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**SOCIOECONOMIC ASPECTS OF AGROFORESTRY IN RURAL HAITI**

by

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**A Final Report of the Research Anthropologist  
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## PREFACE

This report is one of a series describing research done by the staff of the University of Maine Agroforestry Outreach Research Project (AFORP). The AFORP has team members working in several discipline areas including agriculture, anthropology, economics and forestry.

Anthony Balzano's work provides us with an up-close view of two communities and the farmers participating in the AOP. Like the other reports written by the AFORP team, his represents the multidisciplinary character of the team's research. His report also represents a major contribution to our understanding of the importance of the cultural and social factors which are so vital to the continued success of the AOP.

The collective objective of the AFORP program has been to gain a better perspective of the present AOP and its effectiveness. The recommendations coming from this research will hopefully lead to the increased effectiveness of an already successful project.

Marshall Ashley  
Team Leader, AFORP

May, 1986

## EXECUTIVE SUMMARY

This report presents and analyzes socioeconomic research data collected during the period of June, 1985 to April, 1986 at two sites on Haiti's southern peninsula. The first site was at Fond-des-Blancs, Commune d'Aquin, Departement du Sud. The second site was at Beaumont, Commune Corail, Departement de la Grand'Anse.

The study areas are described in terms of their ecological and agricultural settings, and the diverse economic components utilized by the people there in their efforts to make a living from the natural resources available to them. It is from this background that the planting of exotic trees is considered.

The role played by the sub-grantees, who stand between PADF and the planter, is discussed. The differing institutional structures of the sub-grantee at each site has affected the rate of registered and unregistered planters. At Beaumont, the manner of tree distribution has resulted in a higher percentage of Baptist registered planters and Catholic unregistered planters than Baptists and Catholics in the general population.

Two silvopastoral systems and one agrisilvopastoral system from Fond-des-Blancs are described. Two important points emerge: the presence of systems that are potential sites for continued tree-planting (which has thus far been largely confined to the garden) and the central role of livestock in these systems. It is suggested that these silvopastoral systems (viz., woodlands, woodlots, and groves) stand to be the sites of a greater percentage of AOP tree-planting as planters' gardens reach their prescribed limit of shade-producing trees.

Research quantifies the uneven nature of AOP participation among rural social classes.

Data at both sites show that planters buy more agricultural labor, own more purchased land, more often work their own gardens, are older, own their own homes with greater frequency and are more likely to be carpenters than non-planters.

Planters from Fond-des-Blancs sharecrop less, work gardens on the slopes less, and own or have access to more woodlands than Fond-des-Blancs non-planters. None of these differences appeared in Beaumont.

A high frequency of female-only non-planters households was found in Fond-des-Blancs. This is, in part, due to the greater frequency of outmigration from Fond-des-Blancs than from Beaumont, and to the fact that women generally lack the material resources to attract another mate.

In all cases at both sites, women are planters only when a male kiltivaté head of household is absent.

Land and tree tenure are the planters' foremost considerations in his or her decision as to where to plant AOP trees. Over one-third of all AOP plantation sites were found to be on unseparated inherited land or sharecropped land. Thus, initial AOP concern about tenancy rules as a possible barrier to tree-planting has been found to be flexible in the hands of the peasants themselves. They have demonstrated that they are willing to accommodate the decreasingly novel practice of planting trees within existing rules of land and tree tenure.

AOP participants showed a slight preference for planting trees on the valley relative to their planting of their gardens on the valley. The plantations were also found to be in close proximity to the planter's household yard and planted near the home of the planter at roughly the same rate as coffee. This demonstrates the planters' concern that the trees be protected and have the most suitable growing conditions available.

Some planters used trees to initiate new economic ventures around charcoal. Others planted trees to conserve the land rather than turning it over to sharecroppers.

Seventy-six percent of all AOP plantations studied had trees planted in association with other tree and food crops. This pattern of planting mimics strategies for raising tree crops long practiced in the study areas. In 32% of the AOP plantations studied, food crop production may be adversely affected in the absence of further tree management practices such as thinning or pruning.

Socio-cultural information is presented for several areas. It is explained how capital available for agricultural labor can be limited by greater allocations normally made for crisis events (e.g., death/burial). Interpreting share contracts can be quite variable to the benefit of the sharecropper, in part, because of his role as caretaker of the land and its resources.

The following recommendations are made:

Build upon existing agroforestry systems especially those described incorporating livestock. Assist peasants with technical problems that might arise from this.

Deemphasize tenancy/ownership requirements for planters and further decrease the number of trees a planter is required to take.

Do not underestimate the role free trees have played in AOP when constructing policies that make demands on rural capital.

Study seedling survival rates in the context of ownership of indigenous woodlands.

Commission a study on the impact of tree-planting on food production and ways in which its deleterious effects might be countered.

Fully integrate AOP socioeconomic and biological research and extension efforts thus making them responsive to the local and varied circumstances found in rural Haiti.

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AID/AFORP

May, 1986

## CHAPTER 1

### INTRODUCTION

This report presents and analyzes socioeconomic research data collected during the period of June, 1985 - April, 1986 at two sites on Haiti's southern peninsula. The first study site was at Fond-des-Blancs, Commune d'Aquin, Departement du Sud. The second site was at Beaumont, Commune Corail, Departement de la Grand'Anse.

Tree planting on private holdings began in both areas in the Spring of 1982 as a part of AID/Haiti's Agroforestry Outreach Project (AOP). In Fond-des-Blancs, AOP provides funds and technical assistance through the Pan-American Development Foundation's (PADF) Projé Pyebwa to a local private voluntary organization, Cooperation de Developpement et Planification (CodéPla). CodéPla is the development assistance arm of the Conseil des Eglises Evangeliques d'Haiti. In Beaumont, PADF provides direct assistance to a local community group called Tèt Ansanm.

Research began with surveys aimed at gathering data on a broad range of socioeconomic variables. As a way to contextualize these quantitative data, investigations were then conducted on planting decisions, the local agricultural economy and traditional agroforestry. Relevant sociocultural and ecological data were also collected on these subjects.

Among other things, research confirms what social scientists who have been connected with AOP have suspected for some time: there is a measure of inequity with regard to the distribution of AOP trees to poorer peasants. This is a result of the combination of the social and economic realities existing in rural Haiti and the method of project implementation. The scope and dimension of inequities with regard to project implementation are described herein.

A survey of socioeconomic variables in Fond-des-Blancs found, among other things, several land classifications other than the jaden or garden. Investigation of these other land uses formed the basis for the documentation of traditional agroforestry systems in Fond-des-Blancs, which holds significant potential for future agroforestry development.

Data gathered have provided a rich backdrop for interpreting peasant motives for planting AOP trees. For example, inquiries made about indigenous tree holdings and traditional tree

management practices led to the realization that most AOP tree-planting decisions were being made within the context of traditional agroforestry strategies that, while known to all, are not commonly practiced. Also, some AOP tree-planting constitutes innovative behavior with regard to the role of tree crops in the household economy.

Many of the policies governing the implementation of AOP are based on findings of anthropological research. In a series of studies into the nature of Haitian peasant land tenure and its relation to earlier efforts at reforestation and erosion control, Murray laid the foundations for an alternative proposal to motivate peasants to plant trees. This proposal did not directly engender reforestation per se, but the outcome was to have an equally important benefit in the better management of wood resources in Haiti; that is, the incorporation of more wood resources into the realm of the household economy, what Murray terms the domestication of energy. This domestication of energy, Murray proposed, would take place through the greater acceptance of trees as a cash crop by the Haitian peasantry. The fact that they would do this was, in part, shown through studies by Earl (1976), Conway (1979), Voltaire (1979), Murray (1979, 1981), and Smucker (1981) and, in part, by the anthropological and economic literature showing the peasantry to be highly integrated into national market economies.

What emerged in the form of the AOP was a plan to allow the peasant to plant fast-growing exotic trees as a crop on land that is securely held, thus giving the planter full rights to harvest when and as he or she wished.

Two aspects of previous anthropological research have emerged as important issues in the research discussed here: namely, the concern of land tenure security and the role of trees in the household economy. Also, the research for this study points to several other socioeconomic areas which have and may continue to affect the outcome of the AOP: the institutional linkages connecting the grantee (i.e., PADF) and the planters, the number of unregistered planters, uneven AOP participation across rural social classes, the need for locally appropriate technical assistance, and the interaction of scarce capital and high demand for labor on agroforestry management systems.

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### Structure of the Report

In the next chapter, the methodological approach to this research will be discussed. Chapter 3 will describe the study areas in terms of their agricultural and ecological settings, and describe the institutional linkages between PADF and the planter. In Chapter 4, traditional agroforestry systems will be defined and described, and related socioeconomic data will be discussed. Chapter 5 will present the remaining survey data on the socioeconomic status of AOP participants and non-participants. Tree

planting decisions by AOP participants will then be discussed, in Chapter 6, from two perspectives: the role played by land and tree tenure and the kind and quality of land planted and not planted. Chapter 7 suggests recommendations for future AOP policy, research, and extension.

## CHAPTER 2

### METHODOLOGY

Survey data was gathered using closed and open response questions devised according to methods commonly used in anthropological research. Qualitative data was collected through informal interviewing and participant observation facilitated by long-term residence in the study areas.

A random survey was first carried out in alternate (i.e., every other) households. It was deemed necessary to demarcate a random survey in order to determine the percentage of planters, non-planters, and unregistered planters in the community. Following the random survey, further interviews were carried out with as many interviewees as possible. The data presented herein are computed from the results of all these interviews, except for when the data on the percentage of registered and unregistered planters are presented.

In Fond-des-Blancs, the random survey of 99 residents found 53 non-planters, 39 registered planters, and 7 unregistered planters. Three non-planters and 13 planters were subsequently interviewed. In Beaumont, the random survey of 76 residents found 33 non-planters, 25 planters, and 18 unregistered planters. In this instance, one non-planter, five planters, and nine unregistered planters were subsequently interviewed.

To determine socioeconomic status of people in the study areas, the study gathered data on the following variables: agricultural labor market, number of gardens worked and their tenure status, access to or ownership of non-garden landholdings and their tenure status, the occurrence and tenure status of bought land, whether gardens are on slopes or on the plenn, the location of AOP plantations, coffee and livestock holdings, household type, occupation, the extent of their involvement in the charcoal trade, religion, membership in community groups, education, and ownership of homes and cisterns.

As a way to begin to understand the wider agricultural setting, kiltivaté (peasants) were asked about the extent of all landholdings they own or have access to. In addition to jaden (i.e., food producing land) these include raje (bushland), bwa or rak bwa (land with trees suitable for charcoal or lumber), té pit (sisal plantation), café, té zeb (perennial cultivated grassland), and té poze (fallow land). Bwa or rak bwa are at times referred to in the discussion below as indigenous woodlands. Jaden môn or mountain gardens were indicated when kiltivaté said that their gardens were on the môn (slopes), as opposed to being on the plenn (the relatively level areas of the valley).

Data on the agricultural economy, traditional agroforestry and planting decisions were gathered during informal interviews. An important sector of the agricultural economy, sharecropping, was focused upon during the January sorghum harvest. Species counts were conducted and management practices were studied in some of the traditional agroforestry systems. AOP plantations were studied with regard to their crop associations, planting patterns, and circumstances related to planting decisions. This latter information was gathered at the specific planting site in question, with the planter present.

## CHAPTER 3

### THE STUDY AREAS

#### Mòn Zéb, Fond des Blancs

Fond-des-Blancs is a rural area consisting of over 60 neighborhoods or abitasyon. The study area consists of eight of these abitasyon and will be referred to as Mòn Zéb. Those abitasyon comprising the commercial, transportation, and governmental center for the section rurale of Fond des Blancs are referred to as Sen Franswa. Mòn Zéb and Sen Franswa are pseudonyms.

Mòn Zéb consists of approximately 220 households with a mean number of five people to a household making for an estimated population of 1,100. Census data are listed in Appendix A, Table 9.

Mòn Zéb includes a broad valley (250-300 meters elevation) where indigenous trees are found in lakou (household compounds), gardens, coffee groves, and fruit groves. In this latter type, the mango tree predominates. The valley is bounded on the north and southwest by steep slopes (peaking at 380-400 meters) and is interrupted to the southeast, first by a singular mountain and then by the Moussignac-Côte de Fer road where the commercial center for the section rurale is situated. The adjacent slopes support considerable cultivation.

