

HAITI AGROFORESTRY RESEARCH PROJECT

**SOUTH EAST CONSORTIUM FOR INTERNATIONAL DEVELOPMENT/
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**AGROFORESTRY KNOWLEDGE, ATTITUDES
AND PRACTICES IN NORTHWEST HAITI**

by

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AGROFORESTRY KNOWLEDGE, ATTITUDES AND PRACTICES

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AGROFORESTRY KNOWLEDGE, ATTITUDES AND PRACTICES

IN NORTHWEST HAITI

EXECUTIVE SUMMARY

This study provides information about the knowledge, attitudes and practices concerning agroforestry and related agricultural practices of the part of 504 farm families served by CARE International in Northwestern Haiti. The data describe current conditions among farmers in the area and can be later used to assess progress toward CARE's goals to increase agricultural production, to increase farm incomes, and to improve sustainable resource management strategies in the region. The general characteristics of the households are described, including household composition, property and possessions, the organization of work, erosion control and soil conservation practices, hedgerow and tree management practices, crops planted, sold and preferred, sources and storage of seed and seedlings, and off-farm economic activities. Important differences among the regions and the households studied which influence development efforts are noted. The household division of labor in the area is shown to greatly vary on the basis of sex and age and to be influenced by male migration patterns. A substantial minority of households are headed by women. Kombits or cooperative work groups are seen to play an important role in rural production. The data indicate a clear need for more information about specific agroforestry practices on the part of many farmers. Over half the farms studied possess some animals which are often fed from agroforestry sources. Tool availability and use is often low. Noteworthy differences are found among crops grown, sold and preferred. A number of conclusions and recommendations based on the findings are offered.

REZIME

Etid si-la bay infomasyon sou bagay moun konin, attitude ak pratik ki gen pou wè ak travay latè ak rebouazeman è gen pou wè ak pratik agrikilti nan 504 fammi enba CARE International en Haiti. Infomasyon-yo explikè konditision de vie pami pèizan-yo è yo (infomasyon-yo) ka sèvi kom route pou pwogrè nan bu CARE genyen pou ogmantè pwodiksyon agrikol, pou ogmantè lajen k'ap rantrè nan kay la, è pou amèliorè zon-an. Bagay ki impotan pou ètid la dèkri nan rapò si-la, tankou jan kay-la yè, propriètè ak bagay ki pou yo, oganizasyon travay-la, kontrol erozyon an ak konsèvasyon tè-a, kontrol sou piè boua-yo, sou bagay yo plantè vann ak sa yo prèfèrè kimbe, ak lot aktivite ki pa gen rapò ak travay latè-a. Difèrense ki influensè èfò dèvelopman nou jouen nan zon ak kay yo exprimè nan ètid si-la. Divizyon travay ki nan kay yo, nan zon ètid nan, bazè plis sou laj ak sex, dèplaseman gason yo influensè divizyon travay-la. Yon men sèleman de fammi ki chef kay. Yon lot bagay ki jouè nan pwodiksyon zon nan se kombit. Infomasyon kè nou jouen nan men plantè yo, di nou kè nou bezouin plis dirèk infomasyon sou jan yo pratikè travay tè-a ak rebouazeman. Plis kè mouatiè femmi nan femmi nou etidiè yo, gen zannimo ki manjè sou pratik travay tè-a ak rebouazeman. Jouen zouti ak sèvi ak yo sè yon bagay ki ra. Difèrense ki impotan anpil, ouap jouen yo nan bagay yo rèkoltè, vann ou prèfèrè kimbe. Etid si-la bay on bon nomb konseil ak rekomandasyon.

I. Purpose of the Study

This study provides data on selected aspects of the knowledge, attitudes and practices concerning agroforestry and related activities on the part of farm families in Northwestern Haiti, a region served by CARE International. The up-to-date information about farm households in the area provided by this study could also be useful in measuring changes related to the achievement of CARE's goals in the Agroforestry II (AFII) Project.

The goals of CARE in the AFII are to:

1. increase the agricultural production of small farms through the adoption of tree crops, improved agricultural methods and soil conservation methods by 1999;
2. increase the income of target area farmers by overcoming constraints in their access to agricultural inputs, basic crop storage facilities and marketing channels by 1999; and
3. improve the knowledge, attitudes and practices of target area farmers as they relate to sustainable resource management strategies by 1999.

II. Research Design

The study presented here provides basic information about farm households in the Northwest. The information obtained is useful in the current management of the agroforestry program and in planning for the future. Through the study of present conditions and farmer attitudes towards extension activities, agroforestry project staff will be better equipped to design programs to meet the farmers needs. Much of this information can also be useful in determining the consequences of CARE interventions that are now underway in the Northwest. At a later point, additional readings of the status of the households studied could be accomplished. A comparison between the present status of the households with that in a later year could indicate the impact of CARE efforts relative to the achievement of project goals. The effects of the particular rural development methods employed by CARE could then be determined and measured using the data generated by this study and information compiled in the future.

The results of this study should also prove useful in the development of measurement and evaluation methods applicable to comparable projects in Haiti and in other countries. The need for reliable and economical ways to measure the effects of projects in relation to their goals continues to be a significant issue among those involved in international development, and progress is gradually being made to resolve such problems (Chambers, 1983; Kumar, 1989).

III. Methodology

In early 1990, CARE developed a list of issues to be addressed in a baseline study (see Appendix I for list). A survey instrument was developed by CARE and SECID to obtain information on these issues from farmers in the Northwest (See Appendix II). The survey instrument was composed of indicators of a household's knowledge, attitudes and practices as they relate to agroforestry and farm management. The specific topics examined included indicators of social and economic status, material resources and possessions, and skills. Cultivation practices, the division of household labor and income-producing activities were a major focus.

Pre-tests of draft questionnaires were conducted as part of the training of local interviewers by CARE staff in May, 1990. Most of the assistants had previous training and experience with interviewing and data gathering in late 1989 for a CARE project evaluation. Following the pre-test period, a final selection of surveyors was made and field work was initiated. Interviewing was accomplished by twelve local CARE field assistants working in four CARE regions in the Northwest in mid-June, 1990.

IV. Sampling

Random sampling methods that are commonly used in survey and other types of social research in industrial settings are not practical for use in Haiti or in most other Third World settings. Census data in Haiti are out-of-date and unreliable. Available maps and aerial photographs showing settlement patterns are 18 or more years old and are obsolete. Maps in current use are commonly erroneous and show villages that do not exist. Villages which have existed for over a hundred years are sometimes not indicated. A government census was conducted in the 1970s, but there are serious reliability problems with the data. In addition, significant rural to urban migration and population growth has since taken place. Data from the census and maps in use are commonly at odds with first-hand observations regarding the relative size of rural settlements and their precise locations.

Images of Haiti from satellites and modern aerial photography have tremendous potential to create up-to-date maps showing population distribution and the status of the country's resources, including its biomass and physical geography. Such methods are of great potential use in targeting and refining agroforestry and social forestry efforts (Fox, 1986). Progress is being made to create up-to-date specialized maps of Haiti through Geographic Information System (GIS) technology but depictions of current population distribution and characteristics have yet to be developed. It is probable that new maps using data gathered by satellites and space shuttles will be developed within a few years. At present, however, the imprecise nature of existing population data does not permit the drawing of a random sample of households

for survey research. Accordingly, a modified sampling methodology was employed to adjust to current conditions in Haiti.

The effort to secure a reasonable cross-section of households for our research relied on the first-hand knowledge of CARE staff who had routinely worked in areas studied over the past few years. The "lokalite," or small hamlet is the basic sampling unit. Four CARE regions are included in the study (see Appendix 1, Map of CARE Regions in Haiti) and each has from 25 to 30 lokalites. Of the 21 lokalites randomly selected in each region, 18 are those in which CARE is active and three are those in which CARE has no agroforestry program. Six households were selected for interviews in each lokalite. To ensure that a variety of households was included in each lokalite and that they reflect different farming conditions, every fourth household was selected until the total of six was reached. The refusal rate was less than one percent. Accordingly, a total of 504 respondents were interviewed, 126 in each of the four regions. Evidence for the typicality of the respondents who were interviewed comes from other studies. The demographic characteristics of the households involved in the present study are similar to those found in other studies recently accomplished in the Northwest (Starr, 1989; Rorison, Gossin and Joubert, 1990). After the completed forms were reviewed with the interviewers, the data were organized for computer processing and analyses.

V. Characteristics of the Respondents and Households

A. General Characteristics

Interviewers were instructed to speak with the head of the household or the person who would ordinarily act in his or her behalf during the head's absence. Of the 504 persons interviewed, 56.2% are males and 43.9% are females. (Statistics reported in the text are rounded off to the nearest decimal). The average age for those who knew their ages (92.7%) is 45.6 years for males and 43 for females. The number of years each had lived in their present location ranged from one month up to 76 years, and averages 16.3 years. Household size ranges from one to 20, with an average of just over seven members (7.1 persons).

Most households reportedly have one or more literate members. The average is 2.5 literate persons per household. Interpreting the meaning of the term "literacy" in Haiti is not, however, without complications. In rural Haiti, being "literate" generally refers to the ability to sign one's name. Accordingly, "literacy" in this study does not imply a facility in reading or writing. The number of those reportedly being literate in this study is clearly inflated by the standards of industrialized societies.

Most families have children and are making a serious financial investment in the education of at least some of them. Respondents

indicate that the average household paid school fees for 2.6 persons. Expenses for each child attending school beyond the early grades are about \$60 per year, a very serious expense for Haitian families. Most of the cost goes for the purchase of required textbooks that are very expensive by Haitian standards. Few families can afford to send all their children to school. A common pattern is for at least one child to be kept at home to help with housework. The child selected to stay at home is usually the eldest or the one evincing the least interest and ability in school. As reported by CARE agronomists, because some local religious organizations pay all or part of the school fees for some children, the actual number of children in school from a family is often greater than is suggested by the number of school fees that it reports paying.

As with the concept of "literacy," the term "lekol" (school) should be understood within the context of rural Haiti. It implies a different standard than is found in more prosperous countries. Often, those teaching young children are themselves unable to read or write fluently. There remains, however, considerable support within the family for the education of children and tremendous financial sacrifices are routinely made.

As shown in Table 1, there are noticeable regional differences among the respondents with regard to their age and sex.

Table 1. Mean Age of Respondents by Sex and Region

	<u>REGION</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>TOTAL</u>
		<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
<u>SEX</u>						
<u>MALE</u>		38.6(59)	43.1(78)	47.1(78)	44.5(67)	45.6(283)
<u>FEMALE</u>		38.9(67)	40.7(47)	43.8(48)	43.8(59)	43.0(221)

* Number in parenthesis indicates # of respondents.

The majority of respondents are female in Region I and male in the other regions. There are also differences in the average ages of male and female respondents. Female respondents are about the same age as male respondents in Region I; in the other regions male respondents are older than female respondents. The respondents in Region I also tend to be younger than those elsewhere. On the average, women in that area are about four years younger, and men are about seven years younger than those sampled overall. Local regional staff report that these differences accurately reflect the impressions that they have from years of work in the areas examined.

The difference between Region I respondents and those elsewhere is influenced by the seasonal migration patterns of the population in that area. It is more common in Region I for men to seek employment outside of their area during the time that the data were collected (June). Region I is commonly believed to produce more "boat people" or undocumented emigrants seeking to move to the U. S., than the other regions. Most such migrants are men. As is reflected in the data, the same region has a slightly more youthful population than the others.

The data indicate that households in Regions II and III have a longer period of current residence (Mean=22 and 18.3 years respectively) than Regions I (16 years) and IV (14.9 years). Region IV lags noticeably behind the overall average with regard to the number of people in the household who are literate (Mean=1.9, overall Mean=2.5) and the number of school fees paid (Mean=1.8, overall Mean=2.6). These differences are partially due to the smaller size of the households in Region IV (Mean=6.1, overall Mean=7.1).

B. Female-Headed Households

Our data show that 14.5% of the households overall are headed by women. Such households are headed by widows, those involved in polygynous unions, abandoned spouses and those whose husbands have migrated either permanently or for an extended period. Because direct questions about one's domestic status are often given inaccurate replies, current behavioral indicators are used to derive these data. These results were tabulated by noting those households in which the father either contributes no labor or contributes to farm family work in the most minimal way. The percentage of single female head of households for Regions I through IV are 15.1%, 11.1%, 13.5% and 18.3% respectively. The number of female-headed households in each region correlates positively with the sex of respondents in each region. Region I, with the most female respondents, had the largest number of female-headed households. The second largest number of female-headed households was found in Region IV, which also had the second largest group of female respondents. Such households constitute an important minority in each region, a fact that CARE may be able to exploit in it's extension efforts in the future.

VI. Property and Possessions: Land, Housing, and Livestock

A. Land Ownership and Use

Most households report usually working on more separate plots of land (Mean=3.3 plots, SD=2.4) than they own (Mean=2.4, SD=2.1), but the total number of karo (1 karo=1.29 ha) farmed (Mean=1.9, SD=2.3) differed little from the number reported as being owned (Mean=1.9, SD=2.6). Both the numbers of plots and the number of karo that the farmers reported as having actually worked on last year (Mean=2.5, SD=2.1, and Mean=1.2, SD=1.5 respectively) are lower than that indicated as "usually worked."

In understanding reports on land holding and use, it should be noted that reliable information on land holdings in Haiti is very difficult to obtain from peasant farmers. Disputes over the ownership and use of land are typical elements of village life and are not uncommon in urban areas. A recent conflict over the fraudulent sale of property actually owned by Petion-Ville Club, the golf and tennis club of the Haitian elite that adjoins the residence of the U. S. Ambassador, indicates that conflicts over land are by no means confined to the peasantry. Rural respondents typically under-report the size of land owned or farmed. Squatting on unused state-owned land is not unusual. The estimates given by the respondents for the amount of land held is also affected by the geographic position of the land and the extent to which it is used for planting. The size of uncultivated or little farmed land with poor access is commonly underestimated. CARE field staff felt that adding another 50% to the land reported as owned by respondents would improve the accuracy of the data. Accordingly, the figures reported are regarded as the minimum held by each household.

As seen in Table 2, the regions differ with regard to the number of plots usually worked and the amount of land area farmed. Region III has the fewest number of plots (Mean=1.9, overall Mean=3.3) and Region IV has the least amount of land usually worked (Mean=1.3, overall Mean=1.9). Region III also has the fewest number of plots owned and Region IV has the least amount of land owned. Region I reports the largest average number of plots usually worked (4.2) and owned (2.6 karo), and the largest average land area usually worked (3.3) and owned (2.6 karo). A similar ranking is shown when the respondents are specifically asked about the actual number of plots farmed and the total area farmed during the last year. This could be due to the fact that Region I suffers less population pressure on the land than does Region IV. Region I also has many residents squatting on abandoned state-owned land. Region IV, however, reports having the smallest average land area farmed (Mean=.9).

Table 2. Mean Land Owned, Usually Worked and Worked Last Year by Region

<u>REGION</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>OVERALL AVERAGE</u>
<u>LAND OWNED</u>					
Plots	3.3	2.4	1.2	2.6	2.4
Size	2.6	1.6	2.0	1.3	1.9
<u>LAND USUALLY WORKED</u>					
Plots	4.2	3.3	1.9	3.6	3.3
Size	2.6	1.8	1.9	1.3	1.9
<u>LAND WORKED LAST YEAR</u>					
Plots	3.1	2.6	1.7	2.4	2.5
Size	1.5	1.3	1.1	0.9	1.2

* Land size expressed in 'karo' (1.29 ha.).

B. Housing

In general, differences in status among farm families can be most readily seen in the type of housing each owns. Wattle is the most typical form of construction among those surveyed (78.8%). Woven branches are less common (18.3%), as are stone or cement walls (17.1%). The construction which uses woven branches tends to be the least expensive type of construction. Wattle tends to be more costly. Houses with tin roofing (21.3%) and cement floors (19.6%) are typically those of the most affluent. These houses include materials purchased in cities bought by families with above average incomes. Tin roofing and cement floors are commonly found in the same dwellings.

Other factors do, however, influence the types of housing built in each region. In Region I, house differences often reflect differences in stages of construction. Woven branch walls are built first and then covered with wattle as time and money allow. The raw material for wattling is readily available in this region. Because of the reasonable cost of such materials, there is a higher proportion of wattled houses in the region than in the other three. Region I has the highest number of households with cement or stone walls (28.6% compared with 16.7% overall). This concentration can be explained by the fact that rock is plentiful in the area, while wood for construction is less common. The people in Region I use a limestone sand which is cheap and easy to mix, as a cement. CARE staff express their belief that Region I residents benefit more than the others from cash sent to them by emigres to the U.S.

Region II has the lowest proportion of houses with tin roofs, cement floors, and stone or cement walls (9.5%, 7.9% and 8.7%, respectively, compared with 20.6%, 19.1% and 16.7% overall). Wattle houses are most common in this area because the raw material required to build them is close and readily available (86.5% compared with 79.4% overall). The higher proportion of houses constructed with wattle is also seen to be influenced by the absence of men in the area. Some men become "boat people," who leave their families behind. An important minority of households are headed by women who are responsible for accomplishing all of the agricultural and household work on their farms. Some of these families receive money from the men who succeed in traveling to the U. S. or another country finding a job. Such remittances are not seen to be as great as in Region I, however, and do not offset the lost production of male emigres. The absence of men with house-building skills means that less labor is used for house construction and embellishment, with the result that houses tend to be simpler and built in the easiest and cheapest way.

In Region III, the data show a 100% correlation between houses with cement floors and those having walls (13.5%). Tin roofs are found on 24.6% of the houses surveyed, a figure much in line with those of Regions II and IV.

C. Tool Use

Tool use in the Northwest overall follows a familiar pattern. Most farmers typically use machetes (89.3%), followed by hoes (76.4%), and picks (67.1%). The use of shovels (3.8%) and axes (1.6%) is unusual. Haitian farms commonly have a very small tool inventory and some sharing takes place. Traditionally, it is very unusual for a woman or for a young man living in his father's house to own a machete. It is regarded as a symbol of mature status and independence.

In examining tool use, the overall pattern generally follows that which has been observed elsewhere in the country (Starr, 1990). Graph 1 reveals important regional differences.

Region I is tool-rich in comparison to Regions III and IV. This could be due to the fact that recently, several international organizations have come into the area with a tool distribution campaign. CARE field personnel aver that the people in this area also have a tendency to share tools more than those in the other regions, a fact which may also account for the high percentage of tool users. The CARE agronomists unanimously agreed that 100% of the respondents in Region II had access to or owned a machete. The slightly smaller showing on Graph 1 is probably due to the fact that female respondents will not say that they own a machete, it being a man's tool.

It is surprising that the machete, the traditional all-purpose tool of Haiti and most other tropical countries, takes second place to the hoe in Regions II and III. A CARE agronomist believes that some respondents may under-report their tool possession/use in the hope that CARE or some other organization may make them a gift of the needed tools in the future. We have no evidence for this hypothesis. If under-reporting took place, however, this error may be randomly present in all four regions, and would not alter the pattern indicated.

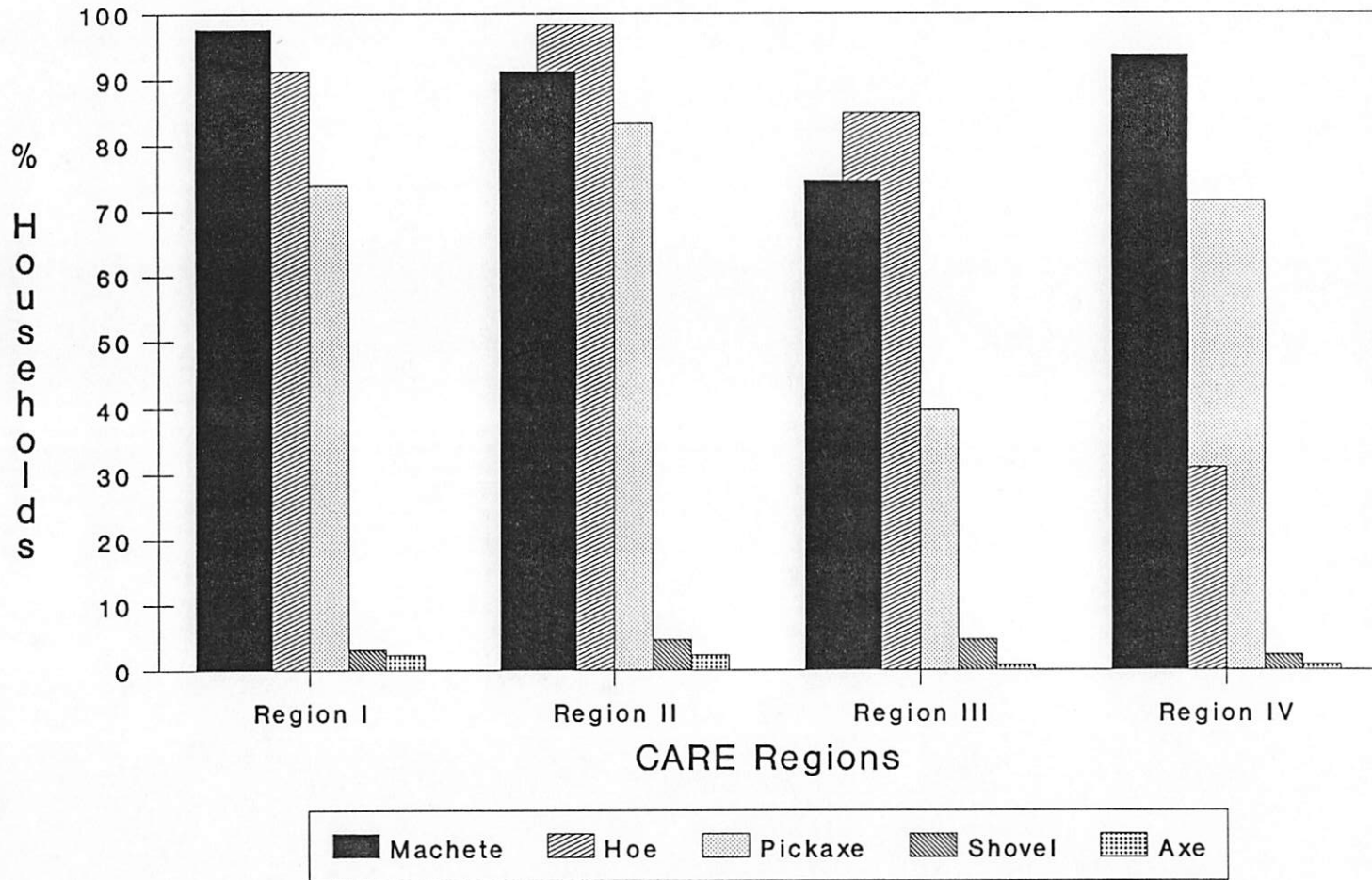
D. Livestock Ownership and Care

1. Animal Ownership

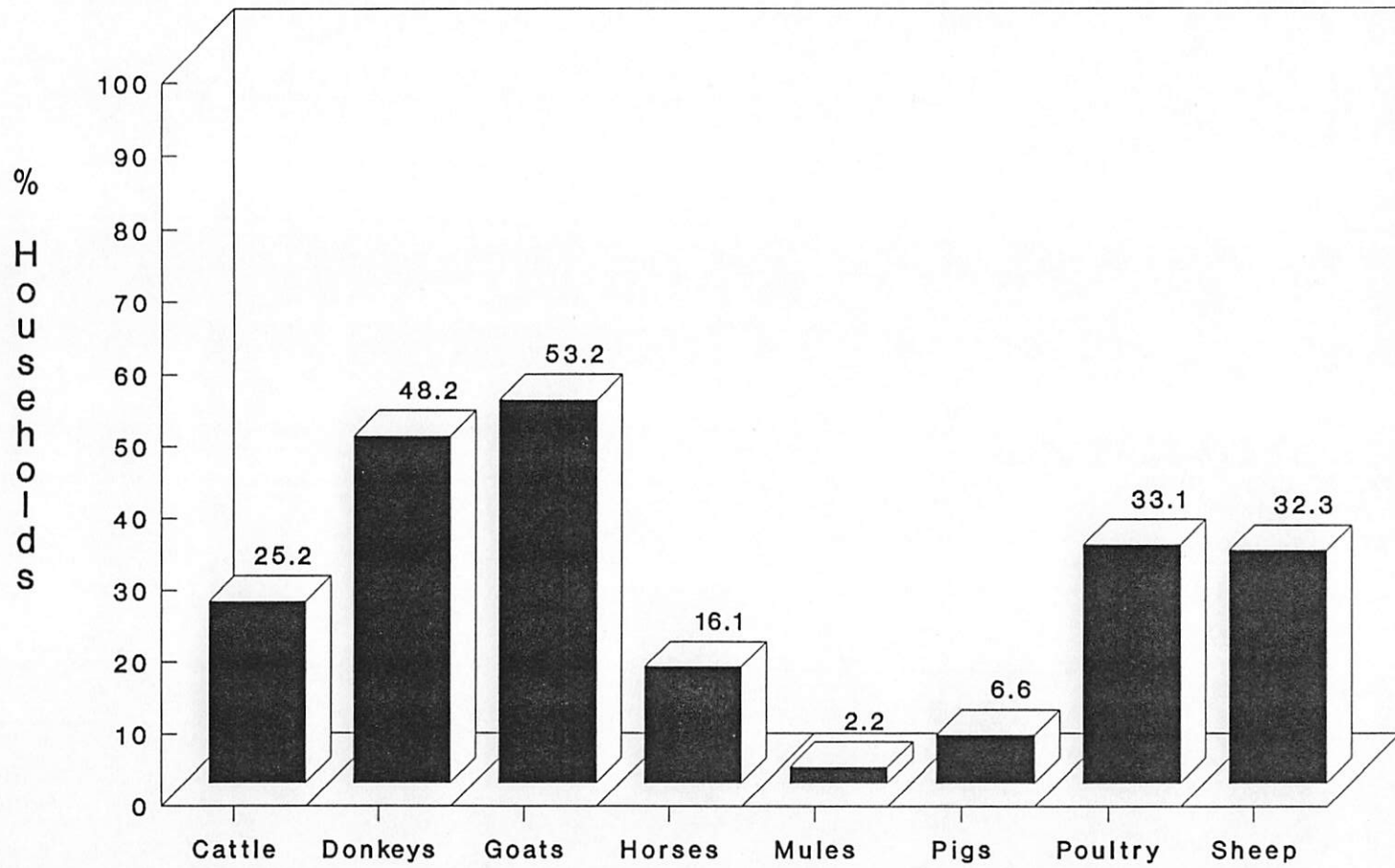
Livestock is also an important property for farmers. Most of the farmers in our study possess some animals. Graph 2 shows the overall percentages for livestock ownership in the households sampled. On the average, the number of animals held by the owners is small. Chicken owners have the largest average number of animals, 6.4 birds per family. The averages for goat, pig and sheep owners are 3.7, 3 and 2.3 respectively. The average number for owners of other animals is under two per household. Turkeys are rare in the Northwest. Given that a third of the farms report having chickens, it is surprising that only one farm indicates that it has a turkey. Turkey production may be a potential growth area for the region.

