livestock will decrease as a need will exist to bring even more marginal land under cultivation. Thus only the extreme marginal lands will be available for grazing.

As it is easier to improve a degrading environment than to completely rehabilitate a degraded area, from the physical perspective, there is every reason to immediately begin the actions required to arrest the ongoing processes throughout the Cayes Plain Basin. The need for such immediate action is further strengthened when the socio-economic impacts of the current degrading system are examined.

5.5.2 Social Economic Implications

The physical degradation of land resources described in the previous section will have significant impacts upon the social and economic structure of the study area. These include:

1. A deteriorating level of food supply, both crops and livestock will occur. This will induce a decline in nutrition and health. Ultimately this will lower the productivity of the human resources in the area. In addition, a decreased food supply will create the necessity for the import of food, thereby creating "leakages" from the regional economy and diminishing its ability to retain the surplus value that has been generated.

2. The level of cash income from the marketing of products will be reduced. This will lead to a reduction in the range and quantity of goods and services that can be purchased, resulting in a lower quality of life. The impact of this income reduction will be amplified due to continuing inflationary trends in the world economy.

CHAPTER 6

THE INSTITUTIONAL CONTEXT

6.1 INTRODUCTION

Regional rural development programs necessarily depend, in practice, on the organizations and people through which such programs can be implemented and the institutional context within which the program activities operate.

This chapter will inventory and generally describe principal institutions that directly or indirectly affect rural development in the Cayes Plain Basin. For the purposes of this report, these institutions are classified as popular, governmental, or non-governmental. The term "institution" is used broadly to encompass agencies, organizations, officials, and a variety of permanent, semi-permanent or ad hoc groups. Limited time for field work did not permit a full inventory of the organizations and their activities, or an evaluation of their effectiveness. Discussion here focuses on the range of activities the groups or institutions are involved in, and their strengths and weaknesses insofar as regional agricultural development activities are concerned. As many institutions work on similar or common activities, discussion of different institutions will occasionally overlap. This chapter concludes with a brief discussion of the effects of land tenure on development options.

For purposes of discussion in this chapter, institutions will be referenced as follows:

6.2 Popular Institutions

6.2.1 Lakou
6.2.2 Coumbites and Escouads
6.2.3 Groupments
6.2.4 Irrigation Groups
6.2.5 Cooperatives
6.2.6 Community Action Councils

6.3 Government

6.3.1 Government Agencies
6.3.1.1 Agriculture
6.3.3.2 Plan
6.3.1.3 Public Works

6.3.1.4 National Education
6.3.1.5 Public Health and Population
6.3.1.6 Finance
6.3.1.7 Justice
6.3.1.8 Interior
6.3.1.9 IDAI
6.3.1.10 BCA
6.3.1.11 ONAAC
6.3.1.12 SNEM
6.3.1.13 SNEP
6.3.1.14 CORCOPLAN

6.3.2 Subnational government entities
6.3.2.1 Prefect
6.3.2.2 Mayor's Office

6.3.3 Other government or quasi-government
6.3.3.1 VSN
6.3.3.2 CONAJEC

6.4 Private organizations

6.4.1 Religious Organizations
6.4.1.1 Catholic organizations
6.4.1.2 Protestant organizations
6.4.2 Non-religious organizations
6.4.2.1 Pan American Development Foundation
6.4.2.2 Ateliers Agricoles et Ecoles de Camp Perrin
6.4.2.3 Interntl. Maize and Wheat Improvement Center
6.4.2.4 ASDEC nursery
6.4.3 Private sector
6.4.3.1 Comme Il Faut
6.4.3.2 FACOLEV
6.4.3.4 Other agroindustries
6.4.3.4 Credit institutions
6.4.3.5 Other citizens groups in Les Cayes

6.5 Land Tenure

6.2 POPULAR INSTITUTIONS

6.2.1 Lakous

The lakou, or extended family compound characterized by several houses and a yard, has long been considered the fundamental institution of rural Haitian society. In addition to being the central focus of family life, it serves a variety of other functions related directly or indirectly to agricultural development. It enables family members to recruit unpaid labor to assist them in assuring their common or separate subsistence. It provides an orderly system for access to land and its transfer between generations. Typically, it is the first

place family members will turn for credit to finance agricultural activites. Along with churches and voodoo groups, it serves as the primary transmitter of peasant culture and values. Lakous provide the education or training in agriculture received by most peasants who cannot attend school or participate in other training programs, and finance whatever formal education family members do receive. They provide for informal resolution of disputes not disruptive enough to warrant the attention of local authorities. Finally, the lakou provide for the support and care of aged peasants.

Since the lakou nurtures family continuity, solidarity, and security, it has not ordinarily been considered a vehicle for development (which must necessarily involve risk and change). Lakous have not been used in the past as a building block for larger planning or development efforts, as groupments, for example, have been used as the constituent groups of cooperatives or community action councils. This may, in part, have been true because of the lakous' diverse age and sex composition. It may also have been caused by reluctance to stimulate neighbors' jealousy by appearing to favor individual families rather than more broadly based groups. Furthermore, increasing population pressure on the land in the last few decades has undermined the lakou as a local institution. Schaedel (1962) noted the decline of family compounds in general, and Plotkin (1982) found the same true of the village of Ca Ira on the Southern Peninsula. Nevertheless, dispite their possible inappropriateness as a vehicle for development projects, the international dynamics of residential rural family groups retain a great deal of control over land use and tenure, they cannot be ignored in rural development planning. In a real sense, it is at the family level that law regarding land tenure in Haiti is administered. Moreover, it is primarily at this level that people adapt written and customary law by contractual relations to counteract the effects of parcel fragmentation.

6.2.2 Coumbites and Escouads

One of the historic rural institutions in Haiti is the reciprocal work group. Two of the most important types of reciprocal work groups are coumbites and escouads. Coumbites, described in detail by Herskovitz (1937), among others, are ad hoc groups of 20 to 125 men summoned by a farmer to work his land for a day or two at most. The task is usually preparing the ground, planting, or harvesting crops. Group members typically work together in rhythm to the sound of drums and often sing. Coumbite members contribute their labor in return for the food and clairin (alcohol distilled from sugar cane) provided by the host farmer at the end of the day. Although anyone who can bear the costs is free to call a coumbite, many observers considered coumbites more of a social activity organized to make tedious tasks an occasion for pleasure and celebration than a true form of labor or cooperative orgqanization (Sugier 1981). In the last fifty years, the custom of providing food for coumbite members has declined for several reasons (Erasmus 1952). Members' cash needs have grown. The advance

purchase and preparation of enough food for the many workers who might appear on a given day represents a relatively large expense. Also, farmers say coumbite members are unreliable about attendance, and are less efficient than paid labor.

Although coumbites are still common in Haiti, escouads are currently the more prevalent form of rural labor mobilization (Lundhal 1979: 114). Escouads may have a different historical source than coumbites. They are said to be based on a military unit of eight people in use at the time of Haitian independence. With a chief and seven to fifteen members, escouades are semi-permanent groups whose membership may change occasionally over time as one member leaves and another is taken in (Turcan 1975: 35).

In the Les Cayes region today, escouads are common. Interviews conducted in this study with thirty-six farmers in the plateau, slopes and plain areas of the l'Acul River Basin revealed that eight of eleven farmers in the Platons area, six of ten farmers in the slopes area, and eight of twelve farmers in the plain area had escouads working their gardens at some point during the year. Some of these farmers also hire individual wage labor paid either by the day (Journalier) or by the job (al la tache). By comparison with coumbites, escouad members are usually paid cash for a day's labor and the host farmer provides no food, although he may serve a little clairin.

Escouad members in the Platons area of l'Acul are paid in cash for work on members' lands, usually at a rate of 1.5 to 2 gourdes for a five hour day. In some cases, escouads work for farmers who are not members of their escouads. In platons, escouads charged non-members 50-100 percent more than they charged escouad members: 3 gourdes per five hour day, the same rate as day labor. Escouad members appear to have first right at performing paid labor on a member's land and conversely, an escouad member is generally obliged to work the land of other group members to remain eligible for their services. In some cases, however, farmers with off-farm jobs who are escouad members were able to hire day labor to replace them in their escouad groups, thereby preserving their access to labor at cheaper than market rates. In some escouads, members who participate actively have the right to one free day of labor from the escouad per month.

Like coumbites, escouads generally contain men only. We were told, however, that in the Platons area, at least, there were also occasionally female escouads whose members were paid 1.5 gourdes per five hour day for what the men called easier work. Turcan (1975) also noted the existence of female escouads in the northern section of the southern peninsula. Our interview sample included several women farmers who said they had been unable to hire escouads, as they were not members. When they needed additional labor to work their gardens, they hired day labor at prevailing rates.

While they remain a viable local form of agricultural labor organization in the Cayes area, escouads may have limitations for development activities. Escouads generally have not been used by their members either as means of sharing information or experimenting with new agricultural methods or inputs, market corps or accululate group capital. Efforts in other areas in Haiti to base cooperatives on escouad type groups have been unsuccessful (Valles, 1968). However, observers such as Lundahl (1979: 114) consider escouads the precursor of the groupment model.

6.2.3 Groupments

The groupment is used here to refer to semi-permanent associations of farmers, usually in groups of six to thirty, who work together on certain activities. These groups are different in sponsorship and often in membership from the official community action councils or their component groupments communautaires.

Most of the recent literature on groupments in Haiti, particularly that by Lowenthal (1978, 1979) focuses on the classic type of groupment represented particularly by Papaye, Gros Morne and Grouppment Pilot projects in the North. Groupment advocates emphasized the viability of groupments as a peasant-focused approach to development that is an alternative to the more politicized community action councils.

With traditional community development, the groupment approach shares the goal of introducing change in rural communities through the participation of residents in the decision-making process. The primary difference is that in community development programs outsiders typically chose what development projects would be implemented by peasant groups. Peasants may have been consulted, but they were rarely allowed to determine on their own what projects to pursue. The groupment philosophy, on the other hand, is based primarily on self-development activities initiated by outside sources. Many groupment programs, such as Papaye and Gros Morne in the Central and Northern Haiti, stress that the groupments themselves must decide what should be done. Such groupments are encouraged to devote considerable time initially to self education and analysis of "conscientization" before engaging in any actual rural development or agricultural activities. In the Papaye tradition, for example, groupment members are encouarged to see themselves as capable of initiating, controlling, and financing their own development rather than as the ignorant, needy recipients of "development inputs" from others.

The accumulating surplus may then be used directly to increase crop returns to peasants. This can be done, for example, by using the funds to build storage for the crops. Storage reduces surplus flight in two ways. First, by conservation from parasite and rat damage, it increases the proportion of the crop that can actually be sold.

Second, it enables the farmers to avoid selling their crops at harvest time when prices are depressed by the volume of supply, allowing them to sell later when prices are better.

Groupment philosophy--along the Papaye and Gros Morne lines--strongly suggests that outside influences, other than basic animateur work to get the groupments going, should be restricted during the early groupment formation period. Groupments should not be told what is in their best interest, nor should they have an outside agency work with them to determine what it is that they want to do. Instead, they should decide for themselves. They can get advice and assistance from support staff if they request it. The initiative must come from farmers themselves or they will have less commitment either to continue the groupments or to make the projects themselves successful.

Given that cautionary beginning, several of these programs do introduce outside influences on groupment decisions once the groupments are underway, generally by control of available credit. When credit is to be given, to whom, for what purposes, and how much are important and delicate decisions. These decisions are not made by groupment members, but sometimes involve their participation. Some groupment movements allow credit to be available only to the groupments themselves, not to individuals, and only for groupment reinvestment projects. All members of the groupment must personally guarantee the loan. Poor peasants often have severe financial pressure at one point or another during the year, and consequently, to keep them from cashing in their groupment shares to pay for schooling or planting expenses, some of the sponsoring programs have made credit available to individuals. Each such loan, however, must be guaranteed by all members of the person's groupment.

The purpose for which the loans are given can obviously influence the activities of the groupments, though credit alone cannot force groupments to undertake activities they would not engage in otherwise. Some groupment priorities for credit use may not coincide with the priorities of donor agencies interested in rural development. Early groupment priorities, for example, will probably not be soil conservation investments.

In the Cayes area there are five principal types of groupments. The first is the general agricultural groupment. Similar to the classic type discussed above, the largest groupment effort--now including over 2000 members--was organized by the Developpement Communautaires Chretiens d'Haiti (DCCH) Center at Laborde in the Ravine du Sud area. These groupments' focus is self-help with gradual provision of outside capital assistance in a variety of forms, but not credit (Tables 6.1, 6.2 and 6.3).

TABLE 6.1

DCCH/CARITAS AFFICIATED GROUPMENTS IN CAYES PLAIN BASIN 1982-83

Parish	Number of Groupments	Number of Women's Clubs
Laborde	50	8
Camp Perrin	17	-
Chantal	3	-
Ducis	10	1
Lagaudray	2	2
TOTAL	82	11

TABLE 6.2

DCCH/CARITAS LAND FARMED BY GROUPMENTS[1]

Locality	Owned	Rented	Sharecropped
Laborde	8	10	2
Camp Perrin	-	2	-
Chantal	-	2/16	-
Ducis	-	1 1/16	-
Maniche	-	2 1/2	1
Sacre Coeur	8/16	4 10/16	4/16
TOTAL	8.5	20.3	3.6

[1]This chart only includes land in the Cayes Plain Basin that is owned, rented or sharecropped in the name of the Diocesis of Les Cayes and made available for groupment use. All land figures are given in Carreaux (1 carreau equals 3.19 acred).

TABLE 6.3

DCCH/CARITAS Groupment Investments in Cayes Plain Basin as of 1983

Locality	Scales	Silo	Plow & Oxen	Store	Cart	Corn Mill	Pump	Community Hall	Bull	Spring	Well	Tilapia Pond	DADF	Trees Planted: Coffee Trees	Trees Planted: Coconut Trees	Trees Planted: Fruit Trees
Laborde	1	7	8		3	1	11	5	1	7	11	1	60,000	10,000	15,000	500,000
Camp Perrin	1			1		1		3		2			15,000	3,000	60	
Maniche	1		10		1	2	12	8	1	12	2	1	60,000	10,000	7,200	5,000
Sacre Coeur		1	2				3			25	7					1,034
Ducis		2	1			1	2	3								
Torbeck																
Chantal										1						
Totals	3	10	21	1	4	5	28	19	2	47	20	2	135,000	23,000	22,260	506,034

The Laborde approach differs from the classic groupment approach, which it actually preceded, by its stress on "faith and development." Although DCCH has Catholic sponsorship it is not concerned with evangelical recruiting, but with using religion in a generic Christian sense as a motivating force. Religion also serves as a shared intellectual tradition between farmers. Animateurs often discuss current group problems in Biblical terms to remove the analysis from the level of petty bickering and jealousy often characteristic of rural life and to get group members to focus on the important issues.

Apart from DCCH, a number of other priests or animateurs affiliated with them also have organized groupments for a variety of crop improvement activities. The Baptist Mission's Integrated Development program (IRD) uses an approach similar in many respects to that of DCCH. Its groupments, called Societes de Developpement Agricule, resemble DCCH in that they frequently include both Protestants and Catholics. The IRD also does not use credit.

A second type of groupment is the irrigation group, usually a spontaneously formed groupment concerned only with irrigation. These groups typically receive organizing and technical assistance from priests and engineers, as well as some financial assistance from non-group sources. Because of their major potential impact on irrigation infrastructure and thus agricultural production capacity in the area, irrigation groups are discussed in a separate section below.

A third type of groupment is the Societe de Credit Agricole, the kind that agricultural credit agencies, particularly IDAI and BCA (see discussion of each below), require applicants to form before they can receive financing. These groups exist primarily to ensure peer pressure to guarantee loan repayments as each member is held responsible for the loans to each other member. In some cases (see IDAI discussion below) the groups are also used as a basis for credit-connected extension activities. It is not clear, however, what other--if any--activities these groups engage in or whether they continue to operated in the absence of credit.

A fourth type of groupment is the PDAI type, organized by the program's agricultural extension agents around demonstration plots. Nearly all of these seem to have folded since the agricultural extension agents were laid off in the spring of 1983.

Independent, self-organized groupments are a fifth type. One such group of farmers on unirrigated land in the Jogue area of the Torbeck Plain, interveiwed in December, 1982, was saving money to rent a parcel of land to farm in common.

Time for research in the Cayes area was insufficient to assess the relative viability of various kinds of groupments, but several general impressions are worth investigating further. First, many of

the active groupments had been in existence for only a few years with the general exception of groupments organized by or working with church-related projects. Second, most groupments appear to rely significantly on the peasant organizers who either formed them or helped them develop. In some cases, withdrawal of these animateurs and their support was enough to render the groups inactive. Third, some previously active groupments in l'Acul River Basin were rendered inactive and suspicious of further participation in community projects as a result of their participation in certain PDAI activities for which they were not paid as fully as had been promised. The money earned by the groups for their communities through work on Day 4 of the PDAI 3-4-5-system amounting to between $18,000 and $20,000 has yet to be released for community projects. Fourth, in many cases groupment leaders could not read or write, which meant all training and information provided by animateurs or extension agents had to be oral. Few animateurs were also involved in literacy programs with the adults involved in the groupments. Fifth, many groupments and even cooperatives had problems with group funds. When the groups became inactive the leader in charge of the money often retained it. Few groupments actually had their funds in bank accounts.

Finally, groupments are not expected to be completely self-sustainable. Some, like those of DCCH whose animateurs are paid very little, have remained active even when the late DCCH director died several years ago and funding was terminated.

It is likely that groupments need some kind of institutional shelter and encouragement both to continue to exist and to expand their efforts. The varieties of institutional shelter currently available are either a large coordinated groupment structure like DCCH which has central coordination and support, or a federation of cooperatives like UNICORS (discussed in the Cooperatives section below). The Papaye and Gros Morne efforts provide the first kind of shelter.

As far as their relevance as institutions for implementing the regional development plan is concerned, groupments have several major advantages. They were often formed by local initiative and some are of long standing. Their members are experienced in working together for an ongoing development purpose. On the other hand, the groups were usually formed for single purposes determined by the groupment members and rarely, within the single groupment form, have branched into other activities. They may not be as committed to other development activities, soil conservation, for example, in any form other than occasional tree planting, despite the importance of such activities in the regional plan. Members of single purpose groupments may be willing to join other groupments for different purposes. This may, however, spread existing leadership too thin, and thereby unintentionally subvert autonomous group development. Such a situation would make it more attractive financially or otherwise for groupment members to participate in donor-sponsored activities than in their own groupments.

6.2.4 Irrigation Groups

Over the past ten years or so one of the more dynamic popular movements in the Cayes Plain Basin has been the organization of irrigation groups by farmers of irrigated or potentially irrigable land. They have organized such groups for a variety of reasons. First, farmers throughout the area are well aware that regular irrigation can not only protect them from losing their harvest during droughts, but will permit them to grow more financially rewarding crops. The spread of irrigated rice and tobacco in the Cayes Plain Basin in the last ten years has helped to accelerate this awareness. Second, the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR), which by law is responsible for controlling irrication (Code Rural Francois Duvalier 1963), with the exception of the PDAI Dubreuil Project and a few other limited activities, has been unable either to maintain or expand existing irrigation systems or build new ones. Farmers owning some 3278 hectares in eight different areas across the plain on unirrigated as well as irrigated land must pay water taxes (see Table 6.6) which are supposed to finance water allocation and canal maintenance. They receive, however, few such services. Many of the farmers have reached the conclusion that if their land is to be irrigated and remain irrigated, they must do it for themselves. They have been assisted in beginning to realize their objections by several groups and individuals.

Particularly active in helping farmer irrigation groups design and build irrigation systems, solicit outside technical help, and obtain financing have been the parish priest of Torbeck, an engineer from Torbeck working with the priest, the parish priest at Laborde who is also the director of Developpement Communautaires Chretiens d'Haiti (DCCH) and the Baptist Mission's Integrated Rural Development director, also an engineer.

The most important sources of financial help for such projects in recent years have been the Canadian International Development Agency (DIDA), CARITAS, the social action arm of the Catholic Church, the Federal Republic of Germany, and the USAID self-help fund, as well as a few private donations. It has, however, been the farmers' initiative and persistence that has mobilized these resources and farmers' labor and maintenance that have helped accomplish the tasks. Many of the area's irrigation systems had to be built and rebuilt over the years, as their usefulness was reduced by dams silting up, by inadequately maintained canals, and by hurricane destruction. As population pressure on the land increases and farmer income from the primary export crops in the area--sugar cane, coffee and vetiver--declines, farmers are more aware than ever that irrigation is critical and that regular and reliable irrigation depends on their initiative and cooperation.

In both the l'Acul and the Ravine du Sud River Basins, the Dubreuil system and the Canal D'Avezac, respectively, provide most of the existing irrigation: 100 hectares presently irrigated out of a planned 1000 for Dubreuil and 445 hectares out of a planned 3800 for the Canal D'Avezac. Between those two river basins, on the Torbeck and Cayes Plains, at least nineteen groups have organized irrigation systems which presently irrigate 367-385 hectares out of a potential 6822 in the Torbeck Plain as well as 245 hectares out of a potential 2655 in the Cayes Plain. Figure 6.4 describes the fourteen systems on the Torbeck plain and Table 6.5 describes the seven systems in the l'Acul and the Cayes Plain. Many of these systems are in the early stages of formation and for the lack of relatively small amounts of money have not yet been made operational. Most of the fourteen irrigation groups in the Torbeck plain were helped in their work by the priest of Torbeck and the engineer affiliated with him. The largest two projects in the Cayes Plain are being coordinated by the IRD's director. Rehabilitation of the entire Canal D'Avezac system is being managed by DCCH with German assistance. The only large system constructed or managed by a government agency is Dubreuil.

The nature of the irrigation groups and their level of organziation varies. In the Torbeck Plain most of the irrigation systems in question involve land belonging, with few exceptions, to small landowners. Five carreaux plots are considered large and there are said to be few of them. The irrigation groups have between 6 and 125 members. Most group members are small landowners living in the area who farm their own land.

In some cases sharecroppers also participate and are among the hardest workers. The Torbeck engineer estimates that 90 percent of the sharecroppers in a portion of the Torbeck plain are not from Torbeck, but from the slopes area of the l'Acul River basin or Port Salut on the coast where they could not make a living on their land. When the Torbeck irrigation groups are actually involved in an irrigation system construction project, they choose a council consisting of a president, secretary, and treasurer who are in charge of organizing the tasks and collecting money from members for the costs the irrigation groups must bear. Costs generally include payment of the topographer, masons and engineer, and sometimes include purchase of materials as well. The council is also responsible for organizing group members to do necessary maintenance. While group membership may at times be unstable, many of the groups have been in operation for five years or more, and in some areas the groups have expanded in size. In the Torbeck plain, irrigation groups rarely include members of the official community councils or members of the VSN, both of which are considered to be more active in politics than in development.

In the Cayes Plain, on the other hand, the two irrigation projects at Masse are being undertaken by the official community council presidents in the areas who own their own land. In one case,

TABLE 6:4 Irrigation Projects in the Torbeck Plain

Location	River	Maximum Flow (Liters/sec)	# Hectares potentially irrigable	# Hectares potentially irrigated	Group Membership	Type of Work Done	Sources and Types of Assistance	Year Work Done
Maillard	Torbeck	4,000 (180,000 at flood time)	2,000	-	125 (5 groups)	Dam Incomplete	SD, EA, B/D/AG, SEPPRN, D/Ag ACANU/CIDA $182,000	1982
						(to be proposed) Completional dams and canals	Estimated cost to make 2,000 hectares irrigable $200,000	?
						(to be proposed) Drainage system primary & secondary canals in masonery	Estimated cost to complete drainage system $500,000	?
Moreau/ Fonfiede	Moreau	2,000	1,200	100	10-45	headgate	D/Ag, JG White, SCRH	1946
						repairs	UN/EDAPS	1967-8
						(to be proposed) dam, headgates, new canals	SD/EA Estimated cost to irrigate 1200 hectares $300,000	?
						(to be proposed) drainage system	Estimated cost to complete drainage system $400,000	?
Bonacor	Lagaudry	?	800	-	?	headgate	CARITAS, D/Ag, FR	1980-81
Welsh	Welsh	627	500	75-80	30-40	dam, canals	UN/EDAPS, PC, D/Ag	1974
						masonery of part of main canal, bridge	SD, GJ, D/Ag CARITAS $5,000	1975-80
Charlette	Labathe	500	00	15-20	16	dam	UN/EDAPS	1974-5
						masonery 127 meters, flome	SD, GJ, EA, D/Ag CARITAS $3,000	
Lagaudray	Boury	342	350	8	18-27	headgate	No help	
						dam & masonery for several meters of main canal	EA USAID $8,000	To be done in 1984
Jogue	Jogue	?	300	100	?	headgate	SHADA	1950's
Guillerme/ Formon	Guillerme	?	300	8-9	?	headgate	SCIPA	1957
						small dam, masonery in most permeable areas of main canal	EA, SD, D/Ag CARITAS $5,000	1981
Praslin	Mineur	82	300	25-30	50	small dam	$1000 bequest from Canadian non; D/Ag-gabions, rocks, sand & gravel; SD, GJ, EA	1978
						2 distribution basins; masonery on main canal	SD, EA, D/Ag CARITAS - $1000	1981
Gaston	Simon	203	172	-	25	dam	USAID EA,D/Ag	1983

Irrigation Projects in the Torbeck Plain

Location	River	Maximum Flow (Liters/sec)	# Hectares potentially irrigable	# Hectares now irrigated	Group Membership	Type of Work Done	Sources and Types of Assistance	Year Work Done
Foscabe I	Foscabe Desiodieres	325	150	10-11	35	dam	SD, GJ, EA, D/Ag CARITAS - $7,000	1983
Foscabe II	Desiodieres	208	150	6-7	6	headgate	CARITAS	1981
Lafosse	Muscaden	328-425	150	-	?	dam & canals	EA Proposed to USAID $10,000	?
Poteau	Poteau	342-387	50	20	18-60	dam	SD, GJ UN/EDAPS $ from Canadian	1971
						masonery on 350 meters of main canal	USAID - $5,000, D/Ag	1983
Totals: 14 projects			6822	367-385				

NOTES TO FIGURE 6.4: IRRIGATION SYSTEMS IN THE TORBECK PLAIN

Information supplied November 1983 - January 1984 by Fritz Regis, Agricultural District; Smith Adonis, Agricultural District; Father Sony De'coste, parish priest of Torbeck; and Eric Armand, private engineer.