The valley in Mòn Zéb is referred to as the plenn. It is characterized by land having an average slope of 8% and never exceeding 15%. It is not uncommon to find a garden having a 0% (level) slope. To call a 15% slope a plenn may seem contradictory but, to Mòn Zéb residents soil type is also important in qualifying land for the plenn classification.

The "cold/hot-fat/thin earth" soil classification system reported for many parts of rural Haiti is of little use to the people of Mòn Zéb (cf., Murray, 1977: 203 ff). Half joking, they will tell you that all the land is té móg (infertile soil) until it rains, then it's té grn (fertile soil)! Instead, the people here have developed a "black-red-white-rock earth" soil classification system that corresponds quite accurately to their limestone and basalt bases, the presence of alluvial deposits, and the occurrence of sheet and gully erosion.

Over three hundred years of agricultural production in Mòn Zéb have subjected the vulnerable hillsides to extensive sheet erosion. Such erosion has stripped away its limestone based top soil and deposited it in the plenn. These alluvial limestone deposits are high in organic matter from the trees, crops, and grasses growing on it in abundance. The people here call them

té nwa (black soil) and say they are the best soils for agricultural production. The first stages of hillside sheet erosion expose its limestone base and hence the classification of té blan (white soil). Later stages of sheet erosion expose the underlying limestone rock base and hence the classification of té woch (rock soil). The rocks exposed are up to eight inches in diameter and loose enough to permit continued, albeit marginal, cultivation. Small pockets of minor gullying can also be found on the hillsides but the more extensive gullying occurs where there are roads.

A thin vein of basalt runs through the Môn Zéb plenn. The alluvial deposits on this basalt base take on a reddish hue, hence the classification té wouj (red earth). Té wouj is generally felt to be less productive than té nwa; these two are soils of the plenn. Té blan and té woch are seen as being equally poor for cultivation; they are soils of the môn (slopes).

There is no permanent surface water in Môn Zéb. Rainfall averages 600-800 millimeters per year. The people of Môn Zéb say that no rain occurs between May and July and November and January.

Approximately 180 thirty kilogram sacks (a large truckload) of charcoal leaves the section rurale daily for Port-au-Prince. Smaller amounts of sisal (Agave rigida), coffee (Coffea arabica), mango (Mangifera indica), sour orange (Citrus sinensis), limes (Citrus aurantifolia), goats, chickens, and beef are also destined for urban markets.

Wood and meat products, vegetables, grains, and fruits consumed here are either locally produced or are brought in from other parts of the country [e.g., kleren (raw rum) from Leogane, cocoa from Jeremie, hats from Bainet, wood planks from Côte de Fer, onions from Kenscoff] via the weekly Friday market. Commerce is conducted on other days of the week as well. Local produce, fried and baked foods, sweet drinks, cigarettes, and candy are always available at the San Franwa market and at various points along the road through Môn Zéb.

About 60% of the plenn and 30% of the môn is under food production. Summer corn (Zea mays) and winter sorghum (Sorghum bicolor) intercropped with several varieties of beans (Phaseolus spp.) provide the base for subsistence food crop production. The white sweet potato (Ipomoea batatas) crop in the spring is said to be marketed in greater proportions than either the corn, sorghum, or bean harvests. One reason kilyivaté give for doing this is because it is very difficult to store sweet potatoes, which rot easily. Other garden cultivars serving subsistence and cash needs are pumpkin (Cucurbita pepo), castor beans (Ricinus communis), and manioc (Manihot cassava). Eggplant (Solanum melongena), basil (Ocimum basilicum), tobacco (Nicotiana tabacum), tomatoes (Lycopersicon esculentum), and okra (Hibiscus esculentus) are commonly planted in the lakou for home consumption.

The remaining land on the plenn is under intensive use as pasturage and as mango and coffee groves. Living fences and boundary markers planted with sisal also occupy considerable space. Sisal plantations (tô pit) are found on the slopes and in several ravines on the plenn.

Pasturage is of two types: tê zeb and tê bêt or raje. Tê zeb is where horsegrass or zeb cheval (Plumbago scandens) has been planted. Tê bêt are areas of bushland and scrub. This pasturage supports a sizable cattle, goat, and pack animal (i.e., horse, mule, donkey) population. Chickens, pigs, sheep, turkeys, and ducks are the other livestock found here. Goats, cattle and fowl are sold at the weekly Sen Franswa market: goats and fowl to a local clientele, cattle and, more recently, pigs to itinerant traders who resell them at the Port-au-Prince market.

Many of the trees in the groves provide the shade and humidity needed for coffee cultivation. Here, fruit trees, such as avocado (Persa americana), sweetsop (Annona muricata), lime, sweet orange, chadek (Citrus grandis) and kenép (Meliococcus bijugatus), were found to outnumber hardwoods. Wood gathered from the tree groves, as well from the gardens and lakou, supplements wood resources gathered from surrounding hillsides for charcoal production.

Besides supporting some food crop production, the slopes are utilized as pasturage and sources of wood for charcoal production and domestic use. Approximately 95% of the land in Môn Zéb can support one or more of the economic activities just described.

Thus, the land is managed for a variety of enterprises that are subsistence as well as market-oriented. Livestock, charcoal, sisal, corn, sorghum, sweet potatoes, beans, and mangoes are the diverse components utilized by the people of Môn Zéb in their efforts to make a living from the natural resources available to them. It is within this agricultural setting that the planting of exotic trees must be considered.

There are other economic and social realities that the people of Môn Zéb must deal with on a daily basis. For one, within Môn Zéb there exist few opportunities for making a living outside of the agricultural realm. There are three masons, two carpenters, two gangan (traditional priests), two school teachers, and a health aide residing in the study area. Opportunities exist in Port-au-Prince, but these are largely for those already possessing a skill such as masonry, carpentry, or truck driving. Thus, apprenticeships are eagerly sought by young men hoping to take advantage of long and short-term opportunities in Port-au-Prince. However, this may mean foregoing certain agricultural opportunities in Môn Zéb, such as a particularly favorable sharecropping contract.

A few residents of Môn Zéb are bona fide members of the urban middle class. They own and/or rent property and

businesses in Port-au-Prince and often engage a jeran or caretaker to manage their rural properties. More common though, in Mòn Zéb, is the well-off peasant with extensive landholdings but still poor by urban middle-class standards. This well-off peasantry forms a distinct rural elite class, though no family or person in that class holds economic or political sway over it. Mòn Zéb elite often have immediate kin who are members of the urban middle and working classes. They send their children to school in Port-au-Prince and often have close relatives living in the United States, Canada, or France. Thus, any characterization of the people of Mòn Zéb would not be complete without mention of their strong urban ties. By contrast, poorer Mòn Zéb peasants send their children to school locally or not at all. They will rarely travel to Port-au-Prince. If they have family overseas, they are most likely to be in French Guyana.

The AOP is implemented here through PADP, which channels funds and provides technical assistance to CodèPla. In addition to the tree-planting program, CodèPla sponsors a pig redistribution program, a goat stock improvement program, and is constructing a water system for Sen Franswa.

Local people have been trained as extension agents or animaté who recruit and follow-up on the peasant farmers who are AOP participants. The program began with two animaté, increased to four for 1983, to nine for 1984, and to eleven for the Fall 1985 planting season. The first two animaté work in the study area just described.

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#### Anba Kafe, Beaumont

Beaumont is a section rurale lying on the northern slopes of the Massif de la Hotte. The study site in this area consists of eight contiguous abitasyon and will be referred to by the pseudonym Anba Kafe. One of these abitasyon is the administrative and commercial center for Commune Corail. It is situated on the Jeremie-Les Cayes road, a chief transportation link in this part of Haiti. Thus, one part of Anba Kafe has a distinctive town character with a long main street dominated by busy workshops, stores, depots, and government offices. Trading coffee is the order of the day. However, the rest of Anba Kafe quickly gives way to agricultural enterprise dominated by coffee production.

Anba Kafe sits at 780 meters elevation in a narrow valley that is surrounded on the northeast and southwest by steep rocky slopes, some of which exceed 100% slope. These mountains have elevations between 875 and 1,000 meters. When plotted in a straight line on a map, Anba Kafe lies approximately 15 kilometers east-northeast of Pic Macaya (elevation 2,347 meters), site of some of the finest sawtimber and last vestiges of virgin subtropical forest in Haiti (see Lowenstein, 1984). This research is not unconcerned about the Macaya area and its wood

resources. Many people in Anba Kafe own or have access to wood resources in the areas of Moulin and Ferace, which lie literally in the shadow of Pic Macaya.

Agriculture in Anba Kafe is dominated by coffee cultivation, which is facilitated by the estimated 3,000 millimeters of annual rainfall. The moisture factor is such that a significant portion of the coffee grows here without the benefit of direct shade. Coffee production in Anba Kafe is perceived by the people there to be falling, especially since the loss of their pigs. They said pigs used to produce fertilizer for coffee groves and were sold in order to generate cash to hire labor to prune and weed the groves. As a result, they said, many of their groves have become overgrown by weeds making them worthless to harvest.

When possible, the people of Anba Kafe strive to have what they refer to as kafe anba (lowland coffee) and kafe woté (high land coffee). This enables them to extend their coffee harvests, and hence the months they are earning coffee income, from between two to four months each year. Kafe anba is harvested from October to January while kafe woté is harvested from December to April. Only lowland coffee is grown in Anba Kafe.

In Anba Kafe, coffee is often cultivated with other crops, especially plantains (Musa paradisiaca), bananas (Musa paradisiaca), and milton (Sechium edule). Grains and other crops are also intercropped with coffee. Thus, what is called a jaden in Anba Kafe would be called a coffee grove in Mõn Zéb. Fruit trees are found in abundance both in coffee groves and in the lakou. The most common fruit tree in Anba Kafe is the avocado, which is said to yield a sizable harvest for market each November or December.

Coffee is supplemented in the local agricultural economy by gardens where several varieties of yams and the black bean are grown, largely for the marketplace. Also grown, but more for subsistence needs, are manioc, congo beans (Cajanus cajan), sweet potato, and maize. Okra, cabbage (Brassica campestris), eggplant, and sugar cane (Saccharum officinarum) can also be found in smaller amounts.

The terrain is extremely rocky. It is not uncommon to find a garden where the majority of the surface area is occupied by piles of rocks made by the kiltiyaté in the process of clearing enough space on which to plant. These piles of rocks are used at times in lieu of poles for yam cultivation.

Nearly all of the valley, no matter how rocky, is under coffee or garden cultivation. The slopes are a different matter. Coffee is not found in the gardens on the slopes and the very steepest slopes are rarely cultivated. However, the majority of gardens lie on slopes. Gardens in the valley or plenn are preferred to gardens on the slopes (jaden mõn). Gardens in the plenn can give up to a 18% slope. The preference for the gardens of the plenn results less from any perceived differences in the

quality of soils between the plenn and the môn than from the preference for a piece of land that has fewer rocks and is easier to work.

Anba Kafe and its environs are in the midst of rugged mountains some of which can only be reached on foot since not even pack animals can climb them. In some directions, as far as the eye can see, are woodlands: some that are under private control and some that are designated state lands. These woodlands are an important component in the local economy. They provide a steady supply of planks, chiefly frenn (Simaruba glauca), pine (Pinus occidentalis) and sêd (Cedrela odorata), for urban markets and local craftsmen.

Thus, land use in Anba Kafe falls into four general categories that include coffee groves, gardens, uncultivated slopes, and woodlands. Livestock present a problem because of this constricted land arrangement. Goats, cattle, and sheep have less room to browse or graze and are a source of problems between neighbors when, for example, a stray animal feeds in a garden not belonging to its owner.

Just as agricultural life centers around coffee, economic life centers around the coffee spekilatê (buyers). The spekilatê will also trade in black beans during the period May to October, the months that coffee is rarely harvested. There are some spekilatê living in Anba Kafe, but their operations are relatively small in comparison with the itinerant spekilatê who reside for the most part outside of the section rurale. These itinerant spekilatê often keep more than one home and generally trade out of the Jeremie port.