GRAPH 1.

Tool Use By Region

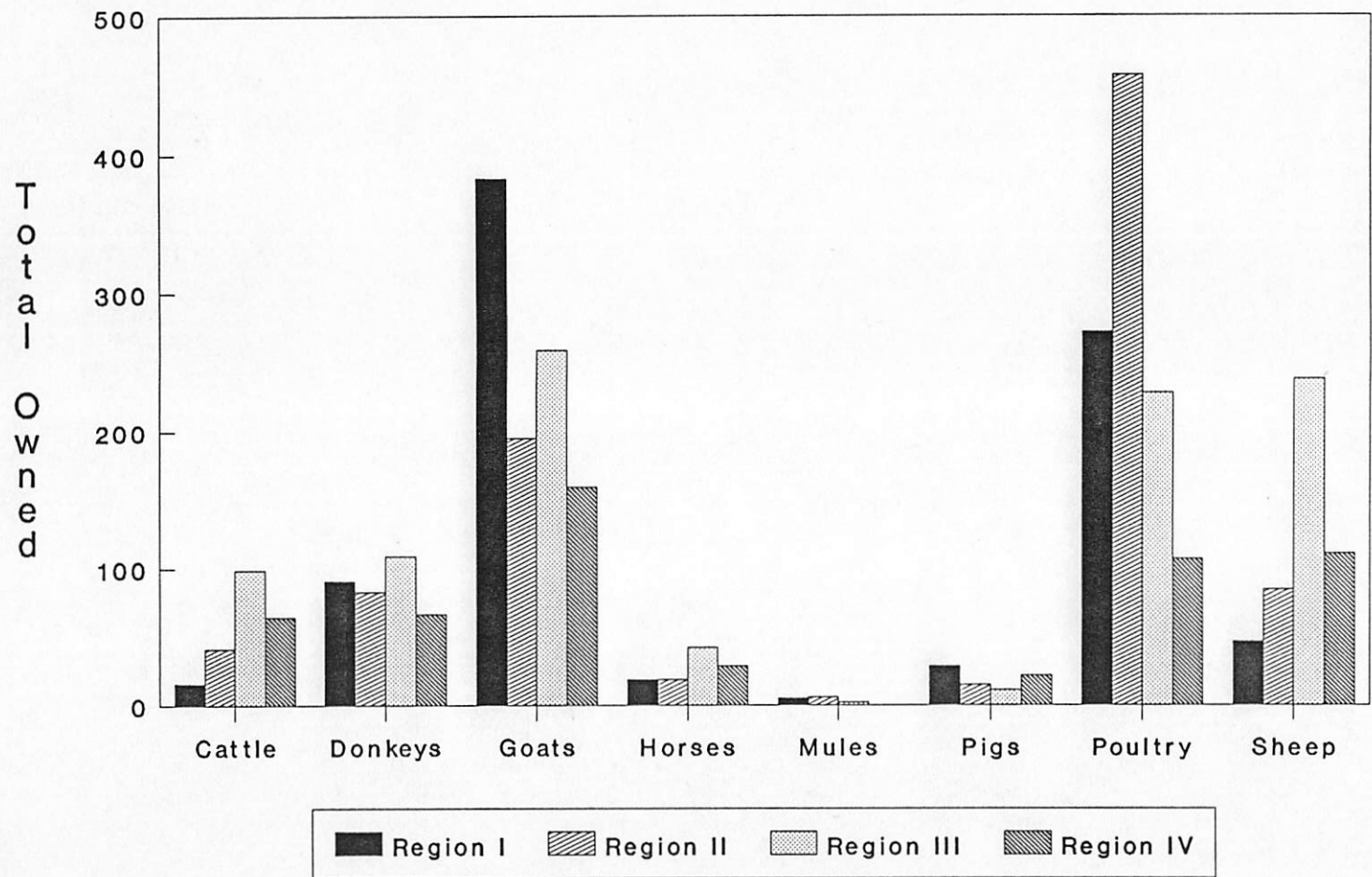


GRAPH 2.
Animals Owned - All Regions



GRAPH 3

Animal Ownership by Region



Graph 3 reports on regional differences in the ownership of various farm animals. The typical pattern is for a farm to have a few different animals. Specialized animal husbandry involving more than a few animals is not practiced. In terms of the average number of each type of animal owned per farm, the number of chickens is the highest in all regions, except for Region I. Goats are the second highest per farm. Region III has the highest number of sheep. The disproportionate number of poultry in Region II is due to one farmer reporting ownership of 100 chickens. Pigs and mules appear to be uncommon.

Local agronomists reviewing these data do not question the nature of the holdings reported with regard to the types of animals the farms have. They do, however, have reservations about the numbers of animals that the households report having. The number of goats reported, for example, appears to be under what their observations indicate. As with the amount of land owned, the number of animals owned seems to have been under-reported and must be taken as a minimum.

2. Animal Care

Most of the animals owned are reportedly tended by tying them up. A handful of the goats owned are placed in a corral. Of the 157 (25%) of the households that had cattle, only two do not tie up the animals. On farms that have a donkey, all but one respondent reports tying up their animals. All who have horses or mules tie them with a rope. Farms with poultry generally allow them to range freely (68.3%) while some place them in a pasture (19.8%).

These reports should be understood in the context of rural Haiti. Feuds and conflict among families about the damage that untended animals may quickly inflict on a neighbor's garden are common and are included in the nation's folklore. There is a 75 gourde (US\$15) fine that may be imposed upon a family by the rural police if they do not tie up their farm animals. Such a fine would be a huge bite out of the income of farm families. It is generally acknowledged that the annual incomes in rural areas of Haiti do not exceed \$100 per capita (World Bank, 1989). Because of the threat of this fine, an over-reporting of the numbers of animals that are tethered is almost certain.

"Tethering," as the term as used here, refers to tying the animal, but also includes the practice of placing a yoke of protruding branches around the necks of goats. The yoke prevents them from entering fenced areas while they range around their owner's property and open areas. It should also be noted that the tethering of animals is affected by the seasons. Livestock is usually left to free range after the harvest. After the planting season, the farmers tie up the animals to protect the newly-planted fields. Between plantings, a common pattern is to tie up the mother animal and allow her young offspring to range freely. As the questionnaires were administered during the planting season, it is possible that most livestock were tied up at this time that would have been free-ranging at another time of year.

Graph 4 shows the primary sources of animal feed and their distribution among livestock for the combined regions. Secondary food sources which constitute a negligible percentage of the dietary intake are grass/beans, garbage, sisal fiber, grain/manioc, grass/sugarcane, banana leaves, and a combination of banana leaves, grass and grain. The grass/patat combination fed to poultry refers to sweet potato peelings.

In the great majority of households, no other care, aside from feeding, is indicated. Poultry are generally allowed to range freely near family dwellings, while a minority are confined to fenced off areas or "corrals." Other care provided a few of the goats, sheep, donkeys, cattle and pigs includes occasionally placing them in corrals or pastures. Few inoculation, veterinary or other services for animals provided by specialists are known in the area.

Reflecting the overall pattern, each region reports its reliance on one or two primary sources of food for its different types of animals. In all regions, grass is by far the primary food for cattle, donkeys, goats, horses, mules and sheep. Grass/cane and grain/grass are noteworthy secondary sources of food for donkeys in Region II, as is grass/crop waste for sheep in Region III. Grass/crop waste is a second source of feed for cattle in Regions II and III. Grain and wheat chaff are the primary food sources for the few pigs owned by the farmers. Crops cultivated primarily to provide food for animals are rare.

VII. Organization of Work

A. Kombit Membership and Participation

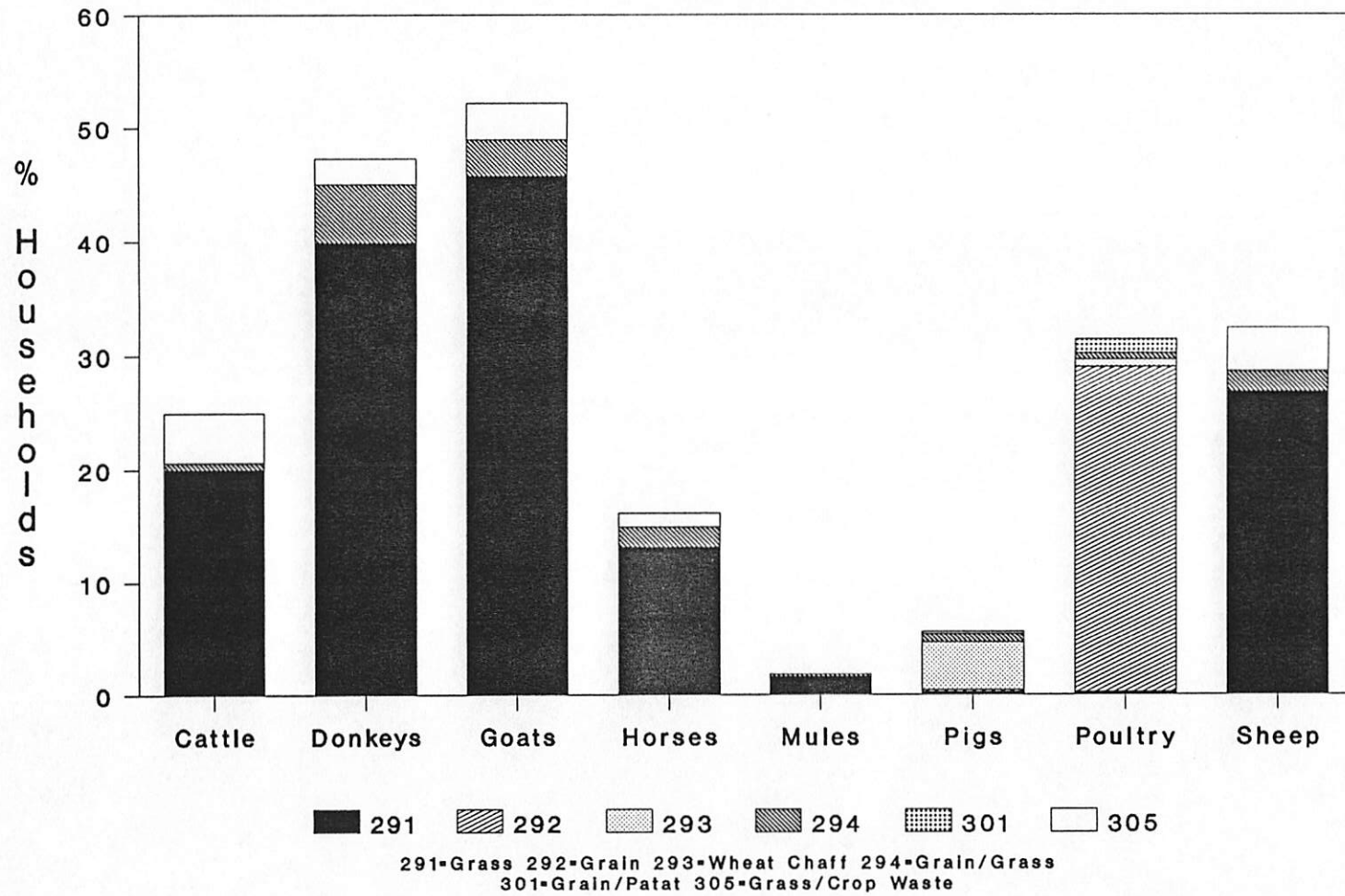
Nearly half (45.2%) of the households belong to "kombits" or local cooperative work groups. The size of kombits ranges from three to 33, and averages 11.8 members. Participation varies significantly during the course of the year. Participation peaks for the Northwest generally occur in March and April and October and November. Participation is lowest in December, January and February, and in May, June and July. CARE personnel mentioned that Protestants generally tend to participate less in kombits because they are considered by some pastors and other community leaders as being tainted by voodoo.

There are important differences among the regions in their seasonal patterns of participation. Different lands tend to be worked and different crops planted during the two planting seasons. Generalizations about the pattern found in the Northwest as a whole are less useful than those relating to particular regions.

The degree of kombit membership greatly differs among the regions. Region II has the highest proportion of households belonging to a kombit (60.3%), followed by Region I (55.6%), Region III (42.1%) and Region IV (23.8%). Kombit size averages 11.8

GRAPH 4. Primary Sources of Animal Feed

Based on 504 respondents



members overall with the regions manifesting noteworthy differences. Region I has the largest average size (14.9) and Region II the smallest (9.2). The average number of days worked per week when the kombits are active do not greatly differ among the regions with the overall average of 5.4 days. There is a stronger kombit tradition in Region I that helps account for the larger size of work groups and the region's above average participation rate. The lower household participation rate in Region IV is probably influenced by the greater prosperity of that area.

The regions differ significantly with regard to the seasonal patterns of work by kombit, as is shown in Graph 5. The overall pattern previously discussed for the Northwest as a whole is a composite of activities during the year by kombits in all four regions. It has little utility in planning or examining the effects of development efforts in a given region. These differences are due to different patterns of planting and harvesting as the farmers have to adapt to differences in rainfall patterns, soil, and climate. Some crops, such as eggplant, squash and melons, grow better in some regions than in others and the farmers seek to maximize whatever advantage they perceive they have. As discussed, work with those outside of the household is largely confined to the planting season. Harvesting is almost always the domain of the household.

The diverse nature of these regional patterns reflects the great variability found in Haiti and its agriculture, and the challenge it presents to researchers seeking to develop reliable generalizations. Haiti remains a "nation of microsities."

B. Division of Labor Within the Household

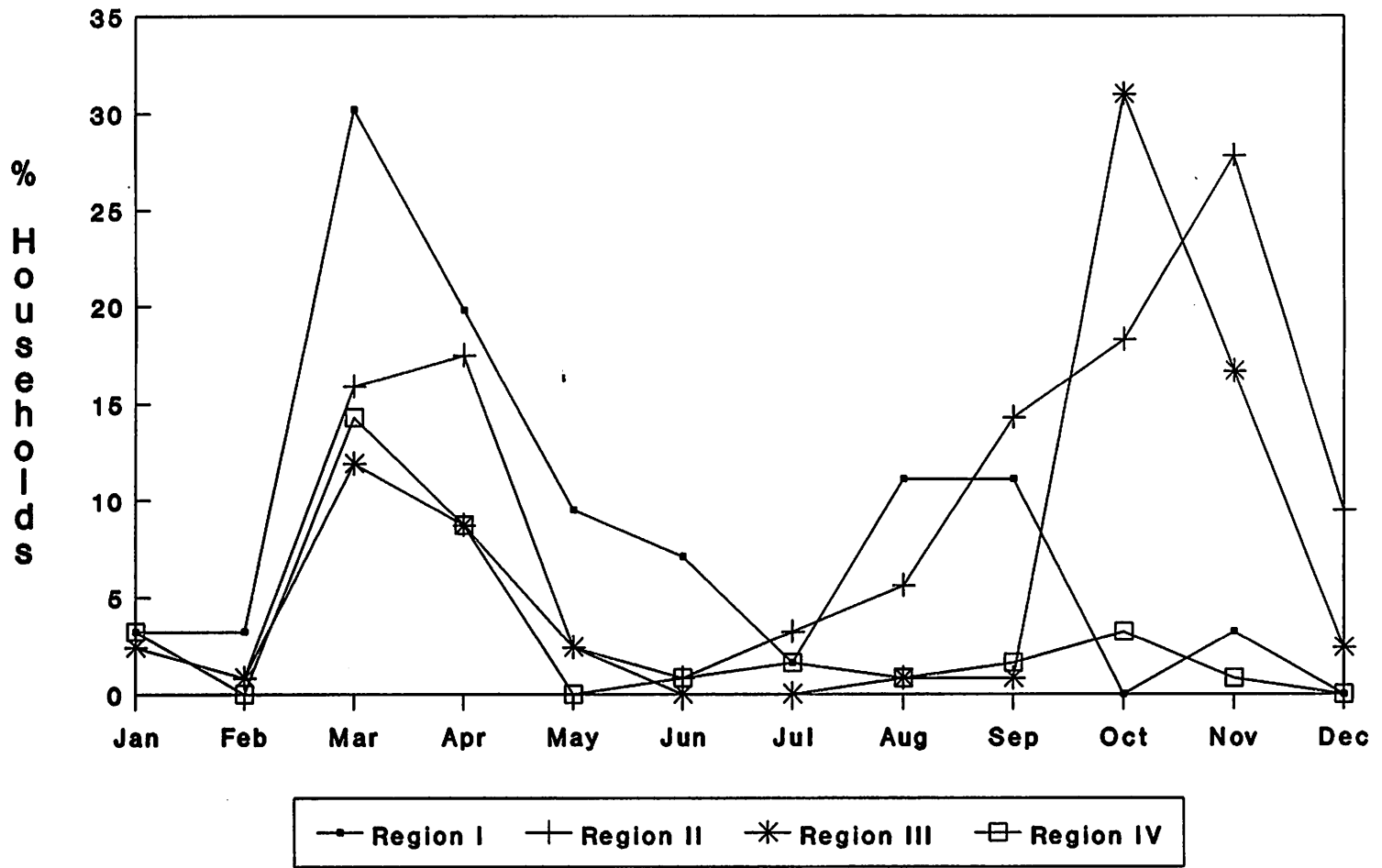
The reported division of labor for all regions within the family shows a pronounced differentiation of roles. Graph 6a shows the distribution of planting and harvesting tasks. Graph 6b indicates role differentiation for other work done by household members. Graph 6c. illustrates task distribution relative to tree and hedgerow planting, maintenance and harvesting.

The work that is most often reported as being that of the father is tree cutting, followed by tree planting, the preparation of the soil for planting, weeding, and gardening. Some households indicate that certain tasks are accomplished jointly by both parents. These include, in descending order of significance, harvesting, the planting of gardens, and the maintaining of gardens. The basic responsibility for the sale of crops is overwhelmingly that of mothers and daughters. These women are also the primary carriers of water. More women are involved in the harvest of crops than are men.

Most farm tasks are reported to be primarily the responsibility of the parents, either individually or jointly. Household children and boy and girl outside helpers also perform

GRAPH 5.

Months Worked in Kombit by Region



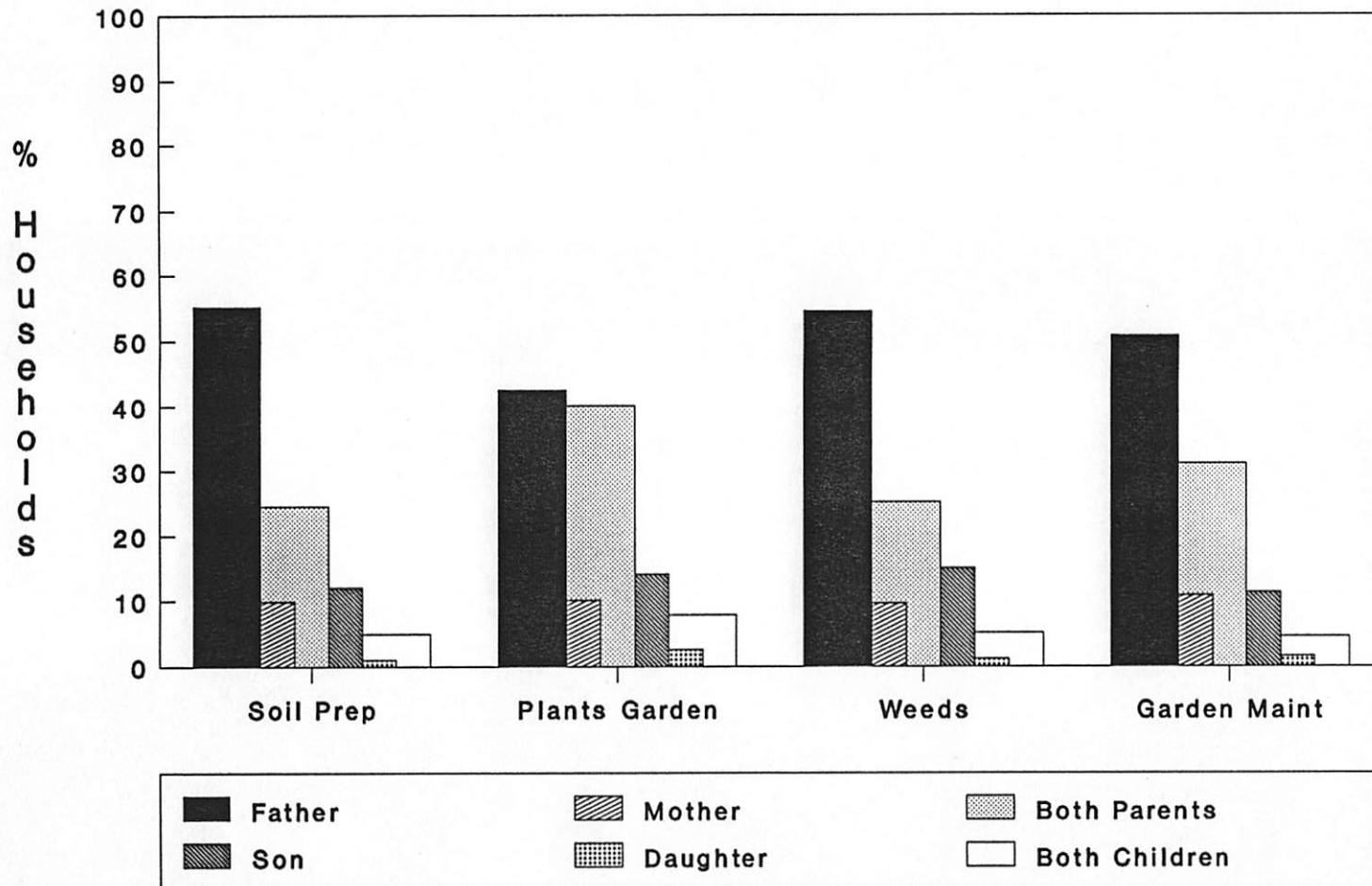
Region I
 + Region II
 * Region III
 □ Region IV

Based on 126 respondents per region.

GRAPH 6a.

Farm Tasks by Household Member

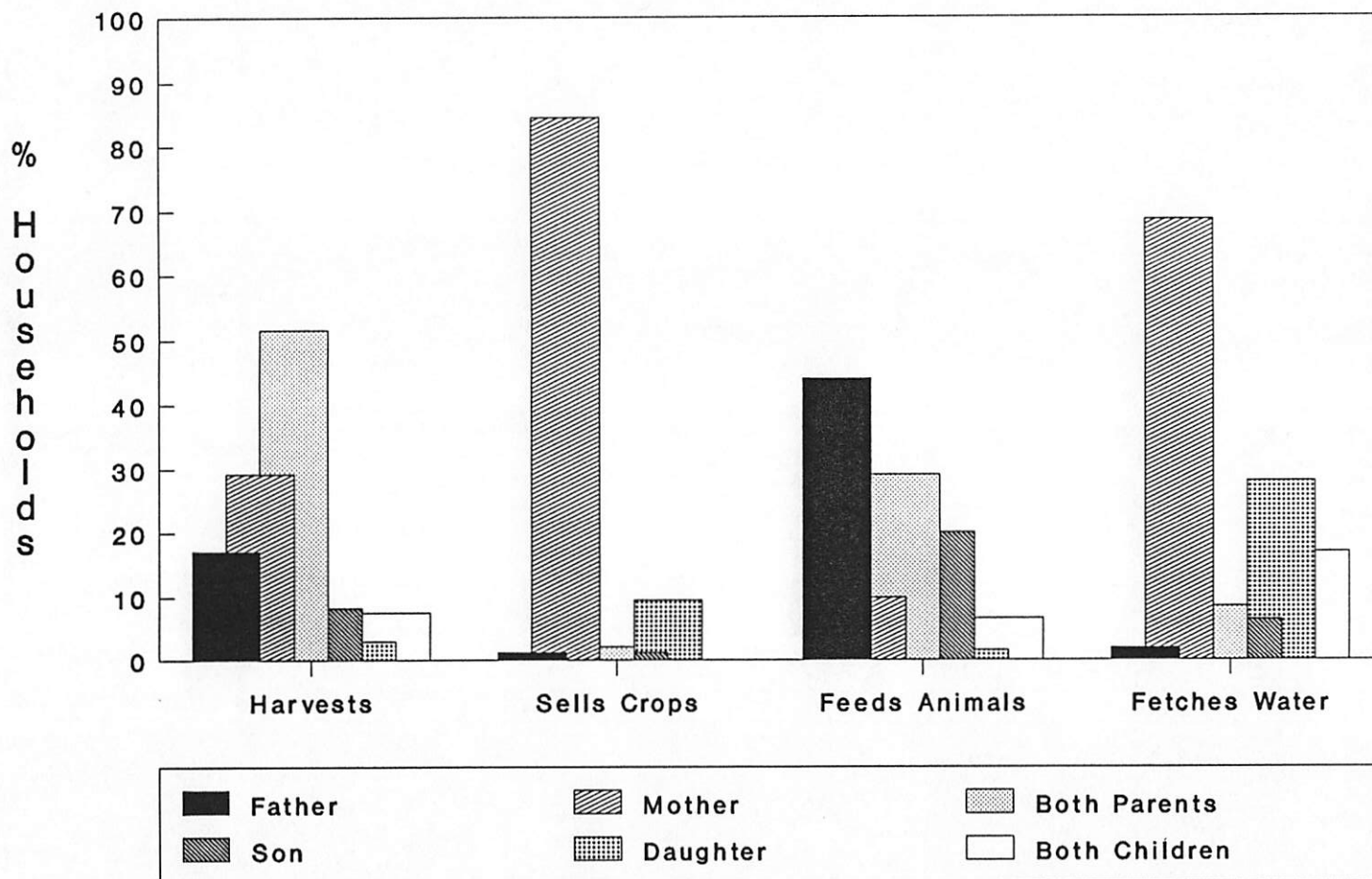
All Regions



GRAPH 6b.