Maximum flow of rivers measured by Eric Armand, 1982 - 1983.

Initials refer to:

D/Ag - assistance from Agricultural District, usually permission and supervision of work by District's engineer, sometimes transport of materials on District truck.

B/D/Ag - bulldozer provided by Agricultural District; diesel and operator paid by irrigation groups.

GJ - topographic work by Guillaume Josephat, employed by Agricultural District but paid additionally by irrigation groups.

PC - engineering by Patrick Carriere, Agricultural District.

FR - technical assistance by Fritz Regis, Agricultural District.

SEPRRN - backhoe provided by SEPRRN (road repair unit of Public Works Department), diesel and operator paid by irrigation groups.

SD - soliciting of technical assistance and funds and project coordination by Father Sony De'coste.

EA - engineering by Eric Armand.

CARITAS - social action arm of the Catholic Church.

CIDA - Canadian International Development Agency.

TABLE 6.5: Irrigation Projects in the Acol and the Cayes Plain

Location	River	# hectares potentially irrigable	# hectares now irrigated	Group Membership	Type of Work Done	Sources and types of Assistance	Year Work Done
Dubreuil	Acul	1000	100-200	?	rehabilitation of canal system	USAID/DARNDR (PDAI)	1979-83
Canal D'Avezac	Ravine du Sud	3800	445	(see text)	Rehabilitation 25 km main canal 25 km secondaries and tertiaries distribution basins, etc.	Misereor - funding DCCH - management and executives	1983-?
Islet Masse	Masse	800	-	(87 people in 3 groupments)		USAID - $7000	1978-?
Oshiell Masse	Masse	1500	100	30		proposed	?
Maniche/ Desrodieres		115	45				
Melon/ Maniche		120	50				
Robert/ Maniche		120	50				
TOTALS		7455	790-890				

the community council president had for some time taken responsibility for organizing regular canal maintenance. He is now being assisted in soliciting funds for the system's rehabilitation by the director of one of the local banks, who owns one hectare in the area and who has acted as treasurer for the $1300 the group members, himself included, put up as their contribution for the project.

The Canal D'Avezac, a colonial system first build in 1770, was originally intended primarily to supply water power for colonial sugar mills but has been used for irrigation as well. Rehabilitating the 3800 hectare system and organizing the farmers in that area to participate in the rehabilitation and to form a water users association to administer and maintain it afterwards is the largest such undertaking in the entire Cayes Plain Basin. The rehabilitation work involves some 25 kilometers of main canal as well as the construction or reconstruction of another 25 kilometers of primary and secondary canals and distribution basins. It is being managed by DCCH with funding from the Federal Republic of Germany through the German Catholic group Misereor. In this case, although the need for the project had been apparent for a long time and the farmers in the area, large and small, felt it was esesential, the scale of the project required centralized initiative and coordination. Its sponsorship by DCCH and extensive negotiations with MARNDR were necessary before permission to work on the main canal itself was granted. The project was initially a joint DCCH-Agricultural District effort. Coordination difficulties, however, resulted in DCCH receiving permission from the Ministry to proceed with the project on its own.

In 1975, the Minister of Agriculture also gave DCCH the assurance that it would be allowed to organize a water users association which would in turn be allowed by MARNDR to take responsibility for maintaining the system. The project organizers, however, feel strongly that legislation is necessary to protect that right. Their draft version of regulations to authorize the Canal D'Avezac Water Users Association to manage the Canal is attached in Appendix A.

Engineering, technical assistance, and organization of the project are being done by a combination of German and privately retained Haitian technicians with the assistance of one young MARNDR agronome based at Levy Farm. Comments and suggestions from area farmers participating in the construction, however, are often used to adapt the project design during the construction phase. The construction and rehabilitation work on the main canal and the primary canals is being done by area residents organized through pre-existing DCCH groupments (see discussion under the heading of Groupments). Such people work for pay as teams under groupment leaders as contractors who are paid on a fee for task basis. It is at the level of the habitations, usually 40 to 400 hectares in size, however, that actual water distribution to farmlands will occur. Each habitation's residents are constructing the distrubtion basins which will control water allocation as their contribution to the system.

The project's philosophy is that farmers who have been involved in building and organizing a system will have a greater interest in maintaining it. Consequently, DCCH is organizing the water users association at the same time as its future members, the area's farmers, are helping to rebuild the system. The water users association, however, is being organized along different lines from the DCCH groupments whose members are involved in the project's construction. Groupments are voluntary associations of farmers interested in the groupment's activities. The project's organizers felt, though, that an irrigation system could not work properly unless all landowners in the area were involved. They were concerned that landowners who did not participate would interfere with regular water distribution by appropriating water for themselves when they saw fit. At present, since there are no effective syndicates regulating water distribution on the Canal D'Avezac, farmers needing water usually take it by force, a practice common throughout the area. This typically involves hiring five men with machetes for a period of three hours to build a temporary dam in one of the existing secondary canals, divert the water, guard the water during the diversion, and seal up the canal wall afterwards. This costs a landowner $10 each time water is needed, considerably more than the average farmer pays in annual water taxes. The project organizers were also concerned that several large landowners in the area with holdings of between 30 and 100 carreaux might not cooperate and thereby deter cooperation by the small farmers.

As a result, the system DCCH is organizing is comprehensive. To ascertain who should belong in each user group, they used aerial photos of the project area on a scale of 1:5000. From the photos they determined how land holdings within the project area were distributed, and then went to the areas to determine who owned the plots. When residents of certain areas showed little interest in joining the user groups, they were told they would then not be able to receive water at all. As a result, their attitude towards participation changed markedly for the better.

When completely organized, the Canal D'Avezac water users association will have three levels. At the habitation level will be approximately 110 user groups of 25 to 30 farmers, each representing ownership of 15 to 25 hectares. The user groups will be responsible for maintaining the system of water distribution in their areas. These user groups will each have presidents who will form some 23 subcommittees on an area basis. The subcommittees will in turn have presidents who will form a Central Committee of the Users of the Canal D'Avezac. The Central Committee, with the participation of one representative each from the Agricultural District, the diocesis of Les Cayes and DCCH/Misereor, will hire a system administrator who will organize and oversee water allocation and system maintenance. At present, 23 out of 110 user groups and 7 out of 25 subcommittees have been organized.

The project's organizers forsee using the present water tax structure to collect fees from members of the water users association to help finance necessary operations and maintenance. What fees will

be charged, however, and how they will be collected has not yet been determined. The only helpful precedent on water tax use by irrigation groups in the region is that of a 700 hectare area in Les Anglais on the western coast of the Southern peninsula, which is in the same Agricultural District as Canal D'Anglais. The landowners in that area who have an average of 5 hectares each are trying a new system of irrigating grain. They recently persuaded MARNDR to allow them a four year moratorium on payment of water taxes while they attempted to demonstrate that they can manage their irrigation system adequately themselves.

The Canal D'Avezac project is at least a year from completion. To date, things are proceeding well. Landowners in the area have not always worked well together in the past. Once the rehabilitation project was underway, however, the level of cooperation and interest from large and small landowners has generally been good. The presence of a major Comme Il Faut tobacco contract grower project in the area currently covering 160 hectares probably also encourages cooperation as tobacco is the area's most lucrative crop and one highly dependent on regular irrigation.

6.2.5 Cooperatives

There have been cooperatives in Haiti since 1937. The Conseil National de la Cooperation (CNC) was formed in 1953, received legal status in 1960, and was placed in the office of the Presidency in 1974 (Wolf and Jean-Julien 1978). In 1977 the CNC recognized the existence of a total of 40 cooperatives. The dominant type at that time was the marketing cooperative. There was a total of 21, twelve of which prepared and marketed coffee. There also were eight credit unions or caisses populaires and four agricultural production cooperatives.

Since 1975 the government has provided cooperatives with some technical assistance through MARNDR. Since 1979, however, it has also tightened control over the cooperatives through the CNC and is due to promulgate new legislation on cooperatives in February 1984.

Cooperatives are different from groupments in several ways. Generally, cooperatives are formed of two or more separate groupments, containing at least ten to fifteen members each. Independent groupments that intend, after a certain period of operation and experience, to join with other groupments to serve common functions are also known as pre-cooperatives. Under the present law, even pre-cooperatives have to be registered with the CND. As a practical matter, however, the CNC has not been interested in registering organizations as cooperatives or pre-cooperatives until they have survived their first two years of operation. The second usual distinction is that cooperatives require social capital in the form of cash contributions or group earnings retained for group use. The social capital, however, need not be a high proportion of cooperative funds. Sometimes the social capital involved is minimal and was contributed only to give a group the cooperative form.

In the Cayes Plain Basin there are 26 organizations that are known as cooperatives, according to the CNC representative for the area. Some are on a solid financial and organizational footing; others are virtually inactive. Some have more than 700 members; others are more like groupments in terms of size of membership. Many show the limiting characteristics Wolf and Jean-Julien noted in their 1978 study of cooperatives throughout Haiti: low social capital, outside subsidies and limited working capital. Some of the cooperatives were organized by local people without outside instigation. A good portion, however, were organized by people not native to the areas in which the cooperatives are located, generally animateurs, extension agents, or priests. Who provided the initiative for the formation of the cooperatives in the Cayes area will be discussed below as the different forms of cooperatives are described.

The cooperatives of the Cayes Plain Basin are of five general kinds: producer marketing cooperatives, agricultural production cooperatives, consumer cooperatives, service cooperatives, and credit unions.

Producer marketing cooperatives. In 1982-83 coffee marketing cooperatives accounted for 7.8 percent of Haitian coffee exports or 25-30,000 60 kilo sacks (Capital Consult 1983). There are two coffee marketing cooperatives in the Cayes area, both in the Ravine du Sud River Basin. One, known as CACVA, is over twenty years old and was formed and is still run by a former mayor of Camp Perrin who is a coffee grower himself. Also, between 1965 and 1983, CACVA distributed 333,000 coffee trees to its members. Another 117,000 coffee trees were planted in its area in recent years under a DARNDR-USAID program which paid planters a bonus for each tree planted.

The second coffee cooperative which has been marketing coffee for three years is made up of two groupments in Marceline and Beaumont and was organized by an animateur working for Laborde and OPRODEX, the national export promotion house. Both cooperatives provide members with a total price slightly higher--when the cooperative dividend is included--then that offered by local coffee speculators. Neither cooperative, however, has significantly interfered with the sources of supply of the largest coffee speculators in the area.

There is a third coffee cooperative entity which presently operates outside the Cayes Plain Basin, but which may become involved in the area in the next five to ten years. UNICORS is a federation of five coffee marketing cooperatives and two pre-cooperatives located on the western coast of the southern peninsula just west of the l'Acul River Basin. In 1982-83, UNICORS accounted for some 12,000 of the 25-30,000 sacks of coffee exported by the CNC-affiliated export house, CCH. On July 3, 1983, the President of Haiti said in a speech on cooperatives that UNICORS was a model for cooperatives.

The UNICORS cooperatives were built up over a period of eighteen years from groupments organized either spontaneously by local residents, or sponsored by the Oblate Fathers, who are the parish priests in those areas. Some of these cooperatives have now been exporting coffee regularly for the past five years.

Membership varies from cooperative to cooperative, but often is extensive. In one area, Rendel, there are 3000 cooperative members who, with their families, represent an estimated 15,000 of the 18,000 people in the area. Members bring their coffee to the cooperative where it is decorticated mechanically. They are then paid an initial price which is less than what is offered by some speculators. Some time after the coffee is sold they receive a cooperative divided which, together with the initial price, exceeds the speculator price.

Other than combating members' fondness for the borlette or lottery which was the impetus for one UNICORS cooperative's formation, breaking the control of the coffee speculators has been the central motivating force behind the success of UNICORS. In that, up to the present time, they have been successful. Several major speculators in the area have had to go out of business and several other powerful people who wanted to become speculators have been unable to do so. Other speculators who do continue to work the area, however, have to offer farmers at least the initial cooperative price. Sometimes these speculators even purchase coffee from cooperatives to fill their orders from exporters. While coffee preparation still represents the cooperatives' major activity, most of the UNICORS cooperatives have branched out into a variety of other enterprises. These include furniture and coffin making, livestock raising, stores for cloth and constructional materials, grain storage, corn milling, potable water, and seed and fertilizer banks. Although there may have been some initial subsidizing of new enterprises by others, each enterprise now constitutes its own division in the cooperative, has its own resources, sometimes grants or loans, is managed separately and is expected to close down if it cannot become self-supporting within a reasonable period of time.

In addition, the oblate Fathers believe the cooperatives needed a resource base to finance their administration, operation and future expansion. To begin to provide this, the Oblates bought land with donor grants or long term loans and transferred title to this land to the cooperatives when they were considered ready. Two of the cooperatives, for example, in Les Anglais and Rendel, have 181 and 419 carreaux of land, respectively. Most of this land is steep slopes, often denuded of trees. It is gradually being replanted in coffee trees interplanted with other trees or food crops. Future coffee sales from these lands are expected first to pay back the loans, and then to generate working capital for the cooperatives. In the meantime, rehabilitation work on the lands provides an opportunity for wage labor for cooperative members and lands not yet rehabilitated are available for farming by members under the cooperative's supervision.

Although the Oblates were, for a long time, actively involved in organizing the cooperatives, such organizing and oversight of cooperative management is now the task of UNICORS officials assisted by CCH staff. By their own description the Oblate priests have changed their role to that of trainer, consultant, program packager, and fundraiser. Some observers, however, feel that UNICORS still depend heavily on the continued presence and leadership of a few of the priests. Other critics believe the mistrust endemic in Haitian society will prevent cooperatives from becoming stable institutions. Strong leadership, then, whether initially from Haitian or non-Haitian priests, or later from Haitian cooperative officials, may be essential to make the cooperatives work.

One of the major difficulties coffee cooperatives have in expanding to include the poorest farmers is that the farmers' major cash flow crunches occur before their coffee crop is ready to harvest. July is one of the dry periods when few crops are ready to harvest. In October school begins and school fees must be paid. As a result, coffee speculators have traditionally been able to buy coffee crops a few months in advance for half their value at November or December harvest time. Such advance purchases amount to short term loans to the farmers involved at annual interest rates well above 200 percent, and account for much of the speculator profits on coffee. Few coffee cooperatives have internally generated funds sufficient to finance advance purchases from members at reasonable interest rates. Those cooperatives that have made advances to the poorest farmers often discovered the farmers ignored their obligation to the cooperative and sold their coffee to the speculators. As a result, cooperatives are trying various experiments to enable them to serve their poorest members. These include releasing the cooperative dividend in the dry season and investigating the formation of credit unions, or a variation, the Caisse Scholaire, a savings bank for school fees.

In addition to the coffee marketing cooperatives, there are a few fisherman's cooperatives in the Cayes area, some of which were organized by priests. They were not investigated by this study.

Agricultural production cooperatives. There are several varieties of agricultural production cooperatives in the area. The largest is an 600 member livestock raising cooperative afficiated with and organized by DCCH at Laborde. It is over ten years old and is said to be the largest of its kind in the country. It incorporates a traditional Haitian practice into a cooperative structure. The practice was for a person with a cow or pig to give the animal to another to care for. The owner had the right to the first calf or litter; the caretaker had the right to the second. In the case of cattle to be fattened, the value of each animal would be calculated, by weight if a scale was available, before it was given out to the caretaker. Later, when the animal was to be sold, its initial value would be subtracted from the sale price and the owner and caretaker would split the difference, with the owner also keeping the portion of the price attributable to the initial value. Such a system gives

people with little capital the chance to own or profit from livestock. In addition, there is also at least one cooperative for joint ownership of plows and oxen.

Consumer cooperatives. A third variety of cooperative functions as a group buying club, typically financed by regular contributions. Usually the item to be bought is fixed when the group organizes, but occasionally such a cooperative will buy a variety of items. Typical items include cement, tin roofing, fabric, milk, seeds, and fertilizer. Occasionally this form of cooperative also includes a savings club. In one case, members who wanted to buy tin roofing for their houses, because good vetiver thatch was scarce, contributed $10 a month into the group treasury. Once they had made the contributions for twelve months, the cooperative then purchased the tin roofing for them.

Service cooperatives. A fourth variety could be called service cooperatives. These are of three kinds: bakery, butcher, and potable water cooperatives. Bakery cooperatives were most common. Three were formed by PDAI agents in the l'Acul area, although all three are now inactive due to poor financial planning and management. There is an active butcher's cooperative less than a year old in Bascamp in the Ravine du Sud. It buys an animal a week with group funds, slaughters it, and sells the meat for local consumption. Usually it has sold out its weekly supply of meat by 10 a.m. the same day. Funds from meat sales replenish the cooperative treasury and are reused the following week.

The potable water system in Camp Perrin which was financed and organized by the Oblate Fathers was set up as a cooperative at the request of SNEP, the government agency in charge of potable water. It subsidizes the provision of water to an estimated 20,000 to 30,000 people by $2 per month charges for water hookups to a hundred individual homes.

Credit unions. There are two credit unions or caisses populaires in the Cayes Plain Basin, one in Camp Perrin and one in the town of Les Cayes. The Camp Perrin credit union has been in existence over ten years. Its treasurer is currently a local priest.

The credit union of Les Cayes is at present the largest independent credit union in the country and is considered one of the best run. Founded in 1949 by residents of Les Cayes, the Caisse Populaire's assets have grown over the years to a peak a few years ago of about $400,000. The CP now has a total of $262,818 in assets, about 24 percent of which is social capital and 63 percent of which are savings deposits (Sepetmber 30, 1983 balance sheet). The 1982-83 revenues of $26,008 exceeded administrative costs of $7,832 and a bad debt reserve of $3,574. The interest rate paid on deposits usually varies between 6 and 8 percent.

There are at present no other credit unions in the region although some areas are considering trying them, or the related form of the Caisse Scholaire, to encourage poeple to save money for their children's school expenses. Credit unions are, however, generally considered difficult to manage. Enforcement of loan repayments by litigation causes resentment. A prior incarnation of the Caisse Populaire of Camp Perrin dissolved when the treasurer died and it became apparent that he had spent the credit union's money. The resources of the Les Cayes credit union are kept in the local state and commercial banks.

There is a major debate in the literature and in practice over whether groupments or cooperatives are the best approach to peasant organizing and development. The Southern peninsula has both those approaches as exemplified by the work of DCCH at Laborde and UNICORS and the Oblate Fathers on the Western coast. The Laborde approach is to stay within the diocesan structure, avoid becoming a non-governmental organization, keep groups small and usually not form them into cooperatives. Under this approach decision-making is kept closer to group members and more under their control. It attracts less attention from potential predators who might attempt to influence the groups. The disadvantages are that a multiplicity of groups can be difficult to manage and coordinate. Moreover, the groupment approach, because of the small group size, cannot deal with the underlying issues that affect the rural farmer's terms of trade and how much of the value generated is kept. Groupments are generally too small to finance large scale storage, marketing or credit by themselves although DCCH and its groupments have made substantial investments in storage and milling capacity.

The other approach favored by UNICORS and the Oblates uses small groups such as groupments to form the bases of cooperatives. They do this for the following reasons. A bigger participation base unified under a common structure builds group strength and expands group options. Bigger units are easier to manage and supervise and can more easily develop a resource base and the capacity to attract donor funds to address major needs such as roads and equipment. Bigger units can more easily generate sources of credit internally. Finally, bigger units can more easily improve peasants' return on crops by direct marketing as well as by storage of both exports and locally consumed products. The disadvantages of this approach are that more complex structures are unquestionably more dependent on sophisticated leadership with levels of education and experience considerably different from that of the usual group member. Furthermore, complex structures, because of their size, may appear more of a threat to the powers that be and so invite either curtailment by regulation or price wars by particularly well-financed and well-placed competitors. Finally, structures large enough to affect marketing opportunities may be too large to permit effective peasant participation and may end up as structures that are cooperatives in form but are really operated by only a few people, even though for the benefit of the many.

6.2.5 Community Action Councils

The conseil d'action communautaire or community action council (CAC) movement which began in the 1950's as a grass roots political movement in various parts of the country has now evolved into a nationwide form of local representation. Most rural sections in Haiti now have CAC's. These are about 100-300 people in size and are formed from smaller groups called groupements communautaires. Currently under the supervision of ONAAC (Organisme National pour l'Alphabetization et Animation), the conseils represent the central government's effort to institutionalize local community movements and to provide acceptable channels through which community participation can be mobilized for regional or local projects.

As a general question, membership in the conseils is said to be fairly broad based although somewhat skewed towards the more educated and comparatively well to do end of the local social spectrum. Despite their apparent large membership and frequently sizeable attendance at periodic meetings, the conseils' affairs are commonly dominated by their executive committees who often comprise members of the local political and economic elite. Conseil leaders are also frequently local chefs de section or members of the VSN or CONAJEC groups.

CAC's in Haiti have been criticized by Lowenthal (1979) among others as one more vehicle for extending political control down to the habitation level, enhancing the positions of the already powerful at the expense of the poorer peasants and undermining peasant initiative by maintaining their dependence on outside funding sources. Under currently applicable law, priests, foreigners and government officials are excluded from membership in conseil executive committees. Such legislation is understandably designed to preclude certain kinds of outsider manipulation. Whether it prevents anti-development manipulation remains to be seen. Despite such criticisms, however, conseils do have their supporters who point out that many conseils have engaged in valuable road building, reforestation and irrigation projects and may well represent dynamic forces for development in their areas. Sometimes CAC's are successful especially because of the influence and connections of their leaders, not in spite of it, and the involvement of political oversight bodies in conseil activities is merely a fact of Haitian life that need not prevent all valuable activity.

In the Les Cayes area, some conseils appear to be run by people acknowledged as community leaders active in development for the people and others by leaders whose development priorities relate more to personal than to public interests. While a number of the CAC's in the Les Cayes area were at one point active in road building or other projects, many now seem to have few ongoing development activities and may be essentially inactive organizations waiting to be mobilized. Whether they would be suitable organizations to undertake development activities envisioned by this report would probably depend both on the kind of activity and the character of the individual conseil. Most

close observers in the Cayes area suggest that some conseils might be suitable for certain development projects but that such evaluations must be made carefully on a conseil by conseil basis. They stress that the CAC's in the area are in general not reliable institutions for implementing development activities though there are definitely exceptions to the rule.

One of the disadvantages of conseils as development institutions is that they have no regular funding apart from what is allotted to them for specific projects, nor do they have the legal authority to tax or collect funds from members, although conseils given legal recognition by ONAAC can receive funding directly from foreign donors. CAC's generally have not operated as savings or investment groups as have some of the groupments which enables them to generate resources for development internally. They also generally have not undertaken projects for whose long term maintenance and operation they are responsible but tend to be involved in more limited scope efforts such as road construction or repair or tree planting where they are used primarily as a means of mobilizing large quantities of labor.

6.3 GOVERNMENT INSTITUTIONS

6.3.1 Government agencies

6.3.1.1 Ministry of Agriculture, Natural Resources and Rural Development (MARNDR).

The relevant Agricultural District for the Cayes Plain Basin is the Agricultural District of Les Cayes whose office is located in the City of Les Cayes. Comprising an area larger than the Cayes Plain Basin itself as defined in this report, the District includes nine communes. Four communes--Cayes, Torbeck, Chantal and Camp Perrin--with their seventeen component rural sections represent most of the Cayes Plain Basin. The district also includes another five communes, most of whose territory is outside the Cayes Plain Basin proper: St Louis du Sud, Cavaillon, Maniche, Port Salut and St Jean du Sud. The part of the district within the Cayes Plain Basin proper is further subdivided into nine agences agricoles with suboffices at Levy Farm, Laborde, Chantal and Houck. The entire surface area covered by the district is between 1,000 and 1,250 square kilometers: 22,000 to 25,000 hectares of plain and 78,000 to 100,000 hectares of hills and mountains.

The district has five major activities: (1) agricultural research; (2) irrigation; (3) reforestation and soil conservation; (4) supplying agricultural inputs and (5) extension.

Agricultural research. The District includes Levy Farm, a former dairy farm about 25 hectares in size about fifteen kilometers north of the city of Les Cayes. The farm has been a MARNDR research station for many years although without electricity, operating pump, laboratory or library. It is principally occupied with testing new varieties of

cassava and beans and doing seed multiplication for local use of two corn varieties: LaMachina, introduced by CIMMYT, discussed later, and Chicken Corn. Local sales of the seeds provide the Farm with its only operating funds other than employee salaries which are paid by MARNDR or USAID. Although additional staff are nominally assigned to Levy farm, staff actively involved in the farm's activities include one U.S. agronomist, one experienced MARNDR agronomist, two 1983 graduates of the MARNDR agronomy school and four field workers who are not paid for periods as long as five months.

Irrigation. As mentioned in the "Irrigation Groups" discussion earlier, the Cayes Plain Basin includes at least twenty-one irrigation systems in various stages of completion: the Dubreuil and Canal D'Avezac systems, the fourteen projects in the Torbeck Plain (Table 6.4) and the five projects in the Cayes Plain (Table 6.5). In the last few years, the Agricultural District was actively involved only in the rehabilitation of the Dubreuil system, through the PDAI program (Projet de Developpement Agricole Integre), a joint MARNDR-USAID effort. When finished, the system should irrigate 1000 hectares. At present, Phase I of the project is 75 percent complete and farmers in the area, by their own work on the secondary canals, are able to irrigate perhaps 100 hectares. During the project construction period, despite plans to hire local labor, officials in charge of construction were said to have preferred to give jobs to outsiders who were friends or acquaintances.

Since the closing of the PDAI irrigation construction effort at Dubreuil in the spring of 1983, the Agricultural District has not had major responsibility for an irrigation construction project.

The other irrigation efforts active in the areas discussed in the "Irrigation Groups" section are being undertaken by farmer groups with the direction and support of the DCCH center at Laborde, the parish priest of Torbeck or the Baptist Mission's Integrated Rural Development program. The district's contribution to these efforts has been providing engineering or technical guidance, construction supervision, truck transport of cement and other materials and occasionally use of a bulldozer.

The Agricultural District is responsible as well for allocating water in existing systems and for doing maintenance and repairs on those systems. To finance such operations a water tax is levied on landowners in many irrigated areas (Table 6.6). The Agricultural District's water controller is responsible for preparing and updating the bills for water taxes. The Agricultural District submits the bills to the Bureau des Contributions (tax office) which collects the taxes. Water taxes are forwarded with all other taxes to the public treasury. An amount comparable to the water taxes collected from the Agricultural district is not, however, allocated to the District for maintenance and supervision.