Many are also absentee landlords owning a great deal of land in Anba Kafe. Much of this land is coffee-producing which, almost without exception, they rent out to local kiltivatê, as opposed to working the land under a share contract (cf. Underwood, 1964). They do this, they say, in order to maintain a cash flow to finance their trading operations. Spekilatê in Anba Kafe also do this to the extent that rented (anfeme) land there is as common as sharecropped (agosye) land. Thus, the structure of economic relationships in the coffee and black bean trades are, in part, reflected in local land tenure arrangements.

In spite of the wealth one might expect to be generated by the coffee trade, many of the people in Anba Kafe live a marginal existence with little else to fall back on during difficult economic times. For the most part, they lack a "bank" of livestock or alternate economic resources to draw from as the need arises. Instead, they are highly dependent on the cycles of coffee and black bean production and the ups and downs of those markets. In times of need they may turn to the local Bureau de Credit Agricole, which lends money at the rate of 12% per annum. The economy of Anba Kafe is relatively specialized and highly monetized, giving it a kind of boom-and-bust character. This character is reflected in a relatively stratified social

structure with the richer spekilaté and shop owners, and the poorer craftspeople and kiltivaté.

AOP is implemented here directly by PADF through one animaté who heads a loosely knit community organization called Tet Ansanm. Tet Ansanm also maintains a small tertiary pig multiplication center in Anba Kafe.

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### Institutional Linkages: From PADF to Planter

#### Definition of a Planter

Planters are defined throughout this report as any peasant who has planted AOP trees whether they are registered (official) planters or unregistered (unofficial) planters. This definition is consistent with that used in the PADF socioeconomic studies by Lauwerysen and Buffum.

Where it is necessary to speak in terms of registered and unregistered planters, it is expressly stated as such. Otherwise the reader should be aware that planters (as opposed to non-planters) means registered and unregistered planters. An unregistered planter is one who receives trees from a friend, neighbor, or relative who signed up for and received trees as a registered planter directly from CodéPla or Tet Ansanm.

#### The Sub-Grantee, Its Religious Affiliation and the Unregistered Planter

CodéPla (sub-grantee) operates a tree-planting program in Môn Zéb that is much larger than the tree-planting program in Anba Kafe. By way of comparison, CodéPla distributes 160,000 trees per season while only 10,000 trees are distributed per season in Anba Kafe. In Anba Kafe there is only one animaté who, as will be explained below, has distributed trees for the most part through his fellow church members. CodéPla has eleven animaté.

CodéPla has consciously sought to link another one its projects, pig distribution, with tree distribution. This was done, in part, to avoid the establishment of parallel distribution systems, and also because CodéPla directors believe that pigs will provide further incentive for planting trees.

Some planters (perhaps 10%) have admitted to joining AOP in order to establish ties with the CodéPla pig distribution program. Even for those not making such an admission, it is not very difficult for one to make the connection between tree-planting and pig distribution. How this might serve as a model for tree-planting efforts and pig redistribution elsewhere would require a research project of its own. Certainly, AOP has proven that the incentive of trees alone is ample reward for AOP participation.

As a way to facilitate both tree and pig distribution (and to work within local political structures), CodéPla has worked through local groupman or community work groups. They number approximately twenty and represent nearly all of the neighborhoods within Fond-des-Blancs. The groupman were formed through the Duvalierist Community Action Council for a government literacy program (ONAAC) and were disbanded (déchouké-ed) after the flight of the ex-president. At present the groupman are in the process of reorganizing, with CodéPla's help, and together are forming a new community development organization. Tree and pig distribution will continue to work through these newly formed groupman.

Nearly all the members of the groupman are men. Non members can be characterized as belonging to the ranks of the retired, female households (although one female household head is president of a groupman in Mòn Zéb), and those originating from outside the study areas.

The lone animaté for Tét Ansanm (sub-grantee) in Anba Kafe apparently has worked through the Baptist church he attends to distribute AOP trees and, in the process, strengthened his ties with his fellow churchgoers. In doing so, he did not serve the needs of all the potential project participants in Anba Kafe. Catholics and other Protestants tended to be recipients of the trees the registered Baptists either didn't want or felt the need to share. This situation arose perhaps because there was no other animaté competing with him for recruits (he is paid on the basis of the number of participants he recruits), and/or because he has too many other demands on his time from operating a busy SNEM (malaria) clinic and coffee depot.

The result has been a higher percent of Baptist planters and Catholic unregistered planters than Baptists and Catholics in the general population of Anba Kafe, as shown in Table 1 below. Comparable data for Mòn Zéb are shown in Table 2 below. These data come from the random survey as described in Chapter 2.

Of the registered planters in the Anba Kafe survey, 56% were Baptist and 40% were Catholics; of the unregistered planters in the survey, 17% were Baptist and 78% were Catholics. In the general population, there are 26% Baptists and 62% Catholics.

By contrast, in Mòn Zéb, the survey found Catholics represent approximately 85% of registered and unregistered planters and Protestants (there are no Baptists in Mòn Zéb) represent approximately 15% of registered and unregistered planters. In the general population, there are similar percentages of Catholics and Protestants.

Table 1  
Frequency of Religious Affiliation by Planter Status,  
Anba Kafe

<u>Religion</u>	<u>Planter Status</u>			
	<u>Registered Planters (%)</u>	<u>Unregistered Planters (%)</u>	<u>Non-Planters (%)</u>	<u>General Population (%)</u>
Catholics	40	78	70	62
Baptists	56	17	9	26
Other Protestants	4	6	21	12

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Table 2  
Frequency of Religious Affiliation by Planter Status,  
Món Zéb

<u>Religion</u>	<u>Planter Status</u>			
	<u>Registered Planters (%)</u>	<u>Unregistered Planters (%)</u>	<u>Non-Planters (%)</u>	<u>General Population (%)</u>
Catholics	85	86	83	84
Baptists	0	0	0	0
Other Protestants	15	14	17	16

Neither of the two CodéPla animaté who serve Môn Zéb resides there. They both live in Sen Franswa, some forty minutes walk away. These animaté are paid a monthly salary by CodéPla rather than being paid by the number of participants they recruit. They are both Catholic while the sub-grantee is an evangelical organization.

One result has been a high rate of unregistered planters in Anba Kafe (41%) as compared to Môn Zéb (16%). That is, the different institutional arrangements at the two sites has, in part, affected the rate of registered and unregistered planters.

One can assume, high percentages of unregistered planters are indicative of high demand for AOP trees. The following incident can also serve to illustrate this point. In Môn Zéb, during the October, 1985 planting season, one animaté was left with five unclaimed boxes of trees (i.e., 1,250 trees). He decided to leave them at the home of a man who said that he knew of people who needed trees to plant. However, later that day the man received the following note from the animaté:

Me. Mesene,

Veillez de remettre pour á Mme. Soso deux boites bois pour moi si vous aurait toujours.

signed Me. Bo

By that time all the trees were gone -- planted by people who were planters previous seasons and by people who had never planted AOP trees before. This incident is indicative of the demand for AOP trees that exists. It also might serve as an innovative model upon which a restructuring of tree distribution could be based.

## CHAPTER 4

### TRADITIONAL AGROFORESTRY SYSTEMS IN RURAL HAITI

#### Overview

Because this chapter includes in its discussion nearly all of the major components of the household economy or farm unit, it provides an important data base on the way in which AOP may be affecting Haitian peasant agriculture. Some suggestions on how these data may be utilized by AOP planners are given in the final chapter of this report.

Agroforestry can be defined as a sustainable land management system which combines agriculture and/or animal husbandry with trees on the same unit of land.

In Mòn Zéb, traditionally practiced agroforestry consists of three major systems: 1) bayahond-kanpech-dilen woodlands and hardwood woodlots; 2) coffee groves and mango groves; and 3) the jaden-lakou system. The first two can be classified as silvopastoral systems; the last, an agrisilvopastoral system (after Nair, 1985).

The woodlands and woodlots lie exclusively on the slopes, away from the residential areas of the plenn. Groves, jaden and lakou lie in the plenn.

What follows is a description of these systems in Mòn Zéb supported by additional data from Anba Kafe. Data gathered on charcoal-making are included in this chapter; data gathered on coffee grove ownership are included in the discussion on coffee groves.

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#### Woodlots and Woodlands

Woodlands and hardwood woodlots lie in areas of Mòn Zéb that are set aside for agriculture rather than in residential areas which are dominated by lakou, jaden, and groves. These woodlands and woodlots are on the poorer soils of the slopes. In all likelihood, this is the best possible use of a low-yield resource. The differences between the two are in 1) the dominant tree species present, 2) their spatial and areal distribution, and 3) the extent to which they have been the site of past agricultural activity and/or wood harvesting.

Woodlands and woodlots are easily distinguished by their differing vegetative structure and distinct boundaries. They occupy at least two-thirds of the land area of the hillsides

surrounding Mòn Zéb. Of this area, approximately 85% are woodlands and the remainder woodlots. The other one third of the hillsides consists of jaden, pasturage, or wastelands.

Woodlands and hardwood woodlots are discussed together because they occupy a contiguous, homogeneous ecological zone. This zone has the depleted rocky soils of the hillsides (tè blan as described in Chapter 3), and is subjected to a greater intensity of sunlight, rain, and wind than the plenn. Additionally, the people of Mòn Zéb alternately refer to both by the same terms bwa or rak bwa.

The hardwood woodlots appear to be vestiges of natural forests (i.e., they were not deliberately planted but are actively managed). This is evident in the vegetative structure of the woodlot. Trees of varying maturity and size form a canopy for a shrubby and herbaceous undergrowth. These woodlots have not supported agricultural activity in living memory. Four of the approximately twenty such woodlots in Mòn Zéb were the subject of this study.

No one species appears to be dominant in these woodlots. Some of the species found here include bwa poup (*Cordia nitida*), koma (*Sideroxylon foetidissimum*), kajou (*Swietenia mahoganii*), bwa dôm (*Muntingia calabura*), frènn (*Simaruba glauca*), bwa blan (*Simaruba glauca officinalis*) and bwa fé (*Krugiodendron ferreum*). Nearly every species present is considered to be a source of good hardwood sawtimber. They also provide a wide variety of wood products (e.g., wood for charcoal, wood for agricultural tools) and shade for tethered livestock.

In contrast to the hardwood woodlots, the woodlands are dominated by one of three species: either bayahond (*Prosopis juliflora*) or kanpèch (*Haematoxylum campechianum*) or dilen (*Leucaena glauca*).

Dilen is usually the first species to colonize a jaden after harvest. Its seedlings are considered a garden weed (moue zéb). This explains some of the reluctance of AOP participants to accept leucaena seedlings since they are nearly indistinguishable from dilen seedlings at early stages of growth. Thus, dilen woodlands indicate agricultural activity in the recent past. Dilen woodlands usually form an impenetrable thicket, or they take the form of scrubland or raje where it grows in association with bwa kabrit (*Cassia emarginata*), grasses, weeds and shrubs. In either case, they provide grazing and browsing sites and sources of ti bwa (small wood) for charcoal production.

Stands of kanpèch and bayahond, with a canopy that effectively shades a variable herbaceous undergrowth, form an ideal area for tethering livestock. The undergrowth will at times be low and consist almost wholly of grasses, and at other times form a thicket with a variety of weeds and vines. Wild honey is said to be best sought in the latter setting. Kanpèch and bayahond are highly prized woods, the former for home

construction and the latter for charcoal-making. Bayahond is coppiced at three to five year intervals for charcoal production. However, informants report that the bayahond sometimes fails to regenerate after two or three cuttings.

The sort of woodlands and the hardwood woodlots described can be considered silvopastoral systems, since they support grazing and browsing livestock. Livestock are frequently tethered there to feed on low tree branches, grasses, shrubs and weeds. Such areas also provide shade, which is viewed as being an essential ingredient in local animal husbandry practices. As the residents of Mòn Zéb say, san lombraj soley manje tout (the sun consumes everything without shade). The woodlands and woodlots are also the source of medicinal plants (e.g., lalwa [Aloe vera], geritout [Philodendron angustatum]), honey and other wood products. In addition to charcoal, planks, and poles for home construction, these products include firewood, poles for fencing, and cuttings of appropriate species (e.g., gomye [Bursera simaruba]) for live fencing (cf., Mintz, 1962).

