

HAITI AGROFORESTRY RESEARCH PROJECT

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**SOCIO-CULTURAL FACTORS
IN HAITIAN AGROFORESTRY:
RESEARCH RESULTS FROM FOUR REGIONS**

by

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The views expressed herein are the views of the contractor and not necessarily those of the U. S. Agency for International Development.

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Haiti Agroforestry Research Project

Socio-Cultural Factors in Haitian Agroforestry: Research Results from Four Regions

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Executive Summary

This report presents the results of research on socio-cultural aspects of agroforestry in the Des Forges, Bassin Bleu, Violet and Maniche areas of Haiti. A total of 258 households were surveyed, 108 in Bassin Bleu and fifty each in the other locales. Most respondents were male heads of households in their forties. Having one or more literate persons in a household was common. Many households included people who had skills and who earned income which depended entirely on wood or wood products. Water and services (medical care, transport, markets) were often lengthy walks from respondents' farms. Schools and churches were more accessible and have good potential for use in extension activities. Radio listening was the most popular leisure activity. Radios is a good medium for extension messages. Tools are in very short supply. Increasing tool availability and use would produce at least a slight increase in farm production. Statistics concerning housing, household utensils and farm animals owned are provided.

Of the types of agroforestry in use, mixed ("melanj") was the most common, followed by living fences, hedgerows with crops, and hedgerows without crops. Tree lots were rare and many farmers were not familiar with hedgerow techniques. More than half of the farmers belonged to a "kombit" or cooperative work group.

Crops were by far the most common source of income, followed by animals. Less than one in twenty had charcoal as a primary income source, and all were in the Des Forges area. More than half reported consumption of purchased wood products. The average expenditure per purchasing household per year was remarkably high, about US\$100.

Nearly four out of five were participating in an agroforestry program. Participants gave the programs a very strong vote of confidence, with more than nine out of ten indicating that they would participate again. A majority reported that controlling erosion was their primary motive. More than nine out of ten replied that they would plant more trees if they could. Their greatest barrier was their lack of land. The largest proportion of respondents reported that their most important non-agroforestry need was for a source of income.

The regions differed from one another in various respects. Pronounced regional differences were manifest in households' main source of income, with charcoal production and non-farm income being concentrated in two different regions. Charcoal purchases sharply differed by region. Kombit membership was high in Des Forges and Maniche and lowest in Violet. Perceptions of development needs differed by region, as did household skills, motives for practicing agroforestry, utensils and perceptions of the barriers preventing its expansion.

Few significant differences were manifest among participating and non-participating respondents. The pattern of these differences suggests that participants are less traditionally oriented, are more careful farmers, and tend to be more prosperous than non-participants.

Research findings are used to make a number of recommendations for project implementation.

REZIME

Rapo sa-a prezanté rezilta rechèch sou aspè socio-kiltirèl agroforestri nan Des Forges, Bassin Bleu, Violet é Maniche. Yo té kestoné 258 mèt kay, 108 nan Bassin Bleu é 50 nan chak lot lokalité-yo. Pi fo nan moun ki té répon-yo cé chef fanmi gason ki gen karant ané. Nan kay yo, té gen yon ou plis moun ki konn' li. Ampil nan kay-yo gen moun ki gen métyé é ki fè kob sou bwa ou produi bwa. Dlo ak dispansè, transpo, maché pa pwé té moun kap répon. Lékol é Légliz té pi facil pou rivé é yo kapab sèvi pou fè lot aktivité. Kouté radio cé pi gwo distraktyon. Radio cé yon bon moyer pou enseyman. Pa gen ampil zouti. Plis zouti ta édé ogmanté prodiktyon sou tè-yo. Infomasyon sou kay, zouti kay ak bèt tou disponib.

Agroforestry ki plis sèvi cé mélanj ak ramp vivan avek é san kilti. Pa gen ampil lot pyébwa é kiltivatè-yo pa konnin teknik ramp vivan-an. Plis ké mwatié kiltivatè-yo nan kombit ou nan travay kooperativ.

Cé kilti ki rapoté plis kob, an apwé cé bèt. Moins ké yon moun nan 20 gen chabon kom premié sous lajan é tout cé nan Des Forges yo rété. Plis ké mwatyé achté pwodui bwa. Dépans moyenn pa kay chak ané té trè ro, prèské \$100.00.

Sou 5 moun 4 tap paticipé nan yon program agroforestri. Paticipan yo té positif sou program yo é 9 sou 10 té di ké yo ta dako pou paticipé anko. Majorité té di ké sé ewozion ki fè yo plis anvi paticipé. Ampil di yo ta planté plis pyébwa si yo té kapab mè yo manké tè. Pi gwo nécesité moun-yo cé lajan.

Chak réjyon diferannan plisiè sans. Sak entré kob nan pwodui chabon é sak entré kob nan travay andéyo rété nan yon lot zon. Nan chak réjyon té gen diferans nan kantitié chabon ki té achté. Ampil moun té nan kombit nan Des Forges ak Maniche é cé Violet ki té gen moins moun. Moun chak zon wè bezwen yo nan fason pa yo. Chak genyen métié pa yo, rézon pa yo pou entré nan agroforestri é zouti pa yo. Yo tout wè pwoblèm expansyon-an jan pa yo.

Pa gen ampil diferans nan mounki paticipé nan pwojè-a aksak pa paticipé. Sèl diferans impotan sé té paticipan-yo pi a la mod é yo té pran plis swen jadin-yo pacé sak pa paticipé-yo. Sak té paticipé-yo té fè plis kob.

A pati rezilta sa-yo pliziè rekomandasyon té fèt pou aktivé pwojè-a.

I. Introduction

This report describes part of the sociological research conducted during 1988-89 by the SECID/Auburn University research team. The team is a component of the Agroforestry Outreach Project (AOP), funded by the U. S. Agency for International Development in Haiti. The SECID/Auburn component of the AOP is also known as the Haiti Agroforestry Research Project, or HARP. The principal objective of the AOP is to help Haitian peasants use agroforestry technology to reduce erosion, improve agricultural production, and to increase the incomes of farm families. The implementation of these activities is the responsibility of CARE International and the Pan American Development Foundation. These organizations carry out a wide range of activities including the establishment of tree nurseries and the distribution of seedlings. A major part of the work of both groups is in extension and animation to help farmers apply improved forms of agroforestry technology.

The primary objective of HARP, under USAID contract number 521-0122-C-00-7104-00, is to conduct research and diffuse technical information in support of CARE and PADF. These include research and the diffusion of information on agroforestry systems, associated tropical crops, nursery production, economic factors, socio-cultural processes, and extension methods. The long-range goals of the HARP, were developed and refined in coordination with CARE, PADF, AID staff, and the Seed and Germplasm Improvement Project of the International Resources Group, Ltd. (IRG). These goals are to:

A. improve the production of vigorous planting stock in the decentralized nurseries operated by non-governmental organizations;

B. develop ways to promote the planting and maintenance of trees within integrated production systems on small farms;

C. improve the understanding of economic and social aspects of agroforestry in Haiti, and of current and potential participant groups, organizations, and communities; and

D. enhance extension resources and methods.

II. Chronology

The social research reported here is part of the larger research agenda of the SECID/Auburn University team. The agenda was designed to accomplish work that the AOP grantees and AID Mission regard as important and necessary. The agenda was formulated by identifying topics about which reliable information is lacking. Almost all of them concern issues encountered in field work that stand little chance of being resolved without systematic research.

The research on socio-cultural elements of agroforestry production has two major purposes. The first is to describe the status of participants and potential participants in selected areas. The second is to obtain information on specific aspects

of their practices, experience and attitudes that can lead to qualitative and quantitative improvements in program implementation. Better extension work can improve the diffusion and more efficient use of agroforestry technology. Following a sequence conventionally used for client-oriented applied research, the research described here has progressed by:

- A. Determining and ranking, in collaboration with CARE, PADF and AID, socio-cultural issues in agroforestry that require research;
- B. Reviewing available data on the characteristics of potential sites and populations and accomplishing a preliminary reconnaissance of them;
- C. Selecting sites and samples that would reflect conditions found elsewhere in Haiti;
- D. Selecting and modifying culturally-appropriate methodologies;
- E. Determining the role of local assistants, recruiting, and training them;
- F. Operationalizing and pre-testing instruments in the field;
- G. Gathering data with continuing monitoring and evaluation;
- H. Initial coding and analysis of data;
- I. Selected reinterviews and recoding of data;
- J. Analysis of results;
- K. Release of research report; and
- L. Working with clients to apply the results in current and future implementation and research programs.

III. Applied Social Research in the AOP

Discussions with CARE and PADF senior staff and a review of project plans and documents show that both CARE and PADF have a continuing need for applied research on questions about the social and economic components of agroforestry systems. The initial conception of the AOP evolved from the work of anthropologists. They designed the project to make full use of the self-interest of farmers to plant, maintain and harvest trees and other agroforestry crops for their personal profit (Smucker, 1981; Murray, 1987). At the outset of the project in 1981, its' design included an ambitious program of project monitoring which entailed the use of many socio-economic indicators. These

indicators were to be used both to provide management information and in on-going research. Planners intended to include sociological and economic analyses as a routine part of AOP operations. Such analyses have, however, only been conducted intermittently. Important socio-economic issues remain unresolved.

The most serious question of a socio-economic nature on the part of AID, PADF and CARE concerns the effects, if any, of the AOP upon the well-being of Haitian households and communities. Informal observations apparently show many benefits of the AOP but systematic research is required to determine their nature and extent. What benefits have accrued to those participating in the project? How can these effects be measured in relation to the investments made? Dr. Donald R. Street, the HARP Resource Economist, has addressed this issue from an economic point of view (1989a, 1989b) and shown evidence of benefits in different locales. More analysis is needed to understand the benefits of agroforestry from a social and economic point of view. Research over a longer period than has been available in the current HARP contract is required. These analyses will be accomplished in the follow-on project, designated as Agroforestry II (AF II).

IV. Research Design and Modifications

One of the best ways to determine the results of an intervention is to conduct a baseline survey at one point in time and to measure the same indicators after the intervention has had a sufficient opportunity to take effect (Pratt and Boyden, 1985). Ideally, the first measurement should be accomplished before any change or intervention has been made. In the absence of factors which would disturb the environment beyond the possible influences of the intervention, the difference between the measurements at time one and those taken at time two can be attributed to the effect of the intervention. A second method would be to find and survey two areas which are very similar in salient respects, one that has the intervention and another that has not. Taking appropriate safeguards to avoid spurious conclusions, the differences between them can be attributed to the effect of the intervention.

CARE/Haiti has a continuing interest in baseline research that could be used to measure the consequences of agroforestry technology. A baseline survey of one of the communities in their area of operation, Northwest Haiti, was CARE's first priority for social science research. Such a survey is also useful for the information it provides on a range of project management issues. Systematic research on the basic status of Haitian households and communities in project areas has either never been undertaken or has not been accomplished for several years. No socio-cultural research of the type reported here has been completed in the Northwest. A major feature of the SECID/Auburn research effort is the emphasis on completing research in the more remote areas of the Northwest. The neglect of the Northwest in the previous agroforestry research conducted in Haiti is apparent.

The primary purpose of the study reported here was to obtain reliable information on the condition and well-being of residents in an area before an agroforestry project reaches full operation. The study can be regarded as a "naturally-occurring experiment." Measurements at one point in time can be used for later comparisons after agroforestry has been in place long enough to have made an impact. Differences in socio-economic status, production, marketing, and consumption could then be attributed to agroforestry outputs.

Research in Bassin Bleu, the site selected, initially progressed well. Fairly early, however, the need for a change in focus became apparent. It was originally anticipated that the larger community of Bassin Bleu, including townspeople, would be the primary focus of the research. After preliminary field work, however, it was determined that the focus of the study should be shifted to rural, outlying residents. They are the primary targets of AOP extension efforts and the intended primary beneficiaries.

At a later point, a second change was made in the original plan. This change was the expansion of the survey to include three other research sites in which agroforestry has been practiced for some years. The opportunity to expand the data base became possible when the three interviewers employed for the agroforestry economics study successfully completed their work more promptly and efficiently than was expected. Each of the interviewers working on the economics of agroforestry study was later asked to later collect data on the social conditions and agroforestry activities of an additional fifty heads of households. Respondents in the three additional areas covered added another 150 respondents, for a total of 258 households surveyed.

V. Research Sites

Following the uniform advice of AID, PADF and CARE staff, our team sought to concentrate its work in a limited number of places. The requirements for research sites for each specialty differed, however, and some locations were not suitable for all types of research. Accordingly, the sites used are not always the same.

Ideally, each location should reflect conditions generally found throughout most, if not all, parts of the country. Necessarily, some other interesting research sites were excluded. A few of these may be used in the future. The team's travel schedule has, however, remained extensive. Travel between farms even within the same research area, for example, may require over two hours. Repeated visits to each site are required.

We have established research in five outlying zones, two in the CARE region and three in PADF areas. Data from these areas has been supplemented by that from other places, most obviously in the research on soil types and the economics of charcoal production.

The main research sites of the team are:

- A. Nord-Ouest (Northwest): Bombardopolis/Des Forges (CARE), Agroforestry/Agronomy, Economics, Sociology;
- B. Nord-Ouest (Northwest): Bassin Bleu (CARE), Sociology;
- C. Centre (Central Plateau): Mirebalais/Lascahobas/Belladere (a southern section of the department; PADF), Agroforestry/Agronomy, Economics, Nursery Research;
- D. Ouest (West): Violet (a western section; PADF), Agroforestry/Agronomy, Economics, Sociology;
- E. Sud (South): Maniche (in the center of the department; PADF), Agroforestry/Agronomy, Economics, Sociology.