TABLE 6.6

Estimated Water taxes assessed in Les Cayes Agricultural District (1)

Location	#hectares taxed	#hectares Agricultural District considers irrigated	Tax rate (gourdes/hectare)	Total estimated taxes per system (2)
In Cayes Plain Basin:				
Dubreuil	972	750	12.5	$2430
Canal D'Avezac	891	445	12.5	2228
Moreau/Fonfrède	700	139	9.6	1344
Maniche/Desrodières	200	50.36	12.5	500
Melon/Maniche	115	45	12.5	288
Robert/Maniche	120	50	12.5	300
Lacorrière/Torbeck	150	95	9.6	288
Jogue	130	65	9.6	250
	3278	1639.36		$7,628
Outside Cayes Plain Basin:				
St. Louis du Sud	200	96.6	9.6	$ 384
Les Anglais (3)	700	400-450	12.5	$1,750

(1) Information supplied by M. Smith Adonis, Water Controller, Agricultural District Les Cayes.

(2) These figures were not verified against the tax bills prepared by the Water Controller and given for collection to the Bureau Des Contributions or against the Bureau des Contributions' records of collections.

(3) There is a four-year moratorium on assessment of water taxes in this area.

The district's water controller is in charge of distribution of water and canal maintenance for the systems in the Cayes Plain Basin as well as for over four other systems in the district. For this purpose he has a staff of six syndics each of whom is in charge of one or two systems. By general consensus in the Cayes area, the water controller's staff does not do an adequate job of either supervision or maintenance. This is at least in part because they are underpaid, and lack vehicles and resources for operation and maintenance. Several of the syndics who try to do their jobs end up acting more like animateurs than irrigation system managers. In other areas of the country, syndics equally poorly supplied with government funds have used their positions to solicit additional fees from farmers and have provided needed maintenance on an off-budget basis. In Cayes, in the past, as in other areas of Haiti, however, some syndics have charged farmers who had already paid water taxes for water without providing necessary canal maintenance. At present, even the water distribution tasks frequently go undone and water allocation is determined mostly by individual initiative and power relations.

Reforestation and soil conservation. The district's reforestation and soil conservation efforts have been primarily associated with the PDAI project, and thus were confined to the Acul river basin and terminated in the spring of 1983 with the suspension of PDAI funding. Recent reports indicate that the PDAI Soil Conservation branch may have resumed some bench terracing activity in the upper reaches of the Acul River Basin.

The study team received some feedback on certain MARNDR reforestation efforts in the slopes area of the Acul river basin. Observers in the area suggested that although farmers planted the trees, they did not maintain them adequately for fear the state would then be entitled to come back and take the trees and perhaps the land as well.

Agricultural inputs. The district has been a major source of seeds and fertilizer to local farmers. Fertilizer, financed in large part by USAID counterpart funds, is imported in bulk from the Dominican Republic. In 1981-82, the district reported that it supplied farmers in the area with 2950 100 lb. sacks of 18-8-20-2zn fertilizer, 63500 lbs of ammonium sulfate and a ton of 46 percent urea. A variety of people in the area believe a significant quantity of this fertilizer was diverted by district officials and sold on the black market.

The district experience with seeds has also been problematic. Supplies often came late, did not germinate property and were not of the varieties preferred by local farmers. As a result the district is putting more emphasis on the use of Levy Farm as a local source for high quality seed.

Extension. The district's staff also work with various farmer groups organized by CAC's or private organizations. In perhaps the most successful part of the PDAI project, extension agents organized groupments in various places in the Acul river basin. They gave these groupments fertilizer, insecticides and seeds for one or two demonstration gardens per groupment. After the conclusion of the program, those farmers who could afford to follow the techniques showed them continued to do so. Those who could not continued their previous cultivation practices. The agents also organized three cooperatives previously mentioned--in Platons, Toro and Ducis--all of which became inactive after the extension agents were terminated when the project closed down.

One enduring result of the PDAI project has soured relations between the Agricultural District and community groups. The community council and church organized groupments which furnished labor for PDAI projects, as was mentioned above in the Groupments discussion, were never paid between $18,000 and $20,000 they had earned for community projects. As a result, even groupments that preexisted PDAI and were working well at that time subsequently became inactive. We were advised by a variety of people that the likelihood of cooperation from community councils or particularly the non-CAC affiliated groupments in future development efforts in the Acul will remain low so long as the funds earned by those groups remain unpaid.

Apart from PDAI with its extension staff, however, the district is generally not involved in organizing groupments themselves. The district's staff, nominally 104 people (as of 1981-82), principally features a district Agronomist, now also regional director, 9 other agronomists, 1 engineer, 8 agricultural agents, 3 forestry agents who both sell permits to cut wood and police illegal tree cutting (giving them the nickname in the Cayes area of agent de deboisement or deforestation agents), 10 veterinary assistants, 1 water controller and 6 syndics.

6.3.1.2 The Ministry of Plan.

The Ministry of Plan, which divides the country into four regions for planning purposes, has had a Regional Director of Plan for the Department of the South, based in Les Cayes, for several years. It was not, however, until the appointment in 1982 of the present regional director, who is an agronomist, and the addition of an engineer and an economist to the staff in 1983 that the office had the opportunity to do much work. An additional agronomist, statistician, cartographer and sociologist have also been promised.

The office completed initial documents for a regional plan in September 1983 and is now occupied with compiling supplementary data and assisting government agencies in the area in preparing project proposals, a task formerly undertaken only in the ministries in Port-au-Prince. The regional director also coordinates the monthly meetings of the regional CORCOPLAN (See description below).

6.3.1.3. Ministry of Public Works, Transport and Communication (TPTC)

TPTC is in charge of road maintenance and repairs in the area. It is staffed by a departmental engineer, a chief of road repair and two administrative staff with additional workers hired for specific jobs. Its principal activity in 1982-83 was maintaining the Cayes-Port Salut road which deteriorates rapidly with heavy rainfall. The Service d'Entretien Permanent du Reseau Routier National (SEPRRN), the road repair agency which was autonomous until November 1983 but which is again a unit of TPTC, has also been helpful to area irrigation groups by permitting them the use of its backhoe from time to time for the cost of the diesel and the operator's wage. For major road or bridge construction projects in the area, such as the three bridges over the Ravine du Sud, Torbeck and Acul rivers, only the first two of which were completed, the ministry contracts with private companies who are supervised by a team from the ministry's Port-au-Prince office.

6.3.1.4. Ministry of National Education.

Education in the area is provided by a variety of institutions and organizations with the Ministry of Education playing primarily an oversight and financing role, with the exception of a few state schools which it operates directly.

At the primary school level -- which includes children from six to eleven years of age in the towns and from six to fourteen or fifteen in the countryside -- there are 48 public establishments in the Cayes Plain Basin. These are schools built or maintained by religious or private groups whose teachers are paid by the Ministry of National Education. There are also another 61 private establishments or schools recognized by the state whose buildings and teaching staff are furnished by church or private groups. The number of children served by the Catholic church affiliated primary schools in the region was estimated by DCCH at 5,747 for 1982-83. Some of the primary schools have hot lunch programs which are all privately funded, usually by religious groups.

At the secondary school level, there is a Lycee National or state funded school in the City of Les Cayes with 731 students. There are also twelve other state recognized but privately financed secondary schools, called "colleges": ten in the city of Les Cayes with a total of 4,391 students and one each in Torbeck and Camp Perrin operated by priests which enroll 218 and 239 students respectively. Above the secondary school level, there is the Oblate Seminary at Camp Perrin and a School of Law in Les Cayes. There are only twelve Normaliens, graduates of post-baccalaureate teacher education programs, working in the entire Department of the South.

6.3.1.5 Ministry of Public Health and Population

In the Department of South as a whole there are said to be 70 doctors, 8 dentists, 58 nurses and 242 medical auxiliaries. In the Cayes area there are two state run hospitals--one each in the towns of

Les Cayes and Camp Perrin. This does not include the Baptist hospital, Bonne Fin, which, although located east of the Cayes Plain Basin, draws clientele from the area. There are six dispensaries run by the state and six run by religious organizations, one of each in Laborde, Camp Perrin, Maniche, Les Cayes, Ducis and Chantal. An additional eleven "antennae" or health outreach stations--three in Laborde, two in Camp Perrin, three in Maniche, one in Les Cayes and two in Ducis--are also operated by religious organizations.

6.3.1.6. Ministry of Finance

The Ministry of Finance is represented in the Cayes area by two divisions, the Bureau des Contributions or tax office and the Douane or customs house.

6.3.1.6.1. Bureau des Contributions

The Bureau des Contributions is in charge of collecting all taxes in the area which it transmits to the Public Treasury through the bureau's Port-au-Prince Office. These include the water taxes mentioned previously (see Table 6.6). The bureau is also responsible for leasing state land. A quick inspection of state land records in the Les Cayes office in December 1983, revealed the following estimated quantities of rural state land in the area:

Table 6.7

ESTIMATED RURAL STATE LAND IN THE CAYES PLAIN BASIN

Commune	Estimated number of hectares leased
Cayes	80
Camp Perrin	1,200
Chantal	585
Torbeck	130
Total:	1,995 hectares

Rural state land is leased on an annual basis for nominal fees. Elsewhere in Haiti lessees of rural state land frequently sublease the parcels at higher rents. We were unable to verify whether or not this occurs in the Cayes area. There are also a considerable number of state land plots in town, both in Les Cayes and in Camp Perrin, which are also leased to private parties by the Bureau des Contributions.

In its capacity as lessor of state land, the Bureau des Contributions also handles sales of state land. Lessees of state land for more than five years who are current on their annual rental payments and, in the case of rural land, have cultivated at least part of the land are entitled to apply for its purchase. The lessee writes a letter of request to the local bureau office which is forwarded to the Bureau headquarters in Port-au-Prince. If the Minister of Finance wishes to consider making the sale, a local commission in Les Cayes made up of the head of the Bureau des Contributions, the head of customs and the departmental engineer of the TPTC meets and determines a fair price which it submits to the Minister of Finance. If the Minister of Finance approves the price and the lessee makes the sum available the land is then sold. Bureau des Contributions staff indicated that the ministry rarely sold irrigated land but sold house plots fairly often. The bureau cannot revoke a lease so long as the lessee's payments are on time. Furthermore, when a lessee of state land dies, the right to rent it passes to the heirs. A lessee of state land who cannot buy the land from the state can, nevertheless, sell the right to rent it to a third party by a legal conveyance called an acte de cession. If the acte de cession is properly registered with the Bureau des Contributions, the bureau must accept the grantee as the new lessee unless, perhaps, the grantee is a foreigner.

Many plots of state land in the Cayes area have been rented for more than five years, many for more than twenty without subsequent purchase. This suggests that either purchase has been attempted and refused or the form of tenure is considered so secure that purchase is unnecessary.

In addition to its state land records, the Bureau des Contributions in Cayes maintains a register, begun in 1954, of private land sales or transfers in the area. These registers of sales supply the only official information, other than deeds and notary records, of land ownership in the area. The office maintains nothing that operates as a record of who has either legal title to or present possession of the land in the area. There is at present no program to do a cadastral survey for the Cayes area.

6.3.1.6.2 Customs House

The douane or customs house is responsible for assessing export and import taxes on commodities entering or leaving the country. When the port of Les Cayes was active, as late as the 1950's, the customs house did a lot of business as ships from the United States or Canada brought flour to Les Cayes and took back coffee. Since the opening of the Minoterie or state controlled flour mill north of Port-au-Prince in the late 1950's, however, and the associated high import taxes on flour, the customs house, like the port, has been relatively inactive. An estimated three quarters of the coffee shipped from the Les Cayes region, for example, is handled by speculators working for Port-au-Prince exporters and so does not go through the Cayes customs house.

In addition to his customs duties, the head of the douane in Les Cayes has operated for some time as the de facto representative of the Ministry of Finance in the area. In this capacity he is responsible, for example, for handling payroll advances for all government employees.

6.3.1.7. Ministry of Justice.

Courts in the area are organized at the commune and department levels. At the commune level are the tribunals de paix, presided over by juges de paix. Such courts have jurisdiction primarily over civil disputes. Land disputes are generally referred to the Tribunal Civil in Les Cayes, presided over by the Commissaire who is the president's representative in the area for judicial matters. Land disputes that cannot be resolved by the mediation of the Commissaire are referred to the civil courts. The commissaire is also present at many official meetings in the area such as those organizing voter registration procedures.

6.3.1.8. Ministry of the Interior.

The Ministry of the Interior oversees both civil and military administration in the area. Civil administration is handled by the prefect and the mayors while military administration is handled by the Army. The Army's installation in Les Cayes has the most imposing physical presence of any government entity in the region. Headed by a colonel, the army is responsible for providing for general security and operates both the urban and rural police. The rural police system, administered by chefs de section or chiefs of the rural sections, is a carry-over from pre-revolutionary times and from the long period when post-revolutionary Haiti had military rather than civilian governments. Appointed by the army head of the commune and confirmed by the President, the chef de section represents military authority in rural areas at the section level where no comparable civil authority exists. Outside cities or towns, the chef de section is the most important unit of local government administration. The chef de section has authority to hear disputes of all kinds, permit transfers of livestock and assign damages when livestock are caught foraging in other people's gardens. The chef de section's secretary, who usually handles the actual paperwork, also writes up rental agreements for land on request.

While the chef de section is a paid employee of the Army, his subordinates, the rural police, are often not paid a salary and thus receive compensation by retaining a portion, often half, of the fees they receive for various services performed for section residents. In one study in the Artibonite, the rural police included one of every 300 rural dwellers (Lahav, 1975). For a variety of reasons, rural police and particularly the chefs de section are rarely held accountable for injustices they cause local people. As Lahav notes, to become a chef de section requires in descending order of importance: wealth, family connections, residence in the section, literacy and reputation. As the chef's administrative and judicial roles are increasingly absorbed by

newly developing civil entities such as the juge de paix, and as the more literate people of the area seek more formalized or legal resolution of their problems, the role of the chef de section may be narrowing to one of simply preserving the rural public order.

The growth of community action councils and their use for development activities has also, to some extent, undermined the power of chefs de section since CAC officials often control access to benefits from development efforts.

6.3.1.9. The Institut de Developpement Agricole et Industriel (IDAI)

Until mid-January 1984 IDAI was an autonomous entity funded by the Interamerican Development Bank and governed by a board which included the Ministers of Agriculture and Commerce. Originally designed to serve medium and large sized firms that were oriented to capital intensive production, thirty percent of IDAI loans countrywide are now in the form of supervised credit to some 12,000 farmers of irrigated land.

The Cayes Branch of IDAI opened in 1981 and was the second most active branch in the country in 1982-83 after Gonaives in the Artibonite in terms of loan volume. The Cayes office made 20 percent of total IDAI small farmer loans or $122,780: 87 percent in cash and 13 percent in inputs (fertilizer and pesticides). The Cayes branch generally serves only irrigated areas in the Cayes plain including Aquin and Cavaillon which are outside the Cayes Plain Basin as defined by this report. The branch is, however, interested in making loans for the cultivation of crops such as coffee which are grown in the uplands but has yet to see much grower demand.

IDAI's client base in the Cayes area in general is approximately 1200 people including about 715 members of 83 groupments. Thirty-seven of these groupments representing 387 people are in the Cayes Plain Basin as defined by this report. IDAI focuses its lending on certain crops, particularly rice, beans, sugar cane, tomatoes, tobacco, legumes and corn. It makes loans to groupments, similar to the Societes Agricoles de Credit used by the Bureau de Credit Agricole (BCA) with loans guaranteed by group members as well as to a few individuals. Each loan involves some inputs in kind, fertilizer and pesticides in proportions that vary from crop to crop. IDAI also supplies farmer clients with technical assistance in cultivating their crops. Staff meet periodically with the groupments to discuss methods of fertilizing and cultivating crops, cleaning irrigation canals, fighting pests, building secondary roads as well as satisfying loan repayment procedures. In 1982-83 IDAI distributed 414.75 tons of a variety of fertilizers to members, as well as 24,068 pounds of pesticides. Loan repayment is due within the year, usually after the harvest. There are exceptions for plantains, sugar cane and livestock loans which can be due in three to five years. Loan volume for the principal crops and their repayment rates are shown in Table 6.8. Some IDAI clients for

TABLE 6.8: 1982-83 Extension of Credit in Cayes Plain Basin by IDAI

Crops	# clients seeking loans / # hectares	# clients seeking loans / # hectares	Loan Volume	Repayment Date
Rice*				
1982 - 1st crop	608/475	225/179	$54,980	94%
2nd crop	592/477	318/264	88,288	92%
1983 - 1st crop	418/333	253/207	63,972	53%
2nd crop	421/334	225/147	43,058	-
Corn				
1982	360/240	213/136	33,930	97%
1983	311/187	225/134	38,338	90%
Beans	373/261	233/164	58,154	95%
Tobacco	76/39	70/36	49,941	86%

*excluding St. Louis du Sud.

tobacco financing are also Comme Il Faut contractors partly because Comme Il Faut has more reliable sources of the necessary pesticides.

IDAI also extended credit to sugar cane growers. In 1981-82, it made loans of $9,518 to 110 clients with 350 hectares in cane. In 1982-83, it gave $5,000 in additional loans to 30 such clients and then stopped lending for cane on at least a temporary basis.

The small farmer office has two other functions. There is a cattle feeding program which encourages farmers to fatten cattle with rice and millet bran and heads of sugar cane. There is also a plow and oxen program through which IDAI has financed the purchase by 41 individuals of a plow and two oxen each at $125 per plow and $800 per trained ox team. Thirty-eight of these plows were locally made at the Ateliers Agricoles at Camp Perrin. Payment for the plows and oxen is due over a three year period.

IDAI also owns the Beurrerie du Sud or regional dairy which is operated by another autonomous government entity known as Service d'Equipement Nationale or SEN. It is also the proprietor of a local slaughter house, known as the Societe Anonyme de Boucherie, now leased to a Canadian. The Beurrerie had sales in 1981-82 of $295,775 and paid $107,100 to producers that year for milk. The slaughter house, several years ago, used to buy an average of 90 head of beef a week but is now down to an average of 45 head per week. In addition IDAI monitors rainfall in different sections of the Cayes Plain as well as market prices for major commodities in the five major markets in the area.

The IDAI small farmer loan office has a staff of four credit agents. IDAI also employs two agricultural technicians and nine agricultural monitors who live in the same areas as the farmer borrowers to supervise the loans. The survey in Chapter 5 revealed no IDAI borrowers in the Platons or slopes areas of the Acul, but three IDAI borrowers out of six respondents farming irrigated land in the plain who had received $200, $600 and $800 respectively.

In mid-January 1984, IDAI became the Banque Nationale de Developpement Agricole et Industriel. The president of its board is now the Minister of the Economy, Finance and Industry. Divesting BNDAI of its small farmer loan portfolio to allow it to focus on larger projects has been discussed. The small farmer loans may be moved to BCA where they would be administered under BCA's rules as non-supervised credit.

6.3.1.10 Bureau de Credit Agricole (BCA)

The Bureau de Credit Agricole was initially established in 1959 and lasted until 1965 to support USAID's integrated rural development programs of that period. At that time it did not focus on small farmers or on group-based lending. Revived in the late 1970's, the BCA, which is a semi-autonomous unit of MARNDR, is now one of the largest suppliers of rural credit in the country, particularly to

farmers outside irrigated areas. The Les Cayes branch is part of what is called the Les Cayes region which includes the entire Department of the South. BCA lending in the Cayes Plain Basin began in 1982 when the branch in Les Cayes was opened. The region's staff includes a regional director and a staff of 14, most of whom work outside the Cayes Plain Basin.

Loans are made to small groups of farmers known as Societes de Credit Agricole (SAC) of between seven to fifteen members each. In 1981-82, there were 15,000 such small farmers receiving BCA loans across Haiti (Poulin 1983). Each member in the SAC guarantees repayment by each other member and the group pressure involved has helped repayment rates. General criteria for lending include that each farmer cultivate one to five carreaux of land (though ownership of the land is unnecessary), have assets to repay, and be borrowing mostly to increase food crops. Other than that, the credit can be used as the borrower wishes and is considered unsupervised. The land tenure, labor and credit survey discussed in Chapter Five of this report revealed no BCA borrowers among thirty-six farmers in the Platons, slope and lowlands areas of the Acul River Basin.

For April 1, 1982-March 30, 1983, the Les Cayes Region had repayments of $66,204 on loans of $258,830. This was the lowest repayment rate for any BCA region in the country.

Presently the Les Cayes office, not the region, has about $110,000 of loans outstanding to about fifty groupments in the Cayes, Coteaux and Cavaillon areas. Loans to another twenty-two groupments are under consideration.

Table 6.9

1981-82 BCA LOANS FOR THE CAYES REGIONAL OFFICE(1)

Loan type	Loans Extended
Food crops	$188,314
Livestock	$133,940
Coffee	$ 16,344
Other	$ 5,000
Total:	$343,598

(1) These figures are not disagregated for the Cayes Plain Basin and include loans made throughout the Department of the South.

6.3.1.11 Office National d'Alphabetization et d'Action Communautaire (ONAAC)

ONAAC is an autonomous government agency created in 1971 and affiliated with the Ministry of National Education. It is in charge of animation, literacy, and oversight of the community action councils. In the Department of the South, there are 277 ONAAC moniteurs who are in charge of teaching literacy. They are paid only $30 each three months and have few materials. There are also at least 3 ONAAC agents doing animation work in the Ravine du Sud River basin at Laborde, Maniche and Camp Perrin.

6.3.1.12 Service Nationale pour les Endemies Majeures (SNEM)

SNEM is another autonomous organization affiliated with the Ministry of Public Health and Population. It has been primarily devoted to the eradication and control of malaria. Its office in Cayes has staff paid by USAID counterpart funds and equipment supplied by the World Bank and the Government of Haiti.

6.3.1.13 Service Nationale de l'Eau Potable (SNEP).

SNEP is the autonomous agency responsible for potable water. It is affiliated with the Department of Public Works. There are six potable water systems in the Cayes River Basin. Only the one for the City of Les Cayes, first constructed in 1927, is maintained by SNEP. The systems at Chantal, Ducis and Bereaud, Torbeck and Camp Perrin were financed and are maintained by priests or religious orders. POCHEP (Poste Communautaire d'Hygiene et d'Eau Potable), a World Bank funded project, plans to build nine potable water systems in the area: three in the Commune of Chantal and five in the Commune of Torbeck as well as one near Laborde. These systems will all be constructed by a private firm. SNEP supplies technical assistance in project design and some supervision but neither finances nor installs the piping.

6.3.1.14 Commission Regionale de Coordination et de Planification (CORCOPLAN)

On February 3, 1983, the Government of Haiti issued its new law on decentralization. The legislation established four regions of the country for planning purposes and provided an elaborate structure for interagency coordination at the regional and national levels.

In each region a Regional Coordinating and Planning Commission (Commission Regionale de Coordination et de Planification) or CORCOPLAN was authorized to work out a regional development strategy articulated by activities in the different sectors. This was to be done under the general guidance of a newly created National Commission for land management (Commission Nationale a l'Amenagement du Territoire). The National Commission includes the heads of nine ministries: Interior and National Defense, Plan, Public Works, Agriculture, Commerce and Industry, National Education, Public Health and Population, Finance and Economic Affairs and Justice. The Minister of Plan was established as the coordinator.

The role of the National Commission is to approve the General Plan for land management as well as regional plans and programs, coordinate related government decisions and oversee the adjustment of each department's activities to the common objectives of the different plans.

The authorized membership of the CORCOPLAN's reflects the membership of the National Commission at the regional level but is more inclusive. The legislation provides for the participation of the Regional Directors of the Ministerial Departments, the heads of autonomous organizations in the area--SNEP, SNEM, ONAAC, IDAI, Teleco, Electricite d'Haiti and Jeunesse et Sports--and the prefects and deputies of the region. The Regional Director of Plan is the Coordinator of the CORCOPLAN's activities with the authority to convene meetings.

All four CORCOPLAN's for the country were officially inaugurated in November 1983, including the one for the Department of the South which meets in the Les Cayes office of the Regional Director of Plan. It presently has thirty-one members: all the required members with the exception of a regional director for the Ministry of Finance and a regional director for Electricite d'Haiti who have yet to be named. The full body is expected to meet twice a year. Part of the Department of the South's CORCOPLAN, called the Technical Commission, is a working group of fifteen. It consists of all the CORCOPLAN members other than the five prefects and thirteen deputes. The Technical Commission has met once a month since November.

6.3.2. Subnational Government Entities

6.3.2.1. Prefect

The prefect is the appointed representative of the president for non-judicial issues at the arrondissement level and is usually a prominent local business or professional man. His role is that of dispute resolver and political overseer. If an area resident has a problem with a government agency he can take it up with the prefect. The prefect has the authority to convene a meeting with the local head of the agency and to address the issue. If the problem cannot be resolved at this level, the prefect can take the issue up to the Ministry of the Interior who can consult with other Ministry representatives in Port-au-Prince. The prefect is also present at all official functions but otherwise has no budget or control over public services and can give no orders to the local staff of ministries in charge of local services. A new prefect for Les Cayes was appointed during the period of this study, just prior to the elections for deputy.

6.3.2.2. Mayor's Office

The mayor's office is the only unit of civil government in Haiti at an intermediate level between the president and the people. There exists in Haiti nothing comparable to a state or provincial governor.

Each commune is administered by a mayor or magistrat who heads a communal commission of two assistant mayors. In the spring of 1983, there were free elections for mayor in Haiti for the first time in twenty-five years. Although the Cayes Plain Basin has a magistrat for each commune, the mayor of the Commune of Les Cayes is perhaps the most important, as he is effectively the mayor of the City of Les Cayes. The mayors' operating budgets are funded by the Ministry of the Interior, not by the taxes collected from the areas. Such budgets contain no funds for capital improvements and little for operations. For Les Cayes itself, for example, the budget pays the salaries of the mayor and the assistant mayors, seven clerks, and a few others in charge of cleaning the main city market, the beaches and the town parks.

The mayors are responsible for political administration, which includes voter registration and supervision of the elections for deputy on February 12, 1984, as well as organizing local festivals. In addition to its political and ceremonial functions, the mayor's office in Les Cayes is also responsible for collecting the town's garbage. Since it has no truck it must coordinate efforts with the departments of Public Health and Public Works and occasionally with the local sugar mill.