Farm Tasks by Household Member

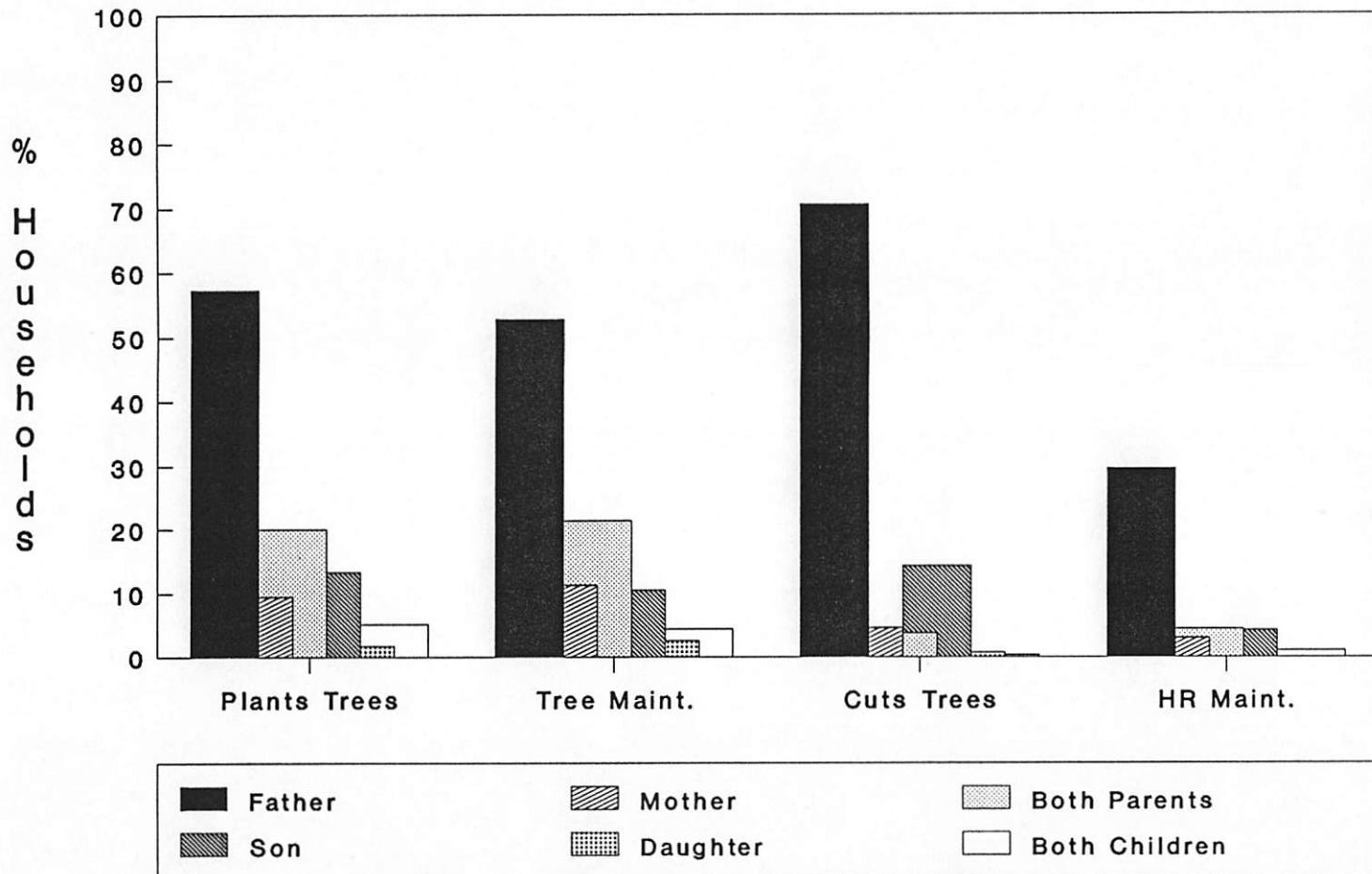
All Regions



GRAPH 6c.

Farm Tasks by Household Member

All Regions



tasks, but much less often than do the parents. The most frequently reported jobs exclusively accomplished by sons include feeding animals, weeding plots, cutting trees and planting gardens. Tasks most often accomplished by daughters include fetching water and selling crops. Of the tasks done by both sons and daughters, the most common is obtaining water for the household.

"Sons" and "daughters," as the terms are conventionally used in Haiti, refer to either males or females who are years younger than the household's parents and who are considered members of the family unit. Most of these people are the biological offspring of the parents. Others may be nieces or nephews, the children of one of the parent's brothers or sisters. A smaller proportion of the children are not blood relatives but live on the farm and have been adopted as family members.

The most common tasks of "outside workers," or those few people who are not members of the household, and who are paid for their work, are to weed, prepare soil for planting, and to plant gardens. Female outside workers are very uncommon and not a significant source of labor in the great majority of households. Perhaps because family members fear for the theft of crops, outside helpers are rarely involved in the harvesting or other care of maturing gardens. Although outside workers are important for the accomplishment of seasonal farm work on a few farms, they are generally a negligible source of labor in the Northwest, unless they are members of a kombit to which a farmer belongs.

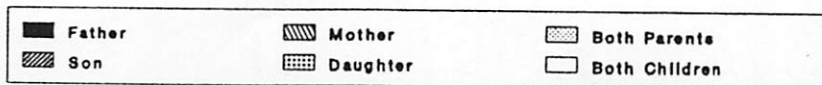
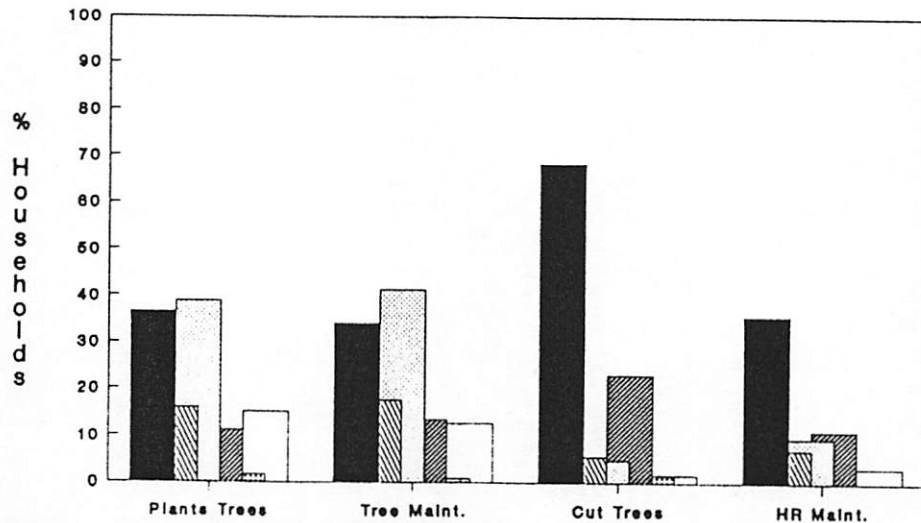
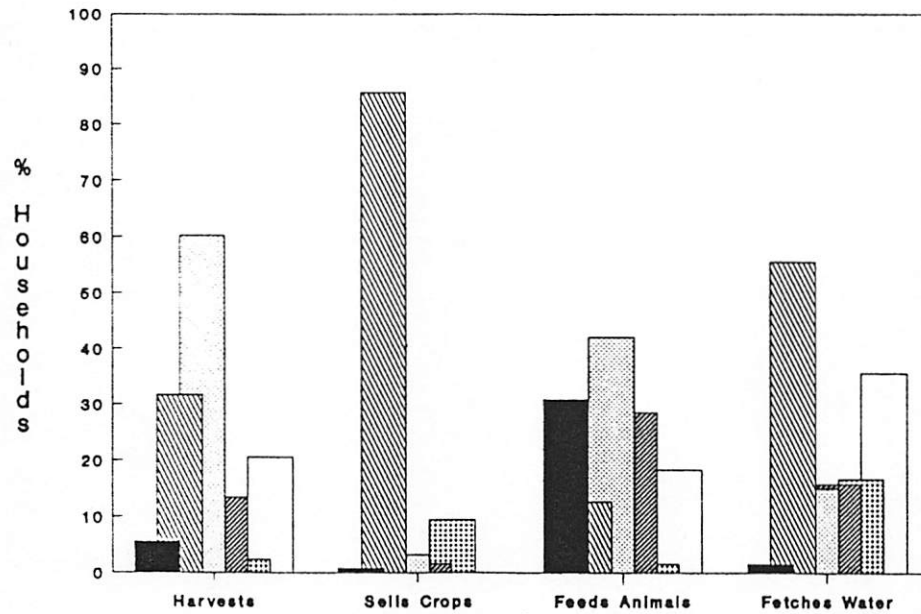
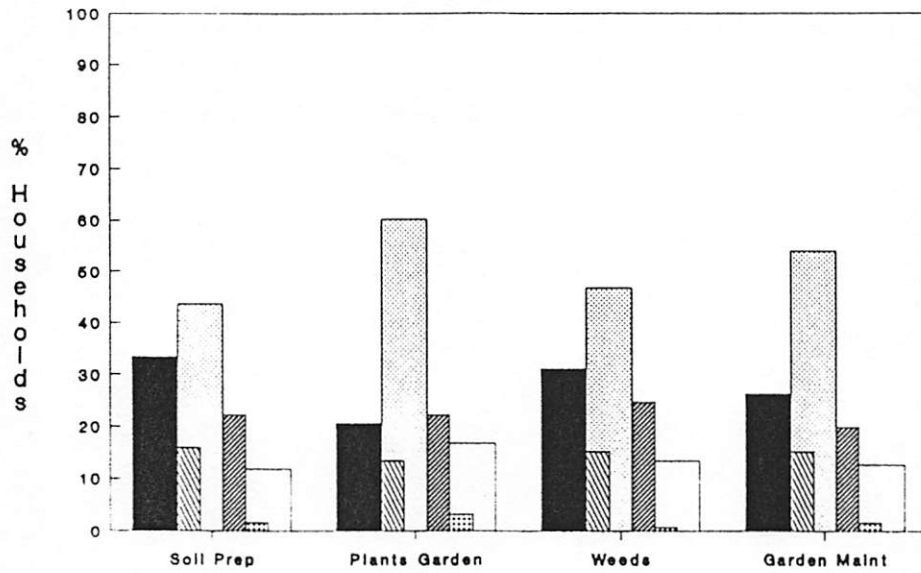
Aside from the work done on their farms, we asked respondents to indicate if their household did NOT perform certain activities associated with farming. 311 out of 504 respondents report not maintaining hedgerows. This is probably because they do not have any to maintain, since only 188 farmers report having them. A minority reports not feeding animals (52), or maintaining trees (51). Other tasks are not performed because they are not required on a particular farm. A few farms do not have trees or animals requiring maintenance.

The pronounced division of labor reported in the overall results is generally mirrored in those for each region. Nevertheless, important differences among the regions concerning which actors perform certain jobs can be seen. The results derived from asking respondents in each region about who does particular tasks in their household are shown in detail in Graphs 7a,b,c, 8a,b,c, 9a,b,c, and 10a,b,c. The specific frequencies indicating who accomplishes which tasks required by the household can be useful in planning and executing extension efforts. Readers should also note that while some tasks, such as gardening and fetching water, are required on virtually every farm household, other tasks need not be performed on all of them. A farm without hedgerows, trees or animals, for example, does not require the accomplishment of tasks related to them.

GRAPHS 7a-7c

Farm Tasks by Household Members

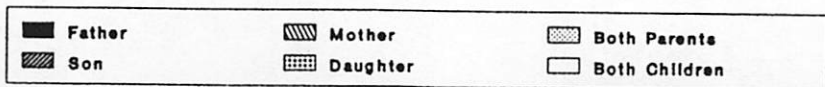
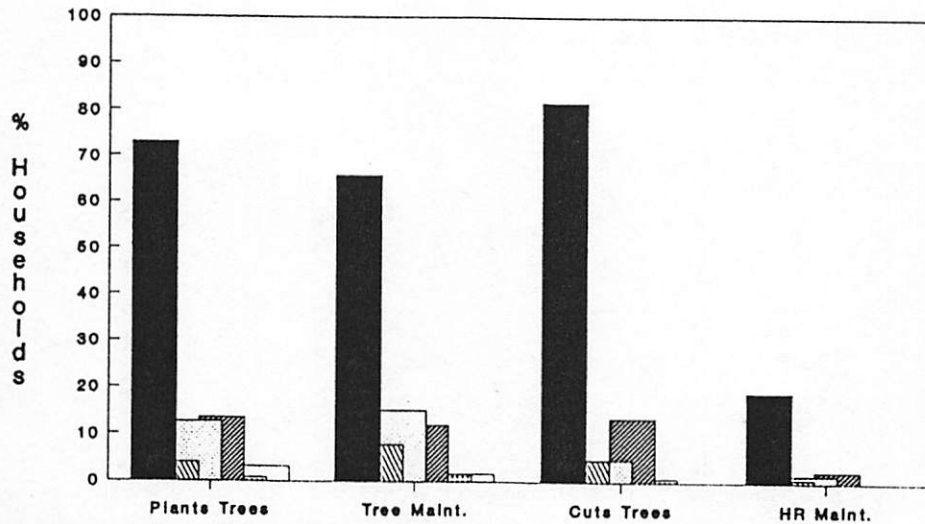
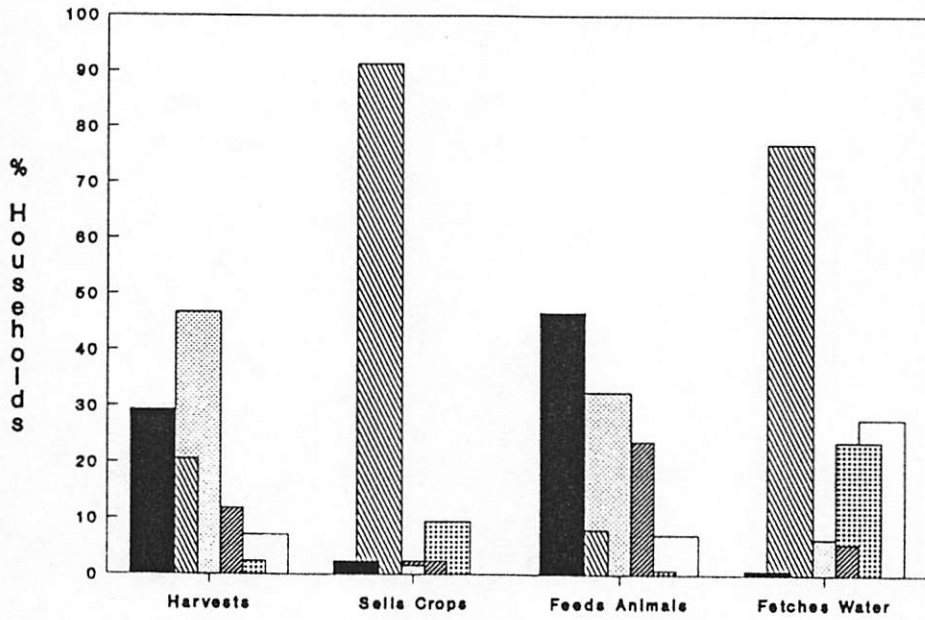
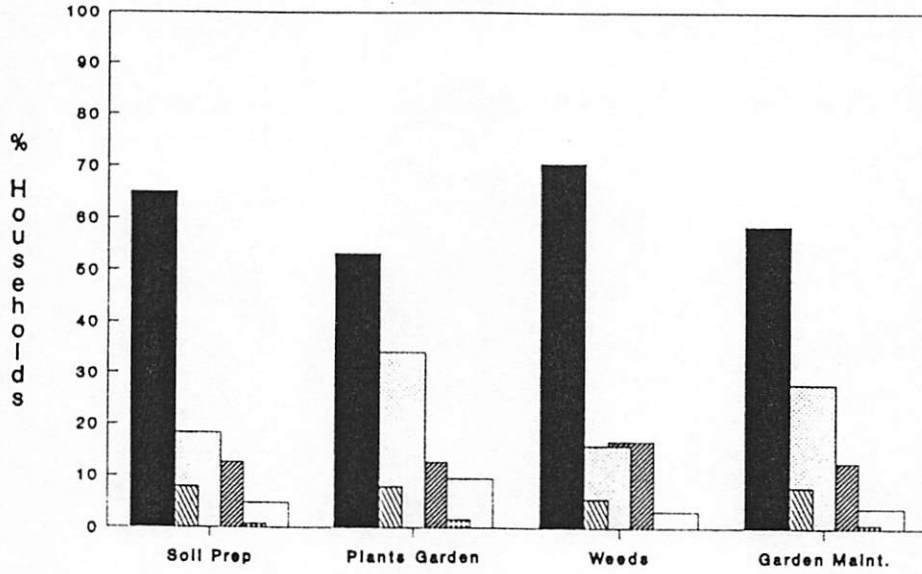
Region I



GRAPHS 8a-8c

Farm Tasks by Household Member

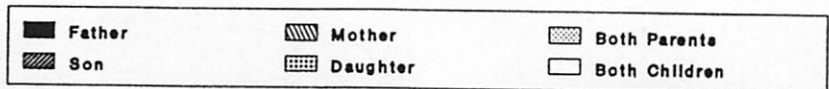
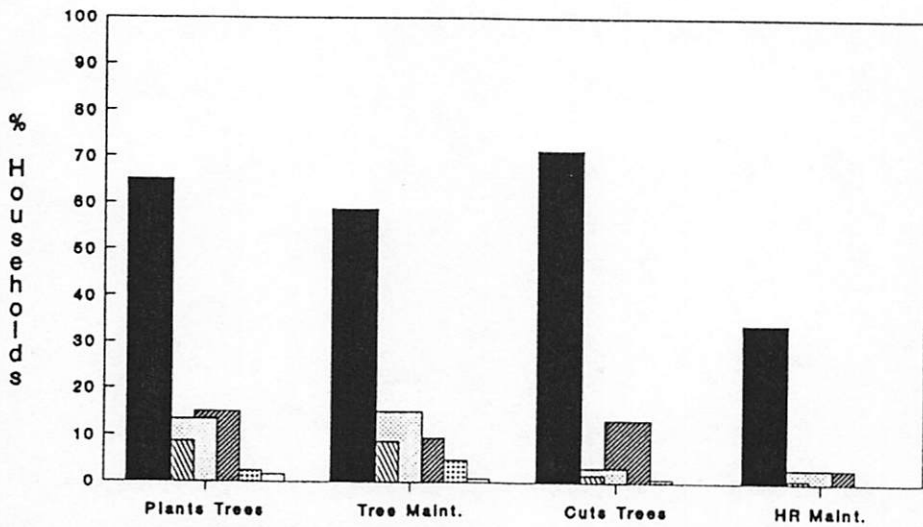
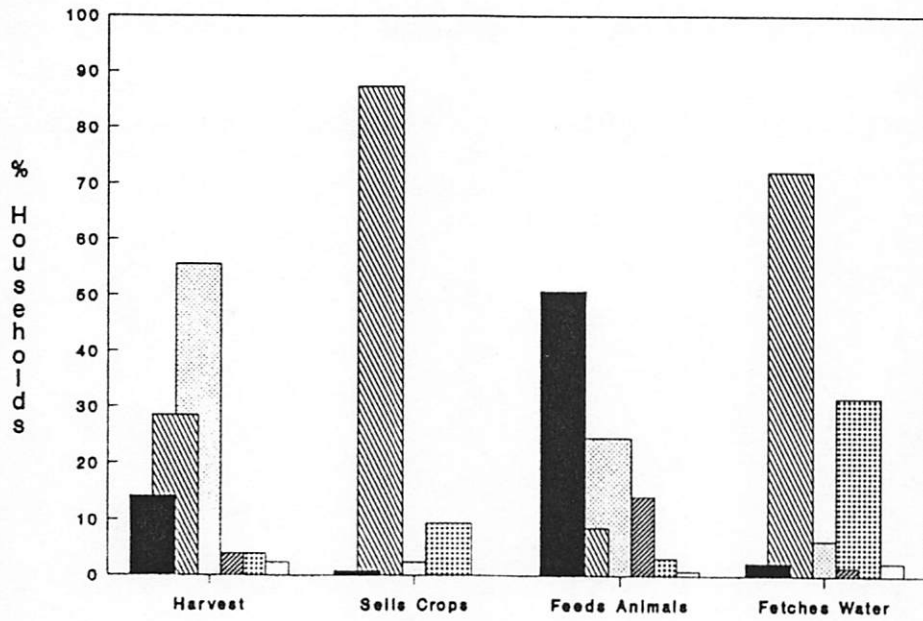
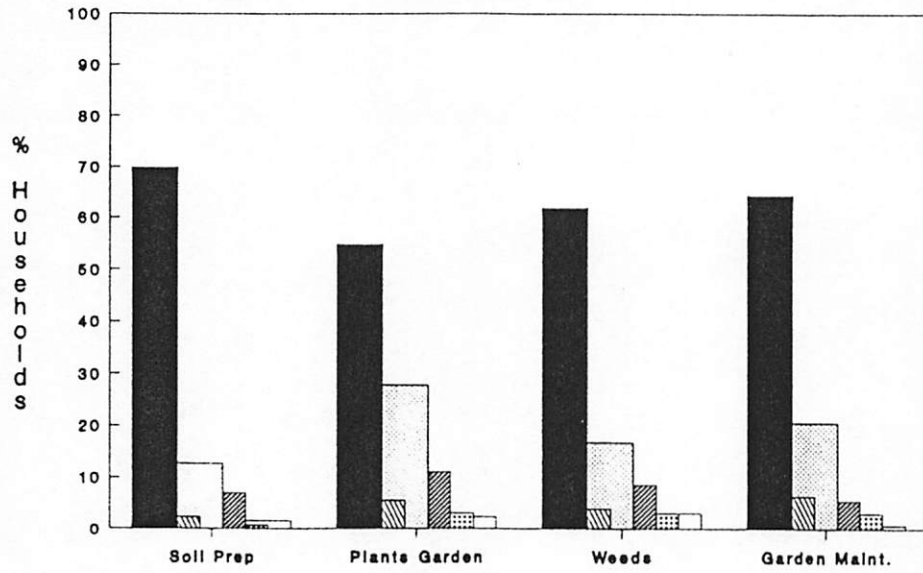
Region II



GRAPHS 9a-9c

Farm Tasks by Household Member

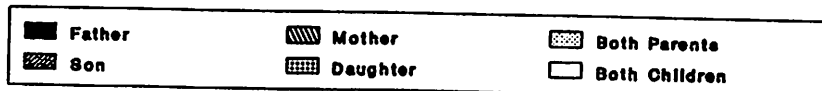
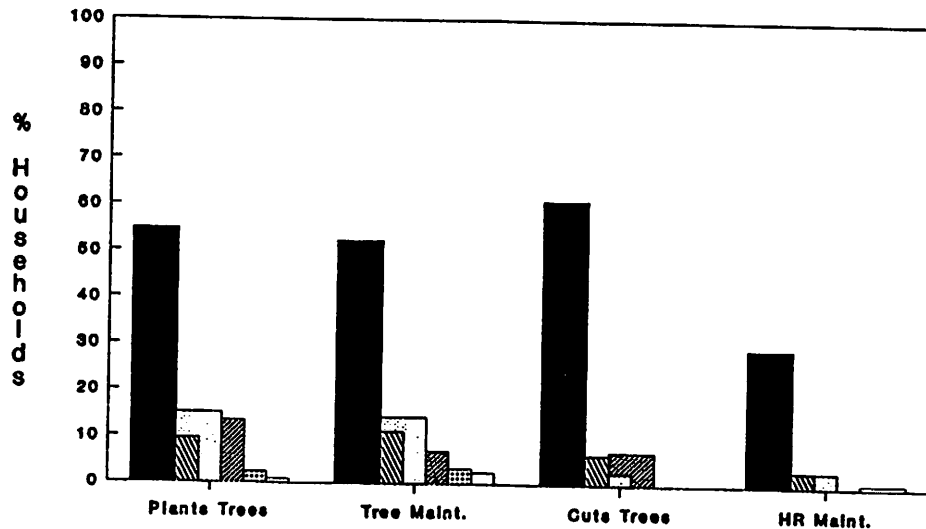
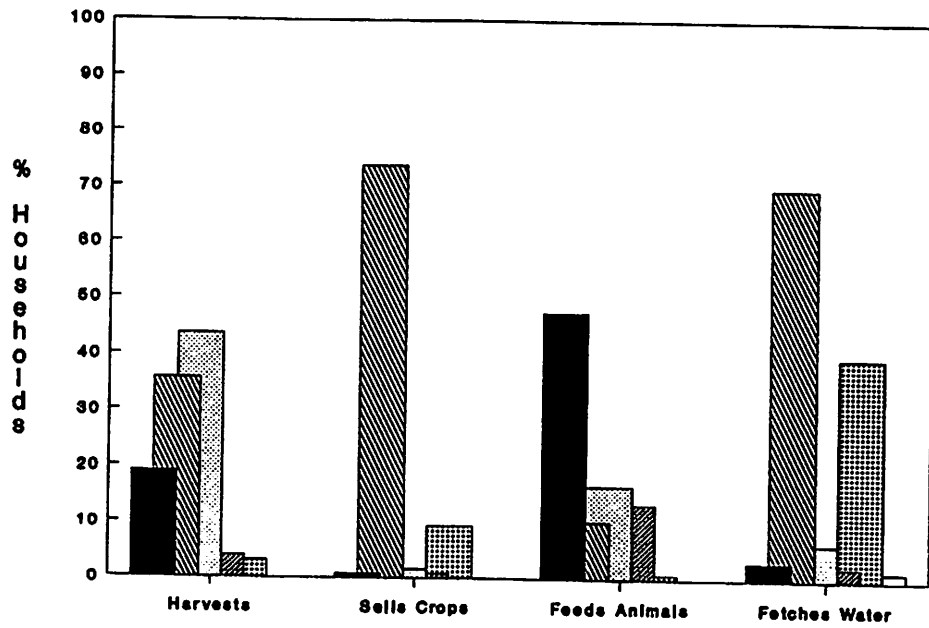
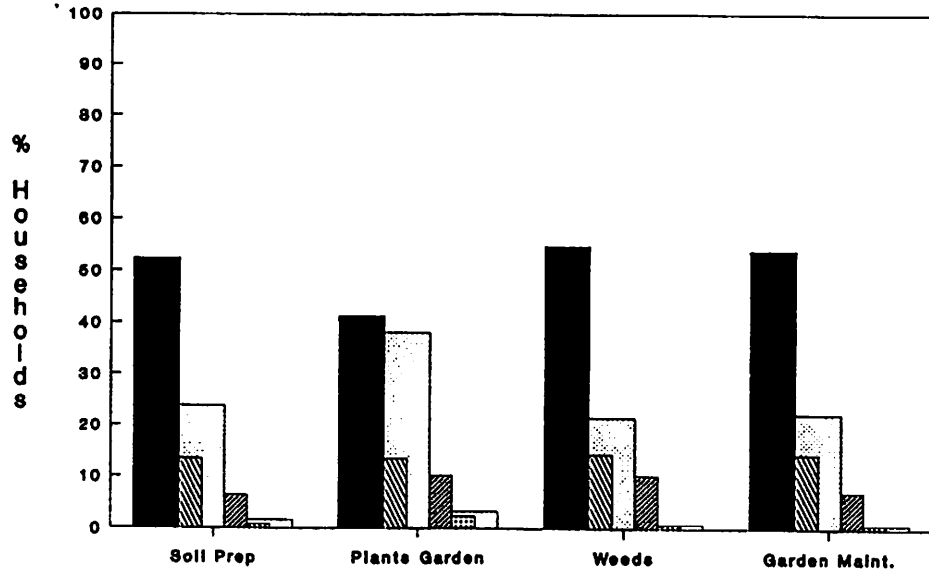
Region III



GRAPHS 10a-10c

Farm Tasks by Household Member

Region IV



C. Regional Variations in the Division of Labor

Regional patterns in the division of labor largely conform to the overall pattern previously described. One may note shifts in work roles because of the availability of some sources of labor and the scarcity of others. As seen in Region I, adjustments are made when men migrate or are not present in the household. Paid outside labor is rare in Region I and difficult for most to afford. A common form of adjustment in households where the father is not present is for the mother to take over tasks that he would otherwise accomplish. Needs are also met by the increased work of children from outside the immediate household. There is a pattern of "child-sharing" among some neighboring households, which accounts for the higher percentage of outside boys and girls reported as working in the region. CARE staff noted that there is also a shortage of labor by children within some households. The shortage is said to be due to the larger proportion of children who attend school in Region I through the "brevet" level (similar to U.S. junior high school). School children spend more time in school and are less available for household work. Once they obtain the brevet level of schooling, they also generally shun agricultural labor.