Agroforestry and agronomic research continues in Bombardopolis/Des Forges, Mirebalais, Violet and Maniche. Economic research has been conducted in Bombardopolis/Des Forges, Violet and Maniche. Nursery research has used the facilities of Operation Double Harvest near the capital and sites near Mirebalais.

The social research reported here includes four sites, two in CARE and two in PADF areas. Initial priority was given to completing research in the Northwest to remedy the neglect of the region during earlier AOP research.

Of the four areas where social research has been conducted, Bassin Bleu is particularly well-suited to serve as a site for continuing research. It can be a source of considerably more information on virtually every aspect of agroforestry, and findings from it could apply to other remote economically-stressed regions in the country. Bassin Bleu could evolve into a small scale "Vicos Project," similar to that conducted over several years in Peru by Cornell University. Since the early 1950s, Cornell University has been conducting a wide range of research on agricultural and social development in the Vicos region of Peru. The long-term commitment that the University, AID and other supporters made to continue work in that area has generated unique research of considerable benefit.

VI. The Interview Process

In each location, well-qualified local people were recruited to assist the professional specialists on our team. Each interviewer was selected with the help of local grantee staff and was known locally as a reliable long-term resident.

Charles Oc-Ciel, a trained agricultural technician with experience in socio-economic research, serves as the Social and Economic Research Assistant. He assists with the training, monitoring and supervision of the five local field interviewers working with Drs. Starr and Street. He also helps with re-interviewing and the coding and interpretation of data.

Four of our five part-time interviewers received training during a program conducted in Petionville. Each was also accompanied during his or her initial interviews in the field to insure that our directions were understood. We provided instruction in the field to a fifth interviewer who was hired later. Of the five, two interviewers worked in separate parts of the Bassin Bleu area, and one each in Bombardopolis, Violet, and Maniche.

The Bassin Bleu interviewers spoke with respondents from 108 households, all of them in remote areas about a two to four-hour walk from the town. Each interviewed over fifty respondents about their farms and households. (See the original questionnaire in Appendix I and an English translation in Appendix II). The other three interviewers completed an additional total of 150 interviews in the three areas used for the agroforestry economics study, fifty each from Des Forges (near Bombardopolis), Violet and Maniche. The total number of respondents is 258.

VII. The Selection of Households and Respondents

Two major elements determined who would be included in the study. The first of these is cultural and influences who serves as the spokesperson for a farm household. The other concerns the lack of data to use in drawing a random sample of respondents which have a great probability of reflecting the characteristics of the larger population.

When Bassin Bleu was our only research site, it was originally intended that the female interviewer there would concentrate on speaking with female respondents, and the male interviewer would primarily interview males. We planned to acquire data to address the question of how the experience and observations of males and females might differ. During the first few interviews, the goal of having comparable numbers of men and women respondents proved to be impractical. Upon reaching the farm, interviewers were required by circumstances to speak with the available dominant household member, whoever he or she might be. Respondents conformed to the traditional practice of the male speaking for the household when both senior male and female family members were present. There are many female cultivators, and there can be no doubt about the important role they play on the farm. For the great majority of Haitian households, however, contact with outsiders about farm matters is the domain of the senior male. Accordingly, it became clear that in this study most respondents would be men. The data from women would be included but a more detailed study of the role of women in agroforestry would be deferred.

The original plan was to also include, as possible, respondents who were agroforestry participants and those who are not participating. Equal representation of each group proved to be difficult because a great number of local farmers are participating. Enough non-participants were found, however, to permit useful comparisons.

Among the potential shortcomings of survey research methods applied to development issues concerns sampling methods (Chambers, 1983). Random sampling techniques which are commonly used for survey research in industrial societies are simply not practical in rural Haiti or in most other Third World environments. As in most other Third World countries, census data in Haiti are non-existent or woefully out-of-date. Maps and aerial photographs are obsolete or poorly done. The detailed scale maps currently available for Haiti are over twenty years old. In some of the areas in our study such maps show villages which do not exist and never have existed. Villages that have been active for nearly one hundred years are not shown. Satellite imaging has tremendous potential to create current maps of Haiti and show detailed population distributions and concentrations. Such maps, however, have yet to be developed. Lacking such resources, existing maps were discussed with our interviewers. They were asked to designate the radius of an area that they could cover with a four-hour one-way walk. Within that area we asked the interviewers and grantee agronomes to estimate the population size. Each interviewer was then asked to obtain a quota of interviews for each major sub-region within the identified area. They were also told that we wanted to include women respondents as well as men, and to interview both participating and non-participating households. If they were in a position to choose a household headed either temporarily or permanently by a woman, they were to choose that one over one headed by a man. If they were to choose between a non-participating or participating household, they were to choose the non-participating one. In this way the study sought to include respondents who might otherwise be under-represented in our research.

VIII. Demographic Features of Respondents and Households

A. Characteristics of Respondents

As shown with greater detail in Appendix III, Statistics: Selected Numerical Variables, those people interviewed included a variety of rural Haitians. Appendix VI, Selected Graphics, also presents bar charts and pie charts of respondents' characteristics and regional comparisons.

Our interviewers were instructed to speak with the person considered to be the "head" of the household. If the head was not present, they were to speak with the person who would ordinarily act during the head's absence. Most commonly, respondents were the oldest male who was still actively farming. If he was not present, his spouse was usually the person interviewed.

For readability and convenience, the figures reported here are rounded off to the nearest decimal. The tables in the appendices report data at two decimal places. Of the 258 people interviewed, 85.3% were male and 14.7% were female. The great bulk of the persons interviewed (97%) reported that their primary work was that of farmer or homemaker. The average or mean age was 43.1 years, with a standard deviation (SD) of 13.0 years. The length of time that each had spent at their present location ranged from five months to 75 years, with a mean of 22.7 years (SD=18.3). The number of years of schooling also varied considerably, ranging from none to 17 years, with a mean of 3.6 years (SD=4.0). The high birth rate in Haiti was reflected by the number of children reported for each household, which ranged from none to sixteen, with a mean of 4.1 (SD=2.9). A large proportion of those people which we interviewed had little contact with the world beyond their immediate area. Some 42.6% had never visited Port-au-Prince. Nearly a fourth (23%) had never visited the closest smaller regional city (Gonaives or Les Cayes).

B. Household Characteristics

Most of those we spoke with reported that their households were Catholic (61.5%); the remainder said that they were Protestants (38.5%). Just under one fourth (24.2%) indicated that their household included at least one person who practiced voodoo.

The majority (57.8%) of those interviewed lived in simple peasant style houses with mud walls and thatch roofs. Some lived in houses with tin roofs (41%) which are more expensive and considered to be superior to thatch. A very small number (1.2%) lived in brick houses, which, by local standards, are symbols of considerable prosperity. Most lived in houses with two or three small rooms. The mean number of rooms of the houses was 2.8 (SD=1.2). There was some regional variation in the types of houses found in each area that can be attributed to the availability of local building materials. House type and size serves as a measure of a family's socio-economic status. In general, thatch roof houses are the most common and ordinary. Peasants consider those with tin roofs to be better off than those with "kay pay" (thatch-roofed dwellings). Families with brick or masonry houses are generally the most prosperous.

Most families had at least one school age child in school. The mean number of children who were attending or who had attended school, 2.2 (SD=2.2) is significantly lower than the mean total number of children in the family (4.1). The total number of children reported includes, however, some grown-up children who are no longer of school age. Schooling beyond the age of puberty was unusual.

Household commonly had at least one person who was literate. The number of literates per household ranged from zero to eleven, with a mean of 2.3 (SD=2.1). Given the degree of literacy in farm households, extension efforts could make greater use of

written material in spreading information and promoting participation. Even if the farmer is illiterate, the odds remain very good that he has one or more children who can read.

Many households included people who had skills and who earned income which depended entirely on the availability and use of wood or wood products. Only agriculture focused on crop production is more important than forest products as a source of income for rural Haitians. Twelve percent of the households examined had one or more members who were woodcutters. We found charcoal-making skills among 36% of the households. Those who could make whitewash by using wood to burn lime deposits totaled 10.5%. Carpentry, house and roof-building skills were present in 20.9% of the households interviewed. Another 10.9% reported that one or more persons in their household had sold wood. Having a skill is not the same as routinely using it. Many said that those with the skills only used them occasionally. Some had not used their skills for years.

IX. Proximity to Community Services and Water Sources

The well-being of any community depends on the types of services which are available and accessible to its members. The availability of these resources and services both influences and is influenced by the level of local production.

The level of development in rural Haiti is reflected by the access which the peasants have to resources and services. To make use of services and resources they must be accessible to the peasants who must have money to pay for some of them. In this report we address in detail the first of these two constraints. To measure the access and availability of resources and services, respondents were asked to estimate how long it took them to walk in order to meet certain basic needs. Considerable variations in the time required are evident. For example, for some it took only a short walk to obtain water. It took others a two and a half hour walk, with a mean of 25 minutes (SD=25.5 minutes). A walk to the closest small marketplace ranged from zero to four hours, each way, with a mean of 54 minutes (SD=45.4). Most such markets are held on a rotating basis in different places one time each every week. A large market was accessible with a walk which averaged two hours and 17 minutes (SD=87.8). Most large markets operate on a large scale for three or four days a week with limited commerce on other days. Medical care at a minimal level was accessible after about an hour's walk (SD=54.6), but for a few the walk required over six time longer. Access to public transport by camionette ("tap-tap") varied considerably, ranging from no walk to one of five hours (mean=76 minutes, SD=62). In both Des Forges and Bassin Bleu, however, it must also be taken into account that there is no daily motor transport service. At the time of our research, Des Forges had only one tap-tap coming each week. Bassin Bleu had one coming about five times weekly. Both Maniche and Violet inhabitants had service available several times a day from nearby major roads. Roads that could be used by four-wheel drive vehicles were also usually distant. Respondents had to walk an average of fifty minutes to reach one (SD=50

minutes). Schools and churches were more accessible. Both institutions were only about a half hour walk each way (Mean=32 minutes, SD=30 for schools, Mean=28.6, SD=24.7 for churches).

The relative proximity and accessibility of schools and churches to peasant households show that they are well-placed to serve as conduits for development projects. PADF has identified the potential of village schools in its planned pilot environmental education program in schools. Other development programs have involved churches for some years. Development workers in Haiti commonly regard the indigenous voodoo religion negatively. They see it either as a barrier to progress or as irrational and counter-productive behavior that should and will decline as development progresses. Both rural schools and churches, however, continue to have considerable potential as vehicles for development.

The results reported here also suggest that any technology requiring the use of water will be hampered by the distance that users must walk to secure it. Increased accessibility to water should accordingly increase seedling survivability and agroforestry production, particularly in areas where rainfall is poor. As will be discussed later, the lack of a reasonably close source of potable water is also a burden for farm families.

X. Leisure and Recreation

Leisure and recreation, or non-work activities of farm families are often useful in extension and animation programs. These activities can be used to initiate new ideas and promote motivation through peer pressure. They can also be the basis for cooperative work. Accordingly, we asked respondents to describe their non-work activities during the course of a typical week. The most popular activity was listening to the radio (48%), followed by visiting with nearby friends or relatives (47%). Playing with children was common in 38.4% of the households, and attending or betting on cockfights in 22.5%. Playing dominos (22%) and playing the "bolet" or lottery (15%) were less frequent pastimes. Religious services or rituals were not considered as a "leisure" activity but such ceremonies are a very important part of the weekly routine of many rural Haitians. In many places religious gatherings involve a majority of the population one or more times a week. Church services and voodoo activities are important forms of entertainment, expression and community sociability. Observations reaffirm the conclusion that rural churches have considerable value as conduits for agroforestry extension efforts.

XI. Tools and Household Equipment

One of the elements which determines the level of agroforestry production in Haiti is the availability and use of tools. Almost every farm household has at least one each of two basic tools. Nineteen out of twenty (95%) have one or more machetes. We found that hoes were present in 64% of all households, picks in 79%, and sickles in 37%. Axes (18%), and

water buckets (12%), are less commonly found. Although most households had at least some tools, their quality and quantity was typically poor.

Haitians in both rural and urban areas use tools until they become worn out, break or cease to function. Metal workers or welders, who rarely work outside of cities, often extend the life of worn tools by bending over thin worn blades and adding plates to make new ones. These are then sharpened to become a new blade. Tools are expensive to buy and their replacement or repair requires travel to a distant city. For example, farmers in the Bombardopolis/Des Forges area have no local source for tools. They must travel to Gonaives to secure them. This travel requires a full day walk and another half day tap tap ride from Bombardopolis. (Sometimes tools are available in Anse Rouge, which is a full day walk from Bombardopolis). Those in Bassin Bleu commonly go to Gonaives for tools, which, when tap taps or trucks are available, is a two hour ride. Without transport it is a long day walk.

Observations and conversations with farmers show that even if a farm household owned some tools, often it only had one tool of each type. Many farms had only a total of two or three tools even though there were several family members involved in farming. The lack of enough tools sharply limits the number of hours that some family members can work, particularly when the seasonal demand for them is high.

The results of this study generated additional questions about tools and showed that more information is needed to determine their use in rural Haiti. Accordingly, during the summer we designed and carried out a "rapid reconnaissance" survey (Chambers, 1983) focussing on tool possession, use and need. A total of 85 farmers in Des Forges and in Vialet participated. The results of that study will be reported separately.

Most Haitian households had few other possessions as well. Only 9% had bicycles, and 4% had a metal mill for flour-making. Lamps fueled by kerosene were common (93%) as were "pilons" or large wooden mortars and pestles (85%). Clocks or watches were present in only 28% of the households. Water storage jugs were in use in three-fourths of the households and crop or food storage containers in less than half (43%). Water storage jugs and storage containers can improve the cultivation and use of trees and other crops. Accordingly, increasing the number of households which have and use these utensils should increase seedling survival, production and the protected storage of harvested crops.