6.3.3 Other Government or Quasi-government Agencies

6.3.3.1 Volontaires pour la Securite Nationale (VSN)

The VSN, also known as the militia or the Tonton Macoutes, is an organization established by the late President Francois Duvalier in the late 1950's. It is a private security force loyal only to the president and intended to counteract the influence of the Army. It is made up of volunteers who are often poor rural and urban people, and is organized hierarchically on a habitation and commune basis with the Commandant of the VSN for the Cayes Plain Basin located in the city of Les Cayes. Although VSN members are supposed to be unpaid, some VSN officials are said to receive income from the Regie du Tabac and the President's private funds.

In the past, VSN members often appropriated the property of others as compensation to which they felt entitled and frequently harmed and harassed people as well. The level of abuse is said to have declined markedly under the present president. However, the ranks of the VSN have enlarged as the relatives or children of those previously persecuted by the VSN became VSN themselves in self-defense. As a result, in the Les Cayes area, VSN membership and representation on community councils is said to be high. In some cases, local VSN chiefs are respected community leaders who sometimes intervene to protect individuals from abuse by VSN members. There is no question, however, that across Haiti, both misappropriation of property by VSN and their persecution of individuals continues on some scale. In another area of Southern Haiti in the recent past, local VSN members misappropriated development project equipment as large as a bulldozer on the orders of higher level VSN officials for the officials' personal use. The

capacity of this organization to participate in the benefits of development activities, one way or another, and usually with impunity should not be underestimated.

6.3.3.2. Conseil National d'Action Jean Claudiste (CONAJEC)

CONAJEC is a national organization established by the current President in the 1970's which provides one more variation on the elaborate Haitian system of political checks and balances. CONAJEC operates as a club of the President for each commune whose members are usually notables, or important local people. Like the VSN which provides the President with a way to maintain communications with and control over the peasantry and urban population, CONAJEC provides a similar way of providing local notables with a direct line of communication to the President while providing some control in return. Ordinarily a local businessmen with a problem with a local agency or official must take his problem to the prefect and then to the Minister of the Interior. If the usual channels prove unsatisfying he may go through CONAJEC for more direct access to the President. CONAJEC clubs are also supposed to mediate disputes between the VSN and the community action councils and between the community action councils and the chefs de section. CONAJEC members are unpaid and in the Cayes area, at least, a number of the clubs are inactive.

6.4 PRIVATE ORGANIZATIONS

6.4.1. Religious Organizations

Two of the most important characteristics of priests and pastors active in development are their traditional status as authorities in Haitian rural life and their long attachment to the communities they serve. Their status as an authority allows them to intervene occasionally with official authorities on behalf of people in their areas, either to straighten out problems or to ask the authorities for permission or help with community projects. Depending on the priest or religious order, this capacity to intervene can operate at least up to the ministerial level. So long as the priests do not preach against the government from their pulpits, but attempt to resolve problems respectfully through official channels and are selective in their inquiries, their reasonable requests are usually listened to and often honored, if not at the local level, at the ministerial level. For this reason, rural Haitians with problems of various kinds are often just as likely to turn to their local priests for help as they are to go to the appropriate official authority.

The priests' and pastors' extended relationship to their communities, often of fifteen to thirty years' duration, is of value for other reasons. First of all they know the communities and the people well, and typically have a good sense of who respected leaders are. Second, the people in their areas have had a good chance to evaluate the priests or pastors in turn and assess their reliability and their capacity to deliver on promises. If such religious leaders are well respected, their influence with their communities is likely to be considerable and community members are likely to be willing to consider the religious leaders' suggestions.

6.4.1.1. Catholic Organizations.

The Roman Catholic Church is one of the oldest institutions in Haiti dating from the seventeenth century. Under the existing Concordat of 1860 between the Holy See and the Haitian Government, bishops are confirmed by the Pope from among candidates nominated by the President of Haiti. During Pope John Paul II's visit to Haiti in 1983 the government agreed to alter the Concordat to permit appointment of bishops directly by the Pope. Negotiations to conclude a new accord are now under way.

The diocesis of Les Cayes which embraces the southern section of the Department of the South includes thirty-eight parishes and fifty priests. The Cayes Plain Basin area as defined in this study encompasses parts of several parishes; Torbeck, Ducis and Chantal for the Acul river basin, Laborde, Camp Perrin and Maniche for the Ravine du Sud and Cathedral, Sacre Coeur and Lagaudray for the central rivers systems area. Each parish has a central church as well four to six chapels located throughout its area. Many of the chapels have sacristans who live nearby, some of whom are literate and community leaders as well. The Cayes Plain Basin also contains the Oblate Seminary at Mazenod established in the 1940's near Camp Perrin where a majority of Haitian priests and bishops have been educated.

Within the Cayes Plain Basin, priests carry out a variety of development activities with the consent of the bishop and financing obtained from a variety of sources. CARITAS, the social services arm of the Catholic church, whose diocesan director is the parish priest at Laborde, looks for funds from outside sources for development activities suggested by community groups and recommended by their parish priests. Such groups need not have all Catholic members. CARITAS and the Secours Catholique de France finance most of the diocesis's usual activities. Other sources of funds are Oxfam, the UN, the World Food Program and Catholic Relief Service as well as private donations or bequests. As CARITAS is considered an arm of the church, its activities are protected by the Concordat. It is not governed by the laws concerning non-governmental organizations. Under the Concordat, for example, the church can buy land for parish or community use that is immune from seizure by the state.

The priests in the diocesis belong to three orders: the Oblate Fathers of Mary Immaculate (Canadian, American and Haitian members), the Seculiers (French and Haitian) and the Redemptorists (Belgian). The largest of these orders both in Cayes and in Haiti, in general, is the Oblate Fathers. Currently the third largest Roman Catholic missionary order in the world after the Jesuits and the Dominican Fathers, the Oblates, who are Canadian-based, were first invited to Haiti in the 1940's when the government of the period was trying to break the power of the French clergy. The Jesuits were required by the Francois Duvalier government to leave Haiti in the 1960's. Since Vatican II, the Oblates have become gradually more active in

development activities (see discussion of UNICORS in "Cooperatives" section above). In 1980, the Oblate order became a registered non-governmental organization.

In addition to their pastoral work, most parish priests run primary schools, staffed frequently by nuns. The parish priest in Torbeck operates a secondary school as well as does the Oblate Seminary at Mazenod. An order of nuns called the Sisters of St. Francis of Assisi runs a livestock raising project in the Bereaud area of the Acul. They breed cattle and distribute the calves to area residents. Cattle for the project were donated by the Les Cayes Rotary Club.

A third important kind of religious-affiliated entity in the area, distinct both from CARITAS and the religious orders, is the Center at Laborde known as Developpement Communautaires Chretiens d'Haiti or DCCH. Founded in 1964 by a Haitian priest, the center was a major source of the community development movement in Haiti. The priest organized a large cooperative called SOLADEC whose members farmed land rented from one of the area's larger landowners. When the cooperative grew to about 400-500 members, the priest decided smaller groups could involve the farmers more actively in development. The cooperative was then broken up into groupments of 20-25 people each. A groupment based model is what the center relies on today though it has one large livestock raising cooperative with 800 members and a small coffee marketing cooperative. The groupments which now involve some 20-40 people each, both Catholic and Protestant, are organized by animateurs who are community members trained at the Laborde Center and return to their areas. The DCCH animateurs are thirteen in number: four at Laborde, four at Camp Perrin, four in Ducis and one in Fonfrede/Lagaudray. These animateurs are not considered to be professionals but community members with additional skills (see Tables 6.1, 6.2 and 6.3 for a summary of the groupments and their activities).

Because the parish has little money, and also to prevent animateurs from becoming a class of people who consider themselves better than other peasants, animateurs working for Laborde receive only $18 a month every three months. Additional remuneration is occasionally supplied in the form of encouragement for the animateur to remain in the community--a cistern for a house or a donkey. As a result, when funding is interrupted (as it was on the death in the late 1970's of the center's second director) most of the animateurs continued their work while the technicians working for the center stopped. As a practical matter, because the DCCH director is also the CARITAS diocesan director, many activities of DCCH and CARITAS are coordinated.

There is some debate both in the Cayes area and in peasant organizing circles elsewhere in Haiti about how peasant organizing or animation should be done. Some observers feel that at least some of the community people trained at Laborde often acquire the training more for the enhanced prestige involved and the access to jobs with private voluntary organizations it affords than because they are committed to peasant-empowering development activities. Such observers feel

animation training has less of a class-differentiating impact on the animateurs and the people they work with if actually done in the areas where animation is needed for several local leaders at a time rather than at a centralized location. Whatever the difference in opinion over the philosophy of rural development, the Laborde Center has been in continuous operation for twenty years under three different directors and has maintained the largest peasant organizing program in the region at a very low cost.

Many of the people trained at Laborde go on to positions of responsibility in other development programs in the region. The combination of an extended religious education at the Oblate Seminary of Mazenod and animation training at Laborde seems particularly valuable. Four of the five most respected extension agents/animateurs in the region had been religious brothers at Mazenod for six to twelve years each. After they left the seminary they were trained at Laborde. Although none are agronomes, they have in general been more successful than agronomes at working with peasant groups over sustained periods, particularly in remote areas not accessible by car.

Several priests in the area have also been active in potable water systems. As the SNEP section above noted, all the existing systems in the Cayes Plain Basin other than the one in the City of Les Cayes were established by priests and the committees or cooperatives which operate and finance their maintenance are priest organized.

An area of priest involvement that has been expanding recently is irrigation. The priests of Torbeck and Laborde have been particularly active in this regard. The activities they support were described above in the "Irrigation Groups" section (see also Tables 6.4 and 6.5). One of the local priests also acts as the Cayes area coordinator for food-for-work programs. Finally, the Catholic church is presently launching throughout Haiti a literacy drive for which the president has indicated his strong support. DCCH plans to be more active in literacy training in the Cayes area than it is at present.

6.4.1.2 Protestant organizations.

At least five Protestant denominations have churches in the Cayes Plain Basin. The largest of these are the Baptists, but there is also the Church of God and the Adventists, Methodists and Pentecostals. In general, the Protestant churches' interest in development is concentrated on schools and, secondarily, health care. Beyond that, in recent years, two Protestant sponsored development efforts in the Cayes area have focused on agriculture: the Baptist Mission's Integrated Rural Development program and the Concile des Eglises Evangelilques d'Haiti - Comite pour le Developpement et la Planification (CEEH-CODEPLA) program.

The Baptist Mission has been a presence in the Cayes area for about thirty years. Located north of Les Cayes in the central plain area where it owns over 25 hectares of land, it operates some of the best schools in the area as well as Bonne Fin, east of the Cayes Plain Basin, considered by many area residents to be the region's best hospital. In 1976, the mission began to sponsor an Integrated Rural Development Program serving three areas, one of which, Masse, is in the Cayes Plain Basin.

The IRD is currently funded mostly by the Canadian Agency for International Development and is run by a Haitian engineer native to the area. The program uses a groupment and animation approach similar to that of the Laborde Center. Its activities include reforestation, which reaches eight communities in the area and is funded by USAID through the Pan American Development Foundation (PADF), spring capping, soil conservation, crop improvement and animal husbandry. The program also recently completed the first stage of an irrigation system on the Islet/Masse branch of the Masse river which should eventually irrigate 800 hectares. This project was funded by the USAID self-help fund with labor supplied by local CAC members under the supervision of the project director. As with the Catholic organizations, the rural outreach program does not discourage non-Protestants from participating in its activities.

The CEEH-CODEPLA project was established two years ago at Tiverny in the Torbeck area. It emphasizes reforestation and goat raising, the latter under the supervision of the Christian Veterinary Mission. The project has bred Nubian bucks to sixty Haitian does which some twenty participating farmers purchase on terms from the program. Contrary to usual Haitian practice, the farmers must keep the goats penned and carry food and water to them. The project's associated reforestation program, sponsored by PADF, has unintentionally increased the success of the goat program. Farmers who have planted trees chastise their neighbors whose goats escape their pens to prevent the goats from eating the new seedlings.

Implications of the use of religious organizations for future development projects. The above description of religious organizations' activities does not compare on a performance basis the effectiveness of kinds of groupments, animateurs or types of development projects. Before planning to implement any development projects through such organizations a closer look at their activities would be in order.

From this review of the institutions active in development in the area, a few impressions stand out which are subject to verification by further research.

For a variety of reasons, church organizations and their affiliated animateurs may be well situated to carry out, with some assistance, certain agricultural development functions such as reforestation, crop and livestock improvement and, particularly,

peasant organizing. Their major assets are their long term presence in the area, good relations with local farmers and a flexible organization which appears to combine hierarchical coordination and protection with decentralized project initiation and implementation. In addition, religious organizations are used to approaching a variety of sources for funding. This makes them less dependent on any given source of funding and in a better position to be able to continue needed projects after their initial funding periods end.

Religious organizations are also accustomed to operating at very low funding levels. As a result, peasant participation which may be one of many components in other approaches is essential to their projects' survival. Consequently, they devote considerable energy to preventing farmer groupments or cooperatives and their related animateur efforts from becoming dependent for project success on outside sources of funds or technical assistance.

While using religious organizations to implement development activities has its advantages, it has potential constraints as well for certain kinds of donors. First, the level of sustainable community participation may be directly related to the churches' low funding levels. Consequently, increasing resource and salary levels significantly to make more sophisticated services available might have a disequilibrating effect, undermining the independence and initiative of animateurs and groupments who presently fund their projects substantially by their own efforts.

Second, one reason churches or church affiliated animateurs have been successful in peasant organizing throughout Haiti is that they are able to phase their organizing efforts according to the needs and readiness of the peasant communities. They do not, for example, expect farmers to devote much attention to group work or meetings during planting or harvest times. Organizing sustainable groups of farmers who do not, by virtue of being group members, immediately receive access to funds or resources, is no easy task. As was mentioned above in the discussion of Groupments, some of the most eminent peasant organizers in Haiti believe successful groupments must begin by developing their method of working together and generating activities internal to the group. Only later can resources be used well by groupments for development purposes. If such resources are made available too soon, groupments may be formed easily as a way of getting access to resources not as a way of cooperating to increase development possibilities. Once the resource supply dries up, the groupments will too. Consequently, church groups and related animateurs who have been successful in groupment formation may be reluctant to encourage use of the groups either as labor brigades or as channels for credit or resources if they feel such efforts will encourage excessive dependence on outside resources and subvert the groupments' own initiative.

Similarly, church organizations typically prefer working with funding sources which do not require forfeiture of program budget balances if not spent as quickly as projected, even if the funds

available from such sources are much smaller than those available from larger donors. They consider this principle particularly important to prevent animateurs from organizing groupments more rapidly than it takes to do the job right. As its organizers readily acknowledge, projects such as the Canal D'Avezac rehabilitation could be done faster by private contractors. The DCCH organizers, however, have intentionally chosen a slower process to permit the project to be done primarily with farmer labor and to permit the organizing of farmers into a water users' association at the same time.

Third, while both Protestant and Catholic church organizations frequently engage in similar activities, there is little general coordination between them and not a little distrust. In part this is due to some Catholic priests' perception that some Protestant groups encourage peasants to devote their energies to seeking salvation for the hereafter, rather than improving their lot in the present. Cooperation does exist on occasional basis such as the pastor and priest who both serve on the Ducis potable water system management committee or the professional working relationship between Protestant and Catholic engineers working with irrigation groups with their projects. In general, however, it would be unwise to expect a high degree of ecumenical spirit in the region.

Finally, the present quality of cooperation between religious organizations and government agencies, particularly the Agricultural District, depends to a considerable extent on the degree to which the religious organization's roles are complementary to the District's. Any major development effort in the region must carefully define those roles which the religious organizations and their associated groupments may play so as not to preempt the activities the Agricultural District has traditionally performed.

6.4.2. Non Religious Organizations

6.4.2.1. Pan American Development Foundation (PADF)

The Pan American Development Foundation is currently operating an agroforestry program in a number of areas in Haiti. Its four year grant from USAID began in the spring of 1982 and an extension is presently under consideration.

The project's aim is to interest farmers in reforestation as a commercial enterprise. To accomplish this, PADF funds sub-grantees or contractors to establish nurseries and distribute to farmers seedlings of fast-growing fuel wood trees which the farmers should be able to harvest in four years.

The PADF project in the Les Cayes area has worked through CAC's and religious organizations: DCCH at Laborde, CEEH-CODEPLA in Tiverny and the Baptist Mission's Integrated Development program at Bergeaud. Their experience with CAC's has been difficult and not many trees were planted as a result. The religious organizations have proven far more

effective. The IRD agroforestry program, also known as World Team, distributes trees to eight locations in the area. DCCH distributes to at least four parishes. CEEH's distribution zone is the Torbeck area.

To oversee these efforts, PADF has a resident forester in the Les Cayes area who is responsible for PADF reforestation efforts throughout the Department of the South.

6.4.2.2. Ateliers Agricoles and Ateliers Ecoles of Camp Perrin

For over five years there has been a series of Ateliers or workshops in Camp Perrin. The Ateliers produce handicrafts as well and plows, trailers, wheel barrows and hand tools for the local market. They also teach resident students how to make them and encourage these students to return to their areas and open similar tool making and artisanal enterprises. Some eleven such operations now exist, at least one of which is in Chantal in the Acul area. In the last year or so the Atelier's foundry business has increased as IDAI has begun financing three year loans for plows and oxen.

6.4.2.3 International Maize and Wheat Improvement Center (CIMMYT)

CIMMYT is an organization, based in Mexico, dedicated to the improvement of maize and wheat crops in the Third World. It has had a project in the Cayes Plain Basin for three years staffed by a resident anthropologist. His task is to encourage local farmers to try new varieties of maize--LaMachina 7827 and 7928--with and without a variety of fertilizers. He does this by supplying interested farmers with the seed and fertilizer and supervising test plots on their land next to plots of the traditional variety.

6.4.2.4. ASDEC Nursery

About seven years ago the Haitian coffee exporters' association (ASDEC) was criticized for failing to participate in reforestation efforts or encourage farmers to plant more coffee trees. As a result, the association purchased eleven hectares of gently sloping land near Camp Perrin, replanted four of the hectares with 2000 coffee trees per hectare interplanted with 120 fruit trees and established a demonstration nursery one hectare in size. The nursery can produce 200,000 to 500,000 coffee trees a year as well as coconut, orange and mango trees. The nursery distributes its seedlings each year to area farmers at no charge.

One of the largest local coffee speculators and a sometime exporter manages the project for ASDEC, which has run short of funds to complete the replanting effort and would like to see the property turned over to a private group interested in expanding coffee plantations in the area.

6.4.3. Private Sector

6.4.3.1. Comme Il Faut

Comme Il Faut (CIF) is a wholly owned Haitian subsidiary of a small United States tobacco company that has supplied cigarettes in Haiti for over fifty years. It makes most of the cigarettes sold on the Haitian market from a blend of three kinds of tobacco, one of which, Burley, is grown in Haiti.

To assure its Port-au-Prince factory of a supply of high quality local tobacco, Comme Il Faut has grown tobacco in four areas of Haiti including Les Cayes since the early seventies. For the past three years, it has run its tobacco program by contracts on about 300 hectares with some 580 local growers. In return for Comme Il Faut's land preparation by tractor, supplying of seed, fertilizer and pesticides at cost and supervision of cultivation, the growers supply the company with their complete harvest and are paid according to a preestablished schedule of prices for different quality leaves. CIF has had contracts in the Gerard area of the Ravine du Sud river basin in Cayes for several years: in 1982 for 250 hectares, in 1983 for 160 hectares and in 1984 for 153 hectares. The cutback in 1983 was due to a saturation of the Haitian market at current income levels combined with export difficulties. The company presently sells all the cigarettes it produces to the Regie de Tabac. The company is now, however, ready to begin exporting tobacco as well and expects to be able to do so profitably once the present glut on the world market abates.

There were once as many as one hundred and fifty CIF contract growers in the Les Cayes area but now there are only about sixty. Most contract growers plant the tobacco on their own or rented land, but CIF also leases thirty hectares from the area's largest landowner which it subleases to growers. The company prefers to deal with growers who have enough land to grow food crops in addition to the land they use for tobacco, although it makes a few exceptions for landless farmers it knows and considers hard working on the thirty hectare piece. The average CIF contract grower now cultivates, though may not own, four hectares, which makes him a medium sized farmer for the area. The company has its lawyer review the titles to all land on which its tobacco is cultivated before the contracts are signed. CIF has a staff of four field technicians who live in the Gerard area as well as one agronomist. After trying graduates of the Damien agronomy school, the company settled on training responsible community people with no formal agronomy education in a program it devised and now has a staff of field technicians it feels does good extension work. One particularly effective staff member used to be a teacher. Raises for field technicians are based in considerable part on the production levels achieved in the areas under their supervision.

By most accounts CIF has been responsible for teaching local farmers a sophisticated level of agricultural technique in a relatively brief period of time, with the effect of raising the incomes of participating farmers. One good crop of tobacco a year can net a

grower an average of $1,000/hectare in six months with a half year still available for other crops.

Because CIF is interested in keeping its best farmers in the program and building up their land to enhance the quality of future tobacco crops, it has also begun to assist contract farmers with the cultivation of their on-tobacco crops such as beans and corn, but has yet to do so on a contract basis.

6.4.3.2. FACOLEV

FACOLEV is a canning plant in the Cavaillon area just east of the Cayes Plain Basin where some 1800 hectares are potentially irrigable. The plant was built in 1976 by a major Haitian coffee exporter and agro-industrialist to supply tomato paste to the Haitian market. Its present capacity is 200,000 cases (48 8 oz. cans each) of tomato paste per year. Fifty percent of its sales have been of repackaged imported paste. The balance, however, has been made from tomatoes grown in Cavaillon and Les Cayes on 346 hectares, fifty of which FACOLEV owns, by 425 contract planters.

The plant does land preparation for the planters, supplies seeds, fertilizer and pesticides, supervises their use and also does some irrigation canal maintenance in the area. Over the last six years it has had increasing success in getting tomato farmers in the area to coordinate land use. In 1982 or 1983, FACOLEV purchased $770,000 worth of tomatoes in Cavaillon and says that tomato farmers in the area can net as much as $1,500 per hectare per tomato season. Last year, however, the plant closed down temporarily due to competition from contraband tomato paste imported duty-free by a well-placed Haitian agro-industrialist. FACOLEV plans to reopen in July 1984 but may focus on other vegetable crops for the export market.

6.4.3.3 Other agro-industries

In the 1970's, vetiver, a root whose oil is used as a perfume base, was the most important crop in the Cayes region. Vetiver occupied an estimated 4,000 hectares in the area and supplied twenty-one essential oil factories for an estimated annual contribution to the regional economy of some $6 to $7 million in 1975-76. In the late 1970's, the pricing policies of the newly established export board for essential oils (OCEAH) caused a massive decrease in production. As a result, despite a still strong world market for essential oils, half of the essential oils factories in the area are now closed and the contribution to the regional economy is now estimated at closer to $100,000 to $200,000 per year.

The major cash crop in the area is now sugar cane. The principal buyer is the sugar mill, Centrale Sucriere Dessalines, a private company owned primarily by Cuban-Americans in Miami. In 1982-83, the Centrale bought 135,145 tons of cane, an estimated 75 percent of the crop in the Cayes Plain Basin, for $1,757,000. Its facility, most of

whose equipment was second hand when purchased thirty years ago, has a capacity of 300,000 to 350,000 tons of cane. The Centrale, which sells all the sugar it produces to the Regie de Tabac, is unable to buy more cane from its estimated 4,000 suppliers who are expected to further decrease production in future years as they switch to cultivating more profitable crops. The Centrale provides plowing, planting and fertilizer to many of its suppliers and deducts these costs before paying for the cane.

The balance of the cane crop is bought by three larger distilleries and fifteen smaller ones, called guldives, which currently produce clairin for the regional market. The largest of the distilleries, owned by a local family that was one of the larger essential oil processors, is the only agro-industrial facility in the region other than FACOLEV with modern equipment.

The region's other principal crops--coffee, rice, beans, corn and tobacco--involve little centralized processing done in the Cayes area. There are, however, an estimated six coffee decorticaters and twenty-five corn or rice mills in the Cayes Plain Basin. Other agro-industries, the dairy and the slaughterhouse, were described in the IDAI section above.

One other agro-industrial resource in the area is a Port-au-Prince based firm called Agri-Supply, established in February 1983, which distributes fertilizer for the only Haitian fertilizer plant, Agricultural Services S.A. (ASSA), as well as imported seeds, pesticides, rodenticides and agricultural equipment. Last year it was the largest supplier of fertilizer to the Cayes area--approximately 600 tons--which represented 10 percent of its fertilizer volume. The bulk of its business is in the Artibonite (65 percent) and Kenscoff, Fermathe, Furcy and Seguin areas (12 percent collectively). It is the only fertilizer supplier in the Cayes area that analyzes soil samples brought in by individual farmers before recommending appropriate fertilizer, a service which is provided free. One of the partners belongs to the family that owns the modern distillery in Les Cayes.

6.4.3.4 Credit institutions

In addition to IDAI, BCA and the Caisse Populaire there are branches in Les Cayes of two national banks: the government bank, the Banque Nationale de Credit and a private bank, the Banque de l'Union Haitienne. Neither does much by way of agricultural lending to small farmers.

Another traditional form of credit in the area is advances to farmers from coffee speculators. As coffee prices have remained low, speculators have reduced these advances to farmers and appear to be making few such advances outside major coffee growing areas. None of the thirty-six farmers interviewed in the Acul river basin had gotten an advance on a crop in the last year from a coffee speculator. In the plain, the Centrale Dessalines helps ensure regular supplies of sugar

cane from its suppliers by advances which, for a typical two week period in November 1983, totaled $16,000 to 150 farmers of 221 hectares. None of the distilleries in the area presently extends credit on any scale.

The availability of credit throughout the Cayes Plain Basin is unevenly distributed with farmers of regularly irrigated land in the plain having best access and farmers in the uplands having virtually no access at all. The land tenure survey discussed in Chapter 5 revealed that in the Les Platons area eleven out of twelve respondents said they never borrowed money while two said this was so because they had no access to credit. Most indicated they were unsure if they could borrow whether they would be able to pay the money back.

In the slopes area of the Acul, three of nine respondents had loans - two were for between $20 and $50 from friends and one was an advance from a speculator, not on the farmer's own crop but to enable the farmer to buy coffee for the speculator from others, thus not actually a form of credit.

In the non irrigated area of the plain, five out of six respondents never received a loan; the one exception borrowed $20 from a friend with no conditions whatsoever. In the irrigated area, however, only two of six farmers never got a loan; three received cash from IDAI. Two of these also received fertilizer in kind from Comme Il Faut. The fourth said he had received $100 but did not state the source. The results of this brief survey do not reflect the prevalent pattern of indebtness Smucker (1983: 49) found among rural farmers but indicates that the higher risk and lower return nature of farming in the Platons and slopes area has limited both credit availability and credit use. Formal credit, including the BCA, thus favors the middle and upper peasant classes (Smucker, 1783: 47).