The prosperity of Region IV allows the hiring of outside help for certain task such as field preparation. The conventional daily rate is currently between 10 and 15 gourdes (2 to 3 U. S. dollars) up to 18 gourdes if the job is for weeding plots. Jobs generating off-farm income are more readily available in this region than in the others.

VIII. Erosion Control and Soil Maintenance Efforts

A. Erosion Control Practices

Graph 11 shows the erosion control techniques that households report knowing about and those that are actually used. Over a third (36.3%) of those spoken with report not knowing any soil conservation methods. Measures known by more than 10% include contour canals (18.5%), dry walls (12.9%), straw rows (12.3%), and hedgerows (10.5%).

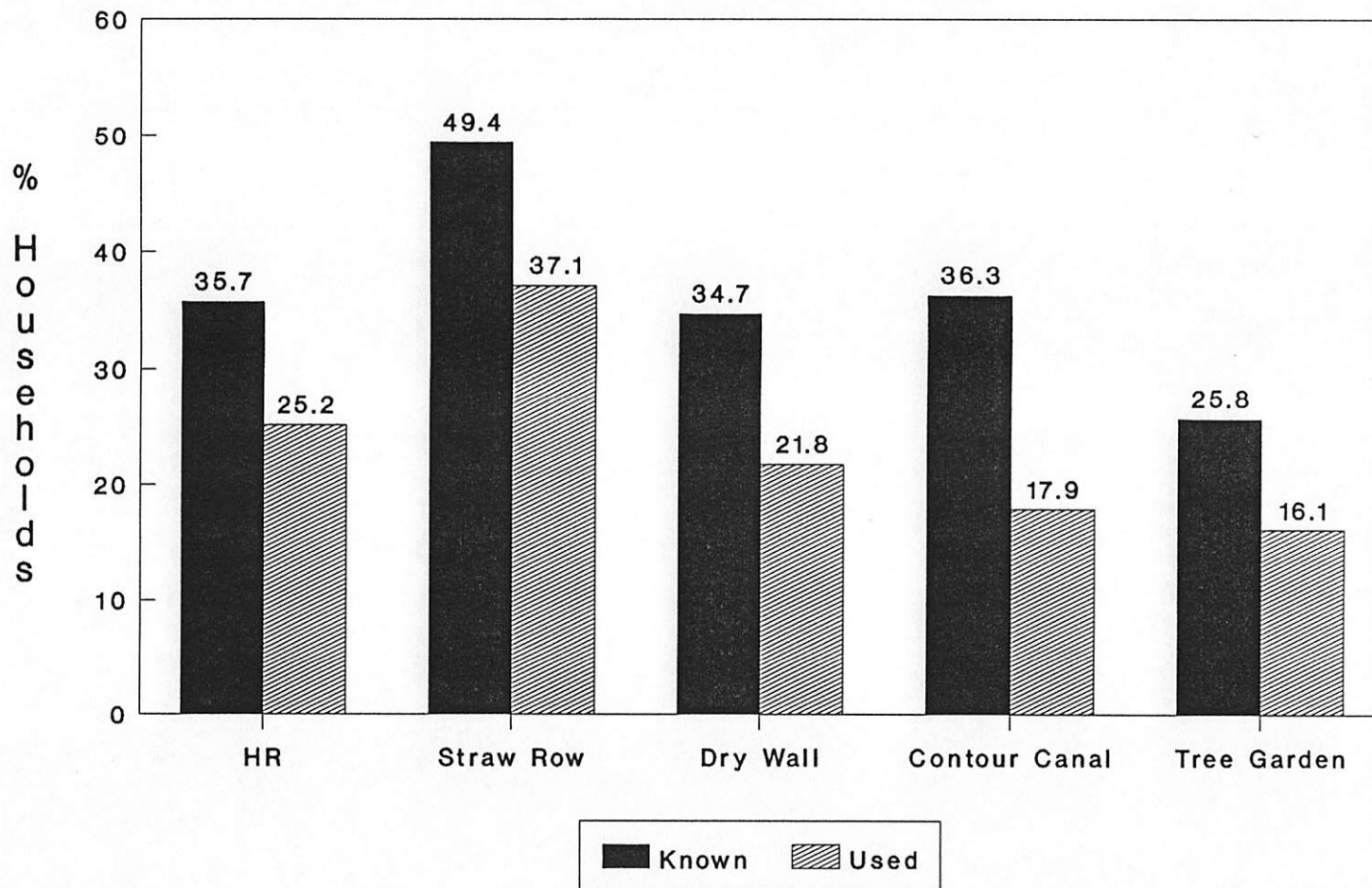
Of the soil conservation techniques actually used, over a third report using straw rows and about one fourth indicate that they cultivated hedgerows. Other often-used methods include dry walls (21.8%), contour canals (17.8%) and tree gardens (16%). Over a fifth (21.6%) report not using any method to control soil loss caused by erosion.

Graphs 12a through 12d summarize our data on the extent to which various techniques to decrease soil erosion are known and then actually used on the farms in each region. The description here will emphasize the techniques most frequently mentioned by the farmers.

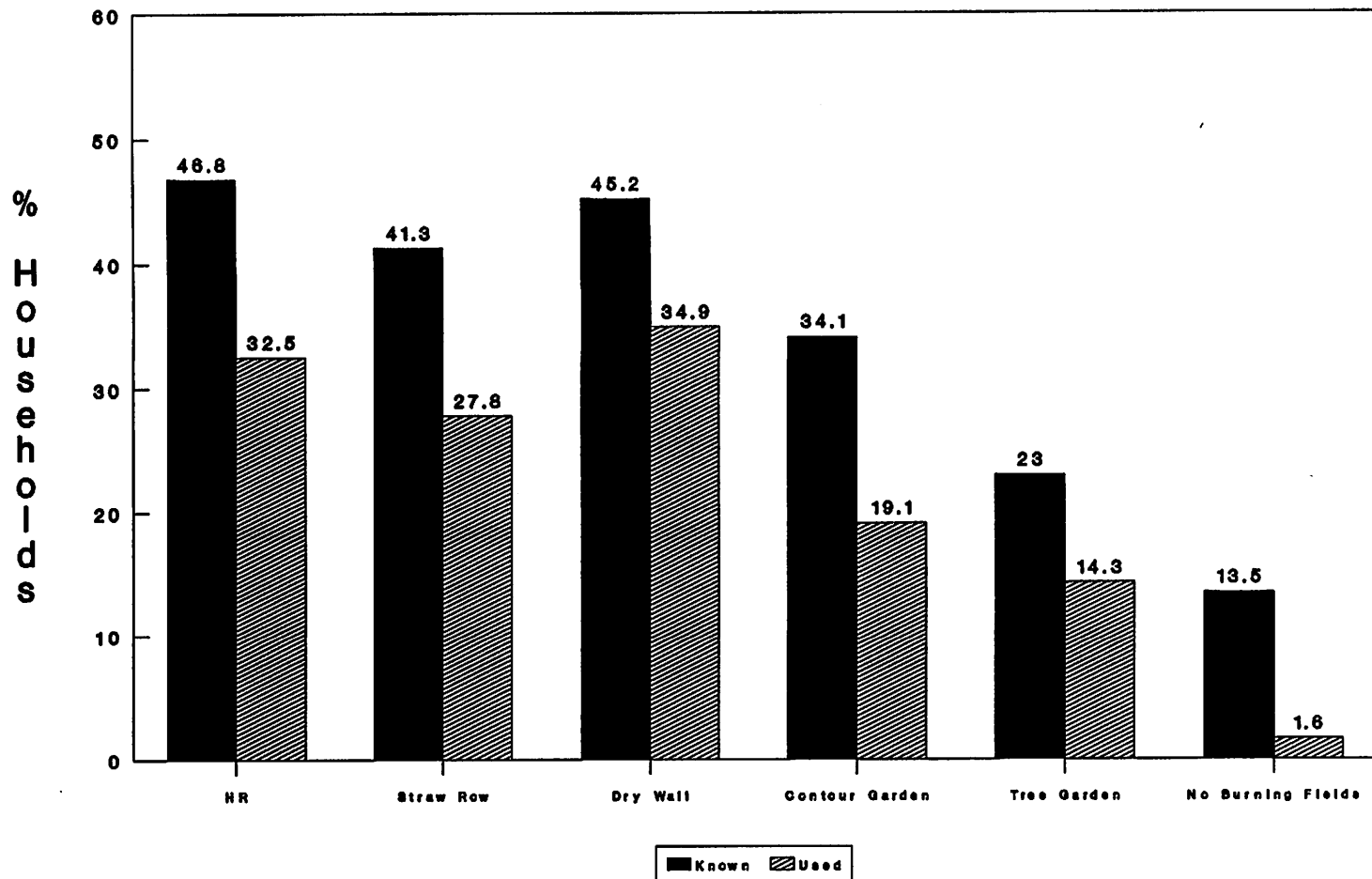
GRAPH 11

Erosion Control Techniques Known & Used

All Regions



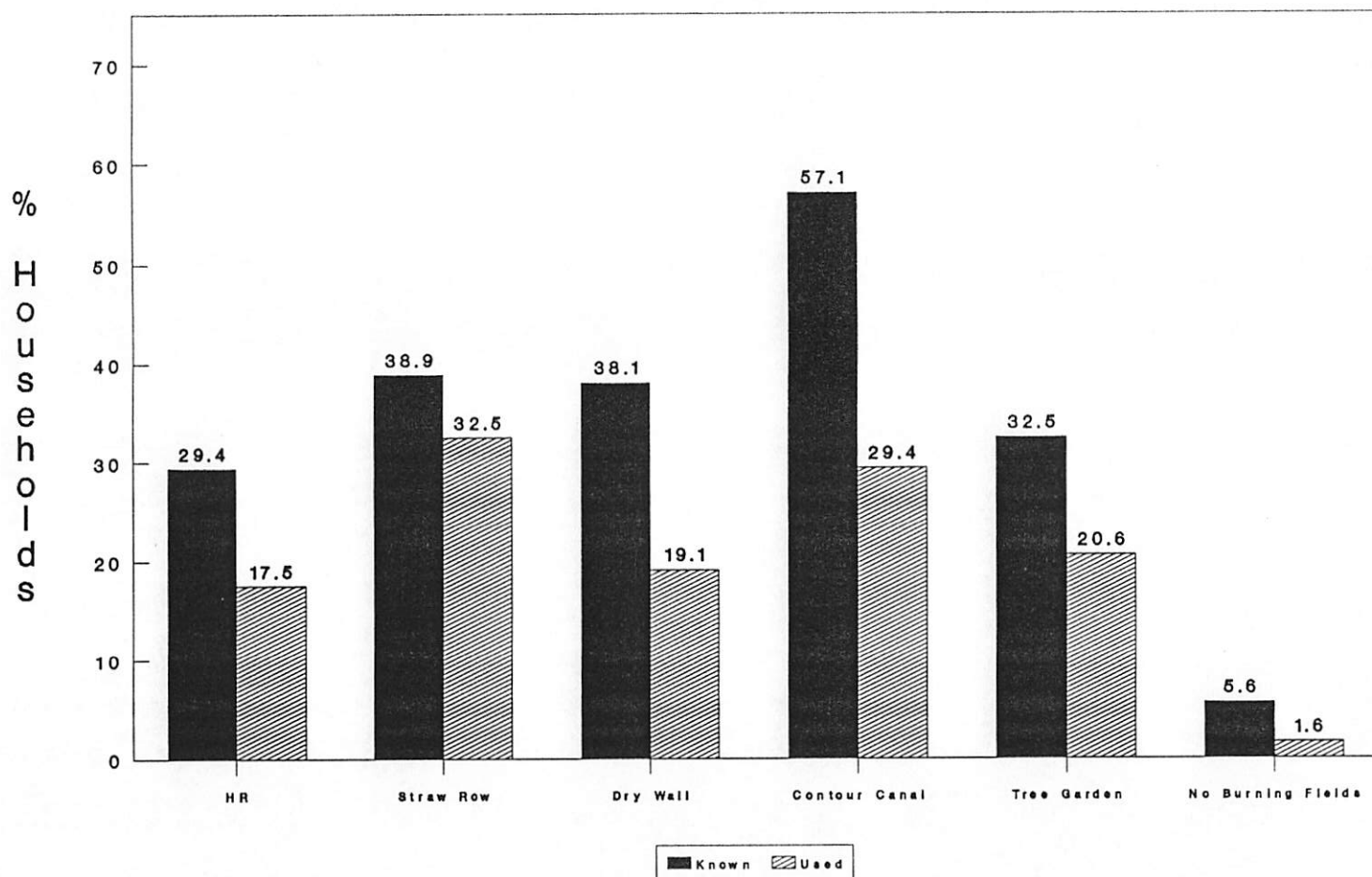
GRAPH 12a
Erosion Control Techniques Known & Used
Region I



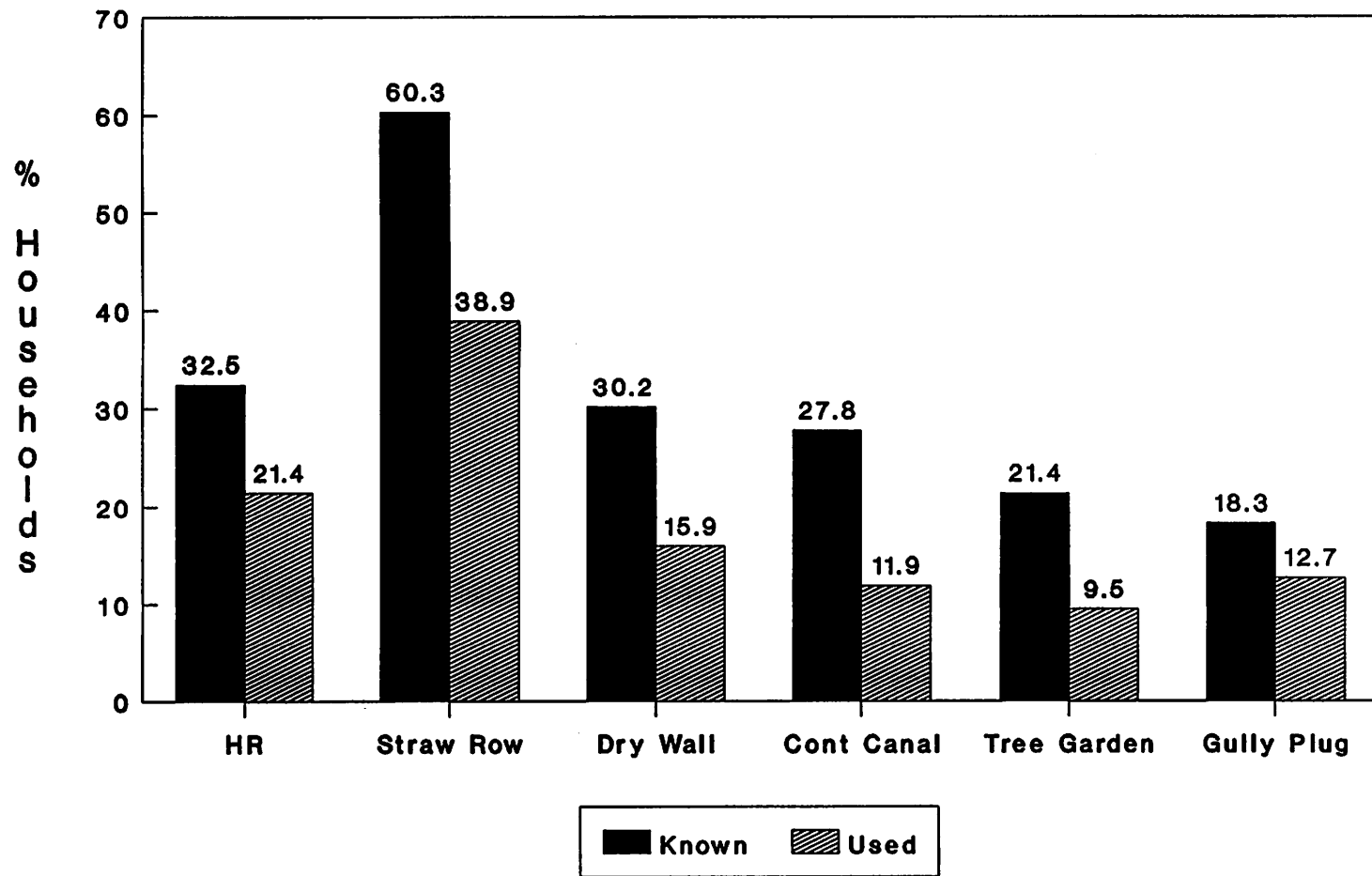
GRAPH 12b

Erosion Control Techniques Known & Used

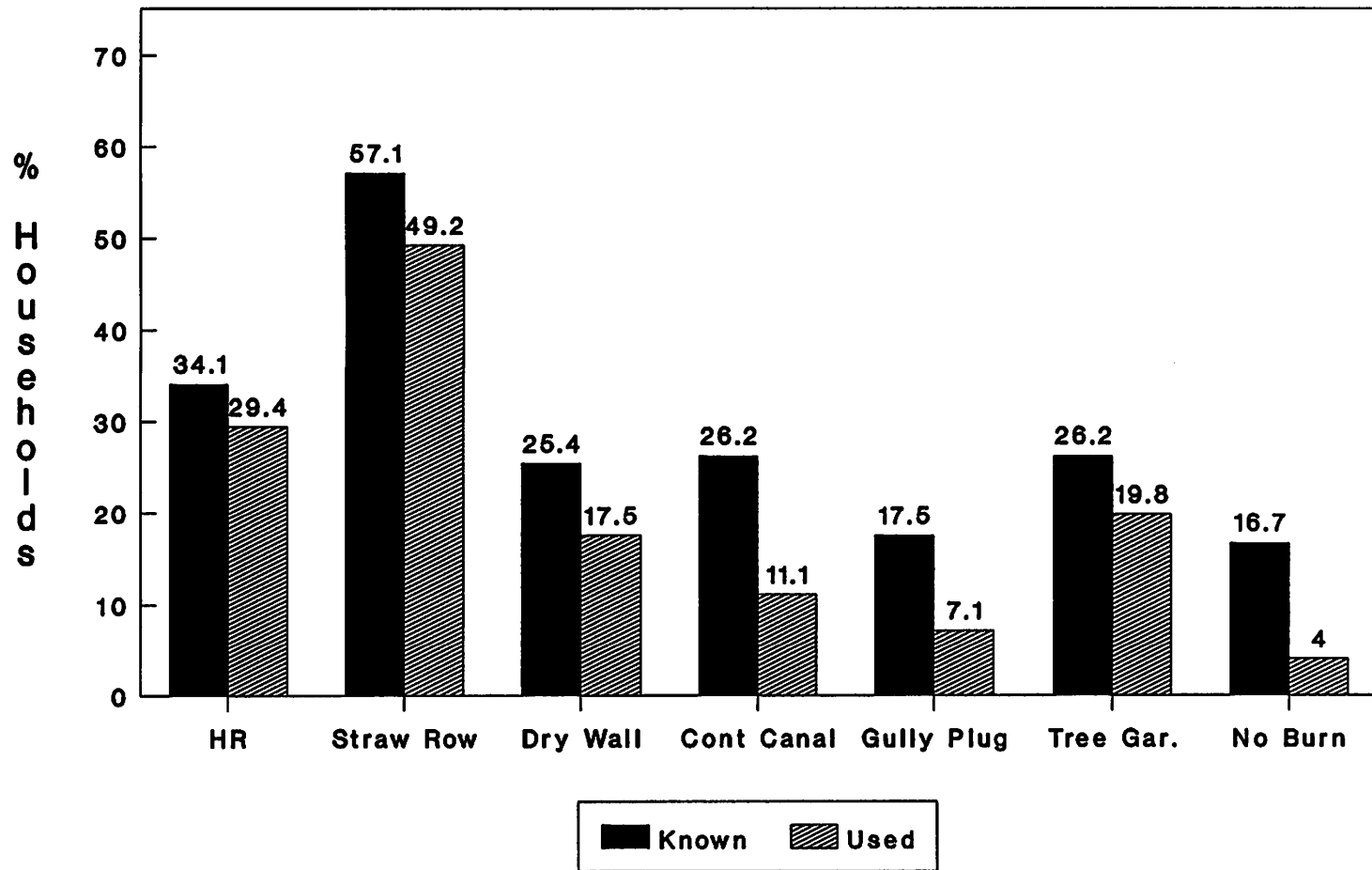
Region II



GRAPH 12c
Erosion Control Techniques Known & Used
Region III



GRAPH 12d
Erosion Control Techniques Known & Used
Region IV



1) Techniques Known

There are important differences among the regions with regard to their knowledge about various techniques to reduce erosion. These differences can be explained by noting that the nature and content of extension efforts vary by region, and the farmers' need for information about methods differs according to the nature of their problems with soil loss.

In all regions, the most common response by the farmers to questions about soil conservation methods is that they do not know of any. Respondents in Region I, which tends to have steeper terrain than is found in the other regions, have a greater overall familiarity with the different erosion control methods. They are also more familiar with the need to not burn their fields as a conservation method. These results are useful in identifying farmers' needs for information about erosion control methods in each region.

2) Techniques Used

The regions also differ with regard to the techniques actually used. More farmers in Region I know about and use conservation techniques than do those elsewhere. The greater knowledge and use of such methods is attributed to CARE's long presence in the area and the efforts of other PVO's which have been working in that area in recent years. Hedgerow use in Region IV is less than it is elsewhere because CARE's work there started 3 years later than in the other locations.

3) The Gap Between Knowledge and Use

Significant differences are found concerning the degree to which soil erosion techniques are known about and the extent to which they are actually used. If conditions warrant the use of a particular method in an area and the method is known to the farmer but not used, the problem should be targeted for further attention on the part of extension workers. The comparisons described here indicate the percent difference between the number of respondents who know about a technique and those who do not use it. Methods known to less than ten percent of the farmers and used by none or very few of them are not described here.

In all four regions the biggest gap is between the number who know that not burning fields prevents erosion and the number who practice the "no burn" approach. Sixty to nearly ninety percent of those in each region who know the "no burn" method fail to use it. Local agronomists suggest that the difference may be larger than is reported. Farmers they know continue to clear fields by burning them but, if asked, claim that they do not burn them. The burning of fields is probably directly related to the subsequent availability of green fertilizer.

4) Barriers to the Use of Erosion Control Techniques

Both those who use erosion control methods and those who do not use them were asked to indicate the barriers to their use of such techniques. Their rankings of barriers do not differ within the same regions. As noted in Graph 13, the four factors mentioned as the most prominent barriers to the use of such methods were lack of knowledge, labor, time and tools. Surprisingly, more respondents in Region I, about one in eight compared with less than one in twenty overall, say that they have no erosion problem. Local agronomists regard Region I as having more severe erosion problems than the others yet residents there appear to regard them as normal features of the environment and are less able to identify such problems. This apparent dichotomy may be due to the fact that some of Region I is located on a plateau which does not suffer from erosion. However, in those areas in which erosion does occur, it is severe.

B. Efforts to Improve Soil Fertility

Graph 14 shows farmers' knowledge and use of soil fertility improvement techniques in the combined regions.

More people overall both know and use natural fertilizer (35.3% vs. 23.2%), and recognize the benefits of and implement tree planting (27.8% vs. 20.4%), than any other techniques. Hedgerows are acknowledged as a soil enrichment agent by 22.2% of the farmers interviewed. 16.8% of them actually plant them. There is a particularly high correlation percentage between awareness and use of this technique. Green manuring, a particularly valuable and viable agricultural tool, seems to be the least known (14.5%) and used (8.3%) of all. CARE personnel noted that this may be due to a particularly resistant attitude on the part of farmers to the idea of not burning their fields. Obviously, burning fields means burning that which produces green manure as well. Green manuring is a technique that has only recently been included in CARE's extension programs and needs to be targeted for more intensive development in the near future.

1) Soil Enrichment Techniques Known

As shown in Graphs 15a through 15d, when asked about the soil fertility improvement techniques that they knew about, the respondents most common answer is that they do not know of any (40.5% overall). Except for natural fertilizer in Region I (19.1%), no method is mentioned by more than one in eight respondents.