A useful finding is that 45% of the households had radios. Previously, we reported that 48% of those surveyed mentioned that listening to the radio was a common part of their routine. These two statistics are noteworthy. A consultant working on the follow-on project paper in February of this year concluded that radio was not a significant form of communication in Haiti.

Accordingly, she commented that radio had limited prospects as a medium for extension messages. The data here show that radio is a very common source of information and is a good resource for communicating extension messages. Aside from informal communication by word of mouth, no other source is as important. Anecdotal evidence also provides many examples of how information obtained over the radio influences the behavior of rural people. Radio is the most important source of information in rural Haiti, even on occasions when the messages provided are inaccurate.

XII. Farm Animals

Project design papers and other documents suggest that the trees produced by agroforestry have replaced swine as a "savings account" on the farm. Haitian peasants traditionally cultivated pigs and kept them in reserve. They then sold them to meet the needs of farm families for school expenses, medical care, or emergencies. The recently-concluded AID-funded program to eradicate swine fever in Haiti resulted in the slaughter of the traditional species and its replacement by a disease resistant variety. Project planning documents suggest that the swine project resulted in pushing swine producers into agroforestry. Those who lost their pigs were thought to have turned to agroforestry to re-build their reserve holdings.

Our data cannot show that agroforestry has replaced pigs as the peasants' "bank." Agroforestry is a much more widely practiced farming activity than is swine production. It is less costly and requires comparatively modest inputs which are available to a much larger number of farmers. Differences between farmers participating in agroforestry programs and non-participants will be discussed later in this report. It is worth mentioning here that the two groups do not significantly differ in the extent to which they practice swine husbandry. If those who cultivated pigs and lost them did take up agroforestry in an effort to re-establish their "savings accounts," the number involved would probably be modest. There is no significant difference in the proportion of pig farmers among participants than among non-participants.

In looking into the animal populations of the households, we asked how many of each type of animal each had. Pigs per household ranged from none to nine, with a mean of 0.48 (SD=1.26). Chickens were the most commonly found farm animal with a mean of 4.82 (SD=6.95) reported per household. Turkeys were rare in the areas surveyed (Mean=0.14, SD=0.62). The second most commonly found animal was the goat (Mean=1.88; SD=2.83), followed by cattle (Mean=0.84, SD=1.18). The mean for donkeys was 0.5 (SD=.73), and for mules 0.17 (SD=.5).

Research accomplished on other forms of cultivation elsewhere in the Third World often applies to Haiti. Studies have shown that farmers who are relatively more successful in caring for farm animals also tend to be more open to new methods. They tend to be superior in their understanding, adoption and use of new forms of on-farm technology. It is likely that this

generalization holds true for Haiti as well. The debate continues about the wisdom and success of programs to help the "poorest of the poor." Evidence continues to mount, however, favoring the view that the more efficient farmers, who also tend to be among the more prosperous, make better use of new types of agricultural methods. Innovations are more likely to be adopted in an area if development workers include such farmers in client or target groups. Local people usually recognize the skills of the more efficient farmers. They often serve as models or leaders. Field workers must sometimes make decisions to select which local households will be given the opportunity to participate in an agroforestry or other resource development effort. Farmers with a record of success with other forms of production should be given priority. A proven skill in caring for animals should carry-over to the care of seedlings and other agroforestry plants.

XIII. Land Use and Types of Agroforestry Practiced

The respondents reported that their household had land holdings that ranged from none to eight carreaus ("karo"), including rented or borrowed plots. The mean amount of land held was 1.21 carreaus (SD=1.37).

Just under half (49.4%) of those spoken with said that they at least sometimes let their land lie fallow. The use of fertilizer was not common, with only 18.8% of farmers reporting that they used fertilizer on at least some of their land. Farmers rarely used chemical fertilizers. All but three users reported that they used green manure or other natural materials on their land.

Of the types of agroforestry in use, mixed ("melanj") was the most common, practiced by 47% of participants. Some 40% grew living fences, 25% grew hedgerows with crops, and 12% grew hedgerows without crops. The least common form of agroforestry practiced was the planting of woodlots (4%).

XIV. Labor, Income and Consumption of Wood Products

More than half (53%) of the people interviewed indicated that they belonged to a "kombit" or cooperative work group. The size of the group ranged from two to 104, with a mean of 17.47 members (SD=12.95). The number of days that the kombit worked per year ranged from one to 313, with a mean of 62.56 (SD=90.32).

When questioned about their source of income, 68.4% reported that crops were their primary source, followed by 18.2% who said that most of their income came from the sale of animals. A total of 9.5% reported that their income came from non-farm sources, and 3.9% replied that charcoal was their most important money-maker. The small proportion who said that charcoal was their primary source is worth notice. It is a far lower proportion than many believe. In popular discourse, the role of agroforestry in producing trees for charcoal as a source of

income for poor farmers seems exaggerated. A fourth of those questioned reported that they sometimes employed others to work on their farms.

The figures reported on annual income, wages and loans are being re-examined. There are inconsistencies in these, with some respondents estimating their annual income in dollars and others in gourdes. These data will be available once the inconsistencies are resolved.

The households examined reported a heavy consumption of wood products. Just over half (51%) said that they paid from twenty to 5,000 gourdes last year for wood products, with a mean of 534.1 gourdes paid. As seen in Appendix IV, Categorical Variables by Region, construction materials were the most common wood products purchased (35.7%), followed by a combination of purchases (25.6%), charcoal (14.6%), planks (9.5%), poles (9.5%) and firewood (5.1%).

XV. Experience and Attitudes About Agroforestry

As noted, 77.9% of the respondents were participating in an agroforestry program conducted in cooperation with either CARE or PADF, and 22.1% were not. Participants gave the programs a very strong vote of confidence. More than nine out of ten (90.3%), said that they would participate again if they were given the opportunity. When asked about their motives for participating, a majority (54.7%) replied that controlling or preventing erosion was their primary reason. Other motives included using trees as an investment or as savings that later could be drawn upon as necessary (15.8%), and to make money through the sale of products (10.8%). Less frequently, the farmers mentioned that they participated to improve gardens (10.3%), and to grow trees or crops for self-consumption (5.4%).

Respondents were also asked if they would plant more trees if they were able to do so. More than nine out of ten (90.3%) replied that they would. When asked about what they needed in order to expand their agroforestry plantings, the farmers mentioned several things. Specific needs for increased production included additional or improved technical assistance (29%), irrigation (15.8%), more or improved nurseries (13.3%), and better roads or transport (10.8%).

Interviewers asked about particular barriers which prevented the expansion of agroforestry production. A strong majority (67.6%) specified that the greatest barrier was their lack of land. Other reasons were a lack of money (15.2%), and either problems with seedlings or a lack of them (12.4%).

Problems which discouraged farmers from such cultivation included limited land (31.2%), insufficient water (24.3%), and a lack of machines or equipment (7.4%). Fewer farmers were concerned about problems with excessive shading from trees which retarded crop growth (6.4%), having too much sun for seedlings (5%) and growth from leucaena trees which threatened to take over

gardens (4%). Nearly a quarter (24.3%), however, reported that there was nothing about agroforestry which discouraged them from pursuing it.

At the risk of being repetitive, respondents were asked about the disadvantages of agroforestry. Over two-thirds (68.8%) reported that there were no disadvantages. Other items mentioned included the death of trees (17.1%), the belief that trees retard garden growth (4.7%), and problems with animals eating seedlings or suffering from the effects of eating leucaena (3.85%).

XVI. Perception of Development Needs

In order to further examine respondents' views of agroforestry in particular and of their perceived development needs generally, we asked about the current needs of their families. The largest proportion of respondents reported that they most needed either money (49.8%) or employment (31.4%), both of which can be placed in the larger category of "income." Some other specific services or goods were mentioned but all were given by less than ten percent of the respondents. The third most common category of answers was "other" and totaled 9.4%.

When asked what they most needed in their area instead of agroforestry, about a third suggested a road or an improved road (31.4%), while others mentioned irrigation (17.3%), employment (9.6%), and potable water (9.6%). Surprisingly, less than one in twenty mentioned technical aid (4.5%), or education (3.85%).

We further asked respondents what they felt they needed in addition to agroforestry. Again, they gave varied replies. They mentioned irrigation (15.1%), a road or better road (13.4%), a school or better school (9.7%), employment (9.7%), potable water (7%), and money (8.06%).

XVII. Favorable and Unfavorable Life Events

To obtain information on the things that people regarded as desirable and which accordingly may be goals for development, we posed open-ended questions about "good" and "bad" experiences. We asked about events which had taken place in their households during the last year and during the last five years. Beneficial events reported for the last year included having good harvests (12.4%), a pleasing marriage in the family (10.5%), the acquisition or sale of animals (7.4%), the acquisition or improvement of land (7%), and house improvements (6.6%). Some 42.6% replied that nothing good had happened during the last year.

We found similar responses about events during the last five years. Close to half (44.6%) reported no positive events over that time. Other responses mentioned by more than ten percent included a good sale or the purchase of animals (13.2%), the acquisition or improvement of land (12%), and harvesting a good crop (11%).

Unfortunate or "bad things" reported for the last year by over ten percent were hurricane damage (17.8%), poor crops (16.3%), one or more deaths in the family (16.3%), the death, loss or theft of animals (13.6%), and serious illness in the family (12.4%). Only 4.7% replied that no bad things had taken place during the last year.

Misfortunes reported for the last five years include problems with animals (19%), serious illness in the family (14.3%), and one or more deaths in the family (12.4%). Some 20.9% of those responding had no negative experiences during that time.

XVIII. Significant Regional Differences

As shown in more detail in Appendix IV, Regional Comparisons, the regions differed from one another in various respects. Using the $P < .05$ level of statistical significance, the differences noted would have occurred by chance less than once out of twenty times. Appendix V, Selected Graphics, also provides bar charts showing regional differences about the type of agroforestry practiced, the prevalence of forestry-related skills, tool availability, and other household possessions.

In terms of demographic characteristics, most of the 15.7% of those who were women in the study were in Bassin Bleu (20.6%) and Maniche (20.8%). In Des Forges and Maniche most interviewees were Protestant (58.3% and 54.7%, respectively) while in the total respondent group, Protestants were a minority (38.5%). Only half of the people interviewed in Violet participated in an agroforestry program, compared with about 85% in the other three regions. Kombit membership also differed by region, ranging from 68.8% in Des Forges to 24% in Violet (52.7% overall).

Pronounced regional differences were manifest in households' main source of income. All of the 3.9% of the total who replied that their most important source was charcoal lived in Des Forges. About one out of five respondents (18.8%) in that region reported that charcoal was their main source of income. Bassin Bleu residents more often indicated that their primary income came from the sale of animals (30.8%) than was the all-group average (18.2%). Violet residents least often reported that the sale of animals was a primary source (4.1%). The same area had more who replied that non-farm sources were primary (18.2%) than was the case overall (9.5%).

The small number who reported that their income came from charcoal and the fact that they all were in Des Forges again challenges the popular assumption that charcoal production is the primary end use of agroforestry production. It is shown to be an important source of income in this study only in the Des Forges area and even there is less important than crop sales. Research on the economics of agroforestry production and consumption should further clarify and place in appropriate context the role of charcoal in agroforestry projects.

In examining the purchase of wood products in each region, Bassin Bleu residents bought significantly less charcoal than did those elsewhere (4% compared with 14.6% overall). This result may be due to the greater use of wood for fuel than elsewhere. Des Forges respondents, even though they are near an area known for its charcoal production, reported buying much more charcoal (35.3%) than respondents generally (14.6%).

Kombit membership was highest in Des Forges (68.8%) and Maniche (67.9%) and lowest in Violet (24%). For the group as a whole, 52.7% were members.

Noteworthy differences in perceived development needs and priorities include the large proportion in Maniche who gave priority to the need for potable water sources (41.4%). Less than one in twenty in the other regions mentioned water as a problem. The need for a road or better road was expressed often in Bassin Bleu (31.3%) and Des Forges (52.1%) and less frequently in Maniche (10.3%) and Violet (6.67%). Both of the latter have access to usable roads and major paved roads are close. The latter two areas are much closer to main and paved roads than are the two in the Northwest.

In discussing motives for pursuing agroforestry, those in Bassin Bleu mentioned erosion control more often than others (67.4% compared with 54.7% overall). Using trees as a form of savings was stated as a motive nearly three times more often in Maniche (27.9%) than in Bassin Bleu (9.8%; 15.8% for all regions). The proportion of Violet respondents who indicated that their primary motive was to grow trees to sell was nearly three times greater than those who did so overall (32% compared with 10.8%).

When farmers were asked if they would participate again, most gave strong approval for agroforestry. Over 90% said that they would chose to participate again, ranging from 98.1% in Bassin Bleu to 70.2% in Violet. Ranging from 81% in Violet to 98.1% in Bassin Bleu, respondents also said that they would plant more trees if they were able to do so. A solid majority (68.8%) reported that they saw no disadvantages to agroforestry, ranging from 92.1% in Violet to 62.1% in Bassin Bleu.

Views on barriers to the expansion of agroforestry also differed by region. A shortage of land was most commonly mentioned, but to varying degrees across the regions (i.e., 81.1% in Bassin Bleu, 43.8% in Violet, 67.6% overall). Those in Violet and Maniche reported that seedling shortages or problems were a barrier, but no one in the other two regions did so (22.45% and 41.7% respectively; 12.4% overall).

Some of the regional characteristics shown in the bar charts in Appendix VI do not differ statistically at the .05 level of significance, but some definite constraints are in evidence. In terms of the different types of agroforestry practiced, Bassin Bleu farmers most often cultivate living fences and mixed plots

(73% and 72%), while Maniche farmers most often plant hedgerows combined with crops (11%). No Des Forges or Maniche respondents reported planting hedgerows.