6.4.3.4 Other Citizens Groups in Les Cayes

There are several citizens groups in the City of Les Cayes. Perhaps the most active is the Rotary Club of Les Cayes which was established in 1979 by a group of local businessmen, professionals and officials. The club now has twenty-four members. It supplied the Sisters of St. Francis of Assisi at Bereaud with twenty head of cattle as breeding stock so they could raise and distribute calves to area farmers. Its major current project is financing the construction of a primary school in the rural area near St. Jean du Sud (South West of the Cayes Plain Basin) which will open in March 1984 after three years work and a total investment of $16,000 raised by the club members.

There are two lodges of Freemasons in town, one of which has a canteen which supplies free lunches to 100 primary school children. The Business and Professional Women's Club which has been in existence for several years, has over thirty members and and is working on establishing a centre d'acceuil or guest house for young women moving to town. In addition, a variety of women's and religious groups support four homes for the old and poor which house between 100 and 200 people.

Finally, a Haitian agronomist who worked in Africa for FAO for twenty years has recently retired to work his family's land near Les Cayes. He practices intensive rice farming and mango cultivation as well as cattle breeding and fattening and plans to open a school on his land in 1984 to teach local farmers improved cultivation practices.

6.5 LAND TENURE

As the Land Tenure section in Chapter 5 (Section 5.4) noted, land tenure patterns in the Acul area of the Cayes Plain Basin are in many ways characteristic of tenure patterns elsewhere in Haiti. An individual or family's holdings may include plots held in a variety of tenure arrangements, including owned land, rented land or sharecropped land, with each type of tenure having several sub-varieties. Peasants in the uplands usually farm more land and larger parcels then farmers in the plain (Duran: 1975). Because of increasing population pressure, few farmers can afford to leave their land in fallow.

Additional interviews in the plain not verified by analysis of notary records suggested that there are a number of large landholdings in the area but that the general description of the Cayes area as containing fewer very large holdings than the North may be correct. At least seventeen families or individuals own between 20 and 70 carreaux in the Cayes Plain while another four families or individuals have 100 to 350 carreaux, for an estimated total of approximately 2,000 hectares. Most of the large holdings are in sugar cane at the present time but in the last two years several of the larger owners have shifted to tobacco and rice.

A quick analysis of state land records (see Table 6.7) revealed 1,995 hectares of rural state land in the area, approximately 210 of which are in the plain.

Much attention in the literature has been devoted to land tenure security. This concern is expressed generally in three debates. First, do (or do not) the majority of farmers in Haiti alleging land ownership base their claim on a legally cognizable right. This right can derive either from a current legal title or from an ancestral deed known as a mere piece. Murray (1977) contends they do; others (Thome 1978) suggest they may not. Secondly, how is the willingness of farmers to make investments in their land (such as soil conservation measures, fertilizer, or improved crop varieties) related to land tenure patterns. Finally, how can farmers' land tenure security be increased so that they will invest and improve their land's productive capacity.

This study's land tenure survey in l'Acul can shed no additional light on the first issue as the interviewer did not ask the farmers to produce deeds for land they claimed to own. It is likely that nothing short of a full scale cadastral survey for the whole country with the accompanying decade or two of title litigation is apt to resolve the question if indeed it could.

The answer to the second issue is both simpler on its face and more complex. Farmers with legal title may be more likely to make improvements of various kinds on their land. Farmers who rent and sharecrop are certainly less likely to be interested in investments which reduce the land's return in the short run and yield benefits after their tenure is likely to terminate, as soil conservation measures almost invariably do (Murray 1979).

At a second level, the issue of investment probably has more to do with the degree of the farmer's economic marginality, the location of the land, the potential yield from the investment and the relationship between the land's owner and its cultivator than it does with the form of tenure or even holding size. An owner with legal right, if not individual title, to a plot of unirrigated land in the slopes area who has no surplus capital and no access to credit will be less likely to invest in fertilizers, pesticides or new seed varieties than a renter of even a smaller parcel of regularly irrigated land in the plain who may have access to formal credit and who may be aware of the high returns available to his neighbors who use improved cultivation practices. Similarly, some renters and sharecroppers have histories of long tenure (Riano-Serrano 1975).

The third question, how to increase land tenure security, is the most complex for a variety of reasons. First, land tenure laws are at present uniform nationwide, although there are some variations from region to region in patterns of customary law. Tenure patterns across the country, however, are not equally uniform; much larger private and state holdings are common in the north than in the south. Second, even privately held lands with legal titles are not equally secure throughout the country. In areas where the state has strategic interests, such as near the Peligre Dam, the state has taken land for the dam and lake area without adequate compensation to its owners. Third, legal title has not prevented the Haitian government on occasion from expropriating the property of political rivals as was done in the 1950's with the Dejoie family lands in the Acul area.

In other areas like the Artibonite where irrigation has significantly increased land values, traditional rights have often lost out in court proceedings to the claims of other parties with more resources and power. In other cases, where there were no land grabs as such, people aware of the future impact of an irrigation project in the area have quietly acquired land from less well informed owners at unirrigated prices plus a premium to induce the owners to sell. Whether this took place in the Dubreuil area of the Acul is not clear and should be investigated. It is also rumored to have happened in the Cavaillon area just east of the Cayes Plain Basin.

A second issue is that what improves land tenure security for the individual farmer may be different from what maintains land tenure security for the poor farmer class. The usual Anglo-American form of high tenure security involves a recorded deed based on clear legal title and a land survey to properly establish plot boundaries. Such a

title also makes the land easy to alienate. If a powerful man with resources wants to acquire land in a newly irrigated or soon to be irrigated area, it may be easier for him to buy plots from individuals with legal titles than from families whose land is undivided inherited land. In the first case, ownership of the land is subsequently lost to the small farmer class, though an individual small farmer and his immediate family might initially benefit. In the latter case, the individual initially does not benefit, but the family and class, which have retained their right to a parcel of higher value irrigated land, do. It may well be that certain aspects of Haitian customary law have evolved to improve land tenure security for the poor small farmer class in ways not provided by the formal Haitian legal system by making it more difficult for non-family members and thus wealthier people to acquire poor farmers' land.

Various commentators have suggested ways to increase the proportion of small Haitian landowners with current legal titles. These methods have included funding mobile titling and survey teams and small farmer legal aid offices (Thome 1978), as well as cadastral surveys. It is not clear, however, that cadastral surveys convert legal rights into formal titles without accompanying legal procedures which, if contested, are usually expensive. Furthermore, it is not clear that the government fully supports a legal cadaster system. The cadaster done by the Federal Republic of Germany for the Organisme du Developpement de la Plaine de Gonaives (ODPG) is now fairly complete, but the government has yet to approve legislation that would institutionalize the cadaster process.

Moreover, because formal legal title in Haiti as such affords small farmers no absolute protection that their land will not be taken by others more powerful, true tenure security often rests more on a margin of financial security, lack of predator interest in the land and the quality of institutional support for small farmers than in the laws themselves. Laws in Haiti, as elsewhere, have little reality apart from the ways in which they are administered. Although this study did not investigate the character of land disputes and how they are resolved, several people affiliated with small farmer groups suggested that in Haitian courts of law the small farmer frequently loses when his adversary is more powerful and has more resources. If this is true, the small farmer cannot rely on official institutions to protect his rights in certain kinds of disputes. He may have, however, alternative sources of protection. Farmer groups that organized improvement of the irrigation systems in their areas have typically held many meetings with local farmers to advise them of what would happen in the area and what benefits it could bring. The spread of information in the process of organizing support for the project in some cases has had two effects: it put farmers on notice that their land would soon become much more valuable. They are thus much less inclined to sell it unless there is a family emergency. Second, when the project improved access to irrigation and disputes over ownership arose, other farmers decided it was time to invest in the formalities of a survey and a current deed. Even renters in irrigated areas were

more likely to have a written lease and receipt for the rent paid which they occasionally even recorded in the Bureau des Contributions. Their upland counterparts more often relied on oral agreements before witnesses.

The second institutional protection is an alternative authority of some kind whose intervention can be sought in the event of land disputes caused by parties more powerful than the small farmer involved. In some cases, well-established cooperatives, particularly those like UNICOFS, have served this purpose. They have done so either by informing the offending party of thecooperative's internal support network, or by advising members where to seek good legal help. In other cases, on an infrequent basis, priests have interceded with official authorities when individuals were blocking irrigation projects that stood to benefit many small farmers.

As a consequence of Haiti's political and economic realities, the forms of intervention that would be more likely to increase farmer investment in land are generally not revisions in the laws but indirect measures. There are, however, two legal approaches that are problematic but nevertheless may be worth exploring in detail. One is establishing a minimum plot size. This would also necessitate changes in the inheritance laws which would end up affecting primarily small landowners. Such a law would prohibit notaries from issuing deeds to parcels of land smaller than the official minimum where the legal subdivision could not be proved to predate the effective date of the law. One problem with this approach is that although it may slow down further fragmentation, most plots in Haiti are already below an economically efficient minimum plot size. To a very real extent, insofar as fragmentation is concerned, the damage has already been done. Short of the Government of Haiti's taking title to all the land and reallocating it with realistic minimum plot sizes, a measure it is unlikely to sponsor in the foreseeable future, little can be done about the existing fragmentation of legal ownership. There are some indications, however, that on an informal basis peasants themselves are limiting further subdivision of already small parcels by delaying until later and later divisions of inherited family land as well as by intrafamily ownership consolidation by sales or rentals.

A second approach would be to reduce from twenty to ten or seven the number of years of occupancy necessary to establish grande prescription or a prescriptive right to ownership without any provable basis in prior title. If many small rural Haitian landowners are, in fact, squatters and have no legal rights to the land they claim to own, such a change in the law would facilitate their access to legal title, as they would have to prove occupancy and semblance of ownership over a shorter period. If most rural Haitians who claim to be landowners do, in fact, have cognizable legal rights to the land they farm, they would not be affected by this change in the law. Renters or sharecroppers, who did not hold themselves out as the land's owners, would be similarly unaffected. Absentee owners could, however, lose their titles if the occupiers of the land had held themselves out as owners

for the required period. Absentee owners with proof of their rental agreements would be protected. There might be repercussions against sharecroppers, however. If absentee owners feared extended sharecropping arrangements which are hardly ever put in writing might jeopardize their title, they might change sharecroppers more frequently. Putting the sharecropper agreements in writing might afford enough protection for the landowner, but whether most absentee owners would rely on written agreements over the simpler regular shifting of sharecroppers is hard to tell. Restricting sharecropper use of land to a few years or less at a time would be an undesirable outcome for a variety of reasons. It might have major effects on the production levels of such currently labor-intensive crops as rice, for example. It might even decrease population movement down from the slopes to the plains, a trend necessary to decrease pressure on the area's most abused land.

Changes in land tenure laws aside, there are a number of indirect measures that might help with both tenure insecurity and fragmentation. The first is expanding irrigated areas only through measures involving high levels of peasant participation in planning, executing and maintenance of the irrigation systems. Providing authority for farmer irrigation groups to administer their own systems and retain water taxes to do so, whether by national legislation or on an experimental basis, as well as supporting animation work to help the groups develop into stable institutions would also help. Aerial photo based land ownership studies such as the ones made by the organizers of the Canal D'Avezac rehabilitation project discussed above would be useful in organizing irrigation groups. The studies would also be helpful in monitoring land tenure changes in the area to provide early warnings of larger landowner land buy-ups, if any, at a point when they might still be dealt with.

A second practical approach to reducing the impact of land tenure variability and fragmentation on both coordinated land use and production levels may be to foster either the comprehensive credit-input-supervised technique-contract grower approach used by the Comme Il Faut tobacco company or the supervised credit-input-technique approach used by IDAI. Comme Il Faut and, at one point, FACOLEV had some considerable success in encouraging farmers of neighboring parcels to work their land in a coordinated way. While this does not erase the fragmentation problem, it does decrease the impact of fragmentation on levels of both agricultural technique and production. Such an approach, however, requires high value crops yielding a financially sufficient income in the first year, for which there is a steady demand. Experimenting with upland irrigation methods, as was suggested in Chapter 7 may also be the key stimulus to coordinating land use in the upland areas.

Another promising alternative in the uplands, derived from the UNICORS example on the Coast, might be to enable church or private voluntary organization (PVO) affiliated entities to acquire moderately degraded land on a purchase or long term rental basis. The

organizations would then replant the land with coffee and other trees or other profitable perennials. To make large scale coffee planting economically rational requires entities who are not marginal farmers and can afford to forgo income during the first five years before the new coffee trees are ready to bear. The farmers who occupied the land could be paid to do the rehabilitation or could sharecrop unrehabilitated land with improved techniques under PVO supervision. These reforested land holdings could then become the financial base for continued extension efforts in their areas and could, like the UNICORS lands, be transferred to cooperatives should stable organizations develop.

Finally, the most useful thing USAID could do to increase land tenure security in Haiti in the short term is to expedite the Interim Swine Repopulation Program. From 1980 through 1983, all the pigs in Haiti were destroyed at the instigation of the U.S. government by a Haitian government program called PEPPADEP (Projet d'Eradication de la Peste Porcine Africaine et de Developpement de l'Elevage Porcin) to eradicate African Swine Fever. Pigs have for a long time in Haiti been the rural Haitian's most important form of both savings and investment. People have relied on pigs and their expected litters to pay for school fees, housing improvements, land purchase and expenses of sickness or death. The importance of pigs in voodoo ceremonies has helped to keep their market value up. Even though the PEPPADEP program paid some compensation for the pigs killed, the absence of pigs has drastically limited the capacity of many rural Haitians to save or invest. As a result, many people in the Cayes area at least, who might have sold pigs to pay for school fees, sickness or burial expenses are now selling land. Accelerating the Swine Repopulation Program would relieve this otherwise unnecessary exacerbation of the land tenure insecurity problem.

CHAPTER 7

A COORDINATED RURAL REGIONAL DEVELOPMENT PLAN FOR THE CAYES PLAIN BASIN

7.1 INTRODUCTION

The previous four chapters have examined the Cayes Plain Basin, and L'Acul River Basin in particular, in terms of their physical resource base, their marketing and economic structure, their agricultural constraints and potentials, and their institutional characteristics. In this chapter, the general dimensions of a coordinated rural regional development plan based upon these considerations are specified. Let us recall that this plan has two goals: the improvement of the indigenous population's standard of living; and the preservation of the region's natural resource base. Recall, also, the implications of a plan that is both regional and coordinated in nature. The former term refers to an approach which incorporates the spatial dimensions of both human social-economic activity and the physical environment, and which focuses development efforts within a well-defined and internally consistent spatial unit. The latter term refers to an approach which incorporates various sectors of economic activity, various elements of the physical environment, various aspects of the social-cultural-institutional milieu, and the various spatial scales (e.g. the regional, intraregional, and interregional levels).

L'Acul River Basin is the focus of a general development plan for the Cayes Plain Basin. The planning recommendations presented for L'Acul can be extended to the entire Cayes Plain Basin, as well as to other similar regions in Haiti. The development strategy outlined below represents a broad overview of the principal elements of a development plan and of the manner in which they interact within a river basin planning unit. The interventions suggested here must be recognized as a first attempt to formulate an effective planning strategy. Due to the limited background data available and the limited field period in which primary data were collected, specific investigations will be necessary to confirm the general impressions presented here.

In order to preserve the internal logic of the coordinated regional approach, the development strategy is presented subregion by subregion. For each subregion, constraints to development, interactions with other subregions, and recommended interventions are described. It should be noted that the city of Les Cayes, while situated in the Lowlands subregion, is functionally (i.e., in social, economic, and institutional terms) an important element of each of the three other subregions. Thus, rural development and the urban-industrial development of Les Cayes must proceed in parallel.

Before presenting the recommended planning strategy, a final philosophical orientation of the Study Team must be made explicit. It is clear that implementation of the interventions outlined Figure 7.1) will require rather profound social change. This is consistent with the notion that development is as much a social phenomenon as an economic one. While the Study Team recognizes that some of the necessary social changes will be extremely difficult to effect, it takes the view that, unless these changes can be accomplished, the prospects for development in the Cayes Plain Basin and in all of Haiti are extremely limited.

7.2 THE IGNEOUS HIGHLANDS

The mountain crests of the Igneous Highlands are the upper-most boundary of L'Acul River Basin. Beginning at the basin divide, the movement of water and sediment begins its downstream flow through the Slopes Unit and Lowlands, ultimately reaching the Caribbean. This specific subregion is a major contributor of water into the lowland river systems; per unit area, the Highlands have the greatest moisture surplus (precipitation minus evapo-transpiration). Because of this large moisture surplus and the high elevations of this subregion, a large potential energy exists to erode and to transport materials from this area through the river system. With its ever decreasing natural tree cover, the Highlands are continuously losing their thin veneer of soil. This results in a continuous lowering of the productive capactiy of the land resource and an ever increasing value in the overland (runoff)-groundwater ratio (Chapter 3). This latter property results in an even more extreme river regime that makes the river system more difficult to manage.

The removal of the natural tree cover, along with the severe limitations in the potential utilization of these lands for either agricultural or livestock activities is reflected in the limited land-use found in this area. Economically this unit has been and continues to be a provider of raw unfinished wood products including wood planks, firewood, and charcoal. Like streamflow, the movement of these goods is largely downslope primarily being marketed on the lowlands. Conversely, all finished and semi-finished goods move from the Lowland and Slope Units toward the Highlands.

Given the Highlands' locational setting and its relations to the other subregions within L'Acul River Basin, the following ongoing phenomena need to be arrested not only to improve the physical/economic environment of the Highlands, but also to ameliorate the conditions within the Slope and Lowlands:

1. The large percentage of precipitation directly entering the river system from rapid surface runoff; and

FIGURE 7.1

PLANNING GOALS AND INTERVENTIONS

CAYES PLAIN BASIN

	HIGHLANDS	LES PLATONS	SLOPES	LOWLANDS
PLANNING GOALS	(S.L.) 1. Decrease Runoff Increase Infiltration (S.L.) 2. Arrest Soil Erosion (L.) 3. Decrease Population	(S.L.) 1. Preserve Environment (S.L.) 2. Expand Agricultural output (S.L.) 3. Improve Infrastructure	(S.L.) 1. Decrease Runoff Increase Infiltration (S.L.) 2. Minimize Soil Loss (L.) 3. Decrease Population	(S.L.) 1. Improved water management (S.L.) 2. Expand Irrigation (S.L.) 3. Increase Agricultural Output (S.L.) 4. Improve Infrastructure (S.L.) 5. Develop Agro & Labor Intensive Industries (S.L.) 6. Absorb Spillover Population from Highlands & Slopes in Les Cayes
INTER-VENTIONS	1. Reforestation 2. Wood Fabrication 3. Footpath Improvement 4. Managed Forests 5. Controlled & Improved Charcoal Production 6. Selective Permanent Agricultural Crop Farming	1. Improved Farming Systems 2. Introduction of New Crops and Varieties 3. Irrigation 4. Woodlot Development 5. Controlled Pasture 6. Improved Social Services 7. Road Linkages to Lowlands 8. Storage Capacity Improvements	1. Introduction of Fruit Orchards 2. Major Soil Conservation Practices 3. Improvement of Roads in Rides Mornes Valley 4. Controlled Pasture 5. Reforestation	1. Irrigation Expansion 2. Introduction of New Crops Varieties 3. Creation & Enhancement of Industries 4. Storage Capacity Improvements 5. Drainage Canals Built 6. Development of Les Cayes Growth Center a. Labor Intensive Industries b. Development of Port facilities c. Regional Administrative/ Institutional Functions d. Improved Urban Quality of Life

S = Short-term
L = Long-term

2. The degrading soil resource resulting in a high sediment yield into the river system and a lower land potential in the Highlands.

The available options to improve the environmental situation of this subregion while at the same time improving the livelihood of its inhabitants are extremely limited. From an economic perspective, the justification of the following recommendation lies not only in the direct benefits to the Highlands, but also to the benefits accruing to the subregions downstream.

According to the LCC (Chapter 3) all lands within the Highlands fall within either Categories VII or VIII, limited or very limited agricultural potential, respectively. From the purely physical perspective the optimal land uses for the Highlands would be forest preserve (Category VIII) to protect the watershed function of this area and managed forest and grazing (Category VII). But given the immediate demands of the population living within this area, as well as the populations living within other areas in the region, these optimal land uses are today not practical. But they are the long-term (second stage) goals for these areas. Until other economic opportunities exist for the Highland inhabitants outside of the Highlands, the following high priority (first stage-short to immediate term) interventions need to be implemented.

1. Reforestation of the Category VIII lands needs to be initiated. Lands within this Category that appear able to support pasture should be carefully managed in terms of carrying capacity to prevent overgrazing that would expose bare soil.

2. The same initiatives should be undertaken in the Category VII lands along with the careful introduction of perennial agriculture in selective areas under extreme soil conservation practices (e.g. tea, coffee, infusions; check dams, mulching, stone barriers). Annual agriculture, unfortunately necessary for the survival of the small farmer, must be limited to the valley bottoms found throughout the Highlands. The placing of impediments to decrease the velocity of the streams within these valley bottoms, be they permanent vegetation or physical barriers, should be encouraged.

As is clearly evident from the above recommendations, in order to accomplish the goal of an improved physical resource base, there are very few degrees of freedom in the choices for rational land use in the Highlands. Likewise, the mix of possible economic opportunities for this subregion is extremely restricted. Besides the continuing sales of lumber, small craft wood industries (e.g. furniture and broom fabrication) need to be introduced. This would employ some of the individuals now living directly off the land and reduce, although only slightly, the land pressure. The development of more efficient[1] methods of charcoal production also would lower

pressure on the land while maintaining today's production levels. All of these economic activities are either directly or indirectly extractive; thus there is a need to carefully manage (coordinate) the demands of the economic sphere with the actions directed toward improving the land and water resources. The reforestation process must succeed.

In the process of reforestation, footpaths need to be carefully constructed to minimize erosion while simultaneously allowing the wood products to be funnelled into the market and manufacturing domains. Only inhabitants presently living in the Highlands should be eligible for employment in the proposed basic construction and reforestation activities. The income derived from these activities would supplement their income. This would increase the probability of success for the reforestation activity. The proposed range of suggested economic activities has been targetted at a low level in order to discourage in-migration, which would stress the physical resource base.

7.3 LES PLATONS

Situated in the northwestern portion of L'Acul River Basin, Les Platons Unit is a rolling to gentle limestone plateau. While it comprises only 7 percent of L'Acul's area, its potential importance in the regional context is far greater. Nineteen percent of L'Acul's arable lands (Categories I-IV) are found within this unit. Relative to other portions of L'Acul, the size of its farming units are favorable (Sec. 5.4.2). The land resource is in a relatively good environmental condition; most lands within this unit are still capable of economically viable agricultural production. However, evidence exists that indicates scattered plots of land are experiencing accelerated soil erosion. With improvements in its farming practices and infrastructure, Les Platons could clearly support its existing population at an acceptable standard of living. Its climatic conditions potentially permit the growth of mid-latitude high value crops, such as vegetables, that are relatively scarce in Haiti. Its proximity to the third largest urban area in Haiti should give it a competitive advantage to this market for these high value crops. During periods of shortfalls of these crops in the Port au Prince market, because of the good road from Les Cayes, these goods could find entry into this market.

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[1]Some reports (e.g. Smucker 1981; Conway 1979) indicate that from an economic perspective the existing primitive charcoal production method is, if not optimal, sufficiently effective given the availability of production technologies and materials. However, in the Highlands the primary objective is to reforest the areas as rapidly as possible while meeting the ongoing demands of the region. Therefore, the benefits of implementing more efficient methods of charcoal production outweigh the costs involved in converting to new methods.

In spite of this favorable potential, the conditions found today on Les Platons are far less propitious. The relative inacessibility of this subregion is reflected in a poor level of social services available to its inhabitants, minimal opportunities to transport perishable crops to market, a poor spatial distribution in the availability of water, and a limited array of agricultural crops grown in the area. This latter property appears to be at least in part a result of seed and nursery stock not reaching this area due to an inadequate distribution sytem.

Besides its current production of staple food and livestock which can be transported out of the area, primarily toward the lowlands, Les Platons today functions as a low order transshipment point between the Highlands beyond the Cayes Plain Basin and the lowlands (Chapter 4). Loads transported by head or animal are continuously moving in both directions on the footpaths that criss-cross the area. The residents of Les Platons are the primary transporters of these commodities.

Physically, Les Platons area significantly contributes to the base flow of L'Acul. Underlain by calcarious rocks, the high permeability along with the general rolling terrain result in a large proportion of the precipitation entering the groundwater domain. The Tête L'Acul at the base of Les Platons in the Slope Unit, as well as the headwaters of the Ravine Caiman, the only two permanent streams in the upper Acul, are fed by springs resulting partially from the groundwater flows under Les Platons. It is these basewater flows that to a large degree determine the quantity of water available for diversion into the Dubreuil irrigation system during the dry season.

The general development strategy for Les Platons must maintain the generally favorable resource base existing in the area while significally increasing the agricultural income of its inhabitants. As in the Highlands, if the recommendations of this strategy are to come to fruition, in-migration into this area must be minimized.

To increase revenues from agriculture while at the same time preserving the land resource, the new interventions that contribute to greater income need to be part of a broader set of development initiatives that contribute to a stable environment. Five major types of interventions are identified that together will preserve the land resource while increasing the economic status of the subregion. These are:

1. The coordination of land use in terms of both crops selection and conservation practices within the boundaries of the natural topographic features that determine the intensity and magnitude of soil erosion.

2. The introduction of new crops and varieties that will increase revenue produced per unit land over existing conditions. Also

existing farming practices need to be altered in some cases to increase yields of existing crops.

3. Reforestation and pasture improvement on the marginal lands must be initiated to increase the supply of fuels for local consumption on a sustained basis. Pasture improvement and changes in the management of the livestock need to be undertaken.

4. Infrastructure improvements in the road system, social services, and food storage areas. These are required to end the relative inaccessibility of the area, improve the quality of life, and increase the financial returns from their agricultural activities.

5. Introduction of new and available but not utilized technologies and products that will increase agricultural output while improving or maintaining the land resource.