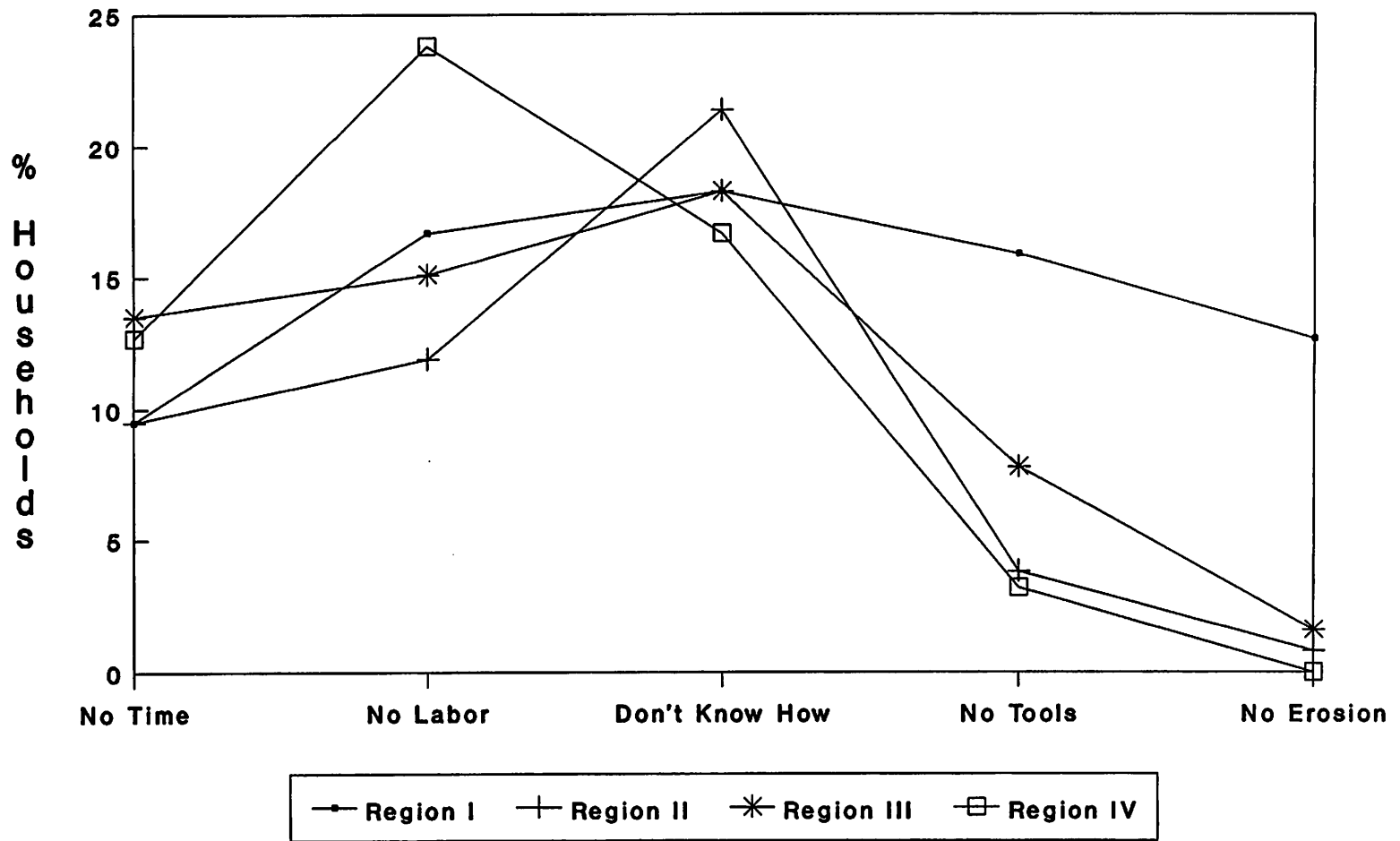
2) Soil Enrichment Techniques Used

There are considerable differences among the regions regarding the actual use of techniques. Overall, 15.7% indicate that they do not know of any method. Using hedgerows is the most common response in Regions II and III. In Regions I and IV, the most

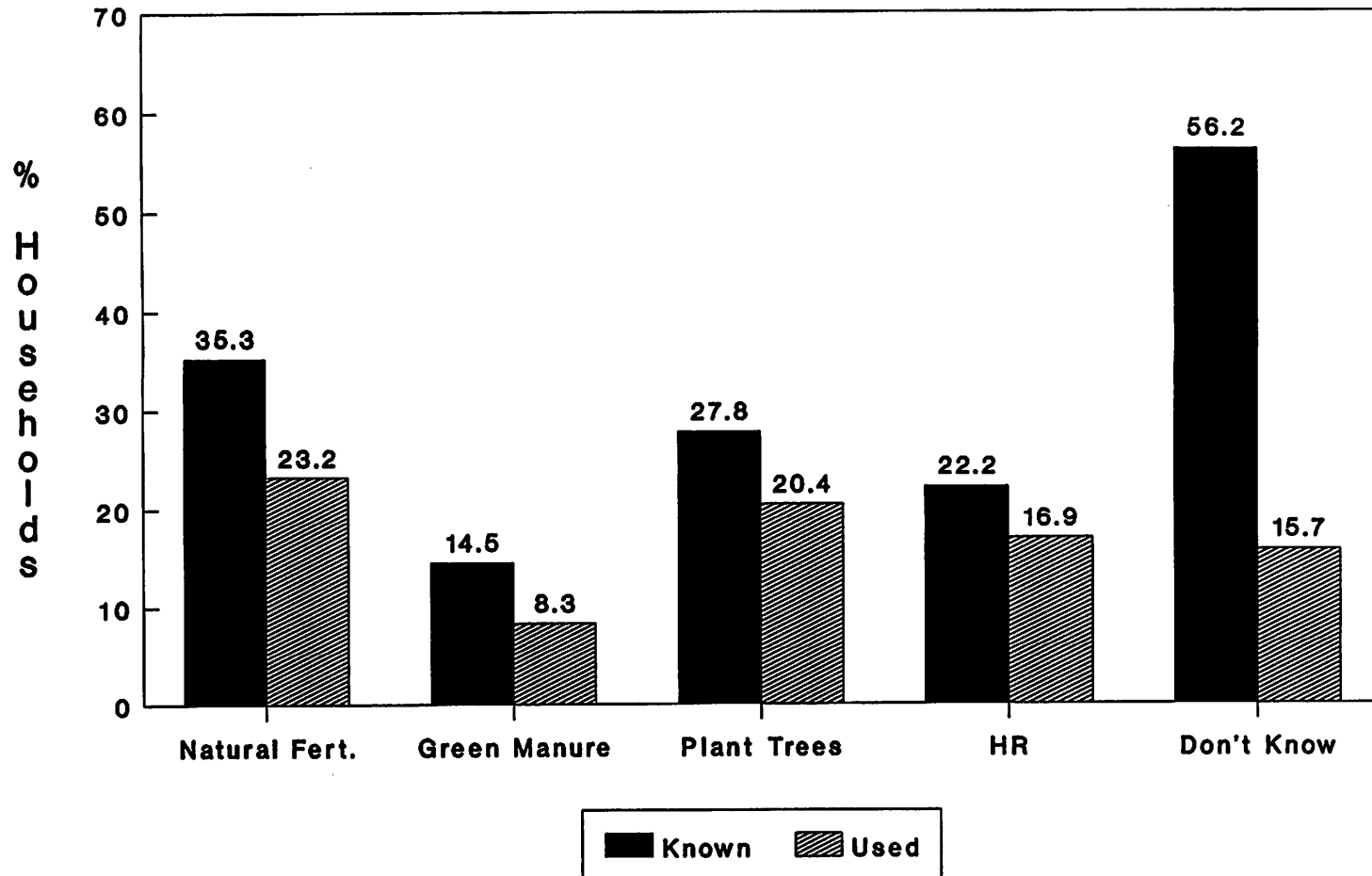
GRAPH 13

Barriers to Erosion Control Techniques

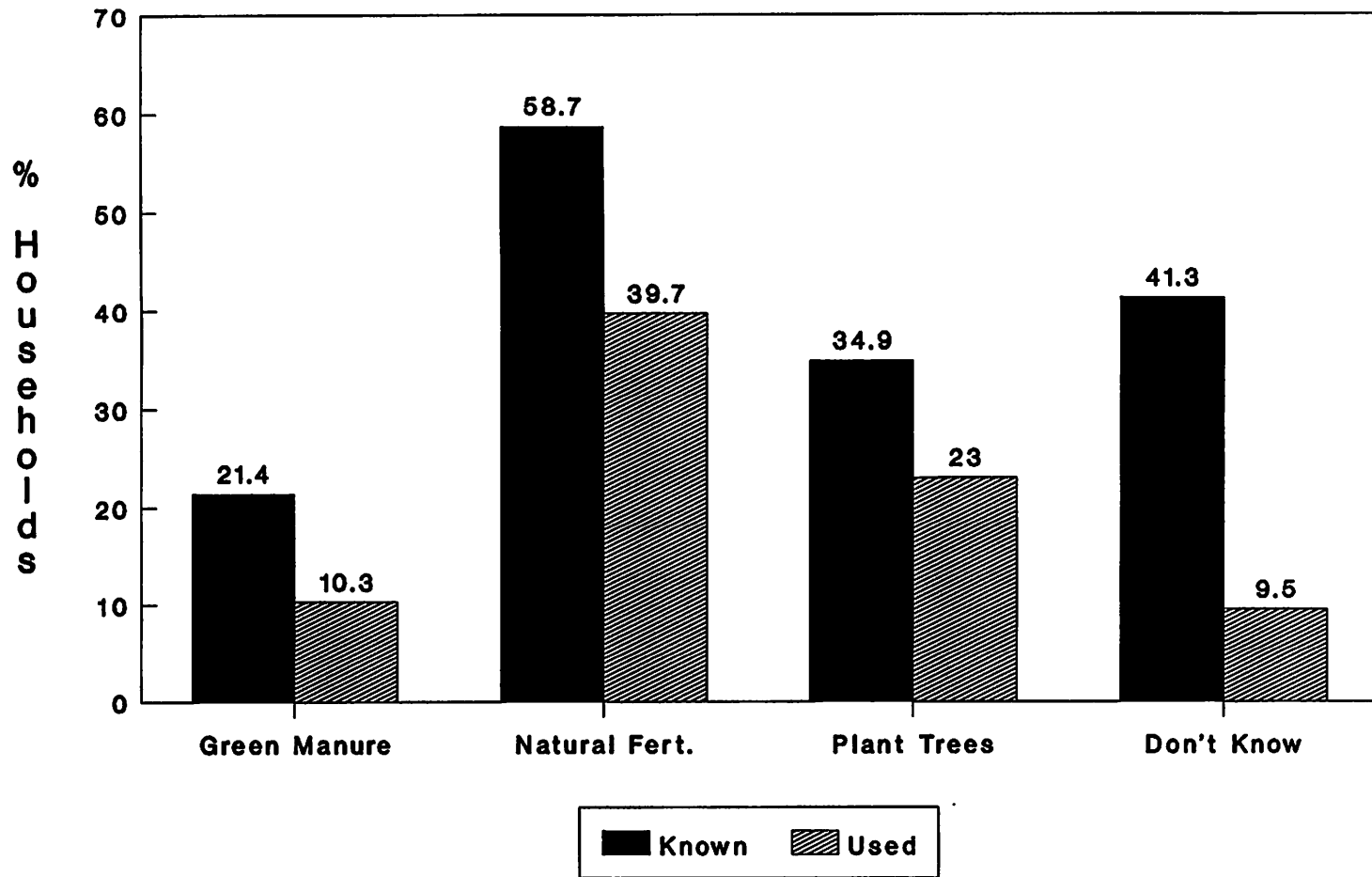
All Regions



GRAPH 14
Soil Enrichment Techniques Known & Used
All Regions



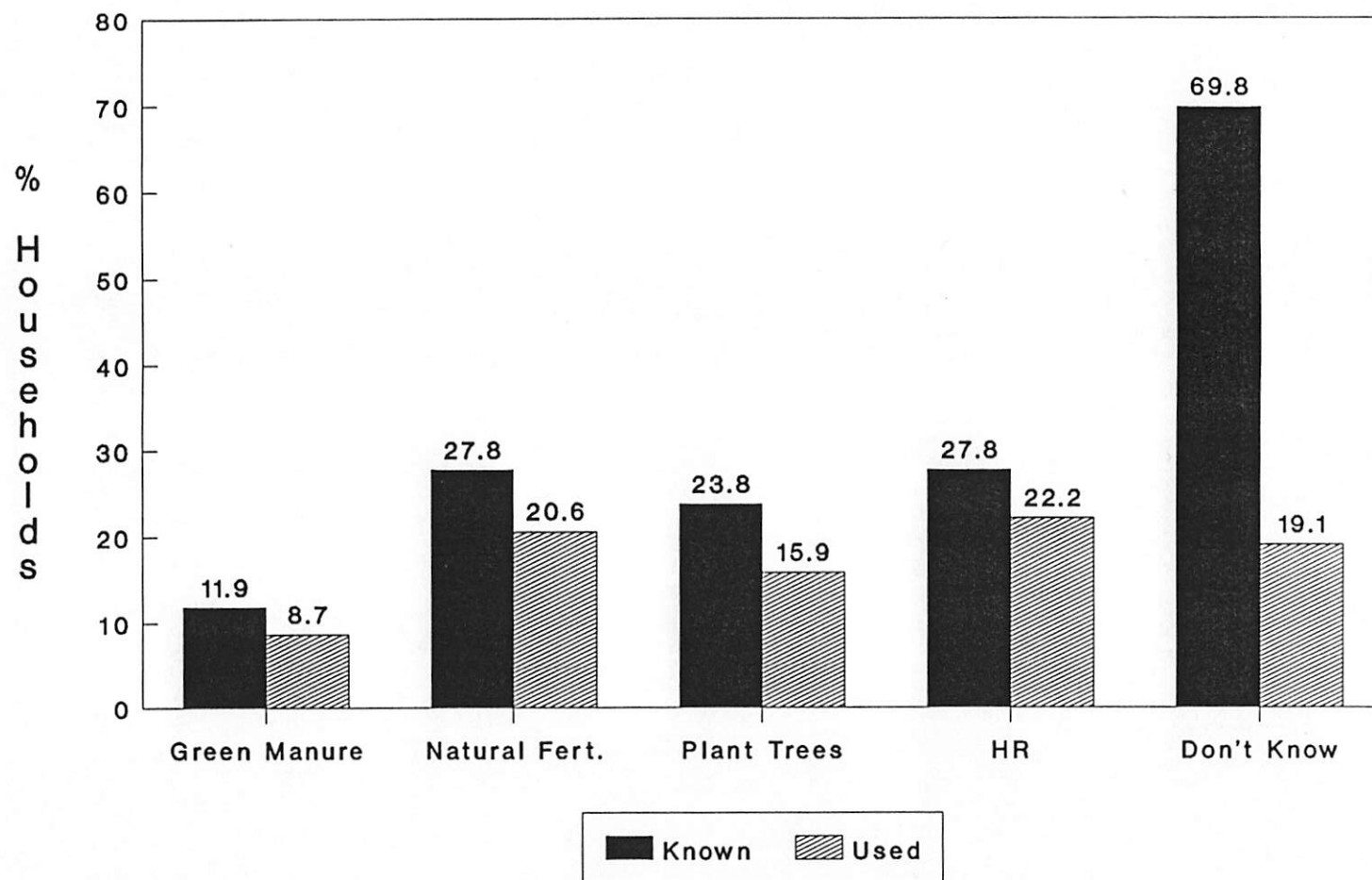
GRAPH 15a
Soil Enrichment Techniques Known & Used
Region I



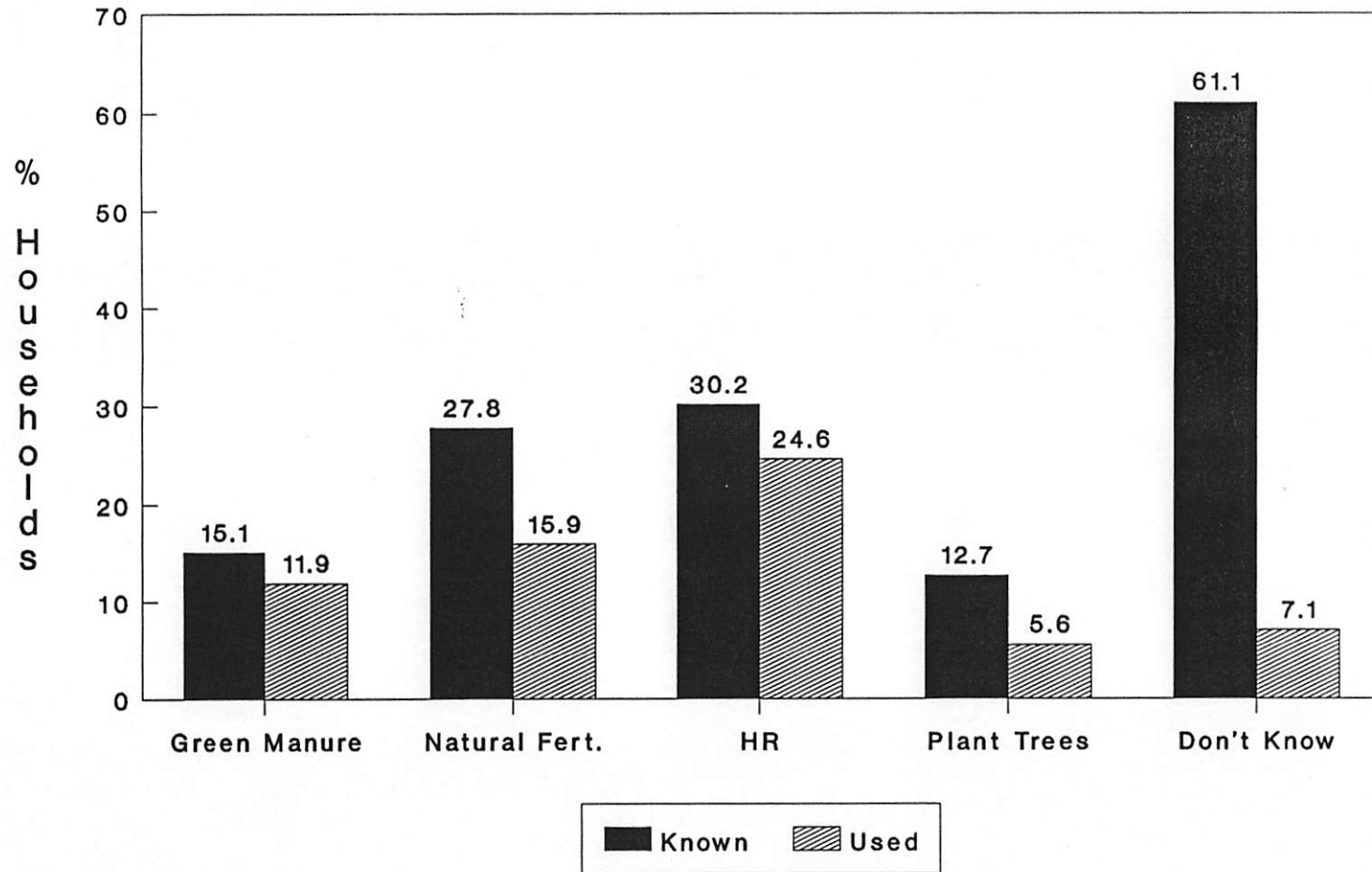
GRAPH 15b

Soil Enrichment Techniques Known & Used

Region II



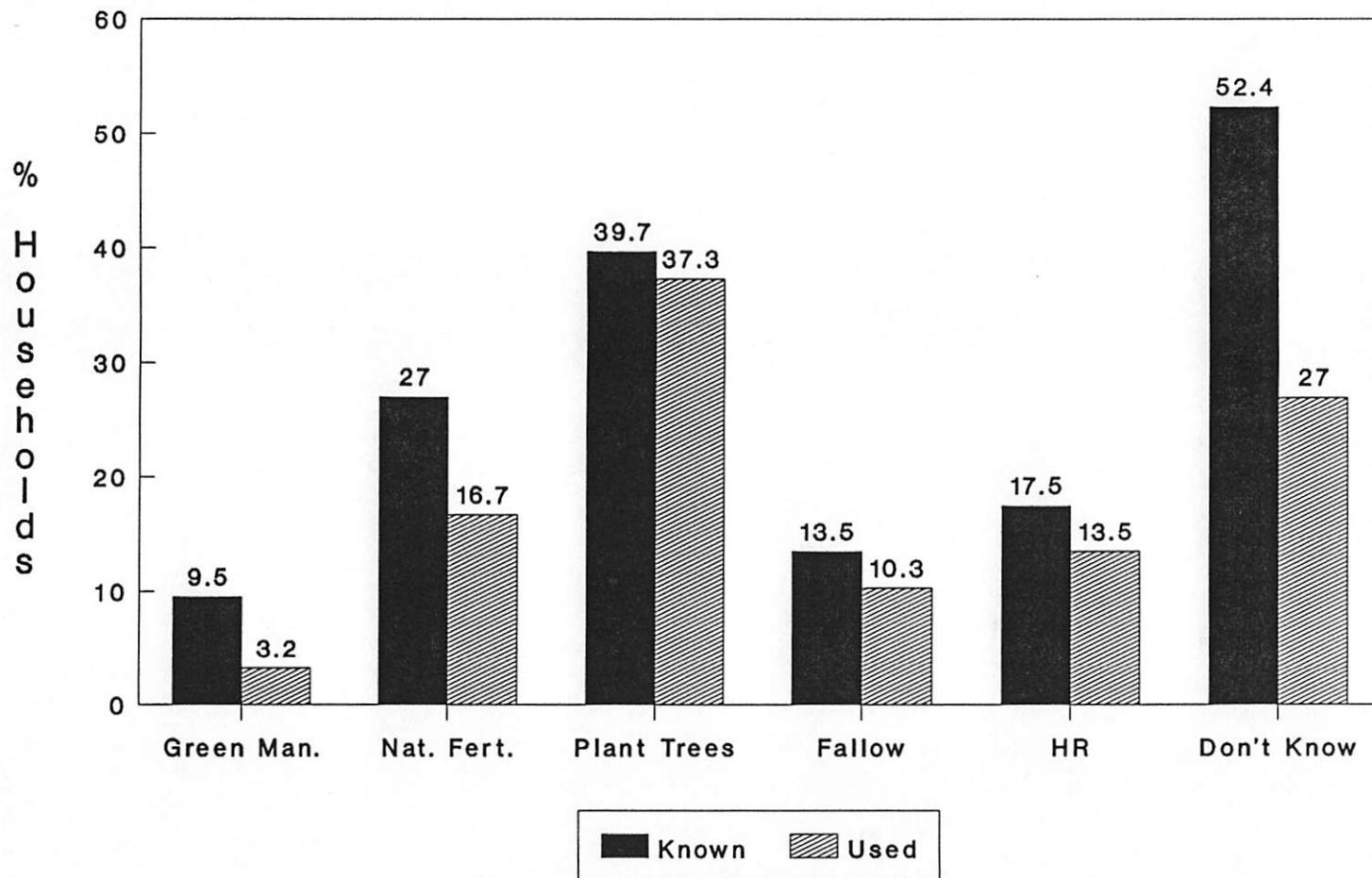
GRAPH 15c
Soil Enrichment Techniques Known & Used
Region III



GRAPH 15d

Soil Enrichment Techniques Known & Used

Region IV



common responses are, respectively, the use of natural fertilizer and the planting of trees. The use of natural fertilizer is second in Regions II, III and IV. The use of green fertilizers ranks third most often in Regions I and III.

3) The Gap Between Knowledge and Practice

Significant differences are apparent about the degree to which soil fertility improvement techniques are known about and the extent to which they are actually put to use. If the situation requires the use of particular methods in an area and the farmer knows them but does not use them, extension workers should step in and seek to resolve the problem.

In understanding any mode of production, an important distinction must be made between knowledge about a technique and its actual use. People may not like a certain method of responding to a problem. They may not have or may not perceive themselves as having the problem addressed by a technique. Some may not wish to invest the time or effort required to apply a technique. In addition, the materials or tools required may not be available. The environment may not be suitable for the use of a particular response. Large gaps are seen with regard to respondents' knowledge about certain soil fertilization improvement techniques and their actual use of them. Among the techniques known about, the largest gap is between the small number who know that using chemical fertilizer can improve fertility and those who actually use it. Of the 15 respondents who knew about the method, 12 or 80% do not use it. It is rarely available or affordable to the vast majority of farmers in the Northwest. The second largest gap among the methods concerns composting (60%), followed by green manuring (41.1%), letting the land lie fallow (38.2%), natural fertilizer (34.3%), tree planting (26.4%) and hedgerows (22.3%).

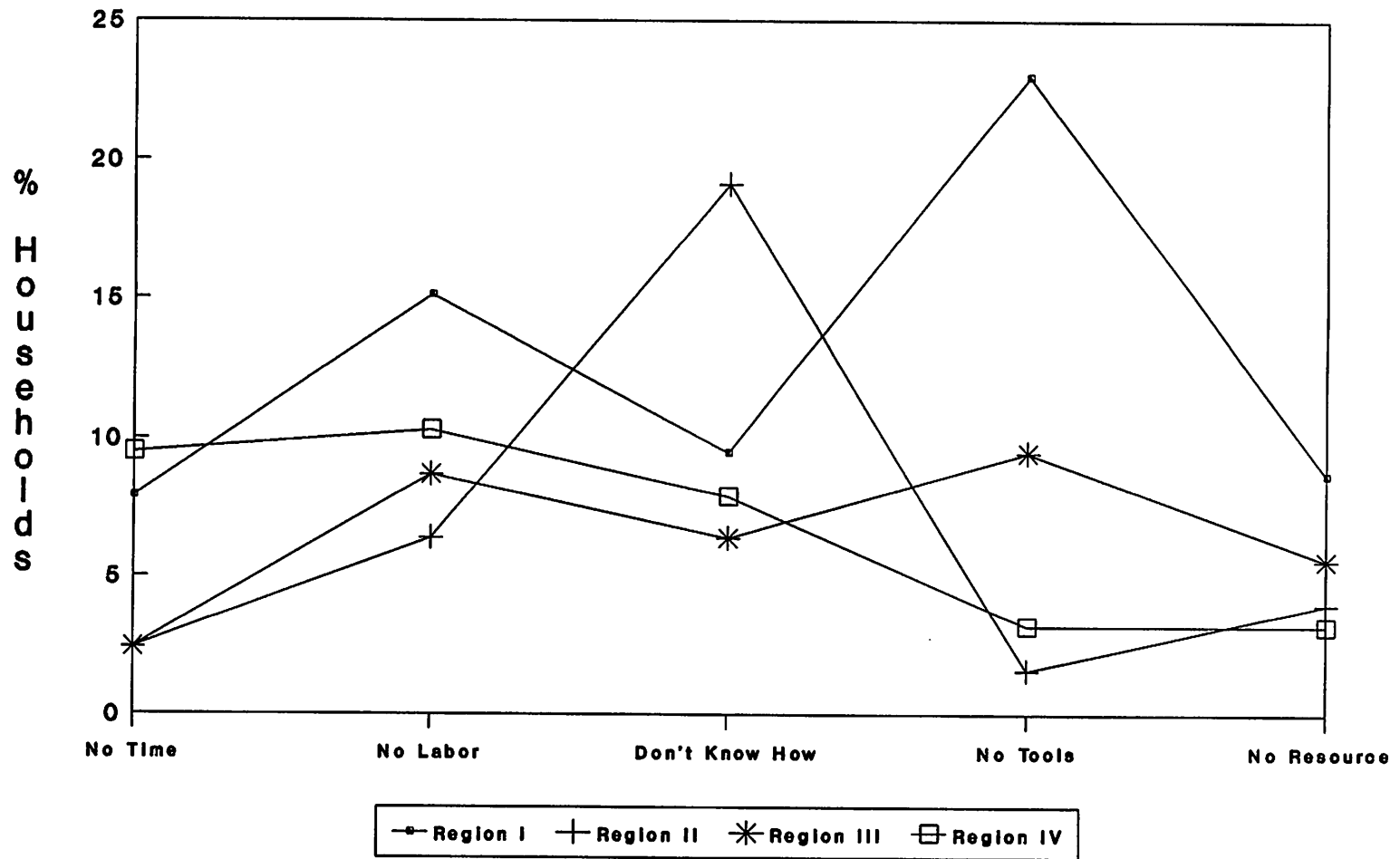
4) Barriers to the Use of Soil Fertility Improvement Methods

Both those who use soil fertility improvement methods and those who do not were asked to indicate the specific barriers that made it difficult for them to practice such techniques. The results are summarized in Graph 16. Only two of the barriers, "No tools" in Region I and "Don't know how" in Region II, are reported by more than one in five respondents. CARE regional staff are skeptical of some of the answers given. They believe that many farmers in the area are simply not convinced about the usefulness of such methods and remain deliberately uninformed about them. Resistance in Region II seems particularly strong.