Among forestry-related skills, woodcutting was the one most prevalent in Vialet (14%). Charcoal-making was the most commonly reported skill in the three other regions. Recall, however, that less than four percent of the total number of respondents reported that charcoal was a primary source of income. The skill is common but the extent to which charcoal-making is practiced and continues to be an important income source is often exaggerated.

Regional differences in tool possession show that the machete is by far the basic tool in Haiti, followed by the hoe. Axes are the scarcest tools. They are found in about a third of the households in Bassin Bleu but in less than one in ten in Maniche and Vialet. Bassin Bleu respondents do not have sickles but they are reported in well over half of the households in the other three regions. The axe is the second tool of choice in Bassin Bleu while the sickle is in the other three regions. In Bassin Bleu, the machete displaces the sickle in cutting operations. Significant regional differences between the types of tools which are available and in use are also apparent in other parts of Haiti.

Comparisons among regions in terms of other household possessions also show variations. Radios are present in over half of the households in Maniche and Vialet, but in well under half in the other two areas. Storage jars are common in Bassin Bleu and Vialet, but infrequently found in Des Forges and Maniche. Local differences of this type are worth noting to determine, for example, the relative extent to which radio can be used in a region to reach peasant farmers. Another example would be the use of such information in determining the specific implements or improved practices that are needed to expand agroforestry production, marketing and consumption.

XIX. Differences Between Participants and Non-Participants

Previous research has examined the differences between those who participate in agroforestry projects and those who do not. The purpose of this research has been to determine which groups in the rural population are not being served or are under-represented in the program, why this is the case, and how more can be included or motivated to participate (Buffum and King 1985; Lauwerysen 1985; Conway 1986; Smucker 1988).

This study also acquired some information on the differences between participants and non-participants. Because the question was among the few topics that was repeatedly examined previously, however, it was not a primary concern in our research. The popularity of agroforestry is shown by the large number (84%-85%) of farms in three of the areas surveyed which are practicing some form of it. Finding similar numbers of non-participants would

have been difficult and required a significant increase in the areas surveyed. Only Violet had a sizable number of non-participants (50%).

Appendix V shows how participating farmers differed from those who were not participating on selected variables. Few statistically significant ($P < .05$) differences were manifest among participating and non-participating respondents. Non-participants were more likely than participants to have someone in their household who practiced voodoo (36.4% compared with 20.6%). More than half (55.3%) of the participating farmers sometimes let their fields lie fallow compared with less than a third (28.6%) of the non-participants. Agroforestry farmers were nearly three times more likely to employ others to work on their farms than were non-participants (29.7% compared with 9.1%). The pattern of these differences suggests that participants are less traditionally oriented, are more careful farmers, and tend to be more prosperous than non-participants.

Non-agroforesters reported that seedling shortages or problems were a barrier to agroforestry cultivation three times more often than did participants (26.7% and 8.6%). Agroforestry farmers indicated that a shortage of money was a barrier to expanded cultivation much more often than did non-agroforesters (18.2% compared with 3.9%). Even non-participants have very positive attitudes toward agroforestry. When asked if they would participate again if they were given the opportunity, more than three-fourths of the non-participants said that they would do so (75.5% compared with 93.4% of participants).

XX. Conclusions and Recommendations

The results of this survey, which come from an analysis of a portion of the data collected, lead to several conclusions. Some of these can be used in the agroforestry implementation efforts of CARE and PADF.

A. Most farms in Haiti have a number of family members capable of working but who are underemployed. In many cases there is a surplus of labor that cannot be absorbed into productive work on the farm. The lack of an adequate labor supply for the cultivation or expansion of agroforestry constrains relatively few households. Farmers most often mention land holding size as the biggest barrier to increased production.

B. Farm households usually have one or more members who are literate. Even in families in which the adults cannot read, children who have some schooling are often literate. Accordingly, there are opportunities for the use of written materials in AOP extension efforts. These items should be written, illustrated and pre-tested with both child and adult readers in mind.

C. A large proportion of people living in the rural areas have very rarely or never visited Port-au-Prince or smaller Haitian cities. Accordingly, extension methods and materials must continue to use examples and symbols which are meaningful in a local context.

D. Agroforestry techniques which require participants to routinely secure water beyond their personal needs should be selectively used or avoided. Obtaining water is a major time-consuming burden on most farm families. Any agroforestry or other intervention that routinely requires additional long walks for water would probably prove to be burdensome in relation to benefits and be abandoned.

E. As shown in the experience of some non-governmental organizations participating in the AOP, local churches have considerable potential as a base or point of contact for extension programs. Churches are, on the average, only a half hour walk from peasants' farms. The expanded use of such groups or facilities for agroforestry implementation may be advantageous.

G. Schools also average a half hour walk from farmers' homes. They too could be systematically incorporated into regional or local extension plans. The fact that many of the literates in a household are children attending school should also be incorporated into extension strategies. Extension publications could be diffused through school children. Both schools and churches could serve as small demonstration sites.

H. Nearly half of all the households surveyed indicated that radio was an important source of information. Radio listening was the most common leisure activity. Additional use can be made of radio in the AF II. Radio could provide spot announcements, case studies of successful farms, songs and descriptions of cultivation methods. Reliable battery-powered radios could be used as gifts or prizes in extension events.

I. Many farms lack basic tools. Of the different parts of an agroforestry production system (land, labor, trees, seeds, water, tools and sun), the one that could be improved most promptly is the availability and use of tools. An increase in the number and quality of farm tools in use in Haiti would raise production noticeably. A more detailed study of this topic is in preparation.

J. An increase in the use of crop storage jars or other storage utensils should decrease losses in harvested crops. More agroforestry products would be useable for auto-consumption or sale.

K. It is questionable whether a large number of pig producing farmers switched to agroforestry as a form of savings after the implementation of the swine-fever eradication and pig population replacement program.

L. The research done in other countries has concluded that more prosperous farmers are more likely to use and succeed with new forms of agricultural technology. These results may be useful in the AF II. If limited resources require the selection of some farmers over others in a locality, those with success in other types of farm production should be given priority.

M. The AOP has given increased attention to hedgerow technology in recent years. Hedgerows continue to be virtually unknown in some regions. Planning should take into account the relative value of hedgerows in various locales.

N. Extension plans, strategies and methods which use different approaches with "kombit" and non-"kombit" farmers should be recorded and disseminated. A study describing how "kombits" function relative to agroforestry efforts is recommended.

O. Less than 4% of the farm households interviewed listed charcoal-making as a primary source of income. Charcoal is a very important source of money for some families, but these are considerably fewer than is popularly assumed. The significance of other agroforestry products for income and auto-consumption must be recognized. The peasant "household economy" of agroforestry production and use remains an important research topic.

P. Our data demonstrate that agroforestry is very popular and is well-regarded among participants and non-participants. Any doubts about Haitian farmers' positive regard for it can be put to rest. The results speak well for the extension efforts of PADF and CARE. The receptivity of farmers for the intervention is a great advantage enjoyed by few other farm improvement projects in Haiti or elsewhere.

Q. Rural households make major expenditures for wood products every year. Increased production should reduce such expenditures and increase auto-consumption. The money now being spent on wood products could then be used for other things.

R. The saving of soil from erosion is an important motive among farmers for practicing agroforestry.

REFERENCES CITED

- Buffum, William and Wendy King
1985 Small Farmer Tree Planting and Decision Making:
Agroforestry Extension Recommendations.
Pan American Development Foundation,
Port-au-Prince.
- Chambers, Robert
1983 Rural Development: Putting the Last First
New York: Longman Scientific.
- Conway, Fred
1986 The Decision Making Framework for Tree Planting in
the Agroforestry Outreach Project. University of
Maine Agroforestry Outreach Project,
Port-au-Prince.
- Lauwerysen, Herman J.
1985 Socio-Economic Study in Two Tree Planting
Communities. Pan American Development
Foundation, Port-au-Prince.
- Murray, Gerald
1987 The Domestication of Wood in Haiti: A Case Study
in Applied Evolution. Chapter in Anthropological
Praxis, edited by Robert Wulff and Shirely Fiske.
Boulder, Colorado: Westview Press.
- Pratt, Brian and Jo Boyden
1985 The Field Directors' Handbook: An OXFAM Manual
for Development Workers
Oxford: Oxford University Press.
- Smucker, Glenn R.
1981 Trees and Charcoal in Haitian Peasant Economy:
A Feasibility Study. Port-au-Prince: USAID.
- Smucker, Glenn R.
1988 Decisions and Motivations in Peasant Tree Farming:
Morne-Frank and the PADF Cycle of Village Studies.
Pan American Development Foundation,
Port-au-Prince.
- Street, Donald R.
1989a Tree Planting in Haiti: A Socio-Economic
Appraisal. SECID/Auburn University, Haiti
Agroforestry Research Project.
- Street, Donald R.
1989b The Charcoal Market in Haiti: Northwest
to Port-au-Prince. SECID/Auburn University,
Haiti Agroforestry Research Project.

APPENDICES

Appendix I	Original Questionnaire (Creole)
Appendix II	English Translation of Questionnaire
Appendix III	Statistics: Selected Numerical Variables
Appendix IV	Regional Comparisons
Appendix V	Differences Between Participants and Non-Participants
Appendix VI	Selected Graphics

Some Variable Labels

add1	need in addition to agroforestry
agfrneed	most need to expand agroforestry
again	Would you participate again in agroforestry?
bad5yrs	bad experience during the last five years
badthing	bad experiences during the last year
barriers	What barriers prevent you from planting more trees?
daysyear	number of days kombit works per year
disadvan	What, if any, are disadvantages of agroforestry?
discoura	discouraging things about agroforestry
employer	Do you sometime hire others to work?
goodthin	good experiences during the last year
good5yrs	good experiences during the last five years
house	type of house
instead	need instead of agroforestry
kombit	Do you belong to a kombit?
kombitno	If you belong, what is the kombit size?
land	amount of land used or owned
literate	number of literates in household
need	most serious need of family
particip	Are you participating in agroforestry?
plantmor	Would you plant more trees if you could?
rooms	number of rooms in house
source	primary source of income
voodoo	Is there a person in your household who practices voodoo?
woodprod	Wood products bought during the last year

A "\$" sign at the end of a label designates a categorical or qualitative variable.

APPENDIX I: ORIGINAL QUESTIONNAIRE

Non enketè: _____

KESTIONE: 1 Niméwo: _____

Komun _____ Lokalité _____

2. Non moun kap répon _____

A. Laj moun kap repon _____

B. Sex: 01 gason ____ 02 fi ____

C. Dépi kilè ou rété isit-la: _____ ané

D. Konbyen ané ou fè nan lot travay: _____

E. Ki kalité travay ou tap fè: _____

F. Konbyen ané ou fè lékol: _____

3. Ki jan kay ou fèt: kay paye ____ kay tol ____ béton ____
lot ____

4. Ki Kantité chamb ki gen nan kay-ou pou moun yo _____

5. Ki kantité chamb ki gen nan pak pou bèt yo _____

6. Eské ou marié: 01 non ____ 02 oui ____

7. Konbyen timoun ou gen yen: _____

8. Laj ak kalité travay ti moun nan kay-la fè nan jadin-ou é
lot koté:

	Laj	01 Gason	02 Fi	Kalité travay	Alé lékol
--	-----	----------	-------	---------------	-----------

1.	_____	_____	_____	_____	_____
----	-------	-------	-------	-------	-------

2.	_____	_____	_____	_____	_____
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9. Lot moun ki viv lakay-ou:

	Relation	Laj	01 gason	02 fi	Kalité travay
--	----------	-----	----------	-------	---------------

1.	_____	_____	_____	_____	_____
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2.	_____	_____	_____	_____	_____
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10. Ki rélijion.-ou: Katolik: _____ Pwotestan: _____
Ni yon ni lot _____

Eské ou gen moun lakay ou ki konn sèvi lwa: _____

11. Ki métié.-ou: kiltivatè _____
okipé kay ak timoun _____
lot (espliké) _____

12. Eské gen moun lakay.-ou ki konn:

siyé bwa _____	bos chapant _____
fè chabon _____	ménwizyé _____
fè lacho _____	boulanjé _____
konstwi kay _____	van bwa _____
lot métié (espliké) _____	

13. Eské gen moun lakay.-ou ki gen métié, min ki pa jouin travay:

01 non _____ 02 oui _____

Ki métié li gen yen _____

14. Eské gen moun lakay.-ou ki konn li?

01 non _____ 02 oui _____ Ci cé oui, konbyen moun _____

15. Ki pi bon bagay ki rivé.-ou ou bien fanmi.-ou nan ané ki sot pacé: _____

16. nan cink ané ki sot pacé _____

17. Ki pi mové bagay ki rivé.-ou ou bien fanmi.-ou nan ané ki sot pacé: _____

nan cink ané ki sot pacé _____

18. Ki sa fanmi.-ou pi bezwen pou amélioré la vi.-nou _____

19. Anplis dé rebwazman ké CARE ou bien lot oganization.-yo ap fè, ki lot bagay ou ta pito yo fè pou édé moun nan zon.-ou:

anplis _____
pito _____

20. Ki lot bagay ki ta doué fèt pou édé rebwazman nan zon.-ou:

21. Ki sa ki anpéché-ou fé lot jadin ké pyébwa: _____

22. Eské ou paticipé nan projè rebwazman CARE-la?

01 non _____ 02 oui _____

Ci cé oui, dépi kilè? _____

Ci cé oui, pouki sa ou komancé planté pyébwa? _____

01 twop tè _____

02 Pou fè ékonomi _____

03 kontwolé éwosion/consèvé tè-a _____

04 pwotégè jadin _____

05 fè lajan _____

06 bwa pou zafè pam (poto, planch, foraj, bwa difé, etc.) _____

07 lot rézon _____

Eské ou ta planté plis pyébwa ci ou té kapab?