7.3.1 COORDINATION OF LAND USE

Under existing conditions where the individual farm family attempts to be largely self-sufficient, land use decisions are primarily formulated to maximize the short-term outputs. Future welfare is secondary to immediate survival. One result of this conceptualization is that each farmer's parcels of land are placed into production largely independently of neighbors' land use decisions. However, when conditions dictate that the survival of the farmer's crops require coordination to insure short-term requirements, complete independence in crop selection is not possible. Under existing conditions where coordination is not easily facilitated among family units, decisions are made largely by default. For example, if an innovative farmer would like to plant a new variety of sorghum that would produce higher yields, but it would mature out of phase with exisiting sorghum varieties, the farmer could not adopt this new variety unless a critical mass of surrounding farmers will also change. In spite of higher yields, without widespread local adoptions, the farmer would likely lose much of his potential harvest to birds and end up with less sorghum than if the traditional variety had been utilized.

A related phenomenon exists when increased agricultural output and soil conservation need to be implemented. The tyranny of soil erosion can only be overcome through the cooperation of all farmers operating within the localized physical system (e.g. the hillslope/runoff system--that is, the introduction of soil conserving practices by one farmer in a hillslope system--will have minimal or no effect on controlling erosion, as phenomena operating both up and downslope of the individual farmer's lands will overwhelm his individual efforts. In fact, this farmer likely will be worse off economically, since his costs will be more (soil conservation implementation) but his returns will not significantly increase if at all. Thus under existing conditions where individual farmers are not required to coordinate their activities, soil erosion control is

almost impossible. Therefore hillslope units must be treated as an integrated economic production system. Individual land use decisions must not be allowed to continue to jeopardize the hillslopes if environmental preservation and economic development are to be pursued.

7.3.2 NEW CROP TYPES, VARIETIES, AND FARMING PRACTICES

The Study Team's examination of marketing in the Region indicated that agricultural commodities were being imported into the area, both interregionally and internationally, that could be introduced or grown in greater quantity in Les Platons. In particular onion, Irish potatoes, and other produce could be cultivated throughout the subregion. The need is to provide the residents with access to the seed for these highly profitable crops. Through crop subsitution the farmers could obtain greater income per unit area. This increase in income would not require new lands or greater intensity of land utilization. In fact, the increase in farm income could likely make the farmer more open to improvements in soil erosion interventions since a slight decrease in land under cultivation would not threaten his short term survival, given his increase in income per unit area of land under cultivation. One crop not currently cultivated in Haiti is garlic. From the brief observation of the Study Team, this crop would appear to be possible to grow profitably in the area. At the minimum these crops should increase the income of Les Platon farmers. At the maximum, they could reduce the price of these foods throughout the Region and thus profit all of the inhabitants. While the savings in foreign currency would be minimal, it seems inefficient to import crops such as garlic which could be grown in the country.

A variation on the above theme would be to introduce new varieties of crops being currently cultivated in the area. Two likely candidates are sorghum and congo peas. Currently the varieties being grown are photo-sensitive. As a result, little control exists in determining their period of maturity. Under current conditions, Les Platons crops enter the market when the value for these crops is lowest (the market is saturated). If a coordinated introduction of new varieties would be systematically achieved already within the subregion, the crops could reach maturity at a moment when historical trends indicate the market price would be higher. By coordinating the planting, sector by sector, the pest destruction problem (i.e. birds) would be minimized.

Coffee is one crop currently growing in Les Platons that could produce drastically higher yields per plant if current farming practices were greatly modified. At the same time, the coffee crop could become a positive factor in soil erosion control. First, little evidence exists that the coffee trees anywhere in Les Platons are pruned, a practice that encourages new growth and heavy areas of coffee cherry bearing. Second, coffee bushes are generally extremely old throughout the area. In fact many residents boasted of the age of their plants, many of which seemed past their prime. Third, if coffee

bushes were planted in concentrated zones along hillslopes, and heavily mulched, they would provide good soil erosion control. Likewise the concentration of sufficient density within the area would likely make fertilization feasible. The increased yields should more than offset the costs of fertilizer. Likely the concentration of the coffee would result in the need to control plant disease through such practices as dusting, but given the increased production of this crop, it should be a cost that the farmer could afford.

7.3.3 REFORESTATION AND PASTURE IMPROVEMENT

Throughout Les Platons are scattered areas of unimproved pasture that support very low levels of economic activity. Two options exist for upgrading these lands which would benefit the area. First, small reforestation projects could be initiated in the area that would supplement local fuel needs, if properly managed. This would at the same time reduce the demands for fuelwood from the immediate areas of the Highland and Slope Units, and thus contribute to the improvement of these areas' land and water resources. A prototype of such an area already exists in Les Platons near the Platons market (Chapter 4). In the long-term this would clearly increase the income of the land owners and could benefit all of the occupants through the stabilization of fuelwood costs.

Through the improvement of pasture in these areas, livestock that now forage on immature crops (when the owners aren't looking) would be reduced. However, a more radical intervention would likely result in greater livestock production and soil conservation than the improvement of open pasture. If elephant grass, or some other varieties, were planted along terrace walls that were constructed to control erosion, these grasses could be cut and brought to the animals if the animals were kept in specific locations. While this would entail new behavioral patterns, the benefits of this change would be many. First, agricultural yields would increase as livestock would not eat growing food crops. Second, erosion control would benefit, first from the stabilization of soil control devices such as terraces; and second, by preventing overgrazing and the tramping/compaction of soils. Third, livestock production would become more efficient. Livestock not forced to forage for their feed require lower quantities of food to produce given increases in weight.

7.3.4 INFRASTRUCTURE IMPROVEMENTS

To lower the isolation of this area and make the crops grown in the subregion accessible to outside markets, the existing road from Dubreuil to the Les Platons market needs to be upgraded. River crossings need to be improved so that four-wheel-drive vehicles are not required. In addition river crossings should be made possible during the rainy season. If these strategies are implemented in the Highland and Slope Units, today's raging torrents immediately following rain events should become ever lower in magnitude. Thus, the problem of road improvement will not be as difficult as it would

be under current conditions. The section of the road running from Le Pretre to Les Platons market needs to be stabilized. As this section is within the Slope Unit, recommendations for this procedure will be discussed in Section 7.4.

Additional improvements in the infrastructure need to be made specifically in terms of storage facilites. The construction of these facilites would permit the farmers better control in the management of their crops for sale in the market. Finally, improvements in the water supply of the area would greatly benefit the inhabitants. This is discussed in the next section.

7.3.5 NEW AND UNDERUTILIZED TECHNOLOGIES

Because Les Platons is underlain by limestone, surface waters are widely spaced throughout the whole subregion. In addition because of the permeability properties of these rocks, in spite of the humid conditons existing in the whole region, periods of soil moisture deficiency exist during the growing season. There is a strong likelihood that groundwater reserves exist under Les Platons. If these waters can be pumped to the surface, a spray system of irrigation could be introduced which would increase the agricultural production of the area. In addition, potable water accessibility would be greatly increased. The feasibility of wind or photovoltaic pumps, in conjunction with storage tanks needs to be explored. Another option corresponding in purpose would be to construct cisterns to collect water for irrigation. However, this option likely would result in a lower potential of water availability than pumping ground water.

Less exotic technologies that would increase the potential of the area such as fertilizer usage, new varieties of crops, improved soil conservation techniques during land preparation have already been mentioned in other contexts. The future of Les Platons could be appreciably improved if the previous recommendations are successfully operationalized.

7.4 THE SLOPES

This subregion is analogous to the Highland unit in many aspects, but at a lower altitude. It is in an intermediate position regarding the flows of energy and matter through L'Acul River System. Because of the high energy potential of this area due to the presence of steep slopes and steep river gradients, sediment coming from areas upstream are quickly transported through the Slopes unit on to the lowlands. Additionally, this subregion is a major source of new sediment entering L'Acul. The overutilization of the steep slopes, all pervasive through this subregion, results in an extremely unstable environmental state that is rapidly degrading. This negative trend directly impacts on the lands downstream from this unit by increasing flooding in magnitude and frequency, and, conversely reducing the streamflows during drier periods. With the presence of completely

degraded slopes throughout the sub-region (surfaces of bedrock exposed on the surface), formerly productive land has been removed from the system for the immediate future. This is a phenomenon that must be stopped since it results in ever-increasing pressure on remaining lands as well as in permanent damage to the flow regime of the rivers draining the area.

The vegetation found throughout the slopes today is primarily annual crops such as congo pea, sorghum, and beans. To a far lesser degree are found permanent crops such as bananas and assorted fruit trees, widely spaced throughout individual slopes. Some coffee is grown near the Kay of the farmers. All indications are that yields are low throughout this whole unit. In many places portions of fields, have portions that have been abandoned. This is one area within L'Acul that land degradation is directly affecting todays farmers. It is not an abstract concept.

Because of the existing environmental situation in this subregion, immediate high priority interventions in soil erosion control need to be initiated. However, because of the large population that must continue to derive a living from these lands, since other subregions in the area and other places within the country cannot satisfactorily absorb these people at this time, a loser's dilemma (game theory) condition exists in the Slope units. This requires a minimax (minimization of maximum expected losses) strategy toward environmental control in the short-term. Almost all lands within the slopes unit fall within Categories VI through VIII (LCC, Chapter 3); that is they should not be in annual crops and should not be farmed except with major conservation efforts. The continual need to keep this land in production until other areas in the Region can employ the people farming this land implies that land regeneration in these areas will not occur in the short-term.

To accomplish a minimax solution the following interventions are proposed:

1. The reforestation of the slopes into densely planted orchards, with either mulching or planted ground covers.

2. Where annual crops must be grown major conservation practices must be introduced including terracing.

3. To minimize damage from overgrazing, livestock numbers must be controlled, and when possible, fodder should be brought to the animals.

4. To supplement the income of the inhabitants and increase the potential economic base of the area a road needs to be built up the valley of the Riviere Des Mornes to permit the newly planted fruit crops to reach the proposed agro-industries in Les Cayes or elsewhere on the lowlands. Only local inhabitants of the Slopes should be employed for the road building. This will substitute for the short-term loss in revenue resulting in cropland being removed for tree planting.

As other options become available throughout the Region, a gradual depopulation of this area should occur. Annual crops will be replaced by perennials, and only then will the long-term goal of land rehabilitation be attained. The potential changes in the long-term employment opportunities for the slope inhabitants are discussed into the next section concerned with the Lowlands subregion.

7.5 THE LOWLANDS

The Lowlands comprise 24 percent of L'Acul River Basin; approximately 45 percent of the Cayes Plain Basin may be classified as lowlands. The Lowlands unit has the greatest agricultural/economic potential in the study area and the ability to support the largest population base. In terms of physical factors, the Lowlands are at the end of the flow system; water and at present, soil particles originating in the three upper subregions affect the agricultual capacity of this unit. Since this is so, the interventions recommended for the three other units will benefit the Lowlands as much as the units in which they are implemented. In economic terms, there is a two-way flow of agricultural products between markets in the Lowlands and the upper sub-regions, and a flow of manufactured and processed goods from the Lowlands to the upper units.

The Lowlands subregion faces a number of critical constraints to development. First, it is characterized by an extreme variability in river regimes. Since there is no water storage capability, the least amount of water is available when it is needed most, and the most available when it is least required. A second and related problem is the high delivery ratio of siltation from the slopes and highlands. This has severe consequences for the Lowlands's irrigation system. Third, the sub-region suffers from a limited industrial structure and, thus, a limited range of non-land-based employment opportunities. One of the area's few large agro-industries, the Dessalines sugar cane centrale, is presently operating well below capacity due to an insufficient supply of cane. Finally, since the harvesting of all fields of an individual crop type occurs within the same short time span, and since there is a lack of storage facilities available for agricultural produce, there are distinct surplus and deficit periods in the supply of individual items of produce. Farmers therefore develop a pattern by which they sell their products when the price is low (at peak supply) and buy the same products back later (at low supply) at a higher price. In this manner, the full economic surplus value produced by the farmer is not retained.

7.5.1 IRRIGATION

One of the principal planning priorities for the Lowlands unit must be a more even temporal distribution of the annual pattern of water availability. If the measures outlined above for the upper three sub-regions are successful, the variation in the regime of rivers will be dampened and more water will be available for use in

existing irrigation systems. In addition, the lower degree of siltation that results from such measures will increase the profitability and efficiency of these systems. In order for the existing irrigation systems to be most effective, however, sound water management practices need to be introduced so as to prevent water logging and to ensure an equitable distribution of water resources. These practices, which are not presently in place, include: 1) the metering (measurement) of water flow and the ability to control flow by means of a system of gates, so as to attain an optimal level between the extremes of salinization and water logging, and so as to ensure that water is applied at the proper moment relative to crop demands; and 2) the construction of drainage canals to carry away excess water during the wet season and as may be otherwise required.

While tertiary canals running off of the existing secondary canals need to be expanded in order to enhance the distribution of the water resource to a wider area, the construction of additional primary and secondary channels does not appear to be indicated. The present gravity-fed irrigation systems, lacking storage capacity, are sub-optimal in terms of both performance (i.e. in providing water when it is required most) and economic (i.e., construction and maintenance cost) criteria.

There is no doubt that increased irrigation would greatly enhance the productive capacity of the Cayes Plain Basin, enabling the intensification of crop yields and the extensification of certain crop types. With regard to the former, it is estimated that sugar cane yields on a unit of land can be increased by a factor ranging from two-fold to six-fold by applying irrigation. Given the reservations expressed above as to the efficacy of the existing methods of gravity-fed irrigation, it is recommended that the feasibility of sprinkler irrigation be investigated and the area's apparently large underground water supply be tapped to expand the areas under irrigation. This technology is currently in place and effective in many developed and developing countries and is competitive with the gravity-fed canal method. One advantage of the sprinkler method in the Cayes Plain is that it is far less prone to suffer damage from hurricanes than is the gravity-fed method.

It should be noted that the increased agricultural yields resulting from the successful implementation of sprinkler irrigation over a broad area will likely necessitate the construction of storage facilities. Although detailed analysis will be necessary to determine the optimal size and location of these facilities, they would likely serve the region most effectively if they were decentralized, rather than concentrated in Les Cayes. To some extent, however, the need for increased storage capacity may be reduced by such farming practices as bringing crops to maturity out of their normal season (this is made possible by irrigation and variety substitution) and the coordination by farmers of planting and harvesting dates so as to reduce the peaks and valleys in the level of output. Either route, storage or farming practices, will have the result of aiding farmers to retain the full value of their efforts.

7.5.2 AGRO-INDUSTRY

The increasing agricultural yields resulting from the intensification and extensification of production (which, in turn, is a consequence of expanded irrigation on the plain, increased output from Les Platons, and greater quantities of fruit from the Slopes) suggest that there is a potential for agro-industrial development in the Cayes Plain Basin.

A short-to-medium term step in this direction should be the rehabilitation of the Centrale Dessalines, which is presently operating at 75 percent capacity and not achieving the economies-of-scale threshold necessary for competition on the world market. The principal cause of this inefficiency is the conversion of land from cane production into the production of rice, legumes, or tobacco. This substitution is occuring for several reasons. First, the Centrale Dessalines occupies a monopsonistic situation in relation to the cane producers (further compounded by state-set sugar prices) and crop substitution allows the small farmers to participate in market with a more competitive structure. Second, as presently grown, cane produces an average yield of $360 per hectare per year (40 tons/hectare at $9 net per ton) as compared to $2,000 per hectare per year for irrigated rice. With irrigation and fertilizer it may be possible for cane to achieve a yield of $1,350 per hectare (150 tons/hectare at $9/ton). This increase in tonnage on the present cane land, and the likely arrestation or reversal of the withdrawal of cane lands due to increasing profitability, may enable the centrale to achieve full capacity. Not only would this permit the more economical operation of the centrale but it would also ensure that the level of employment at the centrale (approximately 200) is maintained. The latter is especially crucial given the scarcity of non-farming opportunities in the Cayes Plain Basin. The sugar cane option appears viable for two reasons. As more areas in Haiti produce rice, there is no reason to assume the price will remain as inflated as it is today. Already there are indications that the government is considering changing its pricing policy in regard to rice. Second, by not overspecializing in rice production, which is a very water demanding farming system, additional waters will be available for irrigation over a larger areal extent.

In order to attain an efficient level of operation, however, the centrale's present practice of cane purchasing needs to be modified. Rather than basing payment on raw tonnage as at present, a method of basing it on sucrose content should be instituted. This is an incentive to the farmers to introduce more careful management practices, and to all concerned to move the cane to the centrale in a more efficient manner, as the sucrose content of the cane begins to decrease with harvesting.

At present, cane is the most important crop in the Cayes Plain Basin, in terms of total value. In the long-term, however its economic viability is somewhat in doubt. Given the economies-of-scale

required for the efficient operation of modern world-scale sugar centrales, the capacity of Dessalines would need to be expanded considerably (and, at the same time, automated, resulting in a decrease in employment), and virtually the entire Cayes Plain Basin would need to be devoted to cane production. The inability to attain this level of scale economies underlies the general decline of cane production in the Caribbean region and the emerging comparative advantage of the Philippines and Brazil.

In addition to the region's sugar centrale, other types of agriculture-based industries which can turn perishable produce into more durable commodities with a higher market value need to be developed. A number of small scale milling operations are feasible: manioc flour, corn, and rice, for example. The greatest potential, however, lies in food processing facilities (juices, jams, canned fruits) based upon the increased production of tree crops in the slopes subregion (section 7.4), e.g. oranges, lemons, limes, mango, papaya. It is likely that, at this stage, such production would serve an interregional, rather than international, market. Finally, it should also be noted that one of the few existing processing operations in the Cayes Plain Basin, a tomato canning plant, has recently been shut down, one reason apparently being competition from lower priced imports from the Dominican Republic. This plant did enjoy a measure of success prior to external competition and serves to illustrate what can be achieved by the cooperation of farmers and industry. However, it also illustrates the need of the national government to implement policies that encourage regional development.

There also appears to be a need for nurseries to supply the Cayes Plain Basin, and perhaps a broader portion of the Southern Peninsula, with seeds and seedlings, particularly of new and specialized crop varieties. While seedlings for certain crop types (e.g., species of fast-growing trees) can be easily and safely transported over longer distances, others (e.g., coffee and fruit trees) do not have this characteristic. Thus a combination of both centralized and decentralized nurseries is indicated.

7.5.3 THE ROLE OF LES CAYES

A necessary prerequisite to the successful implementation of the planning strategies outlined for the Highlands and Slopes is the development of a capacity to effectively absorb that portion of the population which the land is no longer capable of supporting. While it is hoped that some of this population can be absorbed through the provision of jobs by decentralized agro-industries and by an intensification of agriculture on the lowlands, this burden will fall principally upon the City of Les Cayes. In functional terms, Les Cayes is an integral part of each and every subregion within the Cayes Plain Basin. Unless Les Cayes itself is able to attain an enhanced level of development, the full potential for rural development within the Basin will not be realized. The imperative for such urban-centered development, however, appears to be at least

inconsistent with implicit and de facto national policies, if not specifically contrary to those established explictly and de jure.

There are a number of specific avenues along which the urban-centered development of Les Cayes should be directed; these initiatives can be grouped under the title of growth center functions. Although the effectiveness of a growth center approach continues to be debated in the development literature, evidence has shown that, on balance, it has produced significant results where utilized. In general terms, a growth center functions at two scales: interregionally, it is intended to form economic and technological linkages with more advanced regions, in general, and the national urban system, in particular; intraregionally, it is intended to transmit externally originating growth stimuli (e.g., investment, information, fiscal measures), as well as those originating internally (e.g., inter-industry linkages, employment opportunities) to its hinterland.

In Les Cayes, the specific elements of a growth center approach should include the following:

1. The establishment of industries should be encouraged, either through the intervention of the national government's planning powers or through the rise of local entrepreneurship. The Region's real need is for labor intensive rather than capital intensive industries since the reduction of population pressure upon the land is of immediate concern. As industries are developed they create the demand for other complementary industries as well as for service sector functions, both of a high order (e.g. accounting, legal, advertising services) and a low order (e.g., maintenance and repair). The decentralization of industry away from Port-au-Prince and/or the attraction of newly emerging industries may be justified on the basis of lower land prices and more pleasant (lower density) living conditions, although the level of many social services lags far behind that of the capital city. Other than the agro-industries mentioned in the previous section, based upon the Region's resources, there are no obvious candidates for industrial development. The Region's principal comparative advantage lies in its abundance of inexpensive labor.

Thus, it is an appropriate site for the development of a quasi-freeport operation similar to those which are in Port-au-Prince.

2. The potential of Les Cayes as an industrial center is directly related to the development (or, more correctly, the restoration and rehabilitation) of its port facilities. A freeport assembly function would not be possible without port development, for obvious reasons. If such development were to occur, however, the enhanced possibilities for interregional and international export would likely serve as a stimulus to the creation of new firms and the expansion of existing ones. The development of the port need not be very extensive or expensive; what is required is a basic docking and storage

infrastructure and, since water depth is approximately 2.5 meters, an initial dredging followed by maintenance Lightering is also a possibility given the low labor costs in the area.. The lowering of sediment supply from the Cayes Plain Basin resulting from interventions throughout the Region should lower the siltation problem in the port area. If port improvement does not occur, arrangements to ship goods in-bond to Port-au-Prince for export needs to be considered.

3. The establishment of permanent regional offices by the GOH and by international donor organizations, both governmental and non-governmental, should be encouraged. This will enable government ministries and donor organizations to become more aware of, and better able to respond to, the needs of the Region's population. Interestingly, this strategy conforms to President Duvalier's recently articulated goal of governmental decentralization to promote the development of outlying areas. One would also hope that this approach would ultimately lead to the establishment of an effective set of rural outreach services, i.e., health, sanitation education, information, technical training.

4. In order to facilitate and to complement the implementation of the three previous initiatives the living environment of Les Cayes needs to be enhanced. This includes the level of social services available (e.g., health and education); cultural, recreational and entertainment opportunities; and housing and physical infrastructure. Les Cayes is presently a pleasant city but its lack of services and amenities, and its generally perceived character as a "frontier outpost" need to be overcome.

The initiatives outlined above--irrigation, agro-industrial development, and the articulation of the growth center role of Les Cayes--are important measures that will not only ameliorate the level of well-being in the Lowlands but will help this subregion taking pressure off of the Highlands and Slopes subregions by absorbing that portion of their population that exceeds the carrying capacity of the land.

7.6 SUMMARY

The individual elements of this rural regional development plan are by no means novel. The originality and, one hopes, the efficacy of this approach lie in its ability to recognize and to utilize the linkages between spatial units and between the various functional elements of the physical, social, and economic systems.

Figure 7.1 summarizes the planning goals and interventions that the Study Team recommendeds for each of the four subregions in L'Acul River Basin. As previously noted, these goals and interventions are more broadly applicable to similar subregions in the Cayes Plain Basin and in other parts of Haiti. A number of general points following from the previous four sections need to be emphasized:

1. It appears that the river basin is an effective planning unit since both physical and econonmic flows tend to respect the basin boundaries.

2. The four subregions defined within L'Acul River Basin are highly interconnected in terms of both physical and social-economic criteria. Human or physical activities occurring in any one subregion clearly affect those occurring in the others.

3. In L'Acul River Basin as a whole, and in each subregion, the physical and economic environments are closely interrelated. Development cannot occur unless both components are addressed.

4. The role of temporal, as well as spatial, factors needs to be considered. For example, the revenue accruing to farmers is presently not being maximized due to the timing with which crops are introduced into the marketing system.

5. The potential for development of the rural areas of the Cayes Plain Basins is closely interrelated with the potential for urban-industrial development in the city of Les Cayes. The goal of land resource preservation can only be accomplished if a capacity is created to absorb the surplus population of the ecologically fragile Highland and Slope subregions.

6. Just as a development plan for the Cayes Plain Basin must consider the nature of, and interactions between, subregions, it must also consider the relationships of the Basin and its subregions to the nation. In particular, regional development initiatives in the Basin need to be coordinated with national social and economic policies. Ideally, national policies should complement and reinforce regional development efforts; at a minimum, the former should not introduce constraints upon the latter.

In addition to the set of specific development interventions outlined in this chapter, a number of more general recommendations may be advanced.

1. Haiti's greatest comparative advantage lies in its population. This resource should continue to be developed; in particular, the technical skills (including social, economic, physical science, and agricultural areas) needed to promote development should be emphasized. Those individuals that have already been trained in the course of previous projects and initiatives should be employed to assist new development efforts.

2. One of the major constraints to development planning is the scarcity of consistent and reliable data upon which to base decisions. Thus, an enhanced human and physical data base is required, especially at a regional level. At this point it should be noted that a potential problem with the river basin planning unit which has been proposed in this study is that is does not correspond

to existing administrative units. On the other hand, the existing data base for administrative units below the national level is so poor that when future data are collected they could be easily aggregated into appropriate river basin units.

3. To the fullest extent possible, new development interventions should complement and build upon past initiatives. This includes not only research and infrastructure but also, as noted above human resource capabilities.

4. Finally, and most importantly, development can only be accomplished if resources are committed over the long-term. It is unrealistic to expect that a five-year period or even a ten-year period is sufficient to achieve the desired results. Although certain processes techonologies and organizational structures can be instituted in the short-to-medium term, the social changes that comprise development will only be attained if long-term support is committed.

Having presented a range of specific and general recommendations as to the direction that development interventions in the Cayes Plain Basin should take, Chapter 8 now examines the range of appropriate mechanisms by which they can be implemented.

CHAPTER 8: IMPLEMENTATION STRATEGY

8.1 Introduction: Why Regional Rural Development

The previous chapters have explained why a plan with a river basin approach is necessary to make regional rural development work in Haiti. Investments to improve agricultural production in the plains and plateaus and maintain production levels in the slopes cannot be successful in the long run without an accompanying improvement in resource conservation in the highlands, plateau and slopes. At the same time, river basins are not self-sufficient units. Although many of the hydrologic and climatic conditions, marketing flows and social contacts are more consistent or concentrated within the river basins than between them, flows of people, products and services in and out of the river basins link the basins economically, culturally and politically to each other, to the regional and national centers and to the world economy and political context beyond.

A regional approach to planning must necessarily relate what is proposed for the region and its subunits to the national and international economic and policy context since a regional development effort can in no real sense be autonomous. In Haiti, like most countries, all regions and their component river basins or subunits produce products for the cash economy which are destined for buyers beyond regional or national borders. At the same time, regional development efforts are affected by the national and even international political and policy context in which they are embedded. Land tenure and inheritance laws, taxation and labor policies, import, export and pricing policies, the availability and terms of credit, the planning, management, delivery and financing of government services and the ease of emigration are all determined at a national if not international level. Without special policy exemptions or treatment, local and regional development efforts are subject to the prevailing government policies. As a result, promising local or subregional development efforts find their potential effects are often significantly curtailed by the absence of a supportive national policy environment. Even with a variety of beneficial national policies, regional development efforts cannot be protected indefinitely from the operation of the national and international economic system which operates with little respect for geographic boundaries.