GRAPH 16

Barriers to Soil Enrichment Techniques

All Regions



C. Fallowing

1) Practicing Fallowing and Length of Fallow Period

Fallowing is most appropriately seen as the lack of cultivation of fields rather than an intentional "resting" of it to regenerate its fertility. Just under two-thirds of the farms report that they allow their fields to lie fallow at least part of the time, for an average of over a year and a half (19.5 months) per period. Graph 17 shows the number of farmers who fallow per region and overall as well as the average number of months fallowed. The fallow periods are probably longer than previously because of the recent drought. CARE staff indicate that some farms are under so much economic stress that they feel that they cannot let any of their fields lie fallow.

2) Reasons for Fallowing

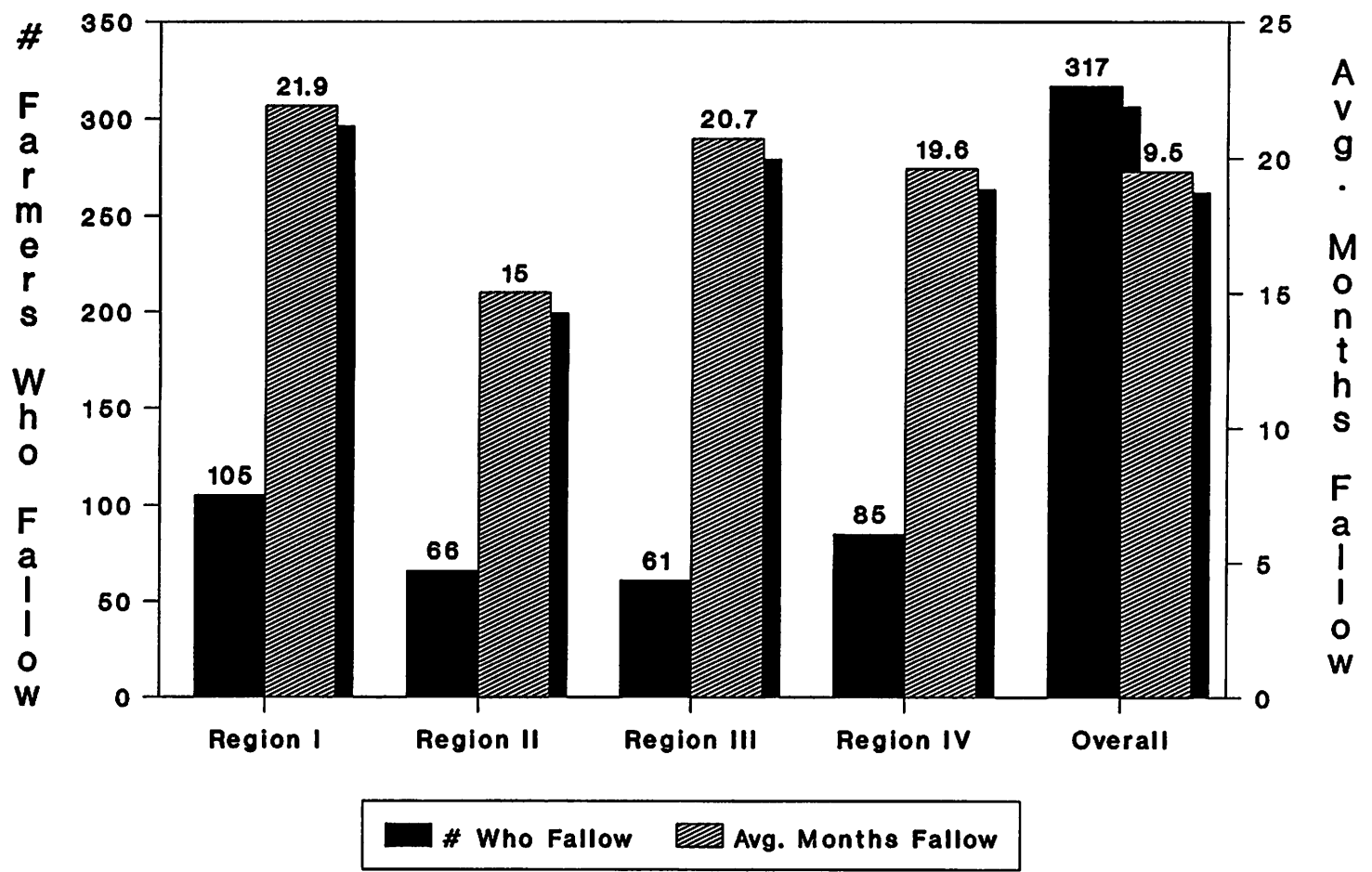
Both those who practice fallowing and those who do not practice it agree on the reasons for engaging in the activity. They also agree on the factors that make it difficult for them to allow their fields to remain uncultivated. The primary reason given for fallowing is to improve the soil. A second reason some gave is that they simply do not have enough time or labor to cultivate their lands and therefore left them uncultivated. A little more than one in twenty said that they allow their fields to become pastures for their animals. Insufficient money to allow them to cultivate their fields is mentioned by one in eight respondents. One in twelve mention not having the "kouraj" i.e. energy/ability, to allow their fields to lie fallow.

Regions I, II and III respondents most frequently give as a reason for fallowing "to improve the soil." The same reason is the second most common in Region IV. Insufficient money to provide for the cultivation of plots is the most frequently expressed reason in Region IV. Regions I and III indicate a lack of "kouraj" as the second most stated reason. The second most common reason in Region II is an inability to farm all the land that the household possesses. Other reasons are stated by a tiny number of respondents.

An interesting correlation can be made between the number of farmers who fallow and the amount of land they own and use in Region I. Farmers own an average of 2.6 karo and work an average of 2.6 karo which represents far and away the largest landowners and workers of the four regions. They also fallow longer than do the others.

GRAPH 17

Fallow Statistics



IX. Hedgerow and Tree Management

A. Hedgerow Planting and Maintenance

As seen in Table 3, just over a third (37.3%) of the households examined overall report planting hedgerows, ranging from about a fourth in Region II to just over half in Region I. The most important hedgerow care activities are weeding and trimming or cutting the rows back. Of the 188 farmers who report that they have hedgerows, almost all claim to do some work to maintain them.

Of the approximately one-fourth of the farmers who cultivate hedgerows, over half (56.9%) weed them. A similar proportion trim or cut them back (54.8%). Just over one in ten (10.6%) use some type of fertilizer.

B. Tree Maintenance Activities

There are virtually no treeless plots on the farms studied. As seen in Table 4, the two major activities that the respondents' households do to care for their trees are to weed around them and to protect them from animals.

As for those who grow trees, over half (53.2%) weed them, while 43.1% water them. Less than one in ten (8.3%) create some protection for them. Less than one in twenty use fertilizer. CARE field personnel informed us that, as a rule, if trees are cared for, they tend to be the younger and more vulnerable ones. Established trees, particularly those that are three or more years old, are regarded as requiring very little or no maintenance.

Local agronomists are very skeptical of the number of farmers who report watering trees. They have not seen trees routinely watered, although some farmers water seedlings a few times shortly after planting them. Any fertilization is very casual. Most likely it refers to throwing household garbage in the vicinity of the trees or adding a small quantity of animal manure to the hole just prior to planting.

Table 3. Hedgerow Care and Maintenance by Region

% Households

	<u>REGION I</u>	<u>REGION II</u>	<u>REGION III</u>	<u>REGION IV</u>	<u>OVERALL</u>
<u>% PLANTING</u>	50.8 (64)	26.2 (33)	36.5 (46)	35.7 (45)	37.3 (188)
<u>% WEEDING</u>	60.9 (39)	30.3 (10)	60.9 (28)	66.7 (30)	56.9 (107)
<u>% FERTILIZE</u>	7.8 (5)	27.3 (9)	2.2 (1)	11.1 (5)	10.6 (20)
<u>% WATER</u>	3.13 (2)	0	2.2 (1)	4.4 (2)	2.7 (5)
<u>% PROTECT</u>	12.5 (8)	9.1 (3)	6.5 (3)	0	7.5 (14)
<u>% TRIM/CUT</u>	56.3 (36)	63.6 (21)	60.9 (28)	51.1 (23)	57.5 (108)

* Percentages shown above are calculated on the basis of # of farmers per region who plant hedgerows.
 () = Number respondents.

Table 4. Tree Care and Maintenance by Region

% Households

	<u>REGION I</u>	<u>REGION II</u>	<u>REGION III</u>	<u>REGION IV</u>	<u>OVERALL</u>
<u>% PLANTING</u>	91.3 (115)	93.7 (118)	92.1 (116)	83.3 (105)	90.1 (454)
<u>% WEEDING</u>	80.0 (92)	72.9 (86)	44.8 (52)	36.2 (38)	59.0 (268)
<u>% FERTILIZE</u>	11.3 (13)	2.5 (3)	0	5.7 (6)	4.9 (22)
<u>% WATER</u>	15.6 (18)	44.1 (52)	73.3 (85)	59.1 (62)	47.8 (217)
<u>% PROTECT</u>	18.3 (21)	11.0 (13)	4.3 (5)	2.9 (3)	9.3 (42)
<u>% TRIM/CUT</u>	0.9 ((1)	2.5 (3)	0	1.9 (2)	1.3 (6)

* Percentages based on number of farmers who plant trees per region. () = Number respondents.

X. Crops Planted and Sold

A. Crops Planted

Respondents report growing a total of 70 crops. The percentage of households that grew and sold the ten most common crops are shown in Graph 18. Although respondents mention many crops, only ten of these are grown by more than a fifth of the farmers. Only twenty crops are grown by more than a tenth of the farms. Crops grown only by a few farmers can be important economically and nutritionally. If we measure the importance of a crop by the number of farmers who grow it, however, maize (81.6%), sweet potatoes (68.3%), manioc (67.3%), avocado (63.7%), pigeon peas (54.4%), mango (53.4%) and sorghum (48%) are the most significant.

Graphs 19a through 19d show the major crops grown and sold in each region. Maize is the crop grown by the most farmers in all except Region I, in which sweet potatoes rank first. Similar crops are found in all four regions, but their relative use by farmers differs. Local staff suggest that the number of farms that grow pigeon peas in Region III are under-reported because several farmers who planted them last year continue to regard the beans as a "filler" in mixed cropping systems rather than as a full-fledged crop. The selection of crops grown in each region is due to their suitability given the areas' soil quality and climate, traditional practices, and the farmer's perception of alternatives. As will be described, many farmers have preferences for other crops that are not grown by many in their respective regions. As the agricultural history of comparable agricultural areas has vividly shown, the future could very well bring a decrease in the proportion of farmers growing the "major" crops reported here, and an increase in crops currently grown by only a few. Rainfall patterns in all regions indicate that, in some cases, perhaps farmers should shift from heavy water consuming crops such as maize, to crops which require less water, such as sorghum. This is especially possible in Region III.

B. Crops Sold

Thirty-nine crops are reportedly sold by farm households. Research in village markets is presently underway to determine the value of these various crops. Three studies of the economics of the area will be carried out during 1991, examining crop yields, farm gate and market prices, and their impact on farmer income.

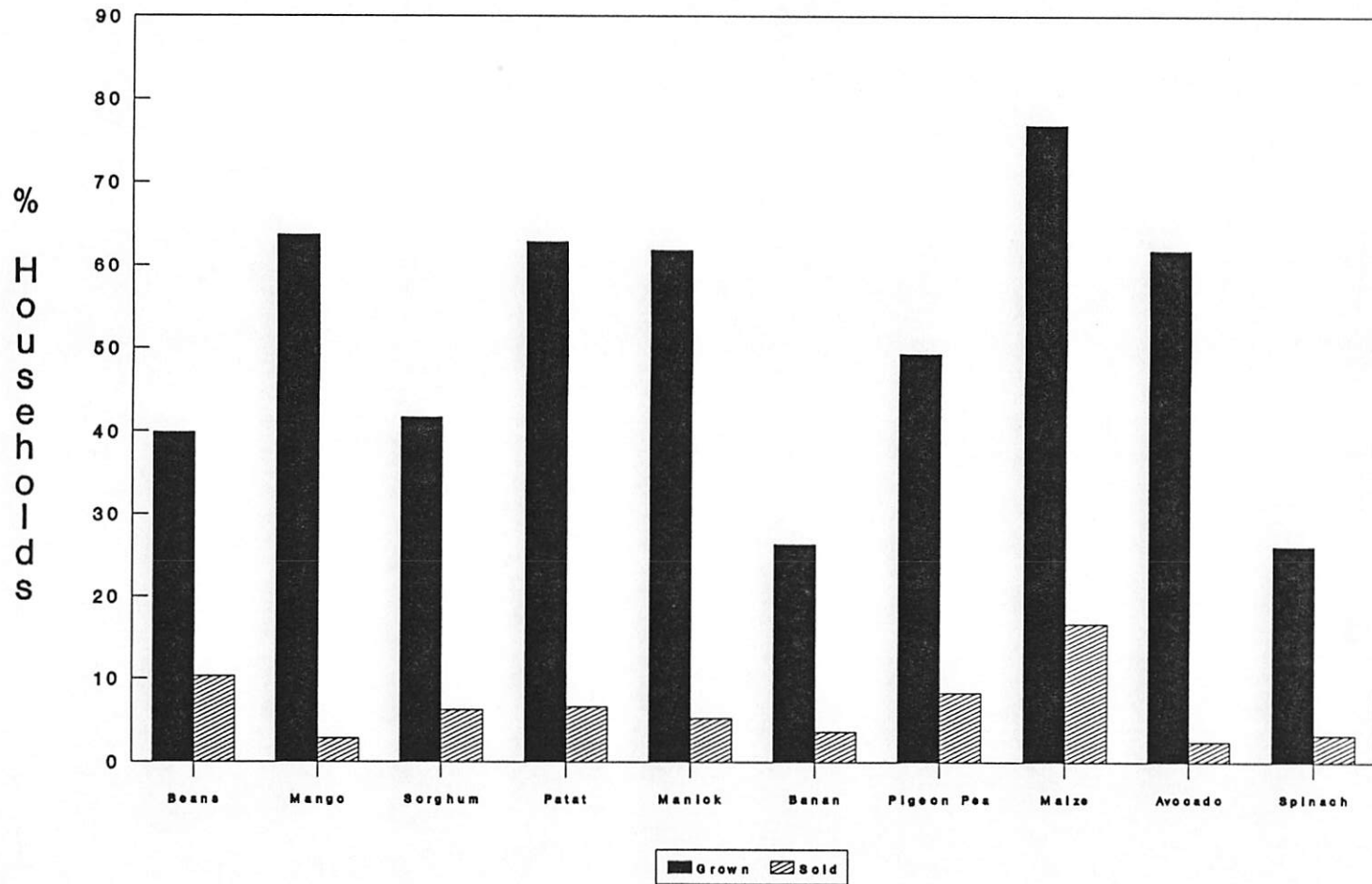
The amounts of the crops grown during the period that the data were collected were less than in previous years because of a severe drought. Accordingly, fewer farmers were selling crops and those who were selling had a smaller crop to sell.

"Major" crops in the Northwest as a whole, or those said to be sold by more than 5% of the households examined are, in order of importance, maize, red beans, pigeon peas, sweet potatoes, sorghum,