In Anba Kafe, there is nothing comparable to the woodlands just described. The ecological conditions in Anba Kafe simply do not allow it. The people of Anba Kafe say they have rak bwa but such woodlands are, at the nearest, several hours away (i.e., not in the study area). In describing these holdings, informants emphasize the presence of bwa pen with tree-trunk diameters exceeding the arm-spread of an adult. Oftentimes, however, when describing these rak bwa, they do not distinguish between their own lands and state lands. Privately, local informants report that many people surreptitiously harvest from the latter.

Many kiltivaté in both communities reported that they owned or had access to landholdings which they refer to as bwa or rak bwa (woodlands and/or woodlots). Overall, more people in Anba Kafe own or have access to wood resources than the people of Mòn Zéb. This is no doubt due to the proximity of Anba Kafe to the sparsely populated and heavily wooded areas of the Massif de la Hotte, including Pic Macaya. Large tracts of these wooded areas are state-owned which is more easily accessed (for free wood resources) than privately wooded areas. (There are no state lands in or around Mòn Zéb.)

Data suggest that there is no difference between planters and non-planters in Anba Kafe with regard to access to wood resources. Seventy-five percent of each category have such access.

Because there are no state lands in or in the vicinity of Mòn Zéb, privately owned wooded areas become an important local resource. Wood resources have grown in importance as the people of Mòn Zéb have become more involved in the charcoal trade. (Informants suggest that involvement in the charcoal trade heightened following Hurricane Flora in 1963 which left large quantities of felled trees in its path.) Thus, access to wood

resources in Môn Zéb becomes an important indicator of economic status (along with the purchase of land and labor).

In Môn Zéb, planters (64%) have greater access to local wood resources than non-planters (41%).

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### Mango Groves and Coffee Groves

Between 15% and 30% of the Môn Zéb plenn is occupied by groves. When atop the surrounding hills, it is striking to see the extent to which they, and the trees of the jadén and lakou, provide cover for the plenn. This cover only halts at the foot of the hillsides.

The mango is a kind of one-tree agroforestry system providing food, fodder (in the form of mangoes), wood, and shade. Mangoes are often clustered in groves. As such, they are an important agrisilvopastoral component of the agricultural economy.

Charcoal is made in the grove at least once a year after the entire grove has been pruned. A mango is felled when its production is deemed low. [Yields from healthy mango trees peak between 30 to 50 years old (Caritas, 1984).] In such instances, the tree provides another important source of income in the form of planks. One dozen eight-foot mango planks will sell in Môn Vét for one-hundred seventy-five goud (one goud  $\cong$  US\$0.20).

Mango groves sometimes are fenced-in to serve as a corral where a variety of livestock can be kept for the night or for a longer period. Mango groves almost never have an undergrowth, probably as a result of the livestock tethered there. Pigs especially are fond of turning over the earth in search of underground roots and invertebrates. Mango groves are also the site for coffee seedbeds and one Môn Zéb kiltivaté keeps about twenty homemade beehives in one of his groves.

There are mango trees, but no mango groves, in Anba Kafe. The people here report that the mango does not do well in this area. Besides, they say, there is a plentiful and inexpensive supply of many varieties that makes its way up the mountain from Jeremie. Groves in Anba Kafe are always coffee groves. Informants report that sikren (Inga vera) is the preferred tree to grow with coffee. In Anba Kafé, sikren is not a preferred sawtimber. Informants report that they cut sikren trees in their coffee groves as they become old and diseased. In this case, the wood is most often used to fuel lime kilns.

This is not the case in the coffee groves of Môn Zéb. There, bwa sayann wouj (Tabebuia ekmanii) or momben bata (Trichilia hirta) are the preferred trees to have growing with coffee. Bwa sayann wouj also provides good sawtimber. In fact, species counts conducted in five Môn Zéb coffee groves showed

that mangoes accounted for 35.4% out of a total 291 trees. The next most abundant species was bwa savann wouj (also referred to as bwa wouj) which accounted for 6.5% of the total; mombin batu accounted for 3.1% of the total.

In sum, thirty-seven different tree species were noted in the five coffee groves studied in detail (the Mòn Zéb tree counts appears as Appendix B, Table 10). Many of them, like the mango, can be considered to be multi-purpose species; that is, species that the kiltivaté indicates are useful for more than one use such as fruit and sawtimber (e.g., mango, avacado), shade and sawtimber (e.g., bwa savann wouj), wood for charcoal and agricultural tools (e.g., calbas [Crescentia cujete], bwa fé), and fodder and home construction (e.g. palmis). Others have more specific uses, such as kapab (Schaefferia frutescens), frenn and kas (Cassia grandis) for home construction; bwa kaka (Capparis sp.) for tool handles; and citrus trees whose fruits are used as cleaning agents as well as made into juice. Finally, there is usually at least one tree in each grove having the potential to yield planks when the need arises.

Coffee groves, as noted above for Anba Kafe, provide areas for tethering animals, especially the pig, which roots for underground morsels, thereby checking the growth of weeds and, through defecation, fertilizing the coffee grove.

Also present in some groves were depo lwa -- trees in which ancestral spirits reside. Depo lwa species include but are not limited to calbas, mango, kenép, figé (Ficus mitrophora), and palmis (Oreodoxa regia).

Virtually all interviewees in Anba Kafe (98%) were found to have coffee and, as such, there were no significant differences between planters and non-planters with regard to the cultivation of coffee.

The situation differs in Mòn Zéb. There, over twice as many planters (49%) as non-planters (24%) have coffee holdings. Coffee, somewhat like the mango in Mòn Zéb, is seen as providing some yields even in years when garden crops fail. Easily maintained, coffee is considered to be an ideal crop for one's retirement years. Much of the coffee produced in Mòn Zéb is consumed or sold locally. Only the very largest growers prepare their harvests for sale at the coffee market in Fond-des-Nègres.

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#### Jaden and Lakou

Groves, as well as woodlands and woodlots, are agroforestry systems combining livestock with trees and crop trees, some of which have multiple uses: that is, a silvopastoral system. Jaden and lakou differ in that they include agricultural crops as well, thus, making them agrisilvopastoral systems.

Non-perennial food producing crops are cultivated in jaden. Jaden in Mòn Zéb are found on the slopes and on the plenn, but not in equal numbers. As shown in Appendix A, Table 8, two-thirds of all jaden in Mòn Zéb are on the plenn while only one-third are on the slopes.

The lakou is more than a household yard. In some respects, it is an extension of the jaden: small patches of field and vegetable crops will at times be planted within the lakou, animals will be tethered and fed there, and trees will be maintained within the lakou providing shade for the home and animals as well as fodder. Many agricultural tasks, such as winnowing and seed preparation, take place in the lakou. Fowl, which at times include caged toutwel (doves?), are raised exclusively within the lakou.

It is the rare jaden in Mòn Zéb that has no trees. When such a jaden does occur, it is either on a slope with particularly rocky, infertile soils and/or under long-term cultivation by a sharecropper(s). In fact, 93% of all jaden had trees (other than AOP trees). Some 46 species of trees were found in 28 jaden: the mango was the most common, being found in 43% of all jaden. Other common species were gwyay (Psidium gunjava), kalbas, kowosol, kokoye (Cocos nucifera), kapab, kajou, kenép, and a wide variety of citrus. As in the species counts conducted in the groves, a good mix of multi-purpose species was found.

The trees of the jaden are generally pruned before planting season in order to provide additional sunlight for the maize crop. The pruned, that is to say, harvested, branches are then made into charcoal. Income generated from the sale of this charcoal is earmarked for the purchase of labor to work in the jaden.

Livestock are tethered in the jaden after both the sorghum and maize harvests and feed on these crop residues. Zéb cheyal or horsegrass (a perennial) is grown in about 30% of all jaden. Prior to the harvest of jaden, zéb cheyal is cut (on a six to twelve month rotation) and carried to livestock tethered in and around the lakou. Additional fodder is provided by trees growing in jaden and lakou. They include siwel (Spondias purpurca), gomye, palmis, kinép, and bénadól (Annona sp.).

Probably the first traditional Haitian agroforestry practice to be recognized by researchers was the living fence which borders nearly every jaden and lakou (see Mintz, 1964). In Mòn Zéb, living fences consist of plant species which serve a number of needs in addition to demarcating borders. In this area, the most common living fence species are kandelab (Euphorbia lactea), sisal, gomye, and siwel. Some of these also provide fodder. The central stalk of sisal is fed to pigs; gomye provides tender branches for goats; and siwel produces a small tart fruit that is collected and fed to pigs. Living fences and other lakou trees also provide shade for the home.

From interviews with killiyaté about AOP tree-planting decisions and about jaden trees, it is evident that there is a limit to the number of trees and, hence, the extent of shade deemed appropriate for jaden devoted to food crop production. This is why, for example, trees are heavily pruned before planting maize, and why a jaden with good soils, level inclination, close to the home and for which a deed is held may be bypassed as an AOP tree-planting site for a jaden with none of these characteristics. That is, if one jaden already has its "quota" of trees, a second jaden will be chosen as the planting site even if the first jaden is considered a better site for the cultivation of trees. Perhaps as the AOP moves into its second phase, AOP tree-planting on more marginal sites will become more common.

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### Charcoal

The patterns emerging from the data on involvement in the charcoal trade are the same for both sites: planters (23%) are involved in some aspect of the charcoal trade at a slightly higher frequency than non-planters (17%). Interviewees were considered to be involved in the trade if they indicated buying, selling and/or making charcoal. Those making charcoal may hire someone or be hired to do so, do so under a share contract (for which the laborer will receive three-quarters of the product), or do so with their own trees.

The buying and selling of charcoal ranges from those buying as few as three sacks a month for one's relatives in Port-au-Prince or Les Cayes, to those buying and hoarding large amounts of charcoal. The more typical buyer/seller in Mòn Zéb will ship 25-75 sacks per month to Port-au-Prince. In Anba Kafe, the typical buyer/seller may handle that amount only twice a year.

There are not great differences between Mòn Zéb and Anba Kafe in the percentages of interviewees indicating that they are involved in the charcoal trade. However, the fact remains that there are much greater quantities of charcoal in Mòn Zéb than in Anba Kafe. As noted above, dealers in Mòn Zéb trade and stockpile greater quantities of charcoal.

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### Summary

What have been described here are two silvopastoral systems and one agrisilvopastoral system. Two important points have emerged from this discussion: the presence of systems that are potential sites for continued tree-planting (which has thus far been largely confined to the jaden) and the central role of livestock in these systems. As will be suggested below, the silvopastoral systems described here (woodlands, woodlots, and groves) stand to be the sites of a greater percentage of AOP

tree-planting as planters' jaden reach their perscribed limit of shade-producing trees. The success of such planting will depend, in part, upon the extent to which AOP extension and research efforts include recommendations for the integration of trees and livestock.

A note of caution: it would be false to assume that given this documentation of agroforestry systems that there exists some great reserve of wood resources. A conservative estimate would be that 75% of all the wood reserves lie in the low-yield nutrient-poor silvopastoral systems of the hillsides; the other 25% in the more humid and fertile groves and jaden of the plenn. Also, the poorest sector of the population have no access to these resources.

## CHAPTER 5

### SOCIOECONOMIC PROFILE: LABOR, LAND, LIVESTOCK AND HOUSEHOLD AMONG PLANTERS AND NON-PLANTERS

#### Survey Results

Data Tables 3 - 7 summarizing the survey results are listed in Appendix A. The bulk of the data appears as Appendix A, Table 3; otherwise it is noted which of the remaining tables should be referred to. In the following discussions, comparisons are made between planters and non-planters in Mòn Zéb and Anba Kafé only when data show there to be significant differences.

Throughout this chapter both registered and unregistered planters are referred to as planters.

Data gathered on the planting frequency and location for 535 AOP participants in appears as Appendix C, Tables 11 - 14.

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#### Agricultural Labor and Capital

Along with the ownership of purchased land, the buying and selling of agricultural labor in rural Haiti is one of the most reliable indicators of economic status. Data was gathered on those who only buy labor, only sell labor, both buy and sell labor, and do neither. In Mòn Zéb, kiltivaté who neither buy nor sell their labor engage labor for large agricultural tasks through reciprocal work exchange groups, called eskwad. Eskwad also sell their labor at times.