While development planning is necessarily circumscribed by the national and international economic and policy context, a regional development approach implemented by a regional development entity can still be highly useful. It can focus the attention and resources of governmental agencies and authorities more productively on local needs. It can explore better ways of planning and coordinating government services at the local and regional levels and making those services more effective. It can mobilize other institutions and resources -- private voluntary organizations, the private sector and peasant groups, for example -- for the development roles they are probably best equipped to play and can coordinate their activities with those of government agencies. It can learn from the development experiences of the

non-governmental organizations and groups and can share their perspectives and the information generated with government agencies and authorities. Finally, it can keep central government authorities informed as to how national policies affect local development options and efforts and how, in some cases, such policies should be amended to promote development activities.

A regional development approach is important for a second reason as well. While ideally resources should be available to promote all necessary development efforts in all areas of a country at the same time, this is never the case. As resources for development are limited, they must be spent in a way which will bring results. The choice of region in which to concentrate development resources will necessarily be a policy decision. The Cayes Plain Basin has the third largest irrigable lowland area in the country after the Artibonite Valley and the Cul de Sac and by the criterion of potential agricultural production alone warrants systematic development attention. Once a choice of region is made, for a variety of reasons, efforts to increase agricultural production cannot generate sustainable results unless there is significant concentration of resources on a river basin and regional basis.

The regional rural development plan recommended here involves a coordinated approach. This means carrying out simultaneously complementary activities within the river basins which are linked to the development of the region as a whole and doing so on a scale necessary to have a worthwhile effect. As the previous chapters have explained, any project attempting to increase agricultural development in the Cayes River Basin must have at least five components which must all be accomplished at approximately the same time if the project is to have more than negligible long run effects.

First, it must promote soil conservation in the highlands, plateau and slopes areas to even out the flows of surface and ground water throughout the year and decrease siltation of irrigation and drainage systems in the plains. Second, it must expand effective use of irrigation, particularly in the plains, but also in the plateau area. Third, it must increase crop and livestock production particularly in the lowlands but also in the uplands to provide food and work for the people and to decrease their out-migration rates in the short run until new employment is available for them in or near the regional growth centers. Fourth, it must provide some way, directly or indirectly, to supplement income sources for those farmers in the uplands who cannot afford to maintain proper soil conservation measures on their land during an initial period. And fifth, it must have supportive government policies. A regional development effort that does not make major headway in realizing each element of this approach, will have very limited effect and will do little to stop either the depletion of the resource base or migration to regional centers, Port-au-Prince or beyond.

8.2 Some Considerations in Selecting a Regional Development Strategy

Before either discussing possible models of regional development entities or recommending agencies, institutions or groups to implement specific project activities, it is worthwhile reviewing five principal and interrelated themes in the literature on development administration strategy and discussing their relevance to regional development in Haiti.

These five themes can be briefly labeled (1) sustainability, (2) local participation; (3) incentives (4) decentralization, and (5) inclusion.

8.2.1 Sustainability. Development annals are filled with case after case of Third World rural development programs which left little net impact even five or ten years after primary project funding was discontinued. Many development efforts in Haiti fit this pattern (see ARCHIPLAN report). The kind of regional development approach envisioned in this report is based primarily on supporting and stimulating peasant efforts to conserve resources and improve crop and livestock production. Soil conservation measures and irrigation system construction, the principal emphases of this regional plan, for example, will only serve their purpose and merit their expense to the extent that they are adequately maintained after the project period ends. The IRDP project in Jamaica, for example, invested over $26 million in soil conservation efforts in what amounted to less than 2,000 acres over a period of six years. As the results showed, concentration of resources accompanied by advanced technologies and elaborate extension efforts do not necessarily result in soil conservation efforts that were adequately maintained by the farmers involved even during the subsidy period. (Blustain, 1982) The IDRP experience also demonstrated that a longer project period will not help establish a project which the farmers did not believe was in their short term or even medium term economic self interest.

Honadle and VanSant suggest in Implementation and Sustainability: Lessons from Integrated Rural Development (1984) that breaking out of the pattern of projects whose benefits are not sustainable requires two things. It needs a commitment from the beginning on the part of the planning agency to linking the plan's implementation strategy to efforts sustainable over the long run. Second, the project's activities must be ones that their beneficiaries value enough to assume their recurrent costs or that the available government or private organizations value enough to finance or subsidize.

The problem of recurrent costs cannot be solved at a project's end, however. It must be dealt with directly at the project design phase. The question is how. Government agencies may not realistically be able to commit themselves to recurrent cost management five and ten years in advance. Neither can the beneficiaries' response to the projected activities be accurately gauged at the project design stage. As Blustain points out, the Jamaican experience eloquently demonstrates how project

planners tend to focus more on showing that their proposed projects are acceptable to their intended beneficiaries than on the more complex process of determining whether those activities are truly appropriate to local needs and conditions. While peasant groups may welcome development activities for a variety of reasons and may seem to find demonstration efforts interesting and worth trying, that does not mean they are willing to commit themselves in advance to later support of such activities at their own expense. As development analysts have repeatedly concluded, small farmers tend to support after funding terminates only those projects which they feel they were actively involved in implementing and which continue to meet one of their priority needs at a cost that is manageable in their own terms.

It may be that peasant groups will not be able to sustain most programs or activities at anything like their project level of operation after the project funding ends because of peasant budgetary constraints. In that case, projects should be scaled initially so that maintenance and operation costs are manageable in terms of beneficiary budgets and beneficiary priorities.

Where this is not possible but where the activity is nevertheless considered critical, animation or technical assistance, for example, a third category or entity such as a religious organization, private voluntary organization or cooperative should be involved in providing the service with the understanding that the organization will assume responsibility for continuing some level of the service after the project period ends either through their own resources or through funding from other sources. Such organizations may be unwilling or unable to make such an advance commitment unless the implementation arrangement with them provides for an expansion of their resource base so they will have additional capacity to generate funds when they are needed in the future.

A fourth possibility is that certain sections of the private sector may be interested in generating profit-making projects complementary to the regional development activities which, while self-supporting, could be assisted through the program's activities.

From a slightly different perspective, Development Associates Incorporated (1982) suggests that to continue to be effective beyond their initial project period development activities must meet three conditions. They must have external support, financial resources and organizational capacity. External support includes both the macroeconomic and government policy environment and the political context. Financial resources might include the savings generated by cost effective technologies or the availability of resources to finance recurrent costs or other expenses. Organizational capacity involves the interest and resources of those organizations responsible for development efforts to continue project activities at their own expense. Each condition is necessary but not sufficient to ensure a project's sustainability. An organization with capacity and financial resources, for example, may not be successful if it lacks a financially interesting market for its crops or if it has engendered serious political opposition.

8.2.2 Local participation. The Cornell Rural Development Project's studies stress the importance of local or peasant participation in development projects, particularly those concerned with resource management. They also criticize the "top down" approach:

> Many resources management projects over the past several decades have been operated under the assumption that with the proper administration, inputs and packaging, plans formulated at the center could be implemented in the rural areas. It has been expected that with the right carrots and sticks, the government could inspire, motivate, cajole, prod, bully, intimidate, threaten or hoodwink farmers into behaving as the government would like them to behave.
> (Blustain 1982)

Their studies conclude that the nature of people's participation in development activities is critical and that "projects are likely to be more successful in the long run when local officials, organizations and people are involved in design, decisionmaking, implementation and evaluation activities." (Cohen & Uphoff 1979: 1)

The emphasis on local participation, on the part of both peasants and local officials is particularly important in the regional development plan proposed here because of its emphasis on resource conservation. Soil conservation efforts in Haiti require reduced use of the land for an initial period of perhaps several years. (Murray 1979). This means the farmers involved will have to accept reduced incomes because of lower agricultural production unless they can supplement their income from other sources. Since most rural Haitians have marginal incomes at best, proposals to improve soil conservation, no matter how beneficial in the long run, have met and may well continue to meet with apparent cooperation followed by lack of maintenance and a return to the previous erosion-promoting modus operandi. Means must be found of dealing with this initial income reduction burden.

The Jamaican experience suggests that peasants came to view soil erosion control as primarily the government's concern and failed to maintain soil conservation structures if they were not paid to do so because it was not in their short term interest to do so. If peasants in Haiti involved in soil conservation programs do not believe that the program will work as explained and that their incomes will somehow be supplemented in the interim period by sources whose commitment to doing so they can reasonably rely on, they will conclude they can not afford to give the programs the genuine support they need. In a real sense, the peasants themselves are the ultimate evaluators of resource conservation programs. If such programs are not rational from the peasant's, not the project designer's, point of view, they will fail since the peasants will ignore them or accept project benefits for the project period and neglect needed maintenance when such benefits end. Many of the best peasant organizing projects in the country have had difficulties dealing with the problem of soil conservation. (Lowenthal, 1979) It is, therefore, particularly essential to involve both peasants and local leaders and authorities in beginning the process of working towards some practical

solutions on an area by area basis. It is also likely that soil conservation will also need a substantial measure of national commitment at the highest level. Provision of jobs building erosion control efforts may provide adequate incentives on an interim basis in situations where the program has widespread support and is perceived as being administered fairly. The soil conservation work of the Organisme du Developpement du Basin du Fleuve Artibonite (ODBFA) in the catchment basin of the Lac de Peligre, which relies on an authoritarian approach supplemented by paid work on the project for many area farmers, is an experiment that should be watched closely (Kulibaba 1983). New measures, however, possibly including purchase or long term leasing of eroded parcels during their rehabilitation periods by satellite centers attached to PVO's should be explored as well.

8.2.3 Incentives. Just as the farmer is the ultimate judge of the merits of a soil conservation program, he is also the final arbiter for programs of crop and livestock improvement. Small farmers have been known to adapt quickly and even take certain risks when they see how a proposed change could benefit them directly and within the short term. A variety of extension efforts involving improved varieties and practices have failed, however, because of the climatologic, or physical conditions in which the crops had to be grown. A process of real peasant participation and consultation in the choice of new varieties and in the adaptation of cultivation practices to local conditions is likely to prove necessary to assure that existing crops and livestock and new and improved varieties will be grown successfully. Again, such an effort will require a bureaucratic reorientation and an adaptation of the research station, official extension service and subsidized demonstration plot approach which has met with limited success in spreading the use of improved varieties and cultivation practices among small farmers in the Third World (Erasmus 1952; Blustain 1982; Honadle and Van Sant 1984).

On the marketing and policy level, the introduction or expansion of production of crops and livestock has been constrained or undermined throughout the Third World by the economic, infrastructural and policy environment in which the improved crops and livestock had to be sold. There are foor typical kinds of problems. In the first case, encouragement of the cultivation of certain crops or livestock by input subsidies was not coordinated with the demand of existing or accessible markets. Farmers overproduced in relation to existing market demand; as a consequence, many farmers could not find a market for their products. In the second case, inadequate transportation, storage or credit infrastructure or the lack of marketing experience prevented farmers from getting their products to existing markets either during a period when the market prices were advantageous or before their crops spoiled. In the third case, inadequate marketing experience or non-supportive government policies precluded access to external markets for local products or reduced what access had been available. In the fourth case, increased production efforts were undermined by the government's importation of substitute commodities in the interests of maintaining a cheap food policy.

While many of these conditions are not resolvable at the local level, farmers are frequently aware of them and perceive them as serious constraints which affect their decisions of what to cultivate. For farmers to have the incentive either to begin or to continue efforts to increase production, they must have self-sustaining incentives to do so, namely worthwhile prices for their products. For the farmers to develop confidence that their efforts will be rewarded they need to have confidence that the marketing systems for their products bring them a fair return.. Adequate incentives have come from three sources: the regular market, advance contracts with buyers and cooperative selling. An example of the second is Comme Il Faut, the tobacco company discussed in Chapter 6. An example of the third is the UNICORS coffee cooperatives. There are some crops such as coffee for which middlemen are perceived by small farmers to be taking a disproportionate share of the profit. Assuming that the underlying economic situation can provide an adequate price for the product, small farmer incentives to produce such crops could be enhanced by structured involvement in marketing. The success of coffee cooperatives in various areas throughout Haiti, particularly on the west coast of the southern peninsula, has done a good deal to give farmers a higher return for their production and indirectly to get them to consider a variety of joint efforts which may be necessary prerequisites to tackling the more difficult problems of resource conservation.

8.2.4 Decentralization. Decentralization theory attempts to classify various approaches to decentralization and assess the benefits and disadvantages of each approach. Although the terms of the classifications vary somewhat, there are five principal types of decentralization relevant here (Schoenberger, 1981): devolution, deconcentration, delegation to autonomous public or quasi-public agencies, delegation to parallel organizations and privatization.

Devolution refers to the legal capacity of a local authority, typically an existing subnational government entity, to undertake certain projects. Deconcentration generally refers to a central ministry's administrative delegation of authority to an area office or field staff to perform certain specified tasks. Delegation to an autonomous public or quasi-public agency involves setting up an entity with an independent legal status to handle government responsibilities. Delegation to parallel organizations involves allowing certain non-public organizations to perform functions which are typically regulatory. Privatization redefines some public goods previously managed by government entities as ordinary commodities that will be supplied by the private market if there is effective demand.

In the regional rural development context in Haiti, the issue of decentralization arises at two levels: what structure should have general responsibility for implementing the regional rural development plan and what entities should carry out the plan's specific activities. The same entity is not necessarily suited to do both. There is no example of regional rural development by devolution in Haiti as there is no unit of government below the central government with any present capacity to administer development programs or, the key to true devolution, the authority to raise its own taxes to finance development or other activities.

Deconcentration is the model that characterizes most of the regional development authorities in Haiti other than the Organisme de Developpement de la Vallee de l'Artibonite (ODVA). It also perhaps most fairly describes the outer limits of the Haitian government's present orientation in the early stages of its decentralization effort for regional development. The advantages of deconcentration are that it allows centrally formulated and coordinated plans to be adapted in their implementation at the local level. It also maintains good communications between the implementing units and the central ministries. Its disadvantages are that a highly politicized central ministry is unlikely to support local field offices effectively and may make it difficult for even competent field staff to do their jobs. Coordination between several politicized ministries at the field level is also likely to be difficult.

Delegation to an autonomous agency best describes the situation of the ODVA. ODVA is a regional development authority concentrating on irrigation development and rice production. Over its thirty year existence, ODVA has enjoyed a fair measure of independence from central government control based in part on its unique "loi d'exception" or law of exception which makes it an autonomous entity affiliated with MARNDR but whose director has direct access to the President. It also benefits from its ability to retain funds from water taxes in its area as well as to attract significant funding from foreign donors because of the Artibonite's status as the nation's granary. No other regional development authority in the country has even the limited capacity to raise its own funds that ODVA has. On a program level, delegation of certain development functions such as small farmer credit or road repair to autonomous or semi-autonomous agencies has proven effective in Haiti.

Delegation of overall regional development responsibilities to a parallel organization may also be useful in the Haitian context both as an implementation strategy in and of itself and as a stimulus to increased deconcentration on the part of the government. If donors can find private organizations that are better placed to undertake development activities than district offices of centralized ministries, the ministries may find themselves with more of an incentive to decentralize effectively. Whether the Government of Haiti allows CIDA and the UN to fund UNICORS's limited regional development program for the western coast of the southern peninsula will be indicative of its willingness to endorse this form of decentralization. Delegation to a parallel organization would also be a suitable approach for many specific regional development activities which private voluntary organizations or private companies might be able to execute as well as or better than government agencies.

Privatization would also be appropriate on the program level for certain development activities such as supply of agricultural inputs (fertilizer, seeds and pesticides) or irrigation system maintenance that could be done more effectively at a similar or lower cost by the private sector and for which there may already be effective demand.

8.2.5 Inclusion. A fifth theme emphasizes the frequent neglect by development projects of important sectors and local actors which could serve beneficial development roles. Crop marketing middlemen and local authorities in developing countries are frequently criticized as

exploitative or concerned primarily with preserving their own excess profits or their own power. Likewise, many private sector companies dealing with peasants are often assumed to be profiting unfairly by their disproportional power in the relationship. In Haiti, missionaries or evangelical preachers -- whether Catholic or Protestant -- and houngans or voodoo priests as well have often been accused of using religion as an opiate to get rural people to accept conditions they would do better to work to change.

Development planners are sensitive to criticisms that they are using development assistance either directly or indirectly to enrich the political and economic elites or to further entrench regressive local institutions. Such planners are further wary of involving in development activities individual or institutional actors whose presence might taint the project in the eyes of the intended beneficiary group and deprive the project of the moral legitimacy necessary for its support by the people. As a result they often design development projects to bypass local elites and authorities, the private sector and most religious institutions. The bypassing and circumvention of some such interests, however, can often result in their unnecessary opposition to and subversion of project activities.

An alternative approach is to assess the interests of these actors on an individual basis and, for those considered most influential, determine whether there is any positive role they can play. While giving certain actors positions of control over development activities might cause resentment or project rejection among the intended project population, the use of the same actors in other roles, such as providing development inputs on a competitive contract basis, might not have the same negative effect. It might also provide the development effort with a needed input and the actor with an interest in further cooperating with development activities.

There are, of course, limits to such an approach. And there are, no doubt, individuals or institutions whose participation in development activities in any form is not worth the risk involved. On the other hand, some means of involving authorities and elites, if only by consultation to inform them of development activities and seek their input and feedback would be well worth the effort.

8.3 Some Considerations in Choosing a Regional Development Model

There are a variety of structures through which coordinated and area focused development efforts are usually implemented. All those discussed here are of the type 4 variety in Figure 2.1). These generally fall into five categories. The five models' strengths, weaknesses and usefulness for particular conditions as summarized by Honadle and Van Sant (1984) are discussed below in terms of their applicability to the proposed regional development project for the Cayes Plain Basin.

8.3.1 National Lead Line Agency. Consigning a regional development project to a national line agency such as a Ministry of Agriculture with cooperative agreements between it and other sectoral agencies is one classic approach. It is thought to have several benefits. It would afford the project an established and not temporary institutional base.

It would mean decisions regarding the project would be likely to be made at high government levels and it might simplify the processes of gathering information and project design. Common disadvantages of such an approach, however, are that it confines the project to a sectoral approach. Project decisions may more closely reflect national preoccupations rather than regional or local needs and national lead agencies are often unwilling to delegate significant operational authority to those at lower levels of their agency who should as a practical matter be responsible for implementation. Finally, other line agencies are often jealous of the lead agency's primacy which can interfere with interagency coordination.

Nevertheless, such an approach has proved useful in various settings in the Third World where the appropriate lead agency was highly capable, where it was responsive to the project's target group, where it set a high priority on institutionalizing the project and last but not least, where the national leadership's commitment to project success was considerable.

Recommendations: In Haiti, under this approach, one choice as lead line agency would be MARNDR. As the plan described in this report, however, must be a regional development program addressing the creation of industries for employment in the lowlands as well as the development of agriculture or the conservation of resources, the use of MARNDR for overall project management would be inappropriate. Recent USAID experience with MARNDR in PDAI, as mentioned in Chapter 6, illustrates some of the difficulties such a choice might involve. Although MARNDR had a District Agronome in the Cayes area subsequently made Regional Director as well, much actual project control for PDAI remained in Port-au-Prince at the Secretaire d'Etat level within the Ministry. Such retention of decision making authority and financial control in Port-au-Prince was a major factor in project delays, coordination difficulties and limited achievements. While the other shortcomings in the PDAI experience mentioned in Chapter 6 are not necessarily standard components of project activities run through MARNDR, they are local realities which affect how other local institutions and people perceive MARNDR's capacity to implement projects. Other drawback to the use of MARNDR as lead agency is that it has a sectoral approach which may not be adequate to manage the regional approach required here.

A second option as lead line agency would be the Ministry of Plan. So far, the Ministry of Plan's preference has been to focus on planning, managing, financing and evaluating development projects conducted by other ministries with the exception of the regional development authorities under its tutelle -- ODBFA, mentioned above, and the Organisme du Developpement du Nord Ouest (ODNO) -- which are undertaking some development activities directly. Running a regional project from the Ministry in Port-au-Prince would likely be both beyond the Ministry's present capacity and contradictory to its commitment to decentralization and regional administration.

8.3.2 Subnational Government Entity. Placing the project as the responsibility of a region, province or district has also worked in some cases in the Third World. This approach ensures a local rather than a national focus. It can improve and consolidate coordination through the use of a political authority superior to local implementing agencies. and it can build the organizational capacity of a permanent entity to plan and implement development activities. The disadvantages of such an approach in a Third World context are that a subnational government entity often lacks sufficient instititutional, technical, or managerial capacity to undertake such development projects. It may also not have adequate leverage to negotiate with line ministries whose other activities may substantially affect the project.

Nevertheless, such an approach has proved useful where the project area is unique in the country context, where the government has a high commitment to decentralization, where the subregional entity has good institutional capacities and is responsive and oriented towards the target group.

Recommendations: The problem with placing a regional development project with a subnational entity in the Cayes region is that the existing structures -- the prefecture for the arrondissement and the mayors' offices for the communes -- have little appropriate institutional capacity to undertake development projects. Both the prefect and the mayors are primarily political administrators. They have no authority to levy taxes or even to spend those taxes collected from their areas. They have few regular operating and maintenance responsibilities in their districts for what are elsewhere considered normal municipal services: sewage and water services, fire protection, street repair, garbage collection, hospitals. This absense is in marked contrast to the situation in municipalities in the Spanish speaking Latin American countries which typically collect some taxes, provide a limited array of public services, and serve as a forum for local identity and for making demands on the national government (Adamczyk, 1983). While the prefecture and the mayors' offices may evolve that way in the future in Haiti, they are not at that point at present. 1983 was the first year in over two decades in which free elections for mayor took place in Haiti. Since the encouragement of local political expression not to mention local government activity in Haiti is at a very early stage, local political entities are still unsure what level of initiative they will be permitted to exercise. While they would like to see development projects of various types accomplished, they do not yet see themselves in a position either politically or institutionally to be responsible for the management or implementation of a regional development effort. In some cases, however, they might welcome direct involvement in the planning and execution of specific projects and might be the entities best able to mobilize certain resources. At the present time however, investiture of such subnational government entities with major development responsibilities and outside funds is not likely to be permitted and, if permitted, might well prove counterproductive.

8.3.3 Permanent Integrated Development Agency. Establishing a Permanent Integrated Development Agency (PIDA), usually directly under the chief of state, is a third common alternative and has been successful in other countries. Such a structure can provide a comprehensive project overview, combining a local area focus with access to high levels of governmental authority. Because of its bureaucratic position, such an entity also has a better chance of institutionalizing the project after its initial period. This approach's disadvantages are that existing line agencies may compete with it to provide services in the target areas and to undermine its efforts. They have at least occasionally been successful in doing so, as was the case in Tunisia (Demongeot, 1981) Secondly, the difficulties of maintaining institutional contacts with high level government and local agencies can be complex. Such efforts however, have proven effective where line agencies had cooperated in the past, where the PIDA was highly capable and sensitive to the target group and where the technology used needed complementary inputs.

Recommendations: In the Cayes context, the chief disadvantage of the PIDA approach is that it involves creating a new mechanism to implement projects rather than using mechanisms already in place. This would necessitate the usual slow start up period as the PIDA acquired and trained staff, developed good working relationships with the other local and national institutions and agencies and worked out the kinks in its operating procedures. It would mean duplicating the institutional capacity that already exists among various groups and institutions which could well be capable of undertaking project activities more rapidly and more effectively than might the PIDA. Secondly, if the new entity were not under the tutelle of either the Ministry of Plan or MARNDR, competition from both the local and national offices of Plan and MARNDR would be likely. The PIDA'S institutionalization independent of both existing Ministries, short of another Loi d'Exception like the ODVA's, would be doubtful. While the creation of a PIDA under the tutelle of the Ministry of Plan would facilitate its institutionalization, such a structure would still represent a duplication of activities and resources in a way not necessarily best designed to accomplish the regional plan's objectives.

8.3.4 Project Management Unit. Project management units (PMU's) are a common form of rural development structure. This structure is derived from the engineering approach to development projects. Under this theory, development is primarily a technical problem. Regional development efforts need the best professional designs available implemented in the field by qualified technicians. The overriding emphasis is on the quality of the initial design, the efficiency of implementation of that design and the avoidance of the political and bureaucratic red tape involved in consultation and participation. PMU's are usually autonomous but temporary agencies established to deliver services or build infrastructure in a limited geographical area in a limited period of time. While such an approach can be highly successful for straightforward infrastructure projects where the usual methods of operating are cumbersome, it has two major difficulties. PMU's are hard to institutionalize because of their temporary nature. This has the related effect of discouraging the participation of the most talented local staff because they often see their professional futures lying with the permanent agencies. If the

project can attract good local personnel, they may see the exercise of independent authority as jeopardizing their careers in the line agencies to which they hope to return once the PMU terminates. This has frequently resulted in a unintended responsiveness of PMU staff to traditional line agencies as was true in the case of Tunisia cited earlier which can reinforce the sectoral approach, deter innovation and subvert decentralization.

Recommendations: The principal difficulties with a PMU approach is that the regional plan proposed for the Cayes Plain Basin depends on getting peasant participation in and support of soil conservation and irrigation management and improved crop and livestock production. As was explained in detail above, this is not simply a service delivery or infrastructure building approach which can be entrusted to experts. Many of the organizations most capable of accomplishing these projects in a sustainable way are not in the government sector and so would not be incorporated into this model. A second problem is that in Haiti, few agronomes have a professional future outside MARNDR or the Ministry of Plan. Consequently, they might make many of their decisions while working for the PMU with sensitivity to preserving their future career options which, in turn, would undermine the project's independence.

8.3.5 Private Voluntary Organization. The fifth and rarer placement strategy for rural though rarely regional development projects is with private voluntary organizations or PVO's. These efforts are usually much smaller in scale than what might be called a regional development project and focus on community development in a few communities. The advantages of such an approach when used by the most successful PVO's are: a major emphasis on involving a wide range of local people in the organizational effort, the incorporation and use of existing local institutions in some project activities, a focus on participant self-help, and a flexible mode of planning involving continuing modifications in project plans as local requirements become clearer. The disadvantages of such an approach include dependence on outside funding and on project organizers who may not be indigenous to the community or likely to remain beyond the project period.