GRAPH 18

Common Farm Crops Grown and Sold

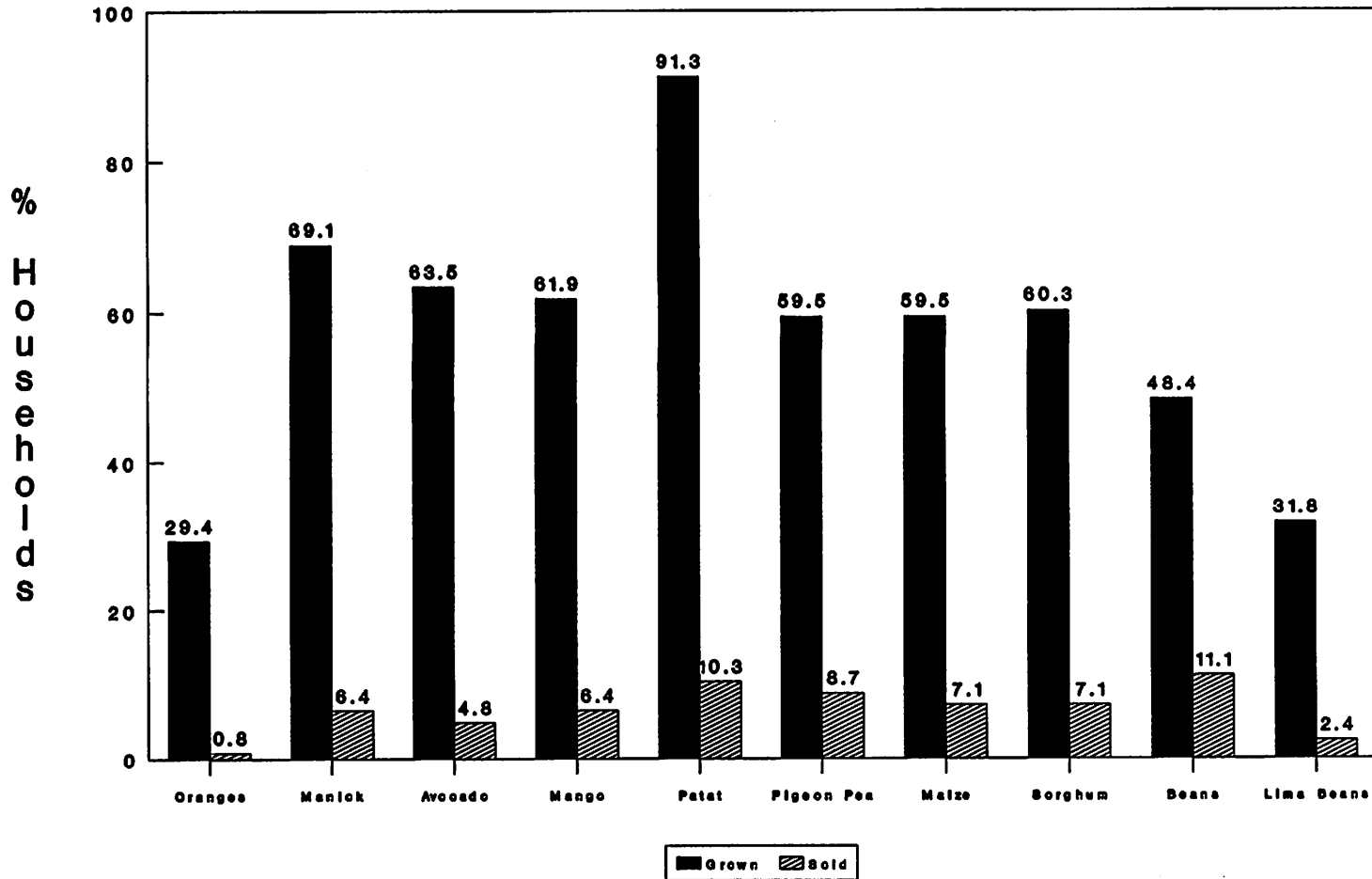
All Regions



GRAPH 19a

Primary Crops Grown and Sold

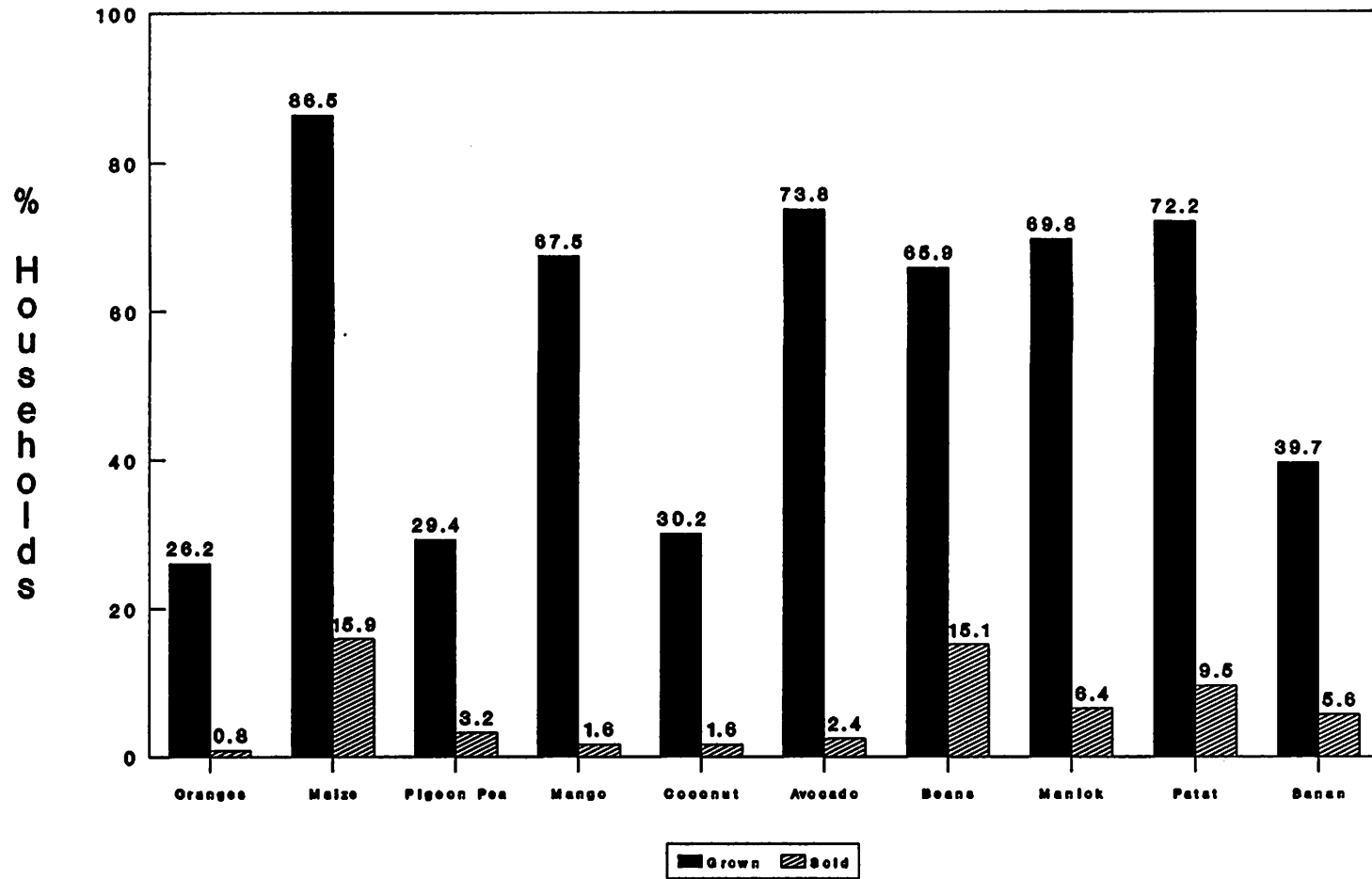
Region I



GRAPH 19b

Primary Crops Grown and Sold

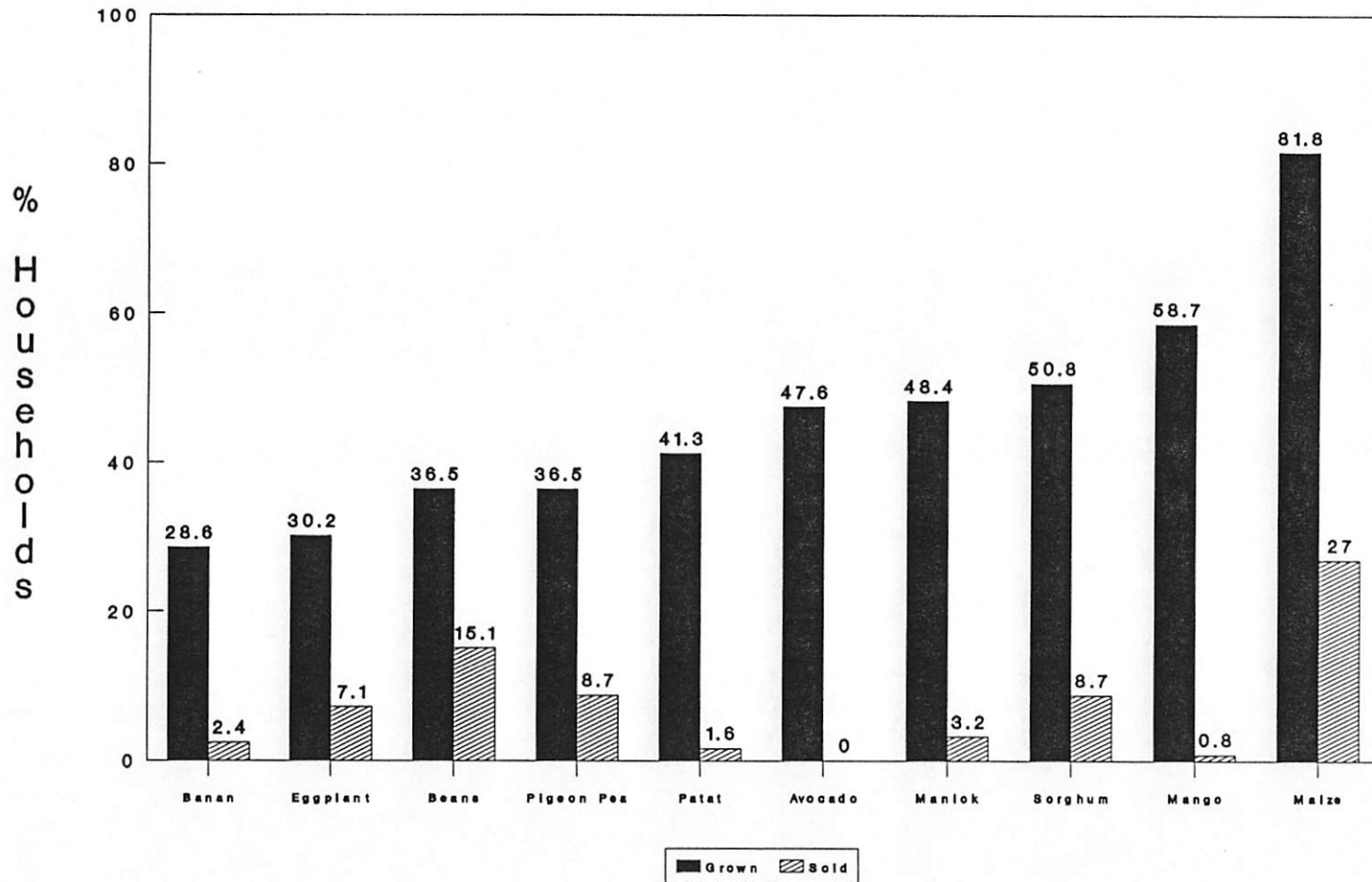
Region II



GRAPH 19c

Primary Crops Grown and Sold

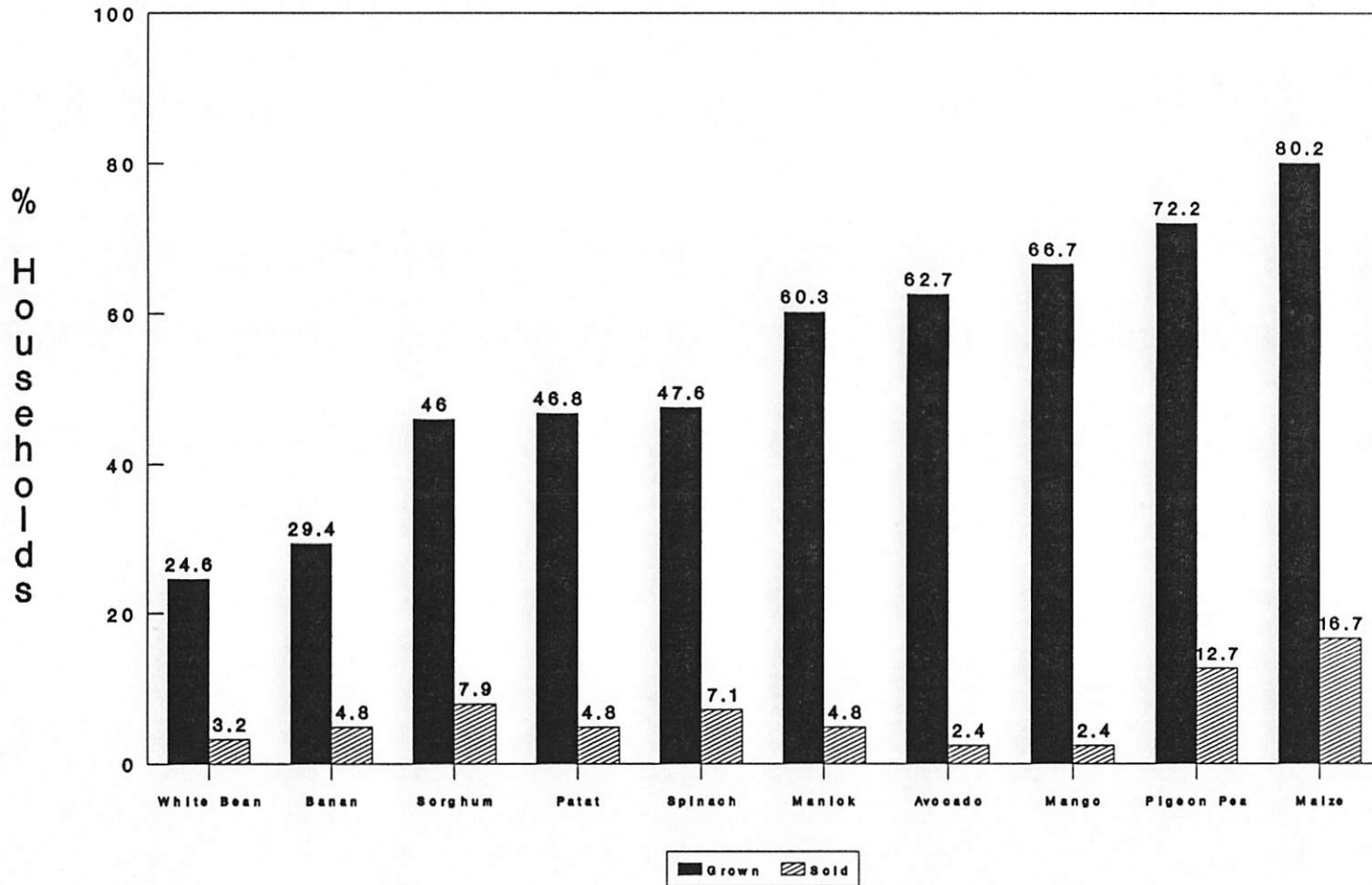
Region III



GRAPH 19d

Primary Crops Grown and Sold

Region IV



and manioc. Only maize and red beans are sold by more than one in ten households overall. By region, major crops for Region I are red beans, sweet potatoes, pigeon peas, sorghum, maize, mango, manioc and peanuts. Region II has five such crops. In terms of the rank of importance these are maize, red beans, sweet potatoes, manioc and plantains. Region III accordingly ranks its major sale crops as maize, red beans, sorghum, pigeon peas, eggplant and white beans. Crops reported in Region IV are maize, pigeon peas, sorghum, and spinach. Relatively few of the Region III households that grew mangos report selling them. This is because the trees are fairly young that are not yet able to bear fruit. It is interesting to note that it is reported that the same region exports by wooden sailboat, an unknown quantity of plantains to Cuba and sometimes to places as far away as the Bahamas.

C. Difference Between Crops Grown and Sold

Considerable differences are shown among the crops in comparing the number of farmers that grow a crop and the number that report subsequently selling some of the same. Percentages are calculated to indicate what percent of the farmers who grew a crop also report selling some of it during the last year. Of the crops grown by more than a fourth of the households, the crop which farmers sell most often in proportion to the number that grow it is red beans (25.9% of farms). Maize (21.6%) is the second crop most often sold, followed by pigeon peas (16.9%), sorghum (14.8%), plantains (13.5%), spinach (12.1%), sweet potatoes (10.4%), manioc (8.3%), mango (4.4%) and avocado (3.8%).

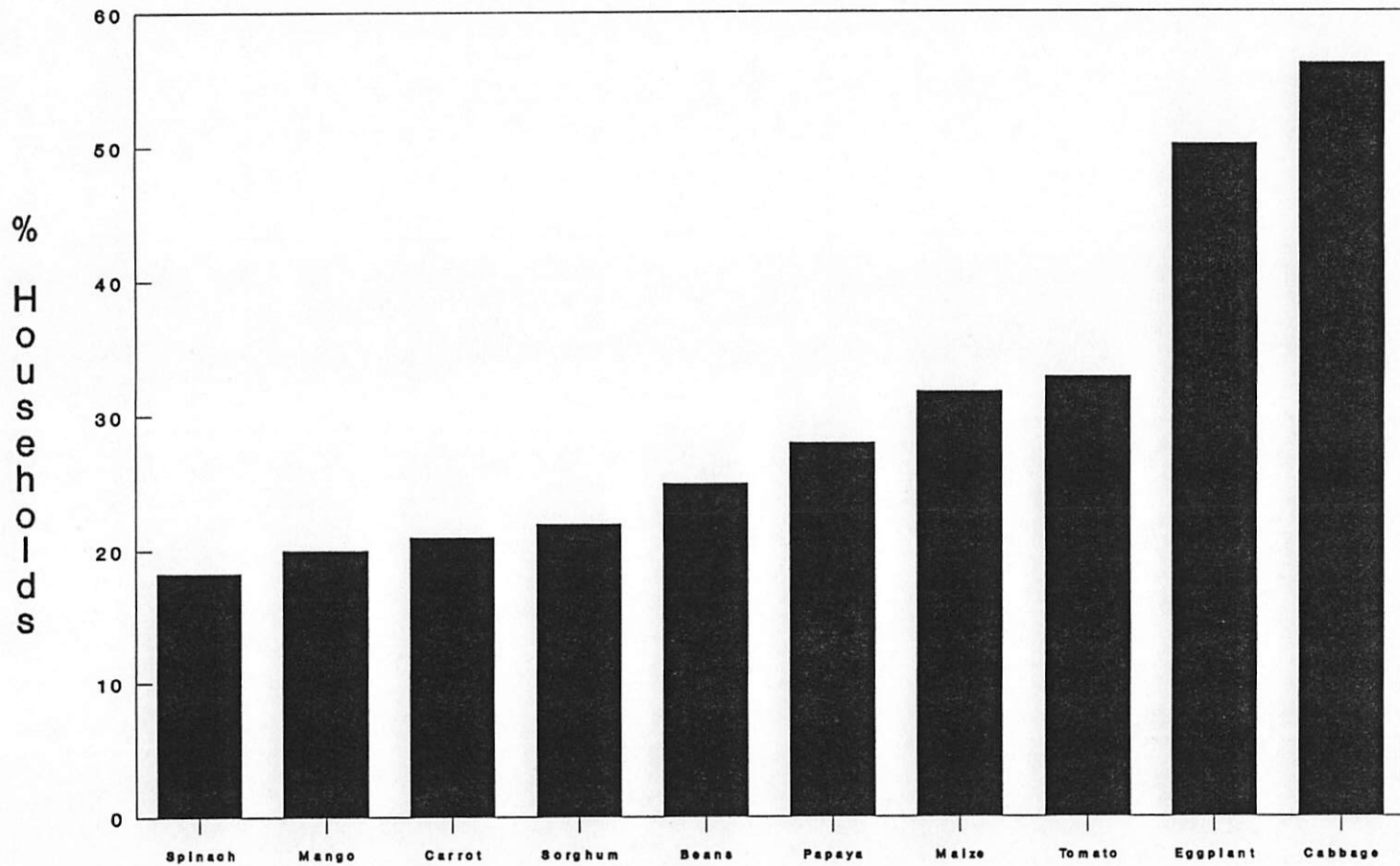
D. Food Crop Preferences

Farmers were also asked to indicate the crops that they would most like to plant in the future. Sixty five different crops are mentioned (including tobacco). Graph 20 shows the ten most common desirable food crops and the percent of households that prefer each. Cabbage and eggplant are listed by over half as shown in Graphs 21 a and b. Only seven others are considered to be desirable by 20% or more of the respondents. This includes crops identified as often being currently sold, as well as other vegetables. They are tomatoes, maize, papaya, red beans, sorghum, carrots and mangoes. Mentioned by more than one in ten are spinach, manioc, coconut, beets, peanuts, oranges, potatoes and avocados.

The food crops included by more than a fourth of the respondents in Region I are, by order of rank, cabbage, eggplant, mango, papaya and red beans. Preferences in Region II are, in order of relative frequency; eggplant, cabbage, tomatoes, red beans, maize and papaya. The listing for Region III is eggplant, tomatoes, cabbage, maize, papaya and sorghum. Region IV ranks the crops as being cabbage, sorghum, spinach and maize. Some of the regions have little land suitable for the traditional methods of cultivation of some of the crops named. The data do show, however,

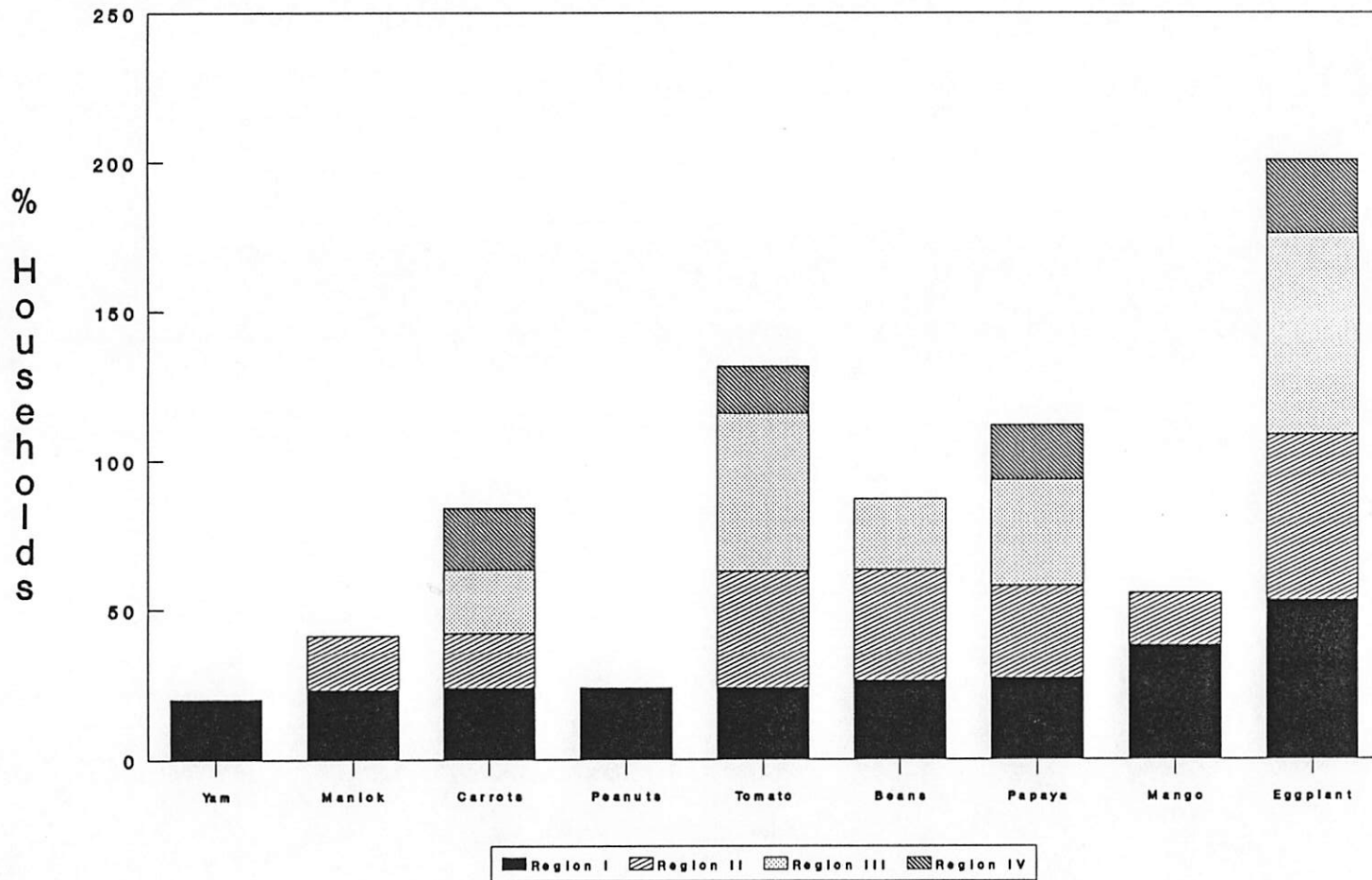
GRAPH 20

Preferred Food Crops - All Regions



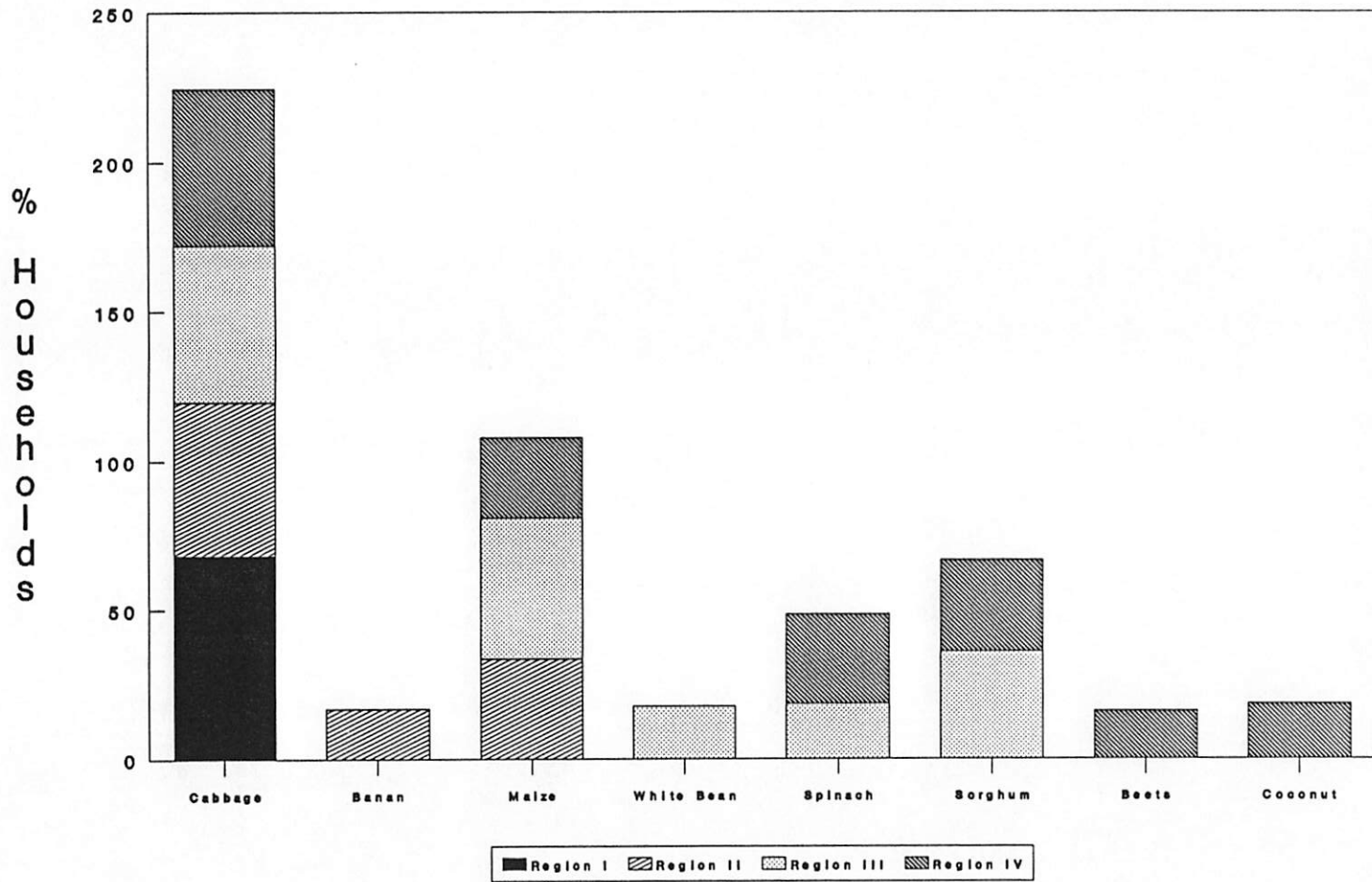
GRAPH 21a

Preferred Food Crops - By Region



GRAPH 21b

Preferred Food Crops - By Region



that local farmers are interested in changing existing patterns of production and should be interested in extension efforts of that nature. The crops indicated in Region I include a majority that can be grown satisfactorily in the area.

Cabbage, eggplant, and tomatoes head the list of preferred crops overall. It is interesting that none of these are among the ten most planted or sold crops in any of the regions. It is doubtful that any of the above mentioned crops would be appropriate for the Northwest in traditional gardening systems as they all require substantial amounts of water to produce marketable vegetables. However, there is potential for their production in a biointensive gardening context. Maize and red beans rank fourth and fifth respectively. Both are currently among the most planted and sold crops overall. Sorghum ranks in the top ten preferred foods and is also among the ten most produced and sold grains.

XI. Sources and Storage of Seeds and Seedlings

A. Seed Sources

The two major sources of crops seeds are those saved from a previous season (60.9%) and those bought from an outside source (64.7%). Buying from local sources provides seeds to 39.5% of the farmers, and receiving from a neighbor to 31.8%. Agronomists reportedly supply seeds to just over ten percent (10.5%). Most farmers obtain seeds from more than one source.

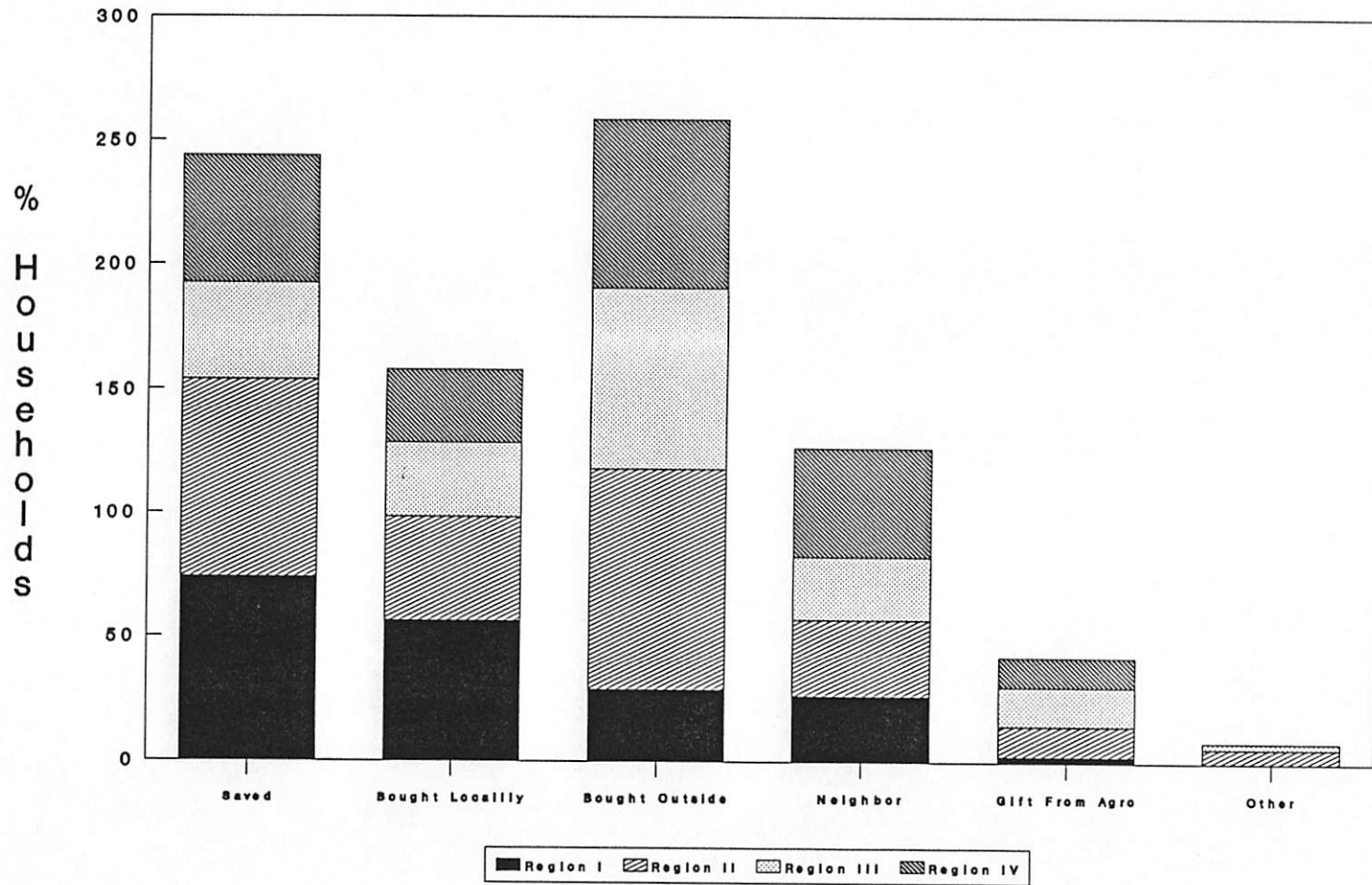
The most common place for seed storage is in the house and yard area ("lakou"). The most frequently used specific storage place is in a "djacout", the small woven sisal pouch with a shoulder string traditionally made and used by peasants (23.6%). Second most common is a fiber or paper sack (20.2%), followed by a dry calabash gourd (11.3%), and a bottle (4.6%). Storage time ranges from three to 60 months, with an average of 6.5 months (SD=6.1). CARE regional staff felt that seeds had been stored for a longer than ordinary period during the last year because the drought had reduced planting.

When asked about the sources of their tree seedlings, the 85.7% of those 504 interviewed who grow trees, overwhelmingly report that they obtain them from CARE (95.2%). Other sources identified are neighbors (3.3%) or a local nursery (.88%). CARE staff felt that those indicated as "neighbor" sources probably secure their seedlings from CARE as well.

The frequency and relative importance of the sources vary by region, as seen in Graph 22. In Region I, about three-fourths of the households obtain some of their seeds by saving them from previous seasons. Just over half bought some locally. About a fourth obtain them by buying them from outside of their area or from a neighbor. In Region II, nine of ten obtain some through purchasing them from outside of their area. Eight of ten saved some from a previous season. Under a third obtain part of their

GRAPH 22

Seed Sources by Region



supply from neighbors. In Region III, about seven in ten obtain seeds from outside purchases while 38.1% used seeds that they had saved. Region IV reports a similar pattern of distribution.

B. Seed Storage

By far, the most common location for seed storage is somewhere in the farmer's house. About one in ten of the storers in Region II placed them in a tree. In Region III, one in seven used a depot, or small storage shed away from their house.

The mean time in months for Regions I through IV is 5.9, 5.8, 3.8 and 8.1, respectively. These periods are regarded as longer than the average for recent years by CARE staff, due to the recent drought that reduced planting.

Farmers display particular ingenuity with regard to the containers they use for seed storage. They include suitcases, papaya skin, bark and containers placed on ropes. The most common containers in Regions I and II are the djacout, or small woven sisal shoulder bag, followed by other types of sacks and calabashes. The ranking in Region III is sacks, djacout and calabashes. For Region IV, it is sacks, calabashes and djacout. Except for the use of bottles in Regions I (7.1%) and II (7.9%), no other containers are used more than five percent of the time by those who stored seeds.