The demand for agricultural labor in rural Haiti has yet to be adequately documented. It has been overshadowed in discussions about Haitian agriculture by the equally pressing concerns of population pressure and land scarcity. Nevertheless, the ability of kiltivaté to engage such labor is probably the one act he will perform which will have the greatest effect on the productivity of his farm. It is a day-to-day problem. On the one hand, kiltivaté must compete with other agricultural opportunities (e.g., self-employment in charcoal production), and the social stigma attached to the work itself. On the other hand, there is a limit to the amount kiltivaté are able to pay for labor, given low market prices and low agricultural yields. Also, there are other demands on a kiltivatés' monetary capital that limits the amount available to purchase agricultural labor, such as allocations normally earmarked for crisis episodes of sickness, healing, death, and burial.

The daily agricultural wage at both sites varies from between two and a half to five goud per day (about US\$0.50-

\$1.00). The former applies to tasks such as picking coffee, the latter to the most strenuous sort of field labor. Some agricultural labor is contracted on a monthly or on-going basis between the same individuals.

Results show that about 75% of all planters only buy labor and that about 55% of all non-planters only buy labor. Planters never only sell their labor, while about 10% of all non-planters only sell their labor. Equal numbers (20%) of planters and non-planters work both sides of the labor market. There are no differences between the two sites in this category.

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### Garden Acquisition

Gardens are acquired in two ways in rural Haiti: through purchase or through inheritance.

The standard of success by which one kiltivaté will usually judge another is whether or not he or she has purchased land. One begins one's agricultural career as a sharecropper. In time and with ample accumulation of livestock, the first plot is purchased. Additional plots are purchased throughout middle-age. Thus, the kiltivaté moves away from sharecropping until he becomes exclusively a landlord/owner in the autumn of his years.

Inherited land is described by kiltivaté in two ways, as separated inherited land (té separe) and as unseparated inherited land (té mine). There are two kinds of té mine: that separated upon agreement of the heirs and that to which all heirs have access to. These latter distinctions are not reflected in the data.

Data show that more planters (75%) have purchased land than non-planters (57%). No differences were found at either site for the ownership of té separe. About 6% of Mòn Zéb planters and non-planters owned té separe; no interviewees in Anba Kafe owned té separe.

There were no differences with regard to the ownership of té mine in Anba Kafe: about 75% of both planters and non-planters reported having té mine. The patterns were different in Mòn Zéb. There 95% of the planters and only 80% of the non-planters reported having té mine.

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### Garden Tenure

The tenure condition under which productive jaden are worked has been grouped into three categories: 1) Working purchased/inherited garden -- working a garden that you or your spouse owns or has inherited with household or hired labor ; 2) Leasing garden to a sharecropper/renter/caretaker -- leasing a

garden you or your spouse owns or has inherited to someone to work (or caretake) with the lessee's household or hired labor in return for rent, a gift or a share of the crop,; and 3) Share-cropping/renting/caretaking a garden -- leasing a garden from someone to work with your own household or hired labor for which you remunerate the lessor with rent, a gift, or a share of the crop.

### Working Purchased and Inherited Gardens

There were no differences between the two sites with regard to working purchased or inherited gardens. About 95% of all planters work at least one garden they own or have secure tenure rights to. In comparison, only 75% of non-planters work at least one garden they own or have secure tenure rights to.

### Leasing Gardens

Sharecropping contracts, termed asosye in Mòn Zéb and Anba Kafe, have it that the owner and sharecropper split the harvest equally. However, this was never the case during a study of the January, 1986 sorghum harvest at Mòn Zéb.

In every case, the planter received the larger portion, usually two-thirds of the harvest, after the planter's workers were given shares. When asked why they didn't take half the crop, the owners replied, "Lap okipe té byen" (He's taking good care of the land) or "Li gen anpil piti" (He has many children [to feed]). When asked why he didn't give the owner one-half of the crop, one sharecropper said, "Paske m bezwen ankourajman" (Because I need encouragement/incentive). Also, in such case, the sharecropper provided the seed, tools, and labor to produce the landowner's share.

In Mòn Zéb, renting or anfème usually costs \$10-\$20 for a minimum of six months. This normally includes a house and a large (approximately a half a karo) jadèn. Another form of renting, termed poték, involves contracts for a minimum of three to four years. Anfème and poték, which are synonymous in Anba Kafe, are normally contracted at five years intervals and more often than not are restricted to coffee-producing land. Rents on coffee-producing land can be as high as \$200 per year, a more commonly cited figure was \$50-\$60 annually. The price will depend on the size and productivity of the grove.

Three-fourths of the leased land in the Anba Kafe survey was worked under rent contracts; one-fourth of the land was worked under share contracts. By contrast, less than five percent of the leased land in the Mòn Zéb survey was worked under rent contracts and ninety-five percent was worked under share contracts.

Caretaking or engaging a jeran is employed in Mòn Zéb by the sick, elderly and those now residing in Port-au-Prince or overseas. Of the 115 interviewees in Mòn Zéb, no more than five

residents reported that they hired and/or are a jeran. This was not the case in Anba Kafe where one-third of the interviewees hired and/or are a jeran.

### Results

In Môn Zéb, planters lease out more and sharecrop less gardens than non-planters. Sixty-one percent of Môn Zéb planters and only 36% of Môn Zéb non-planters lease out gardens. Thirty-nine percent of Môn Zéb planters sharecrop gardens while 55% of the non-planters were found to be sharecropping gardens. In Anba Kafe, planters and non-planters leased gardens and sharecropped gardens at about the same rate (30%).

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### Mean Number of Gardens/Parcels

Data on the mean number of gardens worked by planters and non-planters are presented in Appendix A, Table 5. Also reported are the mean number of parcels of land usually not considered gardens; namely, bushland, woodlands, coffee groves, pasturage, sisal plantations and fallow land.

The term working gardens used here includes gardens working for oneself or a landlord and gardens given to sharecroppers.

The mean number of working gardens found for all planters at both sites exceeded the number found for all non-planters. Planters work 4.54 gardens while non-planters work 3.85 gardens.

On the average, Môn Zéb planters lent 1.33 gardens to sharecroppers while non-planters lent 0.54 gardens. In Anba Kafe, there was no difference between planters and non-planters when it came to lending gardens to sharecroppers or renters. On the average, both lent a half a garden.

The mean number of gardens for planters and non-planters combined in Anba Kafe (4.44) was higher than those found for planters and non-planters in Môn Zéb (3.87). This may be explained in terms of the constricted land use arrangements resulting from the rough and mountainous terrain in Anba Kafe, thus making for smaller garden plots.

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### Gardens on Slopes

Kiltivaté were asked whether gardens they worked for themselves were on the plenn or a môn (slope). In Môn Zéb, soil on the plenn is considered to be more fertile; in Anba Kafe, the plenn is considered to have fewer rocks and is easier to work than the môn. Slopes are considered to be more at risk in terms of lack of moisture, excess sunlight, and strong winds. Nearly all kiltivaté at both sites have gardens on the plenn and on the slopes.

Each kiltivaté was placed into one of three categories depending on how many of his or her gardens were reported as jaden môn (i.e., gardens on the slopes): 1) 0-30% of gardens on the slopes; 2) 40-60% of gardens on the slopes; and 3) 70-100% of gardens on the slopes. Some interviewees reported that their gardens gen pant (are on a slope), others reported their gardens as jaden môn (mountain gardens). A garden was recorded as being on the slopes when it was clear that a jaden môn was gen pant. In both Môn Zéb and Anba Kafe, gardens with a 15% slope were considered plenn.

Most Môn Zéb kiltivaté have a majority of their gardens on the plenn; in Anba Kafe, about half of all gardens are on the plenn, half on the slopes. In Anba Kafe, there are no significant differences between where planters have their gardens and where non-planters have their gardens. If anything, non-planters may be working the plenn with slightly more frequency. This may be due to the fact, as mentioned earlier, that there exists no perceived differences between the fertility of the plenn and the slope in Anba Kafe.

This is definitely not the case in Môn Zéb, where the slopes have been eroded of their top-soil and are considered to have the poorest of soils. There, 72% of the Môn Zéb planters have 0-30% of their gardens on slopes; while only 56% of the non-planters have 0-30% of their gardens on slopes. About the same numbers of planters and non-planters in Môn Zéb have 40-60% of their gardens on slopes, while only 8% of the planters and 18% of the non-planters have 70-100% of their gardens on slopes.

A discussion of slopes in the context of AOP tree-planting decisions appears in Chapter 6 beginning on page 34.

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### Livestock

Livestock categories include cattle, pack animals, goats, pigs, and fowl. Pack animals include horses, mules and donkeys; fowl includes chickens, turkeys and ducks. Only one interviewee indicated that he kept sheep.

Cattle and, to a lesser extent, goats and pigs, are at times put into the hands of a caretaker. In response to the question, "do you have cattle?" the livestock caretaker not having animals of his own will more often than not say that he has. This is partially true since, for his services, the caretaker receives either the second born or, in the case of unproductive or male animals, one-quarter of the price of the animal when it is sold or one-quarter of the meat when it is slaughtered. Cow's milk is only collected on special occasions and only after the calf has been at least partially weaned. Any cow's milk collected is properly at the disposal of the caretaker. The differences

between caretakers and owners of livestock are not distinguishable in these data.

The people of Mòn Zéb as a whole keep approximately 25% more cattle and 55% more pack animals than the people of Anba Kafe.

Small differences exist between planters and non-planters with regard to the ownership and caretaking of all livestock categories at both sites. Planters kept about 10% more livestock than non-planters.

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#### Household Type and Female Planters

Households were typed according to the marital status of the working adults in each lakou. Five categories were created: Married, Plasaj, Female-only, Male-only and 'Other'.

While it is understood that living in married households is considered to be an indicator of economic status, it must be pointed out that some of those now living under plasaj (common-law marriage) may have been married before but are now widowed or single and have taken another partner. Also, there is significant pressure on Protestants to be married by the church. (In November, 1985 a marriage en masse was held for over twenty Protestant couples in Fond-des-Blancs.) This tends to reduce the importance of legal marriage as an economic indicator among Protestants. Those who had a plasaj wife/husband and were still married were placed into the Other category, as were households with more than one single adult (e.g., mother and working son).

The figures for planters and non-planters at both sites are variable in all household categories, therefore making it difficult to draw any firm conclusions. In general, for both sites combined, planters (55%) marry at about twice the rate as non-planters (25%). Planters (25%) enter into plasaj unions less frequently than non-planters (33%). Non-planters (16%) are represented higher than planters (5%) in the female-only category. Planters (12%) were represented in the male-only category at a slightly lower rate than non-planters (16%). Equal percentages (9%) of planters and non-planters were represented in the 'other' category.

There are two exceptions to these general interpretations. One is the higher percentages of married couples and lower percentages of plasaj couples at Anba Kafe. This is due, in all likelihood, to the higher percentages of Protestants in the Anba Kafe survey population. The other exception is the high percentage of female-only non-planter households at Mòn Zéb (24%) as compared to female-only non-planter households from Anba Kafe (9%), and female-only planter households from Mòn Zéb (5%) and Anba Kafe (5%).

The household category data were reworked to show planter status by each category. These data appear as Appendix A, Table 7. They show that female-only Mòn Zéb households have the most marked difference between planters and non-planters of all the household types: 81% of the female-only households in Mòn Zéb are non-planters. In Anba Kafé, female-only households are planters and non-planters at the same rate (50%).

This difference can be a result of the higher rate of female-only households found at Mòn Zéb, which in turn can be seen as a result of higher rate of outmigration from Mòn Zéb than from Anba Kafé. Sixty-two percent of the interviewees from Mòn Zéb as opposed to 28% of the interviewees from Anba Kafé responded positively to having immediate family (viz., mother, father, sister, brother, son, daughter) working overseas. While it must be assumed that men and women outmigrate at the same rates, men are much more likely to take on another live-in mate, and thus fall into the plasaj category, than are women. Women generally lack the material resources to attract a live-in plasaj mate.

However, only about 30% of all female planters at both sites fall within the female-only household category. Nearly 55% of all female planters fall within the "other" category since they have grown adult sons and daughters in residence who are assisting them in their gardens. The remaining 15% of female planters are married and living with husbands whose primary occupations are carpentry and truck driving.

Thus, in all female planter households there was not a male household head to be found whose primary occupation was kiltivaté. This is not surprising in light of what we know about the sexual division of labor in rural Haiti. In general, agricultural management is a male domain and marketing a female one, with both sexes providing agricultural labor (cf., Lowenthal, 1984).