01 non _____ 02 oui _____

Ci cé non, pouki sa? _____

23. Ki pi gwo bagay ki jinnin-ou nan planté ak production pyébwa?

01 pa gen assé tè _____

02 pa gen tan (travay) pou lot _____

03 pa gen lajan pou investi _____

04 paské tè-a gen yen plis valè pou lot bagay

05 pyébwa pa disponib _____

06 gen tout pyébwa moun bezwen _____

07 lot (espliké) _____

24. Eské ou té planté pyébwa avan ou té nan projè-a?

01 non _____ 02 oui _____

25. Ci cé oui, konbyen pyébwa ou planté pa ané? _____

27. Ci cé non, pouki sa _____

26. Ci ta gen yen projè rebwazman enco, eské ou pral paticipé?

01 non _____ 02 oui _____ 03 pé èt _____

27. Ki dézavantaj ou bien pwoblem ou jouin nan zafé rebwazman?

28. Konbyen tan sa pran-ou pou maché rivé:

- 01 nan dlo ki pi pré-ou _____
- 02 nan ti maché ki pi pré-ou _____
- 03 nan gwo maché ki pi pré-ou _____ non maché-a _____
- 04 dispansè _____
- 05 kamion ou bien machine _____
- 06 sou gwan rout-la _____
- 07 lékol _____
- 08 légliz _____

29. Ki amizman ou gen yen é konbyen é dé tan ou bien konbyen tan pa semèn ou fè ladan-yo:

- 01 joué ak timoun _____ é dé tan _____ foa pa semèn
- 02 cok gaguè _____ é dé tan _____ foa pa semèn
- 03 domino _____ é dé tan _____ foa pa semèn
- 04 joué kat/zo _____ é dé tan _____ foa pa semèn
- 05 vizité voazin/zanmi _____ é dé tan _____ foa pa semèn
- 06 kouté radio _____ é dé tan _____ foa pa semèn
- 07 bolet _____ é dé tan _____ foa pa semèn
- 08 lot (espliké) _____

30. Dépi konbyen tan ouap viv nan kay-sa ou bien sou tè-sa: ----

31. Dépi konbyen tan wap travay tè-sa? _____

32. Ki zouti ou bien ekipman ou gen yen :

- 01 manchet
- 02 wou
- 03 rache
- 04 pikwa-dérapi
- 05 mamit pou dlo
- 06 pomp
- 07 kouto-digo
- lot (espliké) _____

33. Ki bèt ou gen yen, konbyen ou gen nan chak é pouki sa yo sèvi-ou:

- | | | | | | pou | |
|----|---------------|-------|---------|-------|-------|-----------|
| | | | | | vann | zafè pamm |
| 01 | bèf | _____ | kantité | _____ | _____ | _____ |
| 02 | bourik | _____ | kantité | _____ | _____ | _____ |
| 03 | milèt | _____ | kantité | _____ | _____ | _____ |
| 04 | poul | _____ | kantité | _____ | _____ | _____ |
| 05 | kodinn | _____ | kantité | _____ | _____ | _____ |
| 06 | kochon | _____ | kantité | _____ | _____ | _____ |
| 07 | cabrit | _____ | kantité | _____ | _____ | _____ |
| 08 | chwal | _____ | kantité | _____ | _____ | _____ |
| 09 | mouton | _____ | kantité | _____ | _____ | _____ |
| | lot (espliké) | _____ | | | | |

34. Eské ou gen bagay sa-yo lakay-ou:

- 01 radio
- 02 biciklèt
- 03 lamp a gaz
- 04 reveil ou bien mont
- 05 cwuch ou bien gwo po dlo
- 07 moulin
- 08 pilon
- 09 danré séré (ki danré)

35. Eské ou déjà alé Gonaives ou bien Poto Prins?

01 non ____ 02 oui ____

Ci cé oui, kombyen foa oualé:

Gonaives _____ Poto Prins _____

36. Konbyen kob tout fanmi-ou fè pa moa ou bien pa ané nan tout bagay ou fè:

_____ gdes. sous _____

37. Ki gwo maladi moun nan kay-la souffri: _____

38. Anplis de travay tè ak okipé kay, eské ou gen responsabilité nan légliz, létat ou bien nan lot oganizations:

01 non ____ 02 oui ____

Ci cé oui, espliké _____

39. Ki kantité tè ou gen yen : _____

40. Eské ou gen tè ki pa-ou? ci cé oui, ki kantité _____

41. Eské ou afémé tè ou bien eské ou démwatié nan min lot moun:

afémé: 01 non ____ 02 oui ____ kantité _____

démwatié: 01 non ____ 02 oui ____ kantité _____

Ci cé oui, ki kantité _____

42. Ci tè-a cé pou-ou, eské ou té achté-li ou bien moun té mouri kité-l (érité) pou ou:

01 achté _____ 02 érité _____

43. Ki jadin ou fè sou tè-a é ak konbyen tè ou sèvi pou chak:

Jadin

Konbyen tè

44. Ki moa ou planté é ki moa ou rékolté jadin-ou:

sézon 1
planté/rékolté

sézon 2
planté/rékolté

Jadin I

Jadin II

Jadin III

Jadin IV

Jadin V

45. Eské ou mélanjé jadin ak pyébwa sou min moso tè? Ci cé oui, ki jadin, ki pyébwa é ki jan ou planté-yo:

46. Ki pyébwa wap planté é ki kantité? Lè ou planté ramp vivan ak jadin eské ou ka di longè ramp vivan é kisa ou planté nan mitan?

ramp vivan ak jadin: longè _____ ki jadin _____

ramp vivan san jadin: longè _____

rak bwa gwosè _____

lisiè longè _____

mélanj kantité _____ jadin _____

47. Eské ou gen sézon ké ou kité tè pozé san planté sou-li?

01 non _____ 02 oui _____

Ci cé oui, ki kantité tè ou kité pozé é kilè? Pouki sa ou fè sa? _____

48. Eské ou sèvi ak angrè ou bien fumié sou tè-ou ou bien nan jadin-ou?

01 non _____ 02 oui _____ ci cé oui, kilé _____

Ci cé oui, espliké _____

49. Ki pwodui bwa ou achté pandan dé ané ki sot pacé?

01 bwa difé 04 planch
02 chabon 05 matériel pou twati kay
03 poto 06 lot (espliké) _____

50. Konbyen ou péyé pou tout ensamb? Gdes. _____

51. Eské gen moun lakay-ou ki travay pou lot moun

01 non _____ 02 oui _____

Ci cé oui, ki sa yo fè _____

Konbyen kob yo fè _____ pa jou

Kilè yo travay _____

Pouki moun yo travay _____

Konbyen tan yo travay pa jou _____

52. Eské ou min ou bien moun laykay-ou pran moun pou travay

01 non _____ 02 oui _____

Ci cé oui, konbyen kob ou péyé-yo _____

Ki travay yo fè _____

Kilè ou pran moun pou travay _____

53. Eské ou té pwété bagay, tankou lajan ou bien grin, ané ki sot pacé-a?

Ki bagay Moun ki pwété-ou Intéré

_____ _____ _____

_____ _____ _____

54. Eské ou nan KOMBIT? 01 non _____ 02 oui _____

Ci cé oui, konbyen moun ki nan KOMBIT? _____

Ci cé oui, konbyen jou pa ané ou travay la dann? _____

55. Eské ou pi bien chita jodia pacé gen cink an dé sa?

01 non _____ 02 oui _____

56. Eské ou pansé ké ouap pi bien chita nan cink an kap vini?

01 non _____ 02 oui _____

APPENDIX II: ENGLISH TRANSLATION OF QUESTIONNAIRE

Haiti Agroforestry Research Project
 Social Survey
 (English Translation)
 1989

(Note: actual space for replies is not shown in this translation).

Interviewer: _____

1. Questionnaire Number: _____ Commune: _____ Locality: _____

2. Name of Respondent _____

A. Age _____

B. Sex: Male _____ Female _____

C. Length of Residence in Location: _____ years

D. Years spent doing other work: _____

E. What kind of work did you do? _____

F. How many years did you have in school? _____

3. Type of house: grass roof _____ tin roof _____ cement _____ other _____

4. Number of rooms for people _____

5. Number of rooms for animals _____

6. Are you married? no _____ yes _____

7. How many children do you have? _____

8. Age and type of work your children do on the farm and elsewhere:

	Age	Male	Female	Type of Work	Attends School
1.	_____	_____	_____	_____	_____
8.					

9. Other people who live in your house:

	Relation	Age	Male	Female	Type of Work
1.	_____	_____	_____	_____	_____
5.					

10. What is your religion?: Catholic _____ Protestant _____ Other _____
 Is there someone in your household who serves "lwa"(voodoo)? _____

11. What is your occupation?: farmer _____ housework and childcare _____
 other (explain) _____

12. Do you have people in your household who know how to:

cut wood _____	roof houses _____
make charcoal _____	make furniture _____
make whitewash _____	make bread _____
build houses _____	sell wood _____
other skills (explain) _____	

13. Are there people in your household who have a skill but cannot find work? no _____ yes _____ What skills? _____

14. Are there people in your household who know how to read? no _____ yes _____ If yes, how many people? _____

15. What good things have happened to you or your family in the past year?: _____

16. In the past five years?: _____
17. What bad things have happened to you or your family during the last year?: _____
In the past five years?: _____
18. What does your family most need to improve its life?: _____
19. What things in addition to agroforestry, or instead of it, should CARE (Note: replaced with PADF in PADF regions) or other organizations do to help people in your area?
In addition: _____
Instead of: _____
20. What other things could be done to aid agroforestry in your area? _____
21. What things prevent you from doing more agroforestry in your fields?: _____
22. Have you participated in the CARE (or PADF-supported) agroforestry program? no___ yes___ If yes, since when?: _____
If yes, why did you start doing it?:
1. use uncultivated "surplus" land
2. as an investment for future use
3. control erosion/save land
4. protect fields under cultivation
5. make money
6. things for personal use (poles, planks, forage, firewood, etc.)
7. other reasons _____
- Would you like to plant more trees if you were able? yes___ no___
If no, why not? _____
23. What is the most important thing that prevents you from doing more agroforestry?
1. not enough land
2. not enough time to do more work
3. not enough money for expenses
4. my land is more valuable for other things
5. seedlings are not available
6. I have all that I need
7. other (explain)
24. Did you plant trees before participating in the project? no___ yes___
25. If yes, how many trees did you plant each year? _____
If no, why not? _____
26. If the agroforestry project were to continue, will you participate?
yes___ no___ maybe___
If no, why not? _____
27. What problems or disadvantages have you had with agroforestry?

28. How much time does it take you to walk to:
1. source of water
 2. closest market
 3. closest large market Name of market: _____
 4. dispensary
 5. tap tap or motor transport
 6. road usable by vehicle
 7. school
 8. church
29. What amusements do you have and how much time do you spend on them each week? hours each time times a week
1. play with children
 2. cock fights
 3. dominos
 4. play cards
 5. visit neighbors/friends
 6. listen to radio
 7. play a lottery
 8. other (explain) _____
30. How long have you lived on this land? _____
31. How long have you worked on the land? _____
32. What kind of tools or equipment do you have?
1. machete
 2. hoe
 3. axe
 4. pick
 5. bucket
 6. sprayer
 7. sickle
 8. other _____
33. What animals do you have, how many, and for what are they used?
- | animal | number | check if: | for work | sale | home use |
|-----------------------|--------|-----------|----------|------|----------|
| 1. cattle | | | | | |
| 2. donkey | | | | | |
| 3. mule | | | | | |
| 4. chicken | | | | | |
| 5. turkey | | | | | |
| 6. pig | | | | | |
| 7. goat | | | | | |
| 8. horse | | | | | |
| 9. sheep | | | | | |
| other (explain) _____ | | | | | |
34. Do you have these things in your house?
1. radio
 2. bicycle
 3. kerosene lamp
 4. clock or watch
 5. storage jug for water
 6. grinder for making flour
 7. mortar and pestle for making flour
 8. crop storage container
35. Have you visited Gonaives (or nearest large town) or Port-au-Prince?
1. no__
 2. yes___ - If yes, how many times each? _____
36. How much money does your entire family make per month or per year from all activities?
- Amount _____ Sources _____

37. What serious health problems do people in your household suffer from?: _____
38. In addition to your work, do you have other responsibilities with your church, the state, or other organizations?
no___ yes___ If yes, explain _____
39. How much land do you have? _____
40. Are you using land that you do not own? If yes, how much? _____
41. Are you renting land from or renting land to another person?
Renting to _____ Amount _____
Renting from _____ Amount _____
42. Did you buy or inherit the land that you own?:
1. buy___ 2. inherit___
43. What crops are you growing on your land and in what size plots?:
Crops _____ Plot Size _____
44. What months do you plant and harvest each crop?
Field Season 1: Plant/Harvest Season 2: Plant/Harvest
1
"
5
45. Do you mix crops with trees on the same piece of land? If so, what crops, what kinds of trees and how are they planted?,

46. What trees have you planted, how are they planted and how many?
Hedgerow and crops length _____ what crops? _____
Hedgerow without crops length _____
woodlot number _____
on boundaries length _____
mixture number _____ crops _____
47. Do you have seasons when you let your field lie fallow? yes___ no___
If yes, how much land and how often? _____
Why do you do this? _____
48. Do you use chemical or natural fertilizer of some type in your farming?
non___ yes___ If yes, explain _____
49. What wood products did you buy during the last year?
1. firewood
2. charcoal
3. poles
4. planks
5. roofing material
6. other (explain) _____
50. How much did you pay for all of these products? _____