XII. Off-Farm Economic Activities

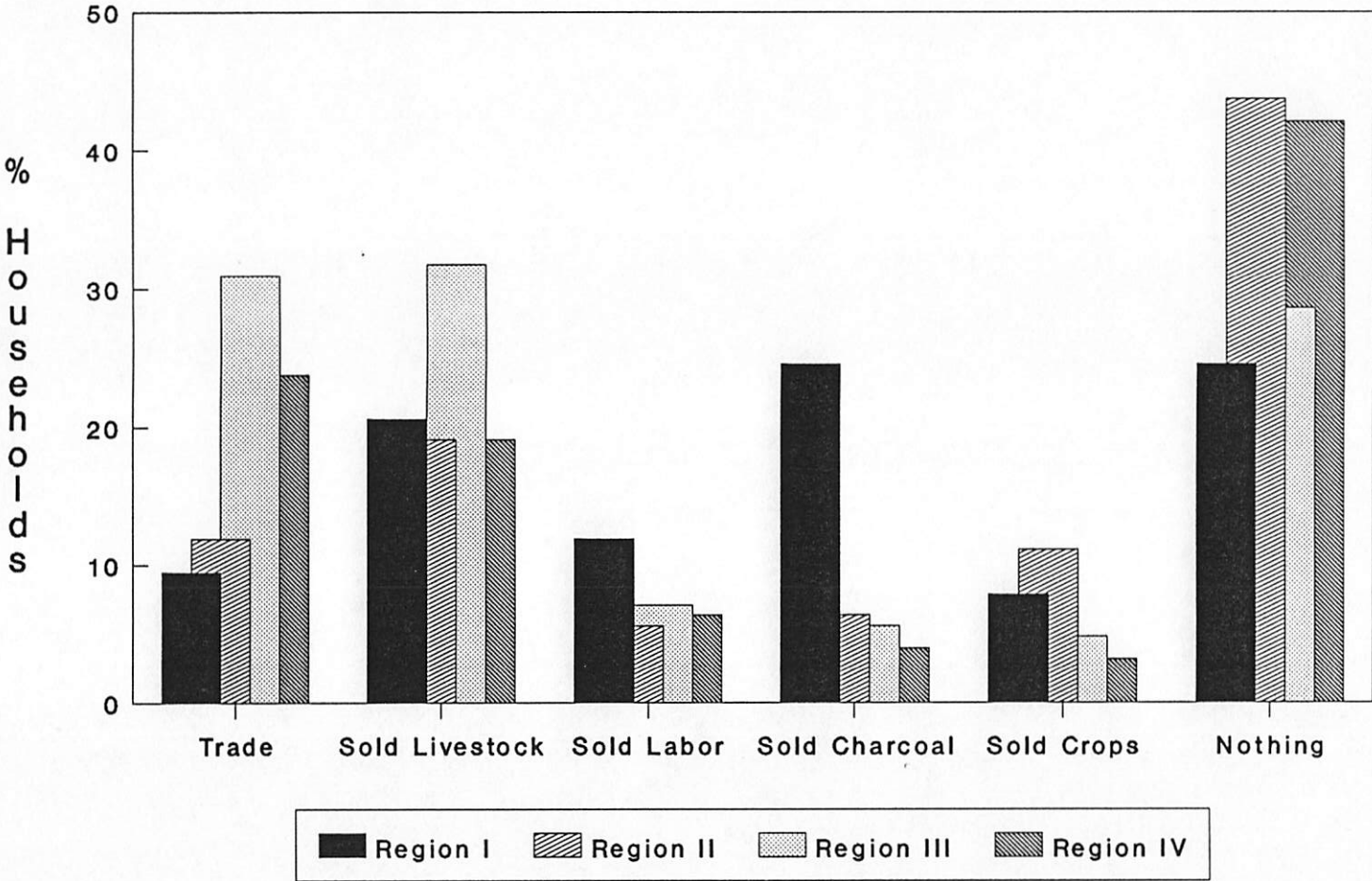
In addition to on-farm activities, about two-thirds of the respondents report working or pursuing economic activities in other places. Graph 23 illustrates the regional importance of some of these activities. The sale of livestock is the most common activity reported (38.3%). About one in five trades in the marketplace (19.1%). One in ten (10.1%) sells charcoal. Smaller proportions work as laborers (7.7%), sell a portion of their harvests (6.8%), gain income as craftsperson or "artisan" (4.8%), or have another off-farm job (4.2%). This overall pattern obscures regional differences discussed below.

The most common activity for all regions, selling animals, is most important in Region III. The second most common activity, trade, is more important in Region III than in the other regions. Charcoal sales are a much more important activity in Region I, (24.6% of households) than in the other three regions (10.1% overall). People there more often report selling their labor (11.9%) than elsewhere (7.7% overall). Other activities reported by 6.1% of the households include work as a craftsperson or an outside job. Agronomists working in Region I indicate that the number of artisans in the area has declined in recent years as the market demand for their products has decreased.

Observations in villages indicate that gambling with cards or dominos, or playing the local lottery, are very popular pastimes.

GRAPH 23

Primary Off-Farm Activities-By Region



Even small villages may have three or more lottery booths. Combined with cockfighting, gambling is endemic to Haitian rural life. Profits from loans made to others are also an important hidden source of income for some of the more prosperous rural Haitian families. Income from gambling and usury is, however, mentioned by a surprisingly small number of respondents. Experience and observation suggest that respondents under-report these activities in our survey.

XIII. Conclusions and Recommendations

This study has provided detailed information about the knowledge, attitudes and practices concerning agroforestry and related agricultural practices of the part of farm families in Northwestern Haiti. One of the goals of the research is to provide baseline data that could be useful in measuring changes in the Northwest that may be related to the achievement of CARE's goals in the Agroforestry II (AF II) Project.

CARE's goals in the Agroforestry II Project are to: increase the agricultural production of small farms through the adoption of improved agricultural methods; increase the income of area farmers by improving their access to agricultural inputs, crop storage facilities and marketing opportunities; and to improve the knowledge, attitudes and practices of farmers in the region to improve to sustainable resource management strategies. The date set for the achievement of these goals is 1999.

Several findings and conclusions provided in the earlier discussion of the research results relate to these specific goals. Rather than repeat them, this section highlights some of the conclusions and provides additional recommendations which follow from them.

A. Regional Diversity

There are important differences among the regions and communities studied. Such differences greatly influence local agroforestry and other development efforts. Generalizations about the Northwest as a whole should be made with caution. Any planning or implementation effort targeted at the "grass roots" community or household level should take into account the unique features of each locale. The data provided here can be an important source of information about local conditions. Methods which have proven successful in one region may need great adjustment when attempted in another. There is also considerable diversity present among the households within each region. Household differences also need to be taken into account by local animators and other staff.

B. Heads of Household

Heads of households in Haiti tend to be in their early to mid-forties. About one in seven households overall are headed by women on a continuing or seasonal basis. There are considerable

differences among the regions with regard to the proportion of female-headed households, ranging from about one in five to one in ten. Such households differ from those headed by men. Their labor supply is more limited, the traditional division of labor is not followed, considerable additional burdens are placed on the female head, and agricultural knowledge and practices are qualitatively different. Women hesitate to venture into a traditionally male-dominated area even in the absence of men. The women field agents employed by CARE may be more likely to understand the problems faced by a female head of household. By giving them special attention and guidance, CARE may find that female heads of household are more receptive to new and different farming techniques that could ease burdens that they now carry alone. This receptivity may prove to be more common among older women. A man is less likely to take on an older woman at the upper limit of her childbearing years who is liable to be encumbered with children (none of which are his), and to whose upkeep and education he would have to contribute. Women field agents could also be used to help such women better accomplish their traditional on-farm tasks. Should observations indicate that female field agents are particularly effective in working with single female heads of households, CARE might consider adding more of them to its staff.

C. Literacy

Persons regarded as "literate" are found on the great majority of farms, but this term typically refers to those who can sign their name rather than to those who can actually read a written text. Visual materials would tend to be a much more effective means of communication for extension messages than would be print matter. When used, written materials in AF II extension work should be selectively directed at that minority which is capable of using them.

D. Farm Labor Supply

Rural Haitian households tend to have several members, many of them young and capable of contributing to the routine work of the farm. Labor shortages occur in a few households but are unusual. The availability of an adequate labor supply to carry out agroforestry practices is presently not a problem for the majority of households, but animators should be aware of important exceptions. Poor health and chronic disease may impair even young people from engaging in heavy labor. Migration, illness, possible population decreases because of the effects of the AIDS virus, and natural decreases in the birth rate could affect the future labor supply in rural areas.

E. Division of Labor

The household division of labor in the Northwest greatly varies on the basis of age and sex. Tasks for men and women tend to be well-delineated and customarily followed. Outside labor is infrequently used but is clearly important for a few farms.

Extension goals should include the identification of those responsible for the particular farm tasks target for intervention. Studies of farm productivity should also take particular note of the household division of labor. It is likely that some patterns of the organization of work are associated with higher productivity and these modes should be addressed in the future.

F. Migration and Labor

Data from this study indicate that migration plays a significant role in Haitian society. Such movements may be accelerating. Increased migration results in a decreasing rural labor supply and demographic changes in farm households, including an increase in the average age of heads and an overall decline in numbers. At present, a noteworthy minority of male heads of households in some regions seasonally migrates to other parts of the country seeking work and income. This internal migration is to other parts of the Northwest, Gonaives, and to the capital region. If the experience of other countries applies, for many migrants, seasonal migration typically becomes a permanent relocation. The initial migration of males is followed by the migration of other family members.

International migration to the U. S., the Dominican Republic and to elsewhere in the Caribbean has been a characteristic of the Haitian population for some years. Migration has led to the departure of able-bodied males from rural areas and an increase in female-head households. Farms have been left to the elderly and very young, transforming the nature of rural life, modes of production and local alternatives for development. Although beyond the scope of the present study, research focussing on both internal and international migration is needed to understand the socio-economic transformation which the country is undergoing. It is reasonable to predict that out-migration from the areas studied will greatly affect future planning and development efforts in the Northwest. Migration out of the region will also have to be taken into account in any subsequent research which seeks to measure the impact of CARE interventions.

G. Kombit Membership As A Production Factor

Kombits play a very important role in rural Haitian life. Just under half of the households studied belong to one. The number of families which belongs to kombits and the average number of days which members work varies by region. Regional differences in membership should be further explored. A typology of the most common type of kombits should be develop and described. "Careers" or natural histories of kombits should be develop to understand successful and unsuccessful adaptations. The use of kombits to exert social pressure on others to accept and use appropriate agroforestry technologies should be examined. They may be effective social control mechanisms to reduce the practice of unsound or destructive cultivation practices. The potential for kombits to cultivate and protect public land or lands which are not owned or farmed by individuals should be consider. They could

serve as a mechanism to spread agroforestry technology beyond individual farms. CARE's extension methodology through groups could benefit from the closer study of traditional groups, reasons for their success and/or failure, and farmer attitudes towards them.

H. Patterns of Knowledge, Attitudes and Practices

The data indicate a clear need for more information about agroforestry on the part of many farmers. Every region has varying proportions of farmers who remain ignorant of specific practices to improve fertility, prevent erosion or otherwise protect and enhance their land. About one in three profess ignorance of any soil conservation techniques. Four in ten report no knowledge of soil improvement techniques. Although some farmers know of methods but do not practice them, knowledge commonly precedes use. A basic understanding of such techniques and their benefits to farmers needs to be imparted. The questionnaires used in this study could help pinpoint those farmers who need the most help.

I. Agroforestry and Farm Animals

Over half of the farms included in the research possess some animals. By far, grass is their most common source of food. Agroforestry directly and indirectly improves the quantity and quality of grasses suitable for feed. The benefits of agroforestry in improving animal feed should be used to promote the use of the technology. The animal feed-agroforestry link within farming systems needs to be better explored and made explicit in extension work.

J. The Burning of Fields: A Continuing Wasteful Practice

The traditional practice of burning crop "waste" and residuals on fields prior to their cultivation continues on some farms. It is almost certainly under-reported in our data. A particular effort needs to be mounted to inform farmers of the destructive consequences of the practice. The practice needs to be popularly stigmatized and reduced.

K. Tool Use

Tool use continues at low levels. As use does not necessarily mean ownership, it would be reasonable to assume that tool possession is even lower. Thus, the ratio of the number of tools to the number of family members remains feeble. In addition to the sale of tools by CARE to farmers at cost, tools could occasionally be diffused by using them as awards to farm household members for their exemplary accomplishments. This would, however, need to be carefully organized so that they would not be perceived as payment for work or an incentive to work. In addition, tool exchanges might also be considered. Worn-out tools plus a small fee could be exchanged for new tools.

L. School Fees and Agroforestry Benefits

The research shows that school fees and the purchase of books is a major expense for most families, usually the largest one for farm households during the course of the year. Extension materials may exploit the message that agroforestry can help meet the need for cash for school expenses among farm households. Rural people could be explicitly shown how the sale or home use of agroforestry products, can, over time, generate or save cash for educational and other uses.

M. Preferred Food Crops

The information gained on the food crops most desired but not generally grown in an area can be used to promote agroforestry. Demonstrations of agroforestry systems could include the most desired crops. The desire for information about preferred crops and seeds to grow them can serve as incentives to motivate farmer participation in agroforestry efforts.

The data on food preferences are also data on consumer preferences. They could be used to stimulate production of preferred crops and help expand local markets. As part of the ongoing effort to direct agroforestry programs into optimally productive channels for the farmer, CARE and SECID/Auburn are currently engaged in gathering data on crop yields in farmer's fields, market prices, and farm gate prices. After analysis and interpretation, this information should provide valuable insights into the market potential of the various crops presently under production in the Northwest as well as their income producing value. It will also enable CARE to identify other vegetables and fruits with potential market value which should be targeted for future development. If the preferred crops can be grown in the areas where they are most popular, research should be conducted to see if the seed supplies for them are adequate or need to be expanded.

Food preferences should be examined in relation to past research on nutritional needs in rural Haiti. The match between the perceived desires of the farm households and their nutritional needs as judged by scientific research should be determined. This determination can be used to select those crops which should be promoted.

N. Fallowing

The data show that decisions about allowing fields to lie fallow are made haphazardly. Such decisions are usually made informally rather than systematically. The advantages of routine fallowing and the most effective schedules and methods needs to be propagated. Such information may be diffused through the use of local farmers as demonstrators.

0. Selection of Participating Farmers

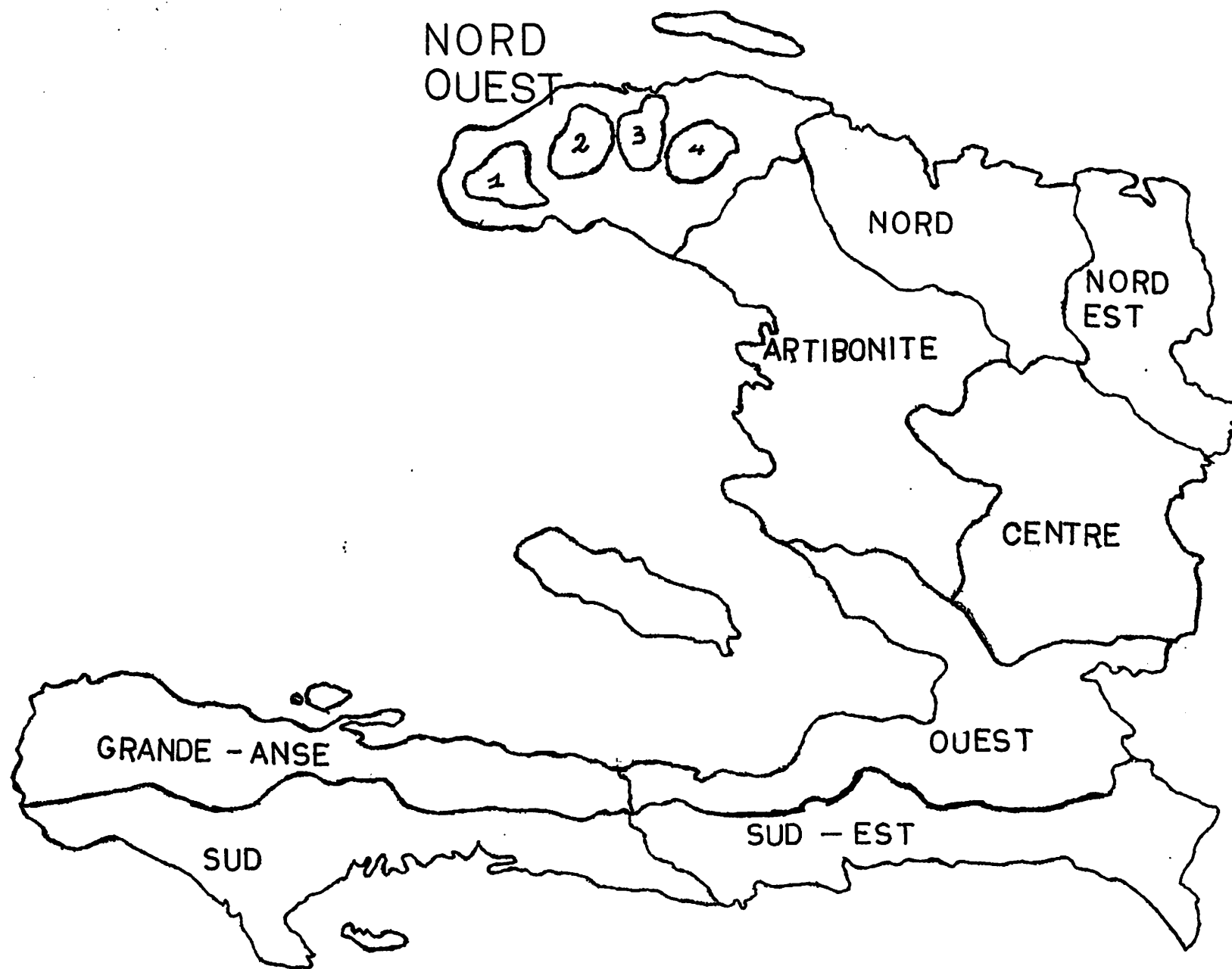
Sometimes choices must be made with regard to the selection of participating farmers. In general, priority should be given to those who "see" problems on their farms over those who do not see them. Some farmers, for example, recognize erosion problems while others which have them do not. The motivation to act typically follows the awareness of the existence of a problem which can then be addressed and solved. Efforts can also be made to enhance the ability of presently naive farmers to recognize problems on their land which can be address by agroforestry.

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APPENDIX I

Map of CARE Regions in Haiti



MAP OF CARE REGIONS IN HAITI (I, II, III AND IV)

Appendix II

CARE List of Issues to be Explored

ISSUES TO BE EXPLORED IN FARM BASELINE STUDY

1. How can farm families in the Northwest be characterized at the present time (size, land holdings, type of housing, education)?
2. How do farm families work in their fields at the present time (i.e. tools, community organization, family roles)?
3. What techniques do farmers presently know to conserve their soil?
4. What techniques do farmers presently implement to conserve their soil?
5. What techniques do farmers presently know to improve the fertility of their soil?
6. What techniques do farmers presently implement to improve the fertility of their soil?
7. What crops are most important to farmers in the Northwest at the present time (including perennials, vegetables, etc.)?
8. What would farmers like to plant in their fields in the future?
9. Where are the seedlings which farmers plant on their land produced?
10. How do farmers manage their trees/hedgerows at the present time? (What do they do between planting and harvest?)
11. How do farmers take care of their farm animals at the present time (especially in terms of fodder production)?
12. What farm activities have produced an income for the farm family during the six months prior to the survey?
13. What other activities (labor/off-farm business) have generated an income for the farm family during the six-months prior to the survey?
14. How do farmers get the necessary seed to plant their crops?
15. How do farmers store their crops and seed at present?

Appendix III

Original Questionnaire (Creole)

CARE-HAITI
PWOJE DONTE TE

KEKSYONE POU ANKET DE BAZ
JEN 1990

1. Nimewo keksyone: _____ 2. Rejyon: _____

3. Nom ankete: _____ 4. Lokalite: _____

5. Nom repondan: _____

6. Depi konbyen tan ou rete nan bitasyon sa a? _____

7. Kiles lot moun ki la avek ou toutan nan kay sa a? Konbyen yo ye?

mari madam pitit gason _____ pitit fi _____

lot gason _____ lot fi _____

Total: _____

8. Eske ou plante ti pyebwa ? wi non ** (Si non, ale nan keksyon 10.)

8a. ** (Si wi) Ki kote ou te jwenn ti pyebwa sa yo?

pepinye pwoje CARE

pepinye lokal (gwoup)

nan men yon vwazen

mwen te achte li Pepinye pam

lot kote _____

9. Apre ou plante pyebwa, ki jan swen ou bay yo pou yo ka grandi?

SA OU FE

1. _____

2. _____

3. _____

4. _____

10. Ki teknik (oubyen ladres) ou fe sou te pa ou, ki kapab konseve oubyen pwoteje te ou kont ewozyon?

e viv ranp pay mi sek/kodon de pye
kanal kontou kleonaj kilti sou kontou
jaden bwa pa boule te lot _____
mwen pa fe anyen

11. Ki lot teknik (oubyen ladres) ou konnen kapab fe sa?

e viv ranp pay mi sek/kodon de pye
kanal kontou kleonaj kilti sou kontou
jaden bwa pa boule te lot _____
mwen pa konnen lot

** (Si repandan di li pa konnen lot teknik, ale nan keksyon 13.)

12. Ou konnen kek teknik pou konseve te, men ou pa fe yo. Pouki sa ou pa fe yo?

pa gen tan pa gen ase moun pa konnen ki jan
pa gen zouti pa gen pwoblem sa a mwen pat vle
lot rezon _____
pa gen yon teknik mwen pa fe

13. Eske ou konn fe e viv oubyen ranp vivan? wi non

13a. ** (Mande keksyon sa a si li di li fe e viv. Si non, ale nan keksyon 14.)
Aprè ou plante e viv, ki sa ou fe pou pran swen li?

SA OU FE

1. _____
2. _____
3. _____
4. _____

14. Ki sa ou menm ou fe sou te pa ou pou fe te a vinn pi gra?

mete angre vet mete pou pou bet/fimye mete angre chimik
mete konpos plante bwa kite te a poze
fe ranp mete deche rekot yo
lot bagay _____
anyen mwen pa konnen yon teknik pou fe te a vinn pi gra

** (Si repondan di li pa konnen yon teknik, ale nan keksyon 17.)

15. Ki lot bagay ou konnen ki kapab fe te a vinn pi gra?

mete angre vet mete pou pou bet/fimye mete angre chimik
mete konpos plante bwa kite te a poze
fe ranp mete deche rekot yo
lot bagay _____
mwen pa konnen lot

** (Si repondan di li pa konnen lot, ale nan keksyon 17.)

16. Ki sa ki anpeche ou sevi ak lot teknik pou fe te ou vinn pi gra?

pa gen tan pa gen ase moun pa konnen ki jan
pa gen zouti pa gen ase te mwen pat vle
pa ka jwenn bagay pou angrese te a mwen pa gen anpechman
lot rezon _____

17. Ki kantite te ou travay? _____ konbyen moso? _____ konbyen kawo?

18. Ki kantite te ki pou ou menm? _____ moso _____ kawo

19. Ki kantite te ou te travay nan ane pase a? _____ moso
_____ kawo

20. Ak ki zouti ou fe travay (jaden) sa yo? manchet wou
rach pel pikwa

21. Eske ou gen te kap poze ki pap travay ane sa a? wi non
** (Si non, ale nan keksyon 22.)

21a. ** (Si wi) Pouki sa? _____
-

21b. ** (Si wi) Konbyen tan w'ap kite te a poze? _____

22. Ki kalite manje ou te plante nan ane pase a?
1. _____ 3. _____ 5. _____
2. _____ 4. _____ 6. _____

23. Ki kalite legim ou te genyen nan jaden ou ane pase a?
1. _____ 3. _____ 5. _____
2. _____ 4. _____ 6. _____

24. Ki kalite bwa fwi ou te genyen nan jaden ou ane pase a?
1. _____ 3. _____ 5. _____
2. _____ 4. _____ 6. _____

25. Ki kalite lot danre ou te genyen sou te ou ane pase a?
1. _____ 3. _____ 5. _____
2. _____ 4. _____ 6. _____

26. Ki kalite manje, legim, fwi, oubyen lot danre ou te vann pandan ane pase a?
1. _____ 4. _____ 7. _____
2. _____ 5. _____ 8. _____
3. _____ 6. _____ 9. _____

27. Ki kalite manje, legim, fwi, oubyen lot danre ou ta renmen plante nan jaden ou a pi devan?

1. _____	4. _____	7. _____
2. _____	5. _____	8. _____
3. _____	6. _____	9. _____

28. Nan sa ou te plante lane pase a, ki bo ou te jwenn semans yo?
 ** (Li lis sa yo te plante a. Si repondan di li achte, mande li ki kote?)

SEMANS	MWEN TE SERE YO	ACHTE NAN LOKALITE	ACHTE LOT KOTE	NAN MEN VWAZEN	AGWO TE BAY	LOT SOUS
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

29. Eske ou sere grenn ou rekolte yo? wi non
 ** (Si non, ale nan keksyon 30.)

29a. ** (Si wi) Ki kalite grenn ou sere? Ki kote? Ki jan? Pou konbyen tan?

SEMANS (KALITE)	KI KOTE	KI JAN	KANTITE TAN
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

30. Eske ou te vann zanimo ane pase? wi non

Ki kalite?	Konbyen?	Ki kalite?	Konbyen?
chwal <input type="checkbox"/>	_____	bourik <input type="checkbox"/>	_____
bef <input type="checkbox"/>	_____	kabrit <input type="checkbox"/>	_____
mouton <input type="checkbox"/>	_____	kochon <input type="checkbox"/>	_____
bet volay <input type="checkbox"/>	_____		

31. Eske ou gade zanimo kounye a? wi non ** (Si non, ale nan keksyon 32.)

Ki zanimo ou gade?

bef: wi non konbyen? _____

chwal: wi non konbyen? _____

bourik: wi non konbyen? _____

kabrit: wi non konbyen? _____

mouton: wi non konbyen? _____

bet volay: wi non konbyen? _____

kochon: wi non konbyen? _____

31a. ** (Si wi) ki jan ou gade zanimo yo?

	sou kod	nan pak	lage nan raje	lage nan paturay	pa gen zanimo sa a
bef	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
chwal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
bourik	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
kabrit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mouton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
bet volay	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
kochon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31b. ** (Si wi) ki sa ou ba yo manje?

bef _____ bet volay _____
chwal _____ mouton _____
bourik _____ kochon _____
kabrit _____

32. Eske ou te jwenn ase bwa pandan ane ki sot pase a pou:

	wi	non		wi	non
kwit manje	<input type="checkbox"/>	<input type="checkbox"/>	meb	<input type="checkbox"/>	<input type="checkbox"/>
chabon	<input type="checkbox"/>	<input type="checkbox"/>	fe remed	<input type="checkbox"/>	<input type="checkbox"/>
planch	<input type="checkbox"/>	<input type="checkbox"/>	manje zanimo	<input type="checkbox"/>	<input type="checkbox"/>
poto	<input type="checkbox"/>	<input type="checkbox"/>	traves	<input type="checkbox"/>	<input type="checkbox"/>

33. Eske gen moun nan fanmiy la ki fe pati yon konbit oubyen kwadi oubyen mazinga?

wi non (Si non, ale nan keksyon 34.)

33a. ** (Si wi) Konbyen moun ki genyen nan konbit oubyen kwadi oubyen mazinga sa a? _____

33b. ** (Si wi) Eske gen yon le nan ane a yo travay pi plis avek konbit oubyen kwadi oubyen mazinga a?

wi non (Si wi) Ki le nan ane a? _____

** (Si wi) Konbyen jou pa semenn yo travay ak li nan le sa a? _____

34. Eske ou menm konn achte jounen? wi non

35. Ki sa ou menm oubyen moun lakay ou te fe pandan 6 mwa ki sot pase a, pou ou gen kob?

komes vann zanimo ed eksterye jwet
 bay ponya job atizana vann jounen anyen
 lot _____

36. Ki moun ki konn fe travay sa yo? M'ap di travay yo:

	Papa	Manman	Gason nan kay	Fi nan kay	Gason pa nan kay	Fi pa nan kay	Nou pa fe'l
Prepare te	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plante jaden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sakle te	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pran swen jaden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rekolte jaden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vann rekot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bay zanimo manje	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chache dlo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plante bwa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pran swen bwa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Koupe bwa	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pran swen e viv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37. Konbyen moun lakay ou konn li? _____

33. Eske w'ap peye lekòl pou ti moun? wi non (Si non, ale nan seksyon 34.)

33a. ** (Si wi) Pou konbyen moun? _____

34. Laj repondan: _____

Obsevasyon:

Ki jan kay li ye?

twati tol wi non

Ate simante wi non

Pano klise wi non

Pano brizye wi non

Mi wi non

Gason ou Fi