Male kiltivaté heads of household usually work (i.e., make the agricultural decisions for) their wives' gardens. Indeed, in only 5% of all (couple) households were wives found to be working gardens of their own.

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### Other Economic Indicators

#### Age

Appendix A, Table 4 shows the age distribution for the interviewee. The Under-25, 36-50 and 51-65 age categories show some differences between planters and non-planters. The other two categories, 26-35 and Over-66, show planters and non-planters to be evenly distributed.

The youngest kiltivaté were much less likely to be planters than those in the 36-50 and 51-65 age categories. This could have been an expected result based on the pattern of the Haitian agricultural career, noted above.

Median age for planters and non-planters fell in the 51-65 age category. Mean age for planters was 51, for non-planters 49.

### Primary and Secondary Occupations

The primary occupation of 95% of interviewees in Mòn Zéb and 55% of interviewees in Anba Kafé was a kiltivaté. There was no significant difference between planters and non-planters in terms of this primary occupation.

However, some notable differences were found between Anba Kafé planters and non-planters in terms of primary occupations. Every interviewee whose primary occupation was carpentry in Anba Kafé was a planter. By contrast, two out of every three shop owners, tailors, seamstresses, and spekilaté were non-planters. This suggests that trees may be a more important resource to the carpenter than to the shop owner/tailor/seamstress/spekilaté. Even among secondary occupations (where agriculture was reported as the primary occupation), the carpentry/mason category has a disproportionate number of planters as opposed to non-planters.

Other differences were found between planters and non-planters with secondary occupations in Mòn Zéb. There, secondary occupations requiring significant capital, education, skill or status were found for 42% of all planters and only 16% of all non-planters.

Smallscale open-market commerce, which can and often is conducted with relatively little capital and may be a strategy for coping with insufficient income from agriculture, was found for 2% of the planters and 11% of the non-planters in Mòn Zéb. No interviewees at Anba Kafé conducted such commerce.

### Education

On the whole, approximately 10% more planters have attended school than non-planters. More people in Anba Kafé (59%) have had some formal education than people in Mòn Zéb (34%). Of those who indicated they had attended school, there was rarely one who had entered the mwayen grades (U.S. fourth grade and up).

### Home Ownership

Home ownership was indicated when the household head or his/her wife/husband was said to be the owner. Planters (88%) were owners of their homes in both study areas at slightly higher rates than non-planters (76%). Those not owning their residence either rented it, were sharecropping the land on which the home stood, or were the caretakers or jeran of the land.

## Cistern Ownership

Cistern ownership is a reliable indicator of economic status. These are usually expensive items being all concrete and fed by a system of gutters from all adjacent sheetmetal roofs within the lakou. To have a cistern, one must be able to afford sheetmetal roofing and concrete.

The incidence of cistern ownership was low among all interviewees but higher in Môn Zéb (7%) than in Anba Kafe (4%); the problem of obtaining potable water being much greater in the more arid Môn Zéb. Planters (13%) were the owners of cisterns at more than twice the rate of non-planters (6%). No non-planters in Môn Zéb own cisterns.

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## Summary Of Socioeconomic Survey Data

Data at both sites show that planters buy more agricultural labor, own more purchased land, more often work their own gardens, are older, own their own homes with greater frequency and are more likely to be carpenters than non-planters.

Planters from Môn Zéb sharecrop less, work gardens on the slopes less, and own or have access to more woodlands than Môn Zéb non-planters. None of these differences appeared in Anba Kafe. It has been suggested that the significantly greater frequency of female-only non-planters in Môn Zéb is a result, in part, of the greater frequency of outmigration from Môn Zéb than from Anba Kafe.

Sociocultural information was also presented for several areas. It was explained how the monetary capital necessary for a peasant to obtain agricultural labor is often limited by allocations needed for crisis events (e.g., sickness, burial). Interpreting share contracts can be quite variable to the benefit of the sharecropper, in part, because of his role as caretaker of the land and its resources.

## CHAPTER 6

### AOP TREE-PLANTING DECISIONS

#### Land and Tree Tenure Security

The first and foremost consideration of the planter is the land tenure conditions under which he or she will plant AOP trees. Subsumed in this consideration are the rules governing tree tenure. There are no rules per se which prevent any sharecropper or renter from planting trees on the land he or she is working under a contract. More important are the rules of tree tenure which dictate to whom the trees belong regardless of who planted them. From this point of view, rules of tree tenure are probably preventing more kiltivaté from participating in AOP than rules of land tenure.

Tree tenure rules, at least in Môn Zéb, have it that if you own the land, you own the trees regardless of who plants them. The felling of trees can only be done at the discretion of the landowner when the land is worked under a share contract. Pruning of existing trees by sharecroppers is allowed and the sharecropper can accrue all the benefits from whatever is done with the branches that are cut. If fruit trees are involved, the produce from them may, at times, be governed by the same arrangements that are made for the division of the crops.

If the ultimate disposal of the trees can be arranged for by agreement of all parties involved, then the issue of land tenure becomes muted. It returns as an issue only if and when the land tenure status comes under new scrutiny by the parties or family members involved. Data gathered in a survey of tenure conditions under which trees were planted attests to the fact that the land tenure issue can be neutralized.

For example, one kiltivaté who sharecrops a parcel of land in Môn Zéb planted trees on this land after coming to an innovative agreement with the landowner about the disposition of the trees. They bent the prevailing rules of tree tenure by deciding that the sharecropper would plant, care, and receive one-half of the worth of the trees are harvested.

As shown in Appendix A, Table 8, 35% of the plantations in Môn Zéb and 57% of the plantations in Anba Kafe were planted on either unseparated inherited land (té miné) or sharecropped/rented land. That is, nearly half of all AOP plantations are on land where the rules of tree tenure played a part in the planting decision.

For example, one kiltivatriis planted trees on té miné that is under the control of her brother-in-law since her husband has

been living and working in French Guyana for some years. The trees are hers and her heirs yet the ultimate disposal of the land remains the prerogative, for the time being, of the brother-in-law.

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### Quality and Kind of Land

#### Protecting the Tree, Protecting the Land: Slopes, Soils and Thieves

In rural Haiti, the slope of the land is one of the chief characteristics in determining agricultural land value. On the whole, slopes are generally considered to be less fertile, more difficult to work because of the inclination and abundance of rocks, and more at risk from the vagaries of the weather than land in a valley or on a plateau.

Appendix A, Table 6 shows the percentages of planter's gardens on slopes (34%) and AOP plantations on slopes (22%) in Mòn Zéb. In 90% of the cases, the garden and the plantation are on the same parcel of land. The same Table also shows the percentages of planter's gardens on the plenn (66%) and AOP plantations on the plenn (78%). These data indicate a decided preference for planting trees on the plenn. Nearly all lakou in Mòn Zéb are also on the plenn. Thus, it can be inferred that, in the mind of the kiltivaté, trees deserve the fertile soils of the plenn and protection from thieves which is afforded by planting near one's home.

By way of evidence that AOP trees are considered to be a valued crop that warrant protection, a comparison was made between coffee groves (a valued crop), sisal plantations (a not-so valued crop and one that a thief cannot readily make off with), and AOP plantations in Mòn Zéb. It was found that AOP plantations were planted in the abitasyon of residence of the planter 80% of the time, coffee groves were in the abitasyon of residence 66% of the time, while sisal plantations were so planted only 21% of the time.

In both sites, AOP plantations have been planted on the more fertile soils of the jadèn (as opposed to being planted in groves, woodlands, etc.) nearly 90% of the time. The reasons given for this are that the kiltivaté feels the trees need good soil and that trees kenbe tè or hold the soil. One kiltivaté planted AOP trees at one-meter spacing along the upper border of his sloping jadèn because, he said, it would act as a break for soil runoff occurring during the rainy season.

The idea of maintaining soil fertility through planting trees and the availability of free trees to do this has led several outmigrants from Mòn Zéb to plant entire parcels of land with trees. That is, rather than turn the land over to sharecroppers, who they say would overwork the land in the owners'

absence, they plant trees. In this fashion, AOP has come to have some participants whose main occupations are taxi driver in New York City, cook in Boston, and motel domestic in Chicago.

Integrating with the Household Economy:  
Decisions of Tree Use and Land Use

Tree use at both sites serves subsistence and cash needs. With a few exceptions noted below, all AOP participants have every intention of keeping this balance. The harvest of trees is controlled more by the immediate cash and subsistence needs of the family than the by seasonal demands of the market. In this way, trees serve as a bank. Albeit a minor one in monetary terms in comparison with livestock, trees are nonetheless a bank from which can withdraw for cash or subsistence needs. For example, one kiltivaté in Mòn Vét sold one large kangéché for twenty dollars to help finance his next doctor's appointment in Port-au-Prince.

Several Mòn Zéb kiltivaté have gone a step further with this idea by making a larger "deposit" in their tree "bank account" for future needs. In each case the kiltivaté was also a charcoal spekilaté who planted woodlots (in each case displacing food crops) with AOP trees with the intention of making charcoal with them in the future.

For them this was a rational decision based on what they have observed with regards to the charcoal market. Some have already responded to an expanding charcoal market by hoarding charcoal and only selling in bulk at higher prices when shortages occur in PortauPrince. The people of Mòn Zéb believe they have a distinct advantage in the charcoal market with their proximity to the capital city and, thus, low transportation costs (six goud per large sack).

The kind of management system (i.e., jaden, coffee grove, sisal plantation, etc.) affects the decision of whether or not to plant trees. Yet the availability of free AOP seedlings has motivated some AOP participants to alter their present management systems. One potential deleterious effect of this is a reduction in food production if such production is not made up on another parcel of comparable land requiring comparable labor inputs. However, as Grosenick (1986) points out, reducing food production in this way may not necessarily lead to reduced income.

In 32% of the Mòn Zéb AOP plantations studied, trees planted in association (not border planting) with agricultural crops were planted fewer than the three meters apart recommended by the animaté. Three meter spacing is the distance AOP foresters say that mature trees will affect each others growth. At closer spacing, food crops may be affected as well. As the trees mature in these gardens, they will either have to be thinned or severely pruned to facilitate continued food crop production. Or, the decision must be made to convert these gardens to "tree gardens" with or without shade-loving crops like coffee. In 76% of all

AOP plantations studied in Mòn Zèb, the trees were planted in associations with other existing trees.

As jaden reach their tree planting limit, either more marginal kinds of land must become AOP planting sites or the decision must be made to reduce food production. Whether the majority of AOP participants opt for marginal land or reduced food producing land will be one of the most crucial decisions on the part of the kiltivaté affecting the future outcome of AOP.

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### Summary

Land and tree tenure are the planters' foremost considerations in his or her decision as to where to plant AOP trees. However, between 35% and 57% of all AOP plantation sites were found to be on unseparated inherited land (té miné) or sharecropped land. Thus, initial AOP concern about tenancy rules as a possible barrier to tree-planting has been found to be flexible in the hands of the peasants themselves. They have demonstrated that they are willing to accommodate the decreasingly novel practice of planting trees within existing rules of land and tree tenure.

AOP participants showed a slight preference for planting trees on the plenn relative to their planting of their gardens on the plenn. The plantations were also found to be in close proximity to the planter's lakou and planted in the home abitasyon of the planter at roughly the same rate as coffee. This demonstrates the planters' concern that the trees be protected and have the most suitable growing conditions available.

Some planters used trees to initiate new economic ventures around charcoal. Others planted trees to conserve the land rather than turning it over to sharecroppers.

Seventy-six percent of all AOP plantations studied had trees planted in association with other tree and food crops. As shown in Chapter 4, this pattern of planting mimics strategies for raising tree crops long practiced in the study area. In 32% of the AOP plantations studied, food crop production may be adversely affected in the absence of further tree management practices such as thinning or pruning.

## CHAPTER 7

### RECOMMENDATIONS

#### Old Systems, New Systems: Trees in the Household Economy in Rural Haiti

**Recommendation:** Build upon existing agroforestry systems especially those described incorporating livestock. Assist peasants with technical problems that might arise from this.

The traditional agroforestry systems described in this report provide several areas within which AOP can provide technical assistance. These agroforestry practices are known but, on the whole, not widely practiced. These are the silvopastoral system practiced on hillsides and marginal lands; the agrisilvopastoral system of gardens and groves, including the cut-and-carry practice of providing fodder for animals; and the existing technologies of coppicing, pruning, and charcoal making.