51. Is there someone in your house who works for another person?

no___ yes___
 If yes, what do they do? _____
 How much are they paid?: _____
 How much time do they work? _____

52. Do you or someone in your household hire people to work?

non___ yes___
 If yes, how much are they paid? _____
 What work do they do? _____
 How much do they work and when? _____

53. Did you borrow money, seeds or other things from others during the last year?

Borrowed items: _____
 Borrowed from: _____
 Interest Paid: _____

54. Do you belong to a Kombit (cooperative work group)?

non___ yes___ If yes, no. of members___
 If yes, how many days per year are worked? ___

55. Are you better off now than you were five years ago? no yes

56. Do you think that you will be better off in five years than you are at present? no yes

APPENDIX III: SELECTED NUMERICAL VARIABLES

	AGE	ONFARM	EDUC	ROOMS	CHILDREN
N OF CASES	253	254	258	257	258
MINIMUM	18.000	0.400	0.000	0.000	0.000
MAXIMUM	97.000	75.000	17.000	10.000	16.000
MEAN	43.134	22.663	3.566	2.790	4.124
STANDARD DEV	13.016	18.247	3.951	1.210	2.930

	LITERATE	WATER*	SMMARKET*	LGMARKET*	MEDCARE*
N OF CASES	258	255	255	254	254
MINIMUM	0.000	1.000	0.000	0.000	1.000
MAXIMUM	11.000	150.000	240.000	360.000	480.000
MEAN	2.310	25.282	53.878	136.972	57.126
STANDARD DEV	2.074	25.049	45.441	87.813	54.638

	TAPTAP*	ROAD*	SCHOOL*	CHURCH*	CATTLE
N OF CASES	196	243	228	249	258
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	300.000	240.000	180.000	120.000	6.000
MEAN	75.980	49.062	32.079	28.578	0.837
STANDARD DEV	61.966	70.317	29.988	24.762	1.176

* Minutes walk

	DONKEY	MULE	CHICKEN	TURKEY	PIG
N OF CASES	258	258	258	258	258
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	3.000	5.000	50.000	5.000	9.000
MEAN	0.500	0.167	4.818	0.143	0.484
STANDARD DEV	0.729	0.498	6.952	0.623	1.258

	GOAT	HORSE	SHEEP	LAND
N OF CASES	258	258	258	258
MINIMUM	0.000	0.000	0.000	0.000
MAXIMUM	20.000	3.000	10.000	8.000
MEAN	1.884	0.178	0.717	1.213
STANDARD DEV	2.834	0.474	1.598	1.371

	KOMBITNO	DAYSYEAR
N OF CASES	137	126
MINIMUM	1.000	1.000
MAXIMUM	104.000	313.000
MEAN	17.474	62.563
STANDARD DEV	12.952	90.319

APPENDIX IV: REGIONAL DIFFERENCES

TABLE OF SEX\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
FEMALE	20.56	20.83	5.66	6.00	14.73	38.00
MALE	79.44	79.17	94.34	94.00	85.27	220.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	48	53	50	258	

TABLE OF HOUSE\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
BRICK	.00	.00	.00	6.00	1.17	3.00
GRASS RO	84.91	59.57	18.87	40.00	57.81	148.00
TIN ROOF	15.09	40.43	81.13	54.00	41.02	105.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	106	47	53	50	256	

TABLE OF RELIGIONS (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
CATHOLIC	79.44	41.67	45.28	59.18	61.48	158.00
PROTESTA	20.56	58.33	54.72	40.82	38.52	99.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	48	53	49	257	

TABLE OF VOODOO\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
NO	64.00	95.83	85.11	71.43	75.82	185.00
YES	36.00	4.17	14.89	28.57	24.18	59.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	100	48	47	49	244	

TABLE OF GOODTHIN\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
ANIMALS	10.28	.00	.00	16.00	7.36	19.00
BIRTH	11.21	8.33	1.89	.00	6.59	17.00
CROPS	23.36	.00	13.21	.00	12.40	32.00
HOUSE	10.28	.00	1.89	10.00	6.59	17.00
LAND	7.48	.00	.00	20.00	6.98	18.00
MARRIAGE	22.43	.00	3.77	2.00	10.47	27.00
NONE	1.87	89.58	77.36	48.00	42.64	110.00
OTHER	13.08	2.08	1.89	4.00	6.98	18.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	48	53	50	258	

TABLE OF GOOD5YRS\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
ANIMALS	26.17	.00	.00	12.00	13.18	34.00
BIRTH	4.67	.00	.00	4.00	2.71	7.00
CROPS	26.17	.00	.00	2.00	11.24	29.00
HOUSE	4.67	.00	1.89	6.00	3.49	9.00
LAND	7.48	.00	.00	46.00	12.02	31.00
MARRIAGE	10.28	.00	5.66	2.00	5.81	15.00
NONE	10.28	95.83	88.68	22.00	44.57	115.00
OTHER	10.28	4.17	3.77	6.00	6.98	18.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	48	53	50	258	

TABLE OF BADTHINGS\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
ANIMALS	20.56	12.50	.00	14.00	13.57	35.00
CHILD DE	8.41	6.25	.00	4.00	5.43	14.00
CRIME	6.54	.00	.00	10.00	4.65	12.00
FAMILY D	26.17	10.42	11.32	6.00	16.28	42.00
FARM DAM	.93	.00	.00	.00	.39	1.00
HUNGER	4.67	10.42	.00	.00	3.88	10.00
HURRICAI	.00	.00	64.15	24.00	17.83	46.00
ILLNESS	12.15	8.33	15.09	14.00	12.40	32.00
NONE	.00	6.25	1.89	16.00	4.65	12.00
OTHER	6.54	.00	5.66	4.00	4.65	12.00
POOR CRO	14.02	45.83	1.89	8.00	16.28	42.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	48	53	50	258	

TABLE OF BAD5YRS\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
ANIMALS	21.50	8.33	32.08	10.00	18.99	49.00
CHILD DE	2.80	2.08	1.89	2.00	2.33	6.00
CRIME	8.41	.00	.00	6.00	4.65	12.00
FAMILY D	14.95	2.08	11.32	18.00	12.40	32.00
FARM DAM	.93	.00	33.96	4.00	8.14	21.00
HUNGER	.93	.00	1.89	.00	.78	2.00
HURRICAI	.00	.00	3.77	.00	.78	2.00
ILLNESS	23.36	.00	7.55	16.00	14.34	37.00
NONE	13.08	50.00	3.77	28.00	20.93	54.00
OTHER	2.80	.00	3.77	8.00	3.49	9.00
POOR CRO	11.21	37.50	.00	8.00	13.18	34.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	48	53	50	258	

TABLE OF NEEDS\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
EDUCATIO	.00	.00	1.89	.00	.39	1.00
EMPLOYME	5.66	70.21	47.17	32.65	31.37	80.00
IRRIGATI	1.89	.00	.00	2.04	1.18	3.00
MONEY	76.42	8.51	47.17	34.69	49.80	127.00
OTHER	4.72	19.15	3.77	16.33	9.41	24.00
POTABLE	.94	.00	.00	4.08	1.18	3.00
ROAD	4.72	.00	.00	.00	1.96	5.00
TECH AID	5.66	2.13	.00	10.20	4.71	12.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	106	47	53	49	255	

TABLE OF AGFRNEED\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
IRRIGATI	33.68	.00	6.25	6.38	16.03	38.00
NURSERY	2.11	10.64	10.42	42.55	13.50	32.00
OTHER	17.89	2.13	66.67	25.53	26.16	62.00
ROAD	27.37	.00	.00	.00	10.97	26.00
SEED	.00	19.15	.00	.00	3.80	9.00
TECH AID	18.95	68.09	16.67	25.53	29.54	70.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	95	47	48	47	237	

TABLE OF DISCOURA\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
EXCESS S	3.06	.00	13.46	.00	4.95	10.00
LEUCENA	.00	17.39	.00	.00	3.96	8.00
LIMITED	62.24	.00	1.92	16.67	31.19	63.00
NO MACHI	7.14	.00	15.38	.00	7.43	15.00
NO WATER	3.06	.00	61.54	.00	17.33	35.00
NONE	22.45	54.35	.00	33.33	24.26	49.00
OTHER	2.04	.00	7.69	50.00	4.46	9.00
SHADE PR	.00	28.26	.00	.00	6.44	13.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	98	46	52	6	202	

TABLE OF ADDL\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
EDUCATIO	11.32	.00	18.87	4.44	9.68	18.00
EMPLOYME	1.89	2.86	13.21	20.00	9.68	18.00
IRRIGATI	26.42	.00	13.21	15.56	15.05	28.00
MONEY	1.89	37.14	.00	2.22	8.06	15.00
NEW CROP	.00	20.00	.00	.00	3.76	7.00
OTHER	30.19	37.14	5.66	33.33	25.27	47.00
POTABLE	1.89	.00	16.98	6.67	6.99	13.00
ROAD	22.64	.00	22.64	2.22	13.44	25.00
TECH AID	3.77	2.86	9.43	15.56	8.06	15.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	53	35	53	45	186	

TABLE OF INSTEAD\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
EDUCATIO	.00	2.08	17.24	.00	3.85	6.00
EMPLOYME	12.50	8.33	10.34	.00	9.62	15.00
IRRIGATI	20.31	18.75	3.45	26.67	17.31	27.00
OTHER	28.13	14.58	13.79	53.33	23.72	37.00
POTABLE	1.56	4.17	41.38	.00	9.62	15.00
ROAD	31.25	52.08	10.34	6.67	31.41	49.00
TECH AID	6.25	.00	3.45	13.33	4.49	7.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	64	48	29	15	156	

TABLE OF PARTICIP\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
NO	15.89	14.58	15.09	50.00	22.09	57.00
YES	84.11	85.42	84.91	50.00	77.91	201.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	48	53	50	258	

TABLE OF MOTIVES\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
EROSION	67.39	41.86	44.19	48.00	54.68	111.00
GARDEN I	9.78	11.63	16.28	.00	10.34	21.00
OTHER	3.26	4.65	.00	4.00	2.96	6.00
SAVINGS	9.78	16.28	27.91	16.00	15.76	32.00
SELF USE	1.09	18.60	4.65	.00	5.42	11.00
SELL	8.70	6.98	6.98	32.00	10.84	22.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	92	43	43	25	203	

TABLE OF PLANTMOR\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
NO	1.94	6.82	11.11	19.05	7.69	18.00
YES	98.06	93.18	88.89	80.95	92.31	216.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	103	44	45	42	234	

TABLE OF BARRIERS\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
NO LAND	81.13	87.23	42.86	43.75	67.60	169.00
NO MONEY	16.04	2.13	30.61	10.42	15.20	38.00
NONE	1.89	6.38	.00	.00	2.00	5.00
OTHER	.94	4.26	4.08	4.17	2.80	7.00
SEEDLING	.00	.00	22.45	41.67	12.40	31.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	106	47	49	48	250	

TABLE OF AGAIN\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
MAYBE	.00	.00	13.46	21.28	6.85	17.00
NO	1.90	2.27	.00	8.51	2.82	7.00
YES	98.10	97.73	86.54	70.21	90.32	224.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	105	44	52	47	248	

TABLE OF DISADVANTAGES (ROWS) BY REGIONS (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
ANIMALS	1.94	4.55	6.12	5.26	3.85	9.00
NO BENEF	1.94	.00	4.08	.00	1.71	4.00
NONE	62.14	70.45	63.27	92.11	68.80	161.00
OTHER	.97	4.55	10.20	2.63	3.85	9.00
TREES DI	33.01	2.27	10.20	.00	17.09	40.00
TREES RE	.00	18.18	6.12	.00	4.70	11.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	103	44	49	38	234	

TABLE OF SOURCES (ROWS) BY REGIONS (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
CHARCOAL	.00	18.75	.00	.00	3.90	9.00
CROPS	63.74	54.17	83.72	77.55	68.40	158.00
NON-FARM	5.49	12.50	4.65	18.37	9.52	22.00
SOLD ANI	30.77	14.58	11.63	4.08	18.18	42.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	91	48	43	49	231	

TABLE OF FALLOWS (ROWS) BY REGIONS (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
NO	48.57	59.57	47.06	50.00	50.59	128.00
YES	51.43	40.43	52.94	50.00	49.41	125.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	105	47	51	50	253	

TABLE OF FERTILIZ\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
NO	82.24	63.83	92.16	84.00	81.18	207.00
YES	17.76	36.17	7.84	16.00	18.82	48.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	107	47	51	50	255	

TABLE OF WOODPROD\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
CHARCOAL	3.95	35.29	25.00	25.00	14.60	20.00
CONSTRUC	51.32	11.76	10.00	25.00	35.77	49.00
FIREWOOD	1.32	.00	.00	25.00	5.11	7.00
MIXED	30.26	.00	45.00	12.50	25.55	35.00
PLANKS	3.95	29.41	15.00	8.33	9.49	13.00
POLES	9.21	23.53	5.00	4.17	9.49	13.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	76	17	20	24	137	

TABLE OF EMPLOYER\$ (ROWS) BY REGION\$ (COLUMNS)

COLUMN PERCENTS

	BASSIN	DES FOR	MENICHE	VIALET	TOTAL	N
NO	63.00	66.67	88.68	91.84	74.80	187.00
YES	37.00	33.33	11.32	8.16	25.20	63.00
TOTAL	100.00	100.00	100.00	100.00	100.00	
N	100	48	53	49	250	

**APPENDIX V:
DIFFERENCES BETWEEN PARTICIPANTS AND NON-PARTICIPANTS**

TABLE OF VOODOOS (ROWS) BY PARTICIP (COLUMNS)