Recommendations: In the Cayes River Basin there are a variety of PVO's which already have development activities under way that fit within the general outlines of the proposed regional development effort. Many could and would like to expand their development activities along similar or complementary lines. No group in the Cayes area, however, is at present in a position to be able to sponsor a regionally oriented development program on the scale that the Oblate Fathers and UNICORS (the federation of coffee cooperatives), for example, have proposed for the western coast of the southern peninsula. Within five years such a capacity on a small scale may have developed for the Acul and Ravine du Sud river basins on the part of the Oblate Fathers, the cooperative effort sponsored by CCH and the Center at Laborde and possibly in the Central river systems area by the Baptist Mission's Integrated Rural Development project. The results of the West Coast UNICORS project if it is permitted to proceed will be highly suggestive on this score. Unlike most PVO's to whom rural development projects have been entrusted elsewhere,

all the groups just mentioned have a permanent commitment to the area. The regional development effort proposed should help these groups develop their capacity along these lines but should not expect it of them prematurely.

8.4 A Recommended Structure and Process for the Cayes Regional Development Project

As the proceeding discussions explained, an appropriate development strategy for the proposed regional plan requires a structure that will involve relevant government agencies, local authorities, private organizations, peasant groups and private sector entities in planning for regional development. It also requires a process by which the most appropriate available entities or resources can be mustered to tackle specific development activities.

Given the available options, we propose that the Cayes Plain Basin regional development project be composed of four elements: an administrative and coordinating office, two types of advisory mechanisms, a financing and control entity, and project activities set up by performance contracts, loans or grants with appropriate organizations or entities. The following discussion will explain the role of each element and justify its selection.

8.4.1 Administration and coordination. The regional development project needs a light coordinating body that has access to higher levels of central government but which is not constrained by a sectoral approach in implementing development projects. It needs an entity that has an institutional capacity to maintain an overview of development needs and the interrelation of development activities with the macroeconomic and policy context; one that will be able to restrict its own bureaucratic growth for the greater goals of accomplishing development activities by the best means available and one which will have natural legitimacy in the eyes of other government agencies in a planning, financing, oversight and evaluation role but which will not compete directly with them in project implementation.

The best choice available in January 1984 at the writing of this report was the Regional Office of the Ministry of Plan for the South. It meets more of these criteria better than any other existing entity. Although the office is relatively recently established, its staff is well known and respected locally and is well acquainted with the needs of the area. While the Regional Office's existing plan for the area, completed in the fall of 1983, is organized on a sectoral basis, the sensitivity of the office to the area's basic problems suggests strong support for a more area-focused coordinated approach which is in keeping with the current development philosophy of the Ministry of Plan.

The Regional Office of Plan (ROP) does not yet have a track record for designing and administering projects but neither does it have a negative record. One benefit of using the Regional Office of Plan as the administrative site for the project is that to do so would strengthen its capacity to do what the Ministry of Plan intends it to do for the long run, namely assess regional conditions, formulate a plan for action and

apply for funds to various sources. This would reduce the institutionalization problems at least at the overall administrative and coordinating level. The Ministry of Plan will have a strong continuing incentive at relatively small cost to improve and support the capacity of its regional office to plan, broker and coordinate projects. It is unlikely, however, that the Ministry of Plan will be able to fund most of the projects itself for some time to come, if not indefinitely. How individual projects will be made self-sustainable or will have their recurrent costs financed by other sources will have to be assessed, before they are approved, on a case by case basis.

We do not recommend the MARNDR's Agricultural District as the administrative base of the regional development effort for the following reasons. The Agricultural District may well have the capacity to carry out a variety of development projects successfully. Its recent experience with the PDAI program in the Acul river basin, however, though complicated by control of the project from the Ministry in Port-au-Prince, involved enough major difficulties that the Agricultural District has little credibility insofar as its management capacity is concerned with a wide range of local people and organizations. While the Agricultural District may recover its credibility through successful future activities, at the present time, placing the regional development project under its management would be unlikely to stimulate local support for the project.

There is one other entity in the area with considerable experience funding and overseeing other development projects. That is the DCCH Center at Laborde. While the Center would be a suitable entity to carry out specific development projects and possibly do some coordination for the Ravine du Sud and Acul river basins, giving it overall regional development responsibility for the Cayes area would be inadvisable for several reasons. First, its scarce administrative resources are already overtaxed. Second, the administration of a regional development project, since it is normally the activity of a government agency, would be generally perceived as a political role. The capacity of organizations like DCCH to do effective work of various kinds with farmer groups depends to a great extent on the degree to which they are perceived by farmers as being independent of the government. Placing the Center in what looks like a political position could undermine its credibility among its peasant client base. Furthermore, relations between the Government of Haiti and the Catholic Church have been in an uncertain period since the visit of Pope John Paul II in 1983. The church has been attacked in the past in Haiti when it was considered too powerful. Consequently, charging priests or Catholic organizations with too much overall responsibility for development efforts might reactivate old fears with serious results for present and future projects.

8.4.2 Advisory groups. In order to make sure the project has proper working relations with government agencies, local authorities, private organizations and farmer groups, we recommend the project structure include two kinds of advisory mechanisms: one for government agencies and officials and the other for other important entities or perspectives.

The first would be the existing CORCOPLAN, or regional council of the heads of government agencies, plus prefects and deputies, for the Department of the South. Incorporating such an entity as an advisory group has several advantages. It would allow the Regional Director of Plan as administrator of the regional development project to consult with other agencies on how the agricultural development needs of the Cayes region might best be met and coordinate activities funded through the ROP with the programs of other government agencies. And it would do so using and strengthening an existing official structure for which the Regional Director of Plan is already the official coordinator.

Though true coordination is more likely to develop from informal contacts between staff and directors of different agencies as development analysts have noted (Demongeot, 1981; Honadle and VanSant, 1984), the formal relationship between the agencies which CORCOPLAN provides legitimizes and facilitates informal contacts. A second reason for using CORCOPLAN as an official advisory group is to reduce the inevitable jealousy that will result from channeling significant quantities of funds through one agency. It would do so by providing other agency chiefs with a way of participating in decisionmaking that does not, however, block the project from pursuing non-governmental approaches such as the use of private voluntary organizations or representatives of the private sector as contractors, for example.

The second type of advisory mechanism should provide a means for involving those local and regional authorities and interests which are not governmental agencies in advising the regional development project on how various development activities ought best be accomplished. The regionalization law provides for such a structure on a regional basis but we recommend a more informal system focused on specific areas. Because there are so many people and institutions that ought to be included, we recommend the creation of three groups: one each for the Acul, Central river systems and Ravine du Sud river basins. As the City of Les Cayes forms an integral part, if not geographically at least economically, culturally and politically of each river basin, the authorities for Les Cayes and the region as a whole should be included in the advisory group for each of the river basins. The Acul river basin advisory group might include, for example, in addition to the Les Cayes and regional authorities -- prefect, magistrat, deputy and commissaire -- the magistrats of the relevant communes, the heads of community councils, the heads of PVO's, representatives from cooperatives and groupments, animateurs, representatives from the private sector and possibly parish priests and pastors. The purpose of these advisory groups is to assist the regional development project in better understanding local conditions and needs so that projects can be better adapted to their settings. As a practical matter, meetings of such groups may prove difficult for a variety of reasons: disparity in position and prestige among members and mistrust or disinclination to talk in front of others. The membership of such structures, however, should still be consulted regularly on an informal basis by the regional development project staff to get information and feedback on proposed and existing development activities and, particularly, to promote local level problem solving on such

difficult issues as soil conservation and land use coordination. The groups can also channel development proposals to the regional development project.

One other alternative regional development structure that has been proposed involves creating an official regional planning body composed of the same kinds of people who would serve on the advisory groups just described: local authorities, representatives of cooperatives, private voluntary organizations, community councils and the private sector, among others. This planning body would meet, deliberate, come up with a regional plan and then apply for funding of specific projects to various donors including USAID.

This approach in the Haitian context has a number of difficulties which at the present time would prove highly risky. First, many of the people involved in development activities do not appear to feel comfortable discussing their perspectives in public with other Haitians. Second, such a body would have potentially significant control over resources and more real power than the advisory groups we propose, and would thus tend to attract at least some people more interested in power than in development. In Haiti, in a number of situations in the past, people have created the appearance of whatever structures they thought would appeal to donors, whether cooperatives, groupments or community councils, in order to get at development resources while having no real commitment to the cooperative problem solving those structures' philosophies involve. As the planning process proceeded, the competition for resources would no doubt intensify and the responsible leaders involved might be reluctant to become politicized by their participation on this planning body as it could deprive them of credibility with their peasant client groups. They would either foresee this problem and not become involved or would withdraw as the body became more politicized to be replaced or crowded out by those who had nothing to lose. As a result, such a structure might well lend itself to being dominated by those forces least interested in genuine development.

8.4.3 Financing, control and technical assistance. If USAID decides to provide substantial funding to a regional development effort in the Cayes area, there should be a USAID representative in Les Cayes to work with the regional development project and to free the ROP for its planning, negotiating and coordinating roles. All such individuals, but particularly the chief USAID person, should sign on for a minimum of three years. Both the chief representative and his staff should live in Les Cayes in order to enable them to acquire a thorough acquaintance with local problems and constraints as well as good relations with local people and agencies. To permit the most effective kinds of relationships and information collecting, both the chief representative and staff should speak French and Creole.

The role of this unit should be to assist the regional development project in determining what kinds of project activities are eligible for either direct assistance or Title III counterpart funds as serving objectives detailed in the regional plan and meeting guidelines negotiated between the Ministry of Plan and the USAID Mission. To so certify, the

USAID unit should be involved in negotiating the contracts, grants or loans by which the plan's activities will be implemented. The office should also administer those projects funded by USAID to assure that funds are spent within the guidelines. It should be allowed considerable discretion by the USAID Mission to approve changes in specific projects during their funding periods if local needs and conditions so require and it should maintain communications with the advisory groups to help in this process. Project funds should be maintained in bank accounts in Les Cayes. The USAID unit could also furnish the ROP with technical assistance of various kinds in program development as well as feasibility studies.

8.4.4 Process of project identification. development and placement. Using the input from CORCOPLAN, the Advisory Groups, and its own staff's research, the ROP would proceed to identify appropriate regional development activities. Those activities eligible for U.S. direct assistance or Title III funding would meet guidelines established by the Ministry of Plan and USAID. Other activities not meeting those guidelines could possibly be funded through other sources. Such projects would not be administered by the USAID/Cayes office.

Once the ROP identified suitable projects, it would consult with the available resources to determine which entity or organization would be most capable of realizing the project. It would also accept applications for projects fitting the plan's objectives. It would negotiate with entities interested in undertaking these projects and would reach an agreement over the service or activity to be undertaken. Finally, the associated USAID unit would maintain financial supervision over all the projects funded by either direct assistance or counterpart funds.

8.5 Project emphases

The rest of this chapter will not identify exactly who would be best able to implement each of the numerous recommendations in Chapter 7. That is a task better suited to the ROP. Instead it will focus on the four main elements of a regional implementation strategy at the program and policy levels and the kinds of institutions that would be useful in implementation. These four elements are: intensification of production in the plain and the plateau area, reforestation and soil conservation in the uplands, associated infrastructure improvements and the national policy framework.

8.5.1 Intensifying production in the plain and plateau areas. Agricultural production in the plain must increase significantly to provide incentives for people to migrate from the uplands to the plain and thus reduce population pressure on the uplands. Increased production in the plain is also necessary to feed the people and generate increased local markets and employment opportunities. This goal can best be achieved by developing the existing irrigation systems and broadening and availability of supervised and unsupervised credit tied to extension or animation. Irrigation system expansion should be done in phases through the irrigation groups and their affiliated private institutions with the supervision and technical assistance of the Agricultural District. A

phased approach allows the irrigation groups to develop the organizational capacity to maintain their systems. Associating credit and animation services with phases of the system's expansion might serve as an incentive in two ways. The groups would have to increase their organizational capacity to win access to credit and, in turn, the increased production made possible by supervised credit would be a further stimulus to assuring the reliability of irrigation. Sprinkler systems that tap groundwater should be tested in the area early on to determine whether they are financially and practically feasible. If sprinkler systems do prove feasible, experiments to accustom irrigation groups to their use should be started as early as possible and irrigation plans for the area should be devised accordingly. Extension and credit efforts could be done either through a semi-autonomous unit such as IDAI, a church-related animation program, the private sector or a combination of sources. The private sector should also be encouraged to develop markets for other crops which could be grown on a contract basis.

Similar attention should also be paid to increasing production in the Platons area by upland irrigation, supervised credit and animation and extension efforts to introduce new crop varieties and cultivation practices as suggested in Chapter 7.

8.5.2 Resource conservation in the uplands.

In order to preserve the upland soils as well as the regularity of water flow to the lowlands, reforestation and planting of perennial grasses is another top priority. Probably the best institution to undertake this task for the Ravine du Sud would be the DCCH as it already has a particular proprietary interest in protecting the flow of water to the Canal D'Avezac. Because of its parish structure, DCCH could also supervise such activities in the Acul river basin as well. The IRD program of the Baptist Mission could be expanded to serve more areas in the central plain and could distribute trees through the Baptist or other Protestant churches throughout the areas as well. The reforestation effort could continue to be supervised and coordinated by PADF. Some changes in the PADF program, however, would be in order to direct tree planting to areas where it is most needed. At present trees are being planted where they will grow best, which is not necessarily on steep slopes. What might help would be an associated active groupment program in penned livestock raising and compost making. If compost is available to enrich the soil, it is more likely that participants would plant and maintain trees on the slopes. An associated penned livestock program would provide some incentive for farmers to plant perennial grasses between the trees in at least some areas. This would both provide livestock feed and reduce erosion.

The PADF program should be expanded to include fruit and coffee as well as fuelwood trees and should take over the existing ASDEC nursery at Camp Perrin. Coffee marketing cooperatives, possibly with the assistance of UNICORS, should be helped to expand their extension efforts to members and non-members alike to encourage both coffee planting and better coffee cultivation and intercropping practices.

The private sector should be encouraged to identify perennials other than coffee and fuelwood trees that can be used for soil conservation purposes on steep slopes. These are crops that could be harvested in the first year or two after planting and for which there is a financially rewarding stable market. Such crops may be available which could be processed by the existing underused essential oil factories. If necessary, private sector entities could be assisted in establishing contract grower arrangements for such crops with farmers in the slopes and Platons areas to facilitate both production and coordinated land use.

Some of the animateurs involved in reforestation should organize groupments of charcoal producers to investigate the acceptability of using the improved techniques for producing charcoal recommended in Chapter 7.

To reclaim moderately eroded areas and to provide a resource base for future extension efforts, particularly in the upland areas, coffee and tree planting rehabilitation projects sponsored by private voluntary organizations with long term lease or purchase arrangements such as were suggested in section 6.5, might be in order.

8.5.3 Infrastructure improvements. While this plan does not recommend much road construction, it does recommend some path and road improvements to facilitate access of extension agents and to increase ease of marketing. These could be undertaken by community action councils under the supervision of SEPRRN. The main infrastructure investments, other than in irrigation, however, should be in potable water and education. Potable water is the most cost effective form of preventive health care. Adult literacy, functional agricultural education, and expansion of existing elementary and secondary schools are necessary to improve the productivity of agriculture in the plain and to attract and accomodate migrants from the uplands. A number of observers in the Cayes area commented that increasing educational opportunities for children from the uplands would do as much as anything else to increase their outmigration from those areas. Some basic educational investments such as school building and provision of at least primary school teachers to those areas would be in order. The recurrent costs for most of those schools could be supplied, in areas suitable for coffee, by the net revenues from a few hectares of rehabilitated coffee and fuelwood or fruit tree plantations which could be owned by a registered non-governmental organization or held by a parish in trust for the school. The link of resources for education to coffee crop quality or fuel wood plantations might do as much as anything else to increase local interest in better coffee or tree cultivation practices.

8.5.4 National policy framework. National export and import policies have considerable effect on the incentives farmers in the Cayes area have to increase production. If the government wishes to see significantly increased production in the Cayes area as well as elsewhere in Haiti it should keep to three straightforward policies. The first is to remove import taxes on inputs to agricultural production. The second is to prohibit imports of certain agricultural commodities, such as rice, in

which the country is becoming self-sufficient, for at least an established period to encourage the spread of irrigation, better irrigation system management and improved cultivation practices. The third is to reduce or eliminate export barriers both in terms of export taxes and export board pricing policies. Finally, the government should encourage water users associations to expand and maintain irrigation systems under the supervision of MARNDR by authorizing such associations to control water allocation and to collect user fees with the cooperation of the Bureau des Contributions. Without the minimally supportive policy framework just described, no regional rural development plan has a chance of having a substantial impact.

CONCLUSIONS AND RECOMMENDATIONS

In the context of a rural regional coordinated development plan for the Les Cayes area, the land tenure, credit and labor data, collected in the Acul River Basin, allow--in view of a development scheme for the basin as operational unit--for the following general recommendations:

1. There is a need to map out a detailed cadastral survey for the whole Acul basin area in order to encourage people to obtain titles for their land. This titling should be done at no cost for the owner if one wants the farmers to collaborate. The titling procedure might resurrect existing or dormant conflicts within families, but on a long-term basis it would increase tenure security. Before implementating, the experience in the Artibonite area (irrigated), where a cadastral survey was accomplished, should be taken into account and studied. One could consider the land to be secure when there is one deed for the whole family, but it is my experience in Haiti, that among family members there are constant conflicts over non formally divided plots. Most people's only objection would be the expenses for notary, etc. Many of Murray's (1978) recommendations should be taken into account.

2. A particular tenure study should be done in the Acul (and Cayes) Plain area, especially with attention to large landownership and State land for both irrigated and dry lands, (in view of land reform).

3. The population pressure on agricultural land is too high. Besides out-migration, only industries, public works, and salaried services could make people leave the agricultural sector. Too many people on to small an amount of land have an immediate erosion effect. Even with the best technologies the best seeds an modern agricultural methods, it all will inevitably lead to what Geertz has called "agricultural involution" if the same number of people stay on the land.

4. Most farmers interviewed complained about decreasing soil fertility because of the loss of the "fallowing institution," instituted when more land was available for less people. Lack of cash pressures them to work all available plots. Fertilizer and locally made "konpos" would address this problem.

5. Coffee seculators in Caiman and Le Prêtre maintain a patron-client type social system. Cooperatives might be the best way to counteract their monopolies, if at the same time the speculator are not integrated into or parallel to the cooperatives.

6. For L'Acul farmers, sharecropping is the only socially accepted way of obtaining access to some plots of land through which they can increase their farm size. Any regional planning, however, should include a component through which those who sharecrop part of their lands out to others, are excluded from advantages brought in by a project. Other pressure means might be worked out. In the short run, this might be to the disadvantage of the small farmer, but a regional plan should be able to compensate those who are negatively affected by this action.

7. Rural animation teams with specific Acul area training (besides a technical one) should be available to assist farmers in organizing cooperatives, credit, etc, and in adopting improved varieties and new crop types, animal traction, etc. The survey has shown the farmers' readiness to change. In Les Platons people spoke highly of a certain agronome Brice who had been working in the area.

8. It would be highly recommended to organize farmers along "groupman" models developped by Chavannes Jean-Baptiste in the Central Plateau and worked out in different types by many PVO's and even religious organizations. Working exclusively with existing PVO's, however, would not satisfy the organizational needs of the slopes and the upper areas of the Acul river basin; some new structures have to be created, non governmental by preference, but not dependent for their existence on the duration of the project.

9. It could be discussed if Les Platons Fortress (ruins) is of any touristic interest for the Les Cayes region.

APPENDIX A

Proposed Regulations for Water Users Association for the Canal D'Avezac

(Drafted by Développements Communautaires Chrétiens d'Haiti)

Le règlement suivant est dressé conformément aux lois de la République d'Haiti relatives a l'usage de l'eau. Il s'agit d'un règlement interne qui concerne le système d'irrigation d'Avezac dans la plaine des Cayes, administré par un Comité des Usagers (C.D.U.) sous la supervision du DARNDR. Voir l'autorisation du Département de l'Agriculture, des Resources Naturelles et du Développement Rural du 2-12-1975.

1. Système d'Irrigation

1.1 Les eaux de système d'irrigation d'Avezac sont devirées de la Grande Ravine du Sud par une prise située à Camp Perrin. Le vannier est employé par le C.D.U.

1.2 Le canal principal est divisé en deux branches par le bassin de distribution de Levy. Les deux branches sont appellées: GRAND COURSIER DE PESMELE (à droite) et GRAND COURSIER DE LABORDE (à gauche).

1.3 Sur le cours des grands coursiers se trouvent des bassins de distribution. Ils derivement l'eau pour les unités d'irrigation pro rata de leurs superficies irrigués. Ces unités sont en général formées par les habitations.

1.4 A partir des bassins de distribution l'eau est amenée jusqu'à la limite des unités d'irrigation par des canaux latéraux, nommés "canaux primaires."

1.5 A l'interieur des unités, l'eau est distribuée par un système de canaux secondaires.

2. Organisation

2.1 L'administration du système d'irrigation d'Avezac est confiée à un Comité des Usagers (C.D.U.) sous la supervision du DARNDR. Le Comité est formé de:

un représentant pour chaque sous-comité (voir 2.2)
un représentant du DARNDR
un représentant du Diocèse des Cayes
un représentant de MISEREOR/DCCH.

Le C.D.U. est administré par un directeur qui doit être approuvé par le DARNDR et l'assemblée du C.D.U.

L'assemblée du C.D.U. est réuniee tous les 6 mois. Elle élit un conseil de 5 personnes, parmi lesquelles se trouve le représentant du DARNDR, le conseil appuye le travail du directeur et siège chaque mois et est convoqué par le directeur en cas de nécessité.

2.2 A l'échelle des unités d'irrigation les propriétaires forment un sous-comité. Les sous-comités sont dirigés par un président, un vice-président, un secrétaire et un trésorier. Ils se réunissent chaque trimestre. La réunion d'un sous-comité doit être indiquée au directeur.

N.B. En cas d'urgence, on peut convoquer une réunion extraordinaire du sous-comité.

2.3 Chaque sous-comité est subdivisé en groupes d'arrosage d'environ 20-30 propriétés. Ils sont dirigés par un président, vice-président, secrétaire et trésorier.

3. Devoirs et Droits des Usagers

3.1 Les grands coursiers, les canaux primaires et les ouvrages dans leurs cours, sont des DOMAINES NATIONALS. Loi sur le Domaine National, Article 2. Nul n'y peut détourner l'eau, dresser des barrages, manipuler des vanniers sauf le personnel du C.D.U. sur l'ordre du directeur. Tout contrevenant sera indiqué à la Gendarmerie afin d'être puni conformément à la loi. Code Rural de 1963, Article 18.

3.2 La répartition de l'eau à l'intérieur d'une unité d'irrigation est organizée par les sous-comités. Chaque propriétaire a le droit de recevoir de l'eau selon la surface de ses terres irrigables. A cette fin le sous-comité dresse et applique un horaire de distribution qui est presenté auprès de l'administration. Quand celle-ci aura donné son accord, il est deposé au bureau du chef de la section rurale chez le président du groupe et affiché à la tête de distribution a l'intention des usagers.

Nul ne peut s'emparer de l'eau quand ce n'est pas prévu dans l'horaire. Après que l'heure d'un usager est terminée, il est obligé de transmettre l'eau à son voisin, prévu dans l'horaire.

Il est le devoir des présidents des groupes et des sous-comités d'indiquer chaque cas de violation porté à sa connaissance à la gendarmerie. Chaque usager a le droit de s'adresser à l'Administration, si les présidents ne répondent pas à leurs devoirs. Code Rural de 1963, Article 18. Arrête présidentiel de 1920 établissant des bureaux d'irrigation, Article 3. Code Rural Dr. Francois Duvalier, Article 139.

En cas de répétition, le directeur fait supprimer l'eau au propriétaire contrevenant à ce règlement. Nul ne sera autorisé à laver les pompes à aspersion dans le canal. Les contrevenants seront sévèrement punis. Arrête presidentiel de 1920, Article 8.

4. Carte d'Usager, Liste des Usagers

4.1 L'administration dresse un plan cadastral à l'usage interne du système d'irrigation d'Avezac. A partir de ce plan, elle dresse une liste des usagers qui contient:

le nom du propriétaire
la surface de ses terres
le sous-comité et le groupe auquel appartiennent ces terres.

4.2 La liste servira pour fixer les taxes d'eau à payer aux contributions et à distribuer l'eau à l'intérieur des unités d'irrigation.

4.3 Chaque propriétaire recevra une carte sur laquelle seront indiquées ces données. Cette carte n'est valable que pour une habitation. S'il a des terres sur plusieurs habitations, il lui faudra une carte par habitation. La carte est à renouveler chaque année. Le propriétaire concerné a le droit de protester dans un délai de deux semaines après avoir reçu la carte, ou bien dans le cas ou il n'en a pas reçu. C'est uniquement la possession de cette carte qui donne le droit d'irriguer dans le cadre de l'horaire.

5. Maintien du Système

5.1 L'opération et le maintien des grands coursiers et des canaux primaires est à la charge du C.D.U. Il emploie du personnel afin de surveiller les canaux et leur état.

5.2 Les sous-comités sont responsables pour l'entretien de leur système secondaire. Le travail y est organisé à l'échelle des groupes d'arrosage. Chacun, qui possède un jardin dans un groupe doit contribuer aux travaux de ce groupe. Code Rural de 1865, Article 17; Loi sur l'irrigation 1913, Article 5. Le président d'un groupe a le droit de donner une amende en cas d'absence d'un membré.

L'administration peut exiger qu'un travail de maintien soit fait. Arrête présidentiel de 1920, Article 8.

Elle peut faire supprimer l'eau à un individu, à un groupe ou bien à un sous-comité en cas de refus.

6. Taxes d'Eau

6.1 Le C.D.U. en consentement avec le DARNDR fixe les taxes d'eau à payer par hectare de surface irrigué.

6.2 Les contributions lèvent cette taxe en utilisant les listes des usagers. Defalque de 10% pour frais de perception, le produit des susdites taxes servira de voies et moyens aux dépenses d'administration, d'entretien et de perfectionnement du service hydraulique agricole. Loi sur l'irrigation, 1913, Article 6.

7. Jusqu'à la fondation définitive du C.D.U. le projet de réhabilitation du système d'Avezac est chargé de ces taches.

8. Ce règlement est valide après avoir été approuvé par le DARNDR. Il est presenté à toutes les autorités d'Etat concernées et publié à la connaissance des usagers. Il existe une version en langue creole.

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