New agroforestry systems and practices can be effectively built upon existing systems and practices. By enhancing the existing systems, kiltivaté will be able to bring more wood resources under his or her control for subsistence and cash needs.

The future may see many planters deciding to plant AOP trees on more marginal lands as many jaden reach their prescribed tree limit.

The greatest challenge for AOP will lie in the hillsides presently managed under a low-yield silvopastoral system. Few AOP trees have been planted on this kind of land for several reasons: 1) Not all peasants own this kind of land or have access to a silvopastoral system of this kind, 2) For those who do, the soils there are considered too poor for trees, 3) These lands are seldom visited on a daily basis and, thus, too far away to protect from poaching by thieves or encroachment by animals that may eat the young trees, and 4) Tree planting would limit the use of that land until the trees grew out of the reach of browsing animals.

As one possibility, AOP could suggest tree-planting with hillside sisal plantations. Within silvopastoral systems, termed té mare bét or té lagé bét in Mòn Zéb, effective rotation systems for grazing and browsing livestock could be devised to facilitate the development of young trees. Specific drought resistant species, with the same use properties as the ones now used (viz., wood that can be hewn for housing construction and that makes good charcoal) could be introduced by AOP expressly for the

purpose of planting within relatively dry, nutrient-poor silvo-pastoral systems.

Also, the qualities of the wood generated by AOP trees remain a mystery to many planters. Some say they are only good for charcoal. Others suspect the tree qualities are similar to local species; they say they share the same fami (i.e., that neem and kajou, and leucaena and dilen are the same botanical family and thus share similar qualities) (also see Ashley, 1986).

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#### Inequitable Distribution and AOP Tenancy and Minimum Seedling Requirements

**Recommendation:** Deemphasize tenancy/ownership requirements for planters and further decrease the number of trees a planter is required to take.

Data suggest that many kiltivaté can only afford to plant a few trees and, possibly for this reason, are sometimes overlooked as appropriate AOP participants by animaté. Preferring fewer trees is understandable. AOP should devise a way to accommodate those with smaller plots as it has done in the past, when the number of trees required to be taken by each kiltivaté was reduced from 500 to 250. In Môn Zéb, CodéPla continues to offer a minimum of 250 trees per box.

Another issue that has emerged from this research is that animaté may overlook certain kiltivaté, especially the poorer and female ones, in part, due to their misinterpretation of the tenancy rules for AOP participation.

The AOP tenancy rules state that "trees should be planted on securely held land giving the planter full rights to harvest the trees when and as he or she wishes". This is interpreted at the animation level as trees should be planted on "bought land". Despite this, peasants have been found to plant AOP trees on inherited family land with nearly the same frequency as they plant on land they have purchased. Yet the rule may be excluding some sectors from either stepping forward to sign up for AOP or being recruited by animaté as participants.

To simplify the matter, the question of tenancy should be a moot point during the inscription phase. This may require additional animaté training to emphasize this point. In this way, the question of securely held land would be placed into the hands of the individual kiltivaté who are in the best position to make such a determination. In doing so, it will allow for the entry of a broader spectrum of rural classes to participate in AOP.

\*\*\*\*\*

Limited Capital, High Demand for Trees  
and Suggested AOP Subsidy Reductions

**Recommendation:** Do not underestimate the role free trees have played in AOP when constructing policies that make demands on rural capital.

While field research indicates a high demand for trees, it must be kept in mind that this is a demand for free trees. Armstrong (1985), for one, suggests that some of this subsidization be removed gradually. If peasants were placed into the situation of having to pay for AOP trees, it can be reasonably predicted that tree planting would decline. By how much is difficult to estimate. But the reality of limited available capital for such purchases should be kept in mind at all times. If capital is being presently accumulated, it is more often than not intended for the future purchase of a pig. Even a price of \$0.03 per seedling would make a box of 250 seedling cost \$7.50; ten boxes would cost the same as a pig.

Some understanding of how reduced subsidies may affect tree planting may be found in the outcome of the fruit tree program whereby PADF purchases fruit trees and resells them at a subsidized price to AOP participants. Are peasants buying them? In what quantities? Do they have better survival rates than free trees? Who does not buy them? How would comparable pricing of AOP hardwoods affect tree-planting? This program has been enacted only very recently; no one at either site has yet to participate in it.

\*\*\*\*\*

Tree Seedling Survival Versus Ownership  
of Indigenous Woodlands

**Recommendation:** Study seedling survival rates in the context of ownership of indigenous woodlands.

Buffum (1985) measured seedling survival for 59 farmers in Grenier. He divided these data into three survival classes and compared them with Grenier socioeconomic data. His findings suggest that those with less landholdings and those who buy more labor had higher survival rates. Buffum also found those who had planted during fewer seasons had higher survival rates.

Similar comparisons could be carried out for data in this report. However, seedling survival data will need to be collected. Additionally, data on ownership of indigenous woodlands for Mòn Zèb show that the gap between those who have wood resources and those who do not is widening (there were no differences among farmers in Anba Kafe with regard to ownership of indigenous woodlands). A comparison of seedling survival rates and ownership of indigenous woodlands can be based on the hypothesis that those who already have significant indigenous wood resources are not as

concerned with seedling survival as those who have little or no indigenous wood resources. If those with significant amounts of indigenous wood resources are found to have lower survival rates then the gap between those with such resources and those with little or no wood resources may not be widening as rapidly as we might otherwise expect.

\*\*\*\*\*

### Impact on Food Production

**Recommendation:** Commission a study on the impact of tree-planting on food production and ways in which its deleterious effects might be countered.

Conversion of gardens from subsistence to cash (tree) crops by some and its effects on the ability of others to pursue their livelihoods is an important issue in the study of the impact of tree planting in Haiti and elsewhere (e.g., Shiva, *op. cit.*, 1981; also Conway, 1986 and Ashley, 1986).

As noted above, many kiltivaté state that there is a limit to the number of tree crops in any one productive jaden in order to allow for continued food crop production. However, some kiltivaté have deliberately taken a portion of their jaden and devoted it to tree crops. Conway (1986) found some kiltivaté have misjudged the growth rate of the AOP tree and, under certain conditions, allowed the trees to displace food crops. While encouraged by AOP grantees, intercropped trees can adversely impact food crop production. Closely planted trees rob essential sunlight and moisture from the food crops growing in association with them. However, trees planted at short distances (viz., fewer than three meters) in association with food crops does not necessarily mean that food crops are being adversely affected. Management practices on the part of the kiltivaté, nitrogen-fixing qualities of many of the AOP trees, and the seasonal nature of the foliage of some AOP tree varieties must also be evaluated in any study of the impact of AOP on food crop production.

It has been noted that in 32% of the AOP plantations studied there exists the potential that food crop production will be adversely affected. Given the nature of Haitian sharecropping practices, there is an additional potential that the livelihoods of other kiltivaté could be adversely affected as well.

In fact, some kiltivaté interviewed indicate that they have already decided to convert their land to "tree gardens". To what extent they have displaced sharecroppers has yet to be investigated.

Both the data presented here and the literature on agroforestry warrant a thorough field study into the impacts of tree planting on food production in rural Haiti.

\*\*\*\*\*

## Integrate Research and Extension

**Recommendation:** Fully integrate AOP socioeconomic and biological research and extension efforts thus making them responsive to the local and varied circumstances found in rural Haiti.

AOP should conduct its tree-planting and extension efforts within the context of existing silvopastoral and agrisilvopastoral practices. In this way, AOP planting and management recommendations will have more significance for the kiltivaté. Such an approach must take into consideration local environmental and social conditions. The agroforestry systems described here may have little bearing on an agrisilvopastoral system practiced, for example, on the Central Plateau. Thus, similar descriptions of agroforestry systems are needed in the other major ecological and economic zones in Haiti.

A team of biological and social scientists should be created whose task it would be to generate locally appropriate extension recommendations based on actual field research. In other words, any future research and extension efforts by AOP should be wholly integrated and geared toward dealing with local circumstances and the wide variety of environmental and economic conditions existing in rural Haiti. Armstrong (1985) makes a pitch in this direction by calling for the establishment of an Agroforestry Information, Training, and Outreach Center. Should such a Center materialize, its information, training and outreach should be guided by field research conducted in ecological/economic zones similar to the ones where an extension efforts are being applied.

This research/extension team should work directly with AOP animaté, in the same way that PADF and CARE foresters do now. All PADF and CARE forestry and socioeconomic research should be placed under the direction of the extension/research team. The extension part of this arrangement could be deemed to be already in place: the seven PADF/CARE foresters and their animaté. Biological and socioeconomic research teams could be assigned to some or all of the seven geographic/ecological areas.

APPENDIX A  
SOCIOECONOMIC SURVEY DATA

Definition of Socioeconomic Variables Surveyed

The data following on planters and non-planters concerns several broad socioeconomic categories. Labor indicates the buying and/or selling of agricultural labor. Garden Tenure and Garden Acquisition summarized garden tenure conditions under three broad headings (1, working purchased/inherited land; 2, leasing a garden to sharecropper/renter; 3, working a sharecropped/rented garden) and garden acquisition according to three methods (1, purchased; 2, inheriting and separating; 3, inheriting and not separating). Gardens on Slopes shows the percentage of each kiltivaté gardens that were indicated to be jadén mon as described above. Mean Number of Gardens/Parcels indicates the mean number of gardens held according to the three broad tenure headings listed above and according to the tenure condition of gardens by age. Also shown is the mean number of non-garden parcels (e.g., raje). Indigenous Woodlands indicates the ownership of/access to woodlands or bwa as indicated above. Coffee indicates the ownership of coffee groves.

Livestock Holdings include pack animals, fowl, cattle, goats and pigs owned or under one's care. Charcoal and Lime indicate the extent of involvement in the manufacturing and dealing of charcoal and/or lime. Household Types and Female Planters summarizes various residential patterns under four household type categories: 1, legally married with husband and wife present; 2, common-law marriage (plasaaj) with husband and wife present; 3, married or unwed female only present; and 4, married or unwed male only present. Household types not fitting into these categories were placed into an Other category. Occupation reflects both the primary and secondary occupations indicated or observed in the course of the interview. Religion breaks down the percentages of Catholics and Protestants; and the percentages of Baptist Protestants and non-Baptist Protestants for Anba Kafe. Age shows the age distribution for the interviewees. Membership in Community Groups shows the extent of membership in the community council and the groupman or community work groups. Education indicates if the interviewee had ever attained any formal schooling. Home Ownership indicates whether interviewees owned the home in which they resided. Cistern Ownership indicates the presence of a water cistern in the household yard.