COLUMN PERCENTS

	NO	YES	TOTAL	N
NO	63.64	79.37	75.82	185.00
YES	36.36	20.63	24.18	59.00
TOTAL	100.00	100.00	100.00	
N	55	189	244	

TABLE OF EMPLOYERS (ROWS) BY PARTICIP (COLUMNS)

COLUMN PERCENTS

	NO	YES	TOTAL	N
NO	90.91	70.26	74.80	187.00
YES	9.09	29.74	25.20	63.00
TOTAL	100.00	100.00	100.00	
N	55	195	250	

TABLE OF KOMBIT (ROWS) BY PARTICIP (COLUMNS)

COLUMN PERCENTS

	NO	YES	TOTAL	N
NO	52.63	45.73	47.27	121.00
YES	47.37	54.27	52.73	135.00
TOTAL	100.00	100.00	100.00	
N	57	199	256	

TABLE OF BARRIERS\$ (ROWS) BY PARTICIP\$ (COLUMNS)

COLUMN PERCENTS

	NO	YES	TOTAL	N
NO LAND	65.38	68.18	67.60	169.00
NO MONEY	3.85	18.18	15.20	38.00
NONE	1.92	2.02	2.00	5.00
OTHER	1.92	3.03	2.80	7.00
SEEDLING	26.92	8.59	12.40	31.00
TOTAL	100.00	100.00	100.00	
N	52	198	250	

TABLE OF AGAIN\$ (ROWS) BY PARTICIP\$ (COLUMNS)

COLUMN PERCENTS

	NO	YES	TOTAL	N
MAYBE	16.33	4.52	6.85	17.00
NO	8.16	1.51	2.82	7.00
YES	75.51	93.97	90.32	224.00
TOTAL	100.00	100.00	100.00	
N	49	199	248	

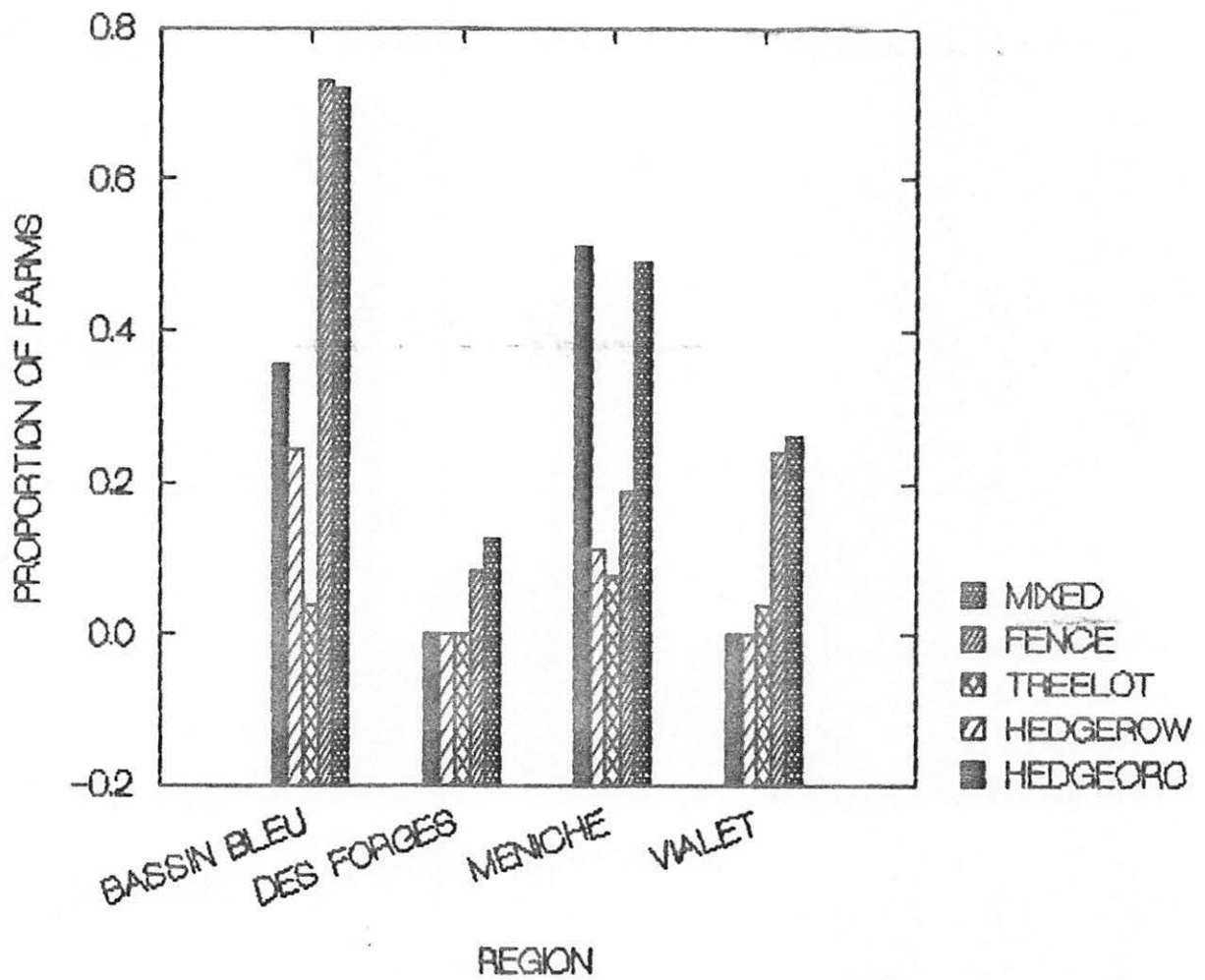
TABLE OF FALLOW\$ (ROWS) BY PARTICIP\$ (COLUMNS)

COLUMN PERCENTS

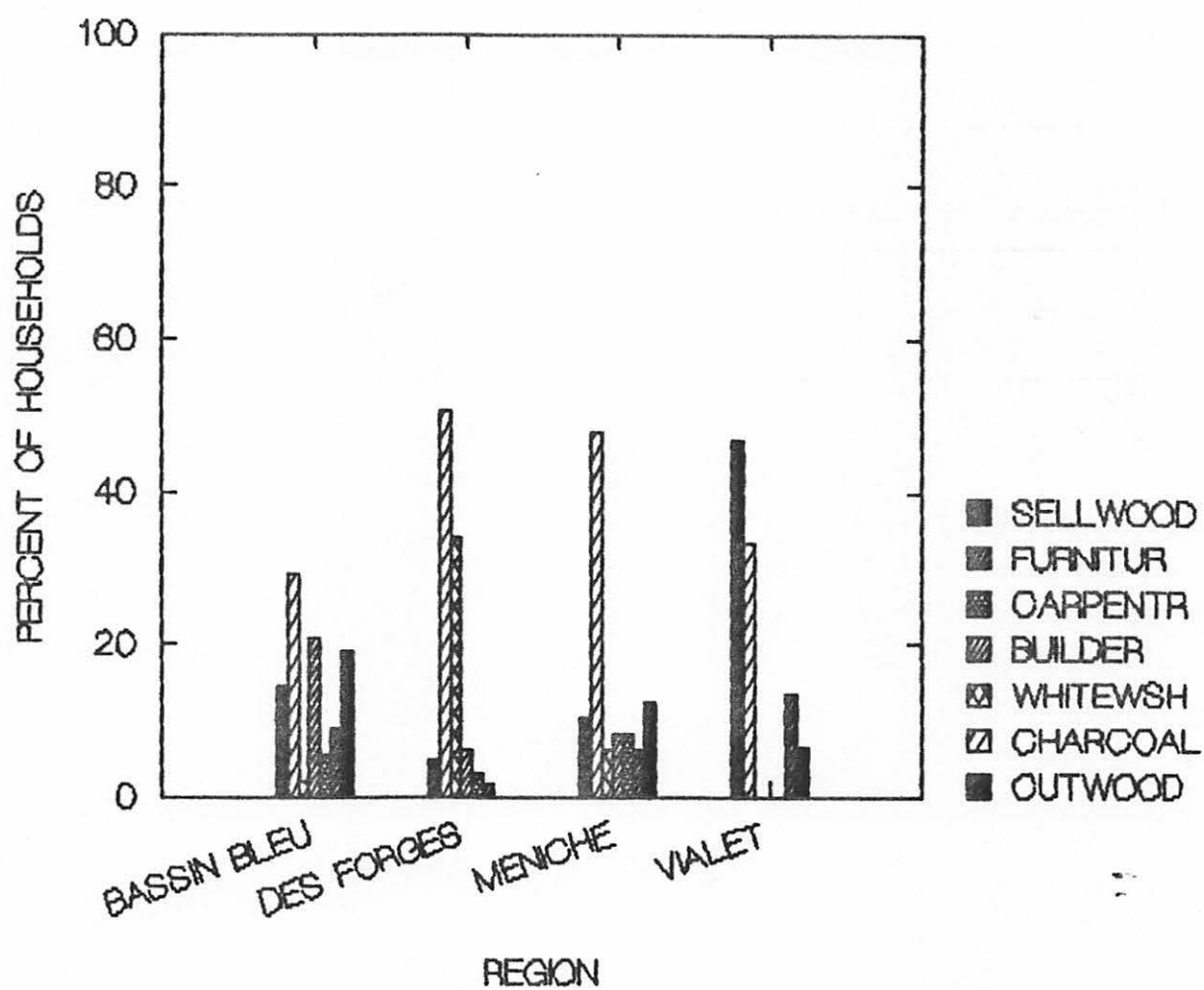
	NO	YES	TOTAL	N
NO	71.43	44.67	50.59	128.00
YES	28.57	55.33	49.41	125.00
TOTAL	100.00	100.00	100.00	
N	56	197	253	

APPENDIX VI: SELECTED GRAPHICS

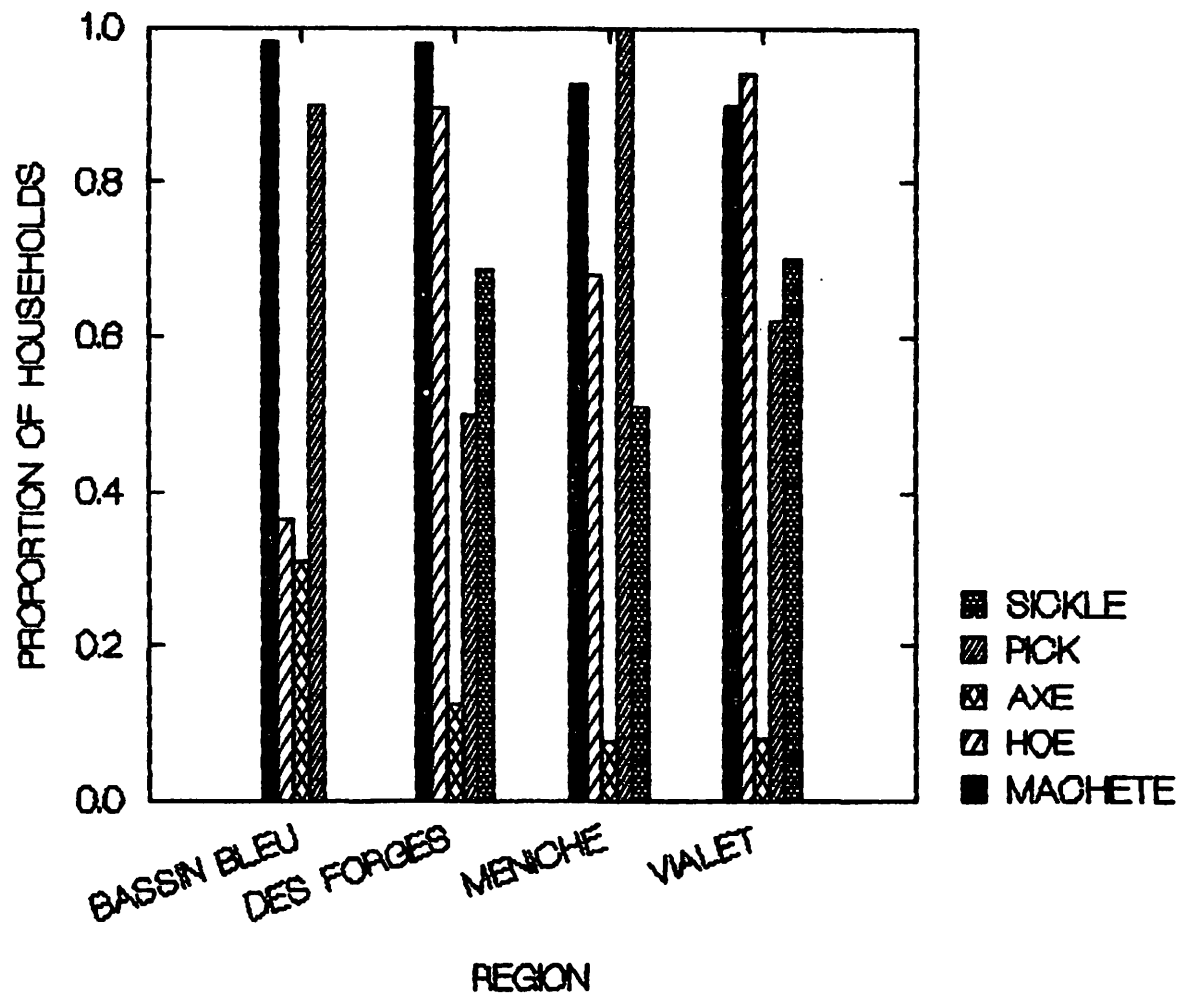
TYPE OF AGROFORESTRY PRACTICED BY REGION



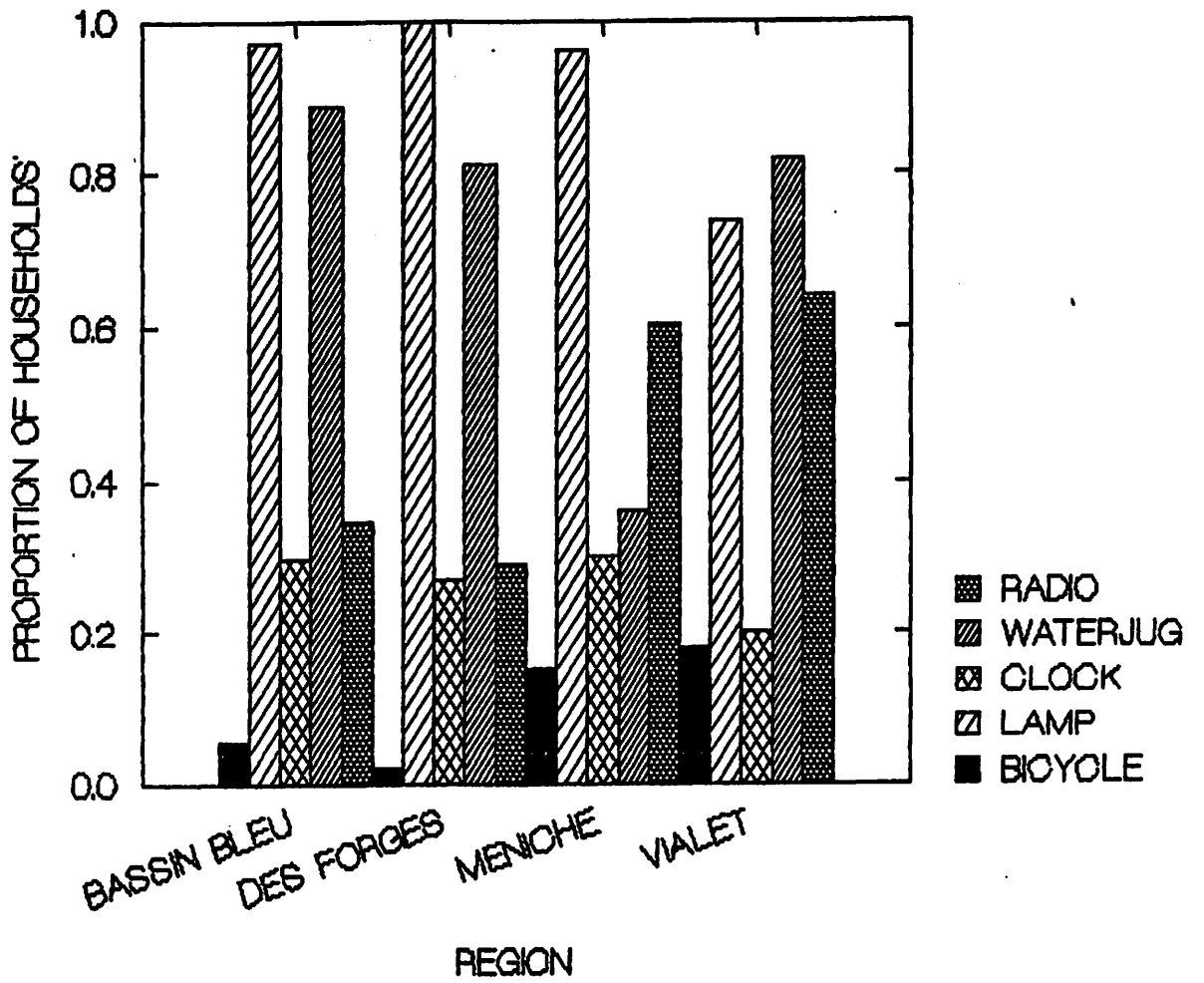
FORESTRY-RELATED SKILLS BY REGION



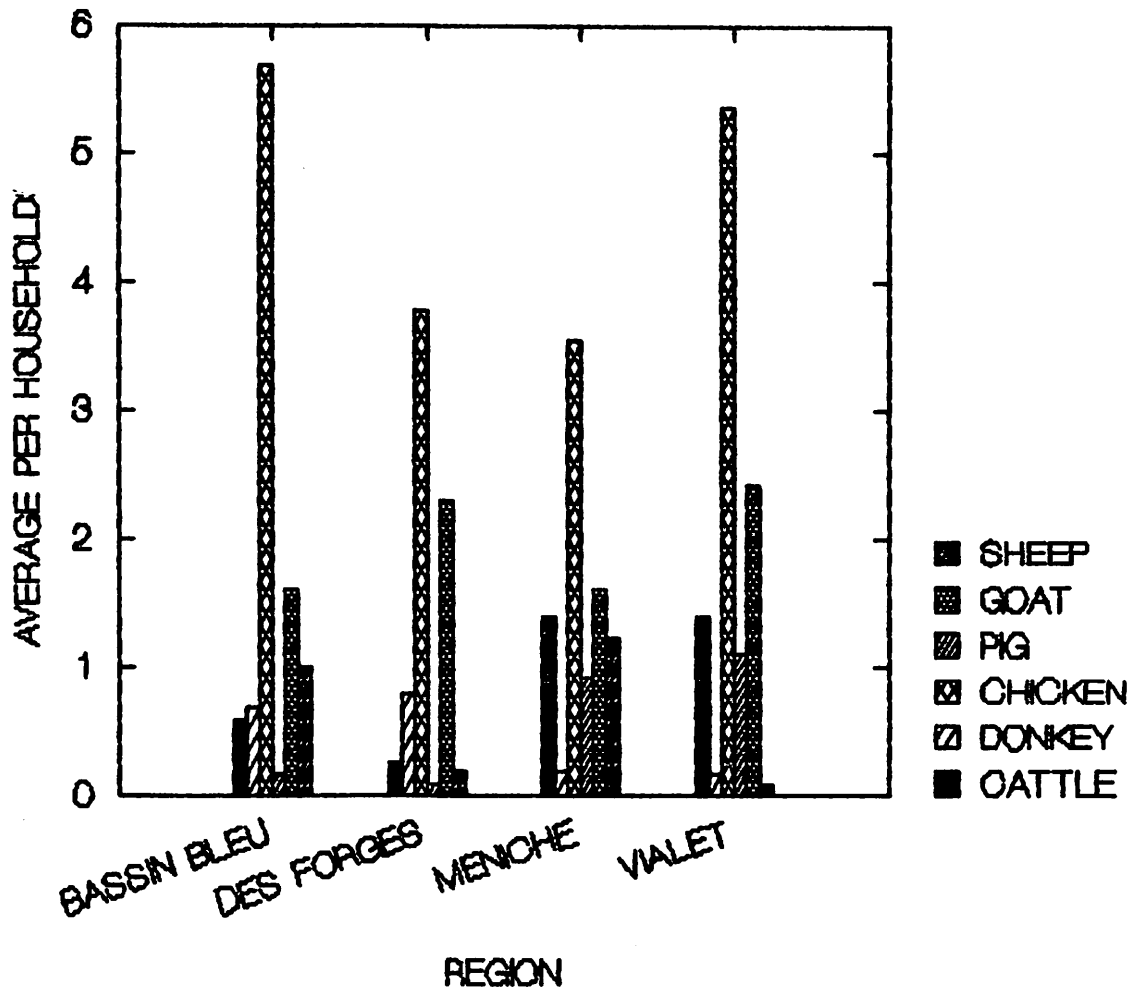
TOOLS IN HOUSEHOLD BY REGION



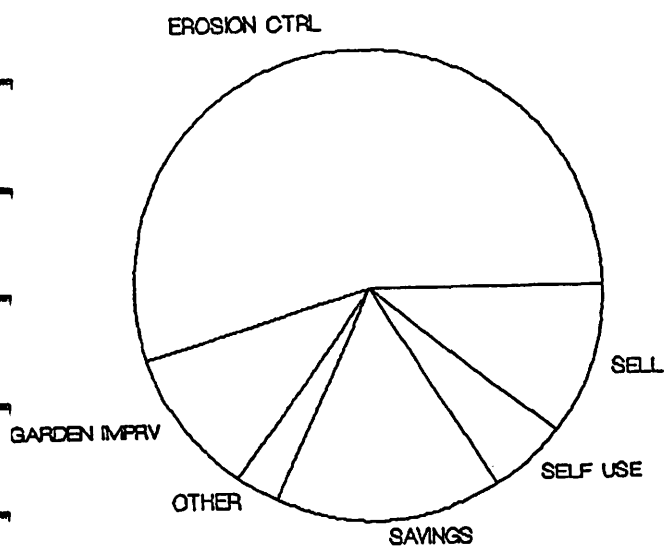
HOUSEHOLD POSSESSIONS BY REGION



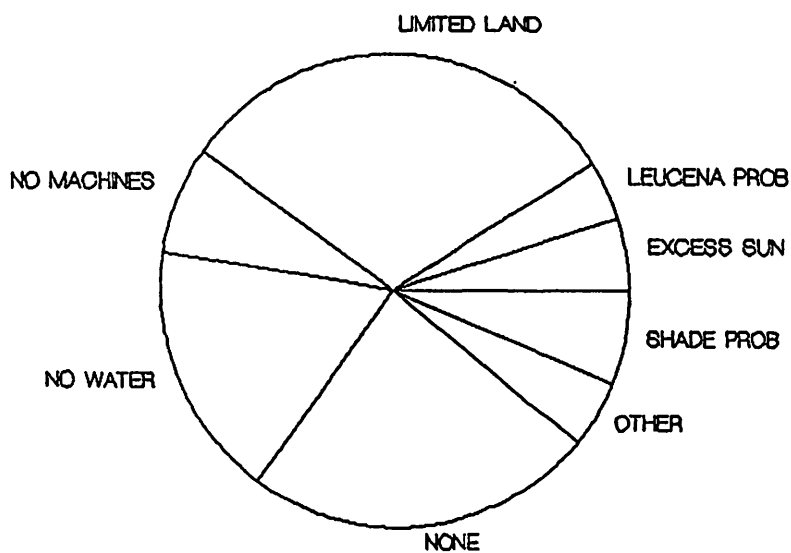
FARM ANIMALS PER HOUSEHOLD BY REGION



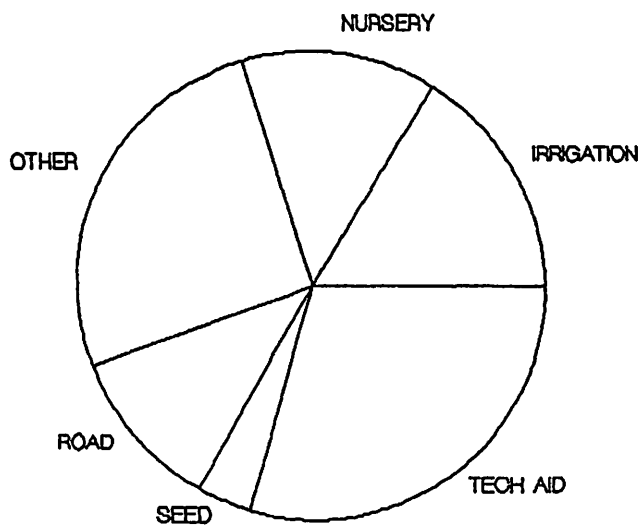
MOTIVES FOR PRACTICING AGROFORESTRY



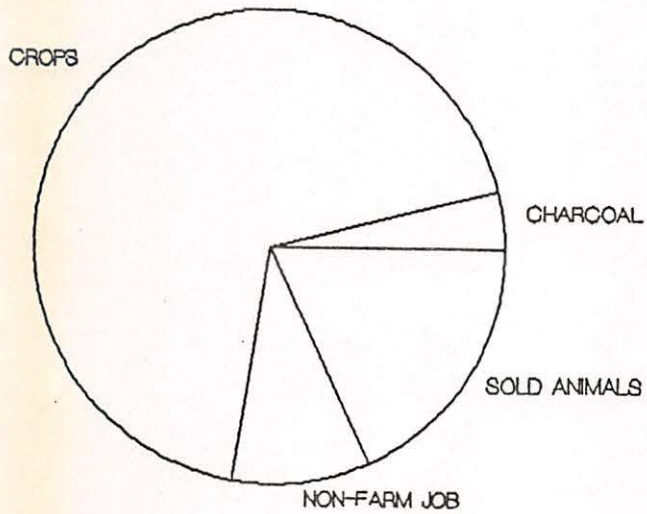
FACTORS DISCOURAGING AGROFORESTRY



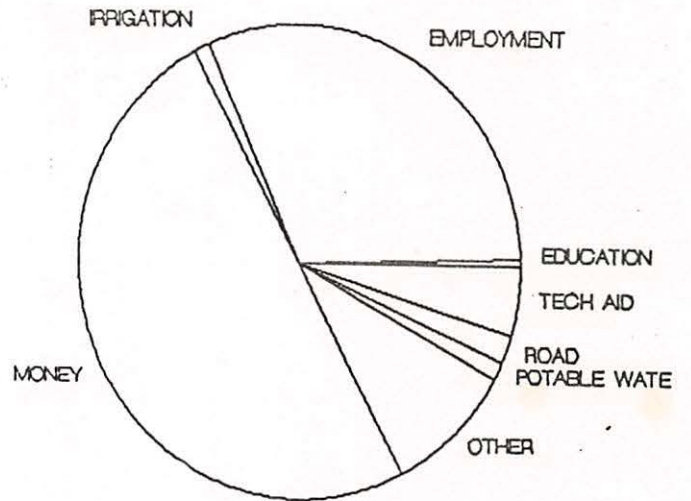
INPUTS NEEDED TO FACILITATE AGROFORESTRY



PRIMARY SOURCE OF INCOME



PERCEIVED NEEDS OF FAMILY



WOOD PRODUCTS PURCHASED LAST YEAR