**Table 3**  
**Percentage of Planters/Non-Planters**  
**By Socioeconomic Categories for**  
**Món Zéb (MZ) and Anba Kafe(AK)**

	Percentage of			
	<u>Planters</u>		<u>Non-Planters</u>	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>
<b>A. Labor</b>				
Buying Labor Only	64%	81%	43%	68%
Selling Labor Only	0	0	19	6
Doing both	22	19	20	21
Do Neither	14	0	18	6
<b>B. Garden Tenure</b>				
Working owned/inherited garden	92%	97%	71%	79%
Not working owned/inherited garden	8	3	29	21
Leases garden to sharecropper, etc.	61%	26%	35%	32%
Does not lease to sharecropper, etc.	39	74	65	68
Sharecropping/renting/caretaking garden	39%	31%	55%	32%
Not sharecropping/renting/caretaking	61	69	45	68
<b>C. Garden Acquisition</b>				
Owens purchased land	76%	74%	55%	59%
Does not own purchased land	24	26	45	41
Owens separated inherited land	7%	0%	6%	0%
Does not own separated inherited land	93	100	94	100
Owens unseparated inherited land	94%	70%	79%	77%
Does not own unseparated inherited land	6	30	21	23
<b>D. Gardens on Slopes (Jardin Món)</b>				
0-30% Jardin Món	72%	24%	56%	24%
40-60% Jardin Món	20	34	27	47%
70-100% Jardin Món	8	42	18	29%
<b>E. Indigenous Woodlands (Bwa)</b>				
Having access or ownership	64%	75%	41%	74%
No legal access or ownership	36	25	59	26

	Percentage of			
	Planters		Non-Planters	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>
<b>F. Livestock Holdings</b>				
Owns cattle	66%	40%	43%	21%
No cattle	34	60	57	79
Owns pack animal	80%	20%	70%	16%
No pack animal	20	80	30	84
Owns goats	79%	67%	61%	58%
No goats	21	33	39	42
Owns pig(s)	8%	7%	0%	3%
No pigs	92	93	100	97
Owns fowl	97%	84%	89%	82%
No fowl	3	16	11	18
<b>G. Coffee</b>				
Owning coffee groves	49%	98%	24%	97%
No coffee groves	51	2	76	3
<b>H. Charcoal</b>				
Buying, selling, making charcoal	24%	22%	19%	15%
No involvement in charcoal trade	76	78	81	85
<b>I. Lime</b>				
Buying, selling, making lime	0%	7%	0%	6%
No involvement in lime trade	100	93	100	94
<b>J. Religion</b>				
Catholic	87%	55%	83%	70%
Protestant	13	45	17	30
<b>K. Household Type</b>				
Married-husband/wife present	42%	61%	24%	26%
Plaçage-husband/wife present	32	14	35	32
Female only present	5	5	24	9
Male only present	14	9	11	21
Other	7	11	6	12

	Percentage of			
	Planters		Non-Planters	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>
<b>L. Primary Occupation</b>				
Cultivateur	95%	58%	94%	50%
Boutique/Depot Owner	0	7	0	20
Tailor/Seamstress	0	7	0	15
Speculteur	0	5	2	9
Mason/Carpenter	0	16	0	0
Government	0	7	0	6
Bakor	3	0	2	0
Teacher/Health Aide	2	0	2	0
<b>M. Secondary Occupation</b>				
Cultivateur	2%	37%	2%	41%
Carpenter/Mason	12	4	2	0
Government	12	2	2	0
Machann/Open-Market Retailer	2	0	11	0
Baker	7	0	6	0
Speculteur	0	4	0	3
Chauffeur	2	2	2	0
Tailor/Seamstress	2	0	2	0
Teacher/Health Aide	4	0	0	0
Boutique/Depot Owner	0	0	0	3
No Secondary Occupation	54	53	71	53
<b>N. Membership in Community Groups</b>				
Membership	95%	86%	74%	57%
No membership	5	14	26	43
<b>O. Education</b>				
Some formal education	40%	55%	28%	63%
No formal education	60	45	72	37
<b>P. Home Ownership</b>				
Own domicile	86%	90%	80%	71%
Do not own domicile	14	10	20	29
<b>Q. Cistern Ownership</b>				
Own water cistern	13%	7%	0%	3%
Do not own water cistern	87	93	100	97

Appendix A

Table 4

Age Distribution for Planters and Non-Planters  
in Mon Zeb (MZ) and Anba Kafe (AK)  
With Percentage Breakdown by Age

<u>Age</u>	<u>Planters</u>		<u>Non-Planters</u>	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>
Under 25	2(25%)	3(43%)	6(75%)	4(57%)
26-35	7(50%)	11(50%)	7(50%)	11(50%)
36-50	11(52%)	20(74%)	10(48%)	7(26%)
51-65	22(59%)	13(62%)	15(41%)	8(38%)
66+	12(46%)	7(64%)	14(54%)	4(36%)

Appendix A

Table 5

Mean Gardens/Parcels for Planter/Non-Planter

	<u>Planters</u>		<u>Non-Planters</u>	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>
<u>Gardens</u>				
A. Working for Self (bought or inherited)	2.29	3.40	1.42	2.65
B. Given to Sharecrop/Rent	1.33	0.54	0.54	0.62
C. Sharecropping/Renting	0.80	0.65	1.35	1.03
D. TOTAL GARDENS WORKING	4.42	4.59	3.31	4.30
<u>Parcels</u>				
E. Parcels of Purchased Land	2.71	2.79	1.17	1.44
Parcels of Seperated Inheritance	0.22	0.00	0.14	0.00
Parcels of Unseperated Inheritance	3.27	2.37	2.23	2.44
F. Parcels of				
Cafe	0.69	3.21	0.23	2.71
Bwa/Rak Bwa	1.16	1.47	0.59	1.47
Pasturage (té bet/té zeb)	0.29	0.16	0.23	0.00
Raje/Bushland	0.40	0.00	0.28	0.00
Sisal	0.31	0.00	0.11	0.00
Fallow	0.02	0.00	0.00	0.00

Appendix A

Table 6

Mean Gardens By Age

<u>Age</u>	<u>A.</u> <u>Self</u> <u>Working</u>		<u>B.</u> <u>Give</u> <u>Others</u>		<u>C.</u> <u>Share/</u> <u>Rent</u>		<u>D.</u> <u>Total</u> <u>(A+C)</u>	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>	<u>MV</u>	<u>AC</u>
<u>Under 25</u>	1.43	2.00	0.50	0.43	1.13	1.00	2.56	3.00
<u>26 - 35</u>	0.39	2.50	0.50	0.27	1.64	1.05	2.57	3.55
<u>36 - 50</u>	1.76	3.33	0.38	0.70	2.38	1.00	4.14	4.33
<u>51 - 65</u>	2.16	3.30	1.00	0.86	0.73	0.33	2.89	4.23
<u>66+</u>	1.87	3.32	1.80	0.55	0.27	0.27	2.14	4.09

Appendix A

Table 7  
Percentage of Planters/Non-Planters  
By Household Type

<u>Household Types</u>	<u>N</u>		<u>% Planters</u>		<u>% Non-Planters</u>	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>
Married	38	44	66%	80%	34%	20%
Plasaj	38	19	50	42	50	58
Female Only	16	6	19	50	81	50
Male Only	14	12	57	42	43	58
Other	7	10	57	60	43	40

Appendix A

TABLE 8  
AOP Plantations

<u>Type of Land</u>	<u>Survey</u>		<u>PADE Files</u>	
	<u>MZ</u>	<u>AK</u>	<u>MZ</u>	<u>AK</u>
All Gardens on Slopes	34%	61%		
Plantations on Slopes	22	44		
All Gardens in the Valley	66	39		
Plantations in the Valley	78	56		
<u>Plantations on</u>				
Purchased Land	60	44	85%	95%
Seperated Inherited Land	5	0	14	1
Unseperated Inherited Land	31	45	2	0
Sharecropped/Rented Land	4	12	0	4
<u>Plantations in</u>				
Gardens	90	44		
Pasturage	1	11		
Coffee	3	40		
Woodlands	3	6		
Sisal	3	0		

Appendix A

Table 9

Persons per Household  
Món Zéb

<u>Number (N) Per</u> <u>Household</u>	<u>Number of</u> <u>Households (Hh)</u>	<u>N X Hh = Population</u> <u>Total</u>
1	7	7
2	10	20
3	21	63
4	16	64
5	22	110
6	19	114
7	13	91
8	3	24
9	7	63
10	2	20
11	0	0
12	2	24
13	1	13
<u>TOTALS</u>	123 Hh	613 = 4.98/Hh

Appendix B

Table 10  
COFFEE GROVE SPECIES COUNT  
MÓN ZÈB

<u>Species</u>	<u>Grove 1</u>	<u>Grove 2</u>	<u>Grove 3</u>	<u>Grove 4</u>	<u>Grove 5</u>	<u>Total</u>	<u>Total</u>
Mango	24	7	42	9	21 =	103	35.2%
Bwa Savann Wouj	3	0	0	15	1 =	19	6.5
Chadek	2	0	5	3	6 =	16	5.5
Palmis	2	0	1	0	12 =	15	5.2
Zaboka	0	0	8	0	6 =	14	4.8
Koysol	1	2	3	1	6 =	13	4.5
Zoranj Si	2	3	4	1	0 =	10	3.4
" Dous-Comin-Seret	2	0	5	0	3 =	10	3.4
Mombinbata	2	0	0	7	0 =	9	3.1
Koma	0	1	0	7	0 =	8	2.8
Mombin	1	1	1	3	2 =	8	2.8
Kupab	0	6	0	1	0 =	7	2.4
Pinye	4	0	1	1	1 =	7	2.4
Kulbas	1	3	0	1	1 =	6	2.1
Kinép	1	0	0	4	0 =	5	1.7
Bwa Dòm	1	1	0	2	0 =	4	1.4
Kuymit	0	2	0	0	2 =	4	1.4
Banan	0	2	2	0	0 =	4	1.4
Sitwon	1	0	2	0	0 =	3	1.0
Gomye	0	2	1	0	0 =	3	1.0
Koraj	0	1	2	0	0 =	3	1.0
Mérez	0	0	0	3	0 =	3	1.0
Papay	0	1	1	0	0 =	2	0.7
Kass	0	0	2	0	0 =	2	0.7
Bwa Fé	0	0	0	2	0 =	2	0.7
Frenn	1	1	0	0	0 =	2	0.7
Pòm Kajou	1	0	0	0	0 =	1	0.3
Bambou	0	1	0	0	0 =	1	0.3
Kokoye	0	0	1	0	0 =	1	0.3
Bernadòl	0	0	1	0	0 =	1	0.3
Catavgate	0	0	0	1	0 =	1	0.3
Bwa Kaka	0	0	0	1	0 =	1	0.3
Ti Ji	0	0	0	1	0 =	1	0.3
Bwa Chenn Blan	0	0	0	1	0 =	1	0.3
Pistach	0	0	0	0	1 =	1	0.3
<u>TOTAL</u>	49	34	82	64	62 =	291	

## Appendix C

### Planters By Sex, Region, and Frequency of Planting For Môn Zéb

The following tables show the breakdown by sex, region (abitnsyon), season of planting, and planting frequency by season for 535 AOP participants in Môn Zéb. These data were collated from the records of two animaté kept through eight consecutive planting seasons from May, 1982 to October, 1985.

Table 11 shows that 19% of Môn Zéb planters to be female.

Table 12 breaks down AOP participation according to eight consecutive planting seasons. AOP participation does not appear to be on the wane. It should be recalled that these 535 participants were recruited by only two of the present eleven animaté in Môn Zéb.

Table 13 shows planting frequency by region. The average AOP participant has received trees for fewer than two seasons.

Table 14 Breaks down planters by the number of seasons they planted AOP trees. Fifty-six percent of all planters planted only one season.

Appendix C

Table 11

AOP Participants by Sex and Region

<u>Region</u>	<u>Sex</u>		<u>Total</u>
	<u>Male</u>	<u>Female</u>	
I Mon Zeb	81	19	100
II Sen Franswa	78	27	105
III Areas Adjacent to I & II	146	35	181
IV Outlying Regions	116	15	131
V Region Unknown	11	7	18
	-----	-----	-----
	432(81%)	103(19%)	535

Appendix C

Table 12

Planters by Season, Region and Sex

<u>Season</u>	<u>Regions</u>					<u>All</u>	<u>Sex</u>	
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>		<u>Male</u>	<u>Female</u>
May 82	9	16	22	25	2	74	62	12
Oct 82	30	28	15	27	2	102	89	13
May 83	32	21	32	31	2	118	97	21
Oct 83	22	29	25	66	3	145	116	29
May 84	26	40	15	31	1	113	91	22
Oct 84	9	41	46	31	5	132	107	25
May 85	30	32	33	48	4	147	117	30
Oct 85	18	26	70	27	1	142	115	27
<b>TOTAL*</b>	<b>176</b>	<b>233</b>	<b>258</b>	<b>286</b>	<b>20</b>	<b>973</b>		

\*These values can be used as estimates for the number of plantations established; those planting two or more plantations in one season can be assumed to be offset by those planting in the same plantation each season.

Appendix C

Table 13

Total Plantations and Planting Frequency  
By Region and Sex

<u>Regions</u>	<u>Total Plantations</u> <u>(Table 2)</u>	<u>Planters</u> <u>(Table 1)</u>	<u>Planting Frequency</u> <u>Per Planter</u>
I	176	100	1.76
II	233	105	2.22
III	258	181	1.43
IV	286	130	2.20
V	20	18	1.11
	-----	-----	-----
TOTAL	973	535	1.82
<u>Sex</u>			
Male	794	431	1.84
Female	179	104	1.72

Appendix C

Table 14  
Planting Frequency By Planter

<u>Number of</u> <u>Seasons</u> <u>Planting</u>	<u>No. of</u> <u>Planters</u>	<u>Percent of</u> <u>Total</u>
1	298	56
2	131	25
3	55	10
4	24	5
5	15	3
6	8	2
7	3	1
8	1	<1
	-----	-----
TOTAL	535	100